

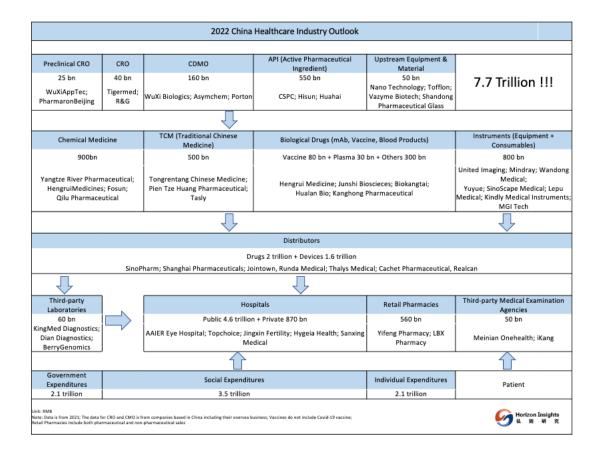
Closer to Chinese Market: China Healthcare Sector Update

Independent thinking and on-the-ground perspective

In the global arena, co-existing with Covid-19 is the new norm in the foreseeable future, and it will overwhelmingly dictate the attention and resource allocation of the global healthcare industry. The Covid-19 virus is testing new frontiers of human medical knowledge as it has surprised and stunned medical professionals in its attacks on various human body systems and organs, especially in those of the weak, sick, and elderly. As the physical health as well as mental health of human population is at risk and/or in process of being affectively weakened & damaged by the Covid virus, the toll it will placed on the healthcare system will be immense.

Challenges and Opportunities to China's Healthcare Sector

- China is in the midst of another drastic healthcare reform that began in 2020, which has since successfully provided a free basic healthcare package to its population on their essential healthcare needs. China's latest healthcare reform coincided with the Covid-19 pandemic, which strengthened and accelerated the progress of the reform to address the challenges of China's rapidly aging population, healthcare equality, rising public healthcare costs, and a shortage of medical professionals.
- New innovative technology solutions to tackle problems and challenges such as the
 aging population, healthcare equality, and rising healthcare costs: China's healthcare
 industry will look to innovative technology solutions to help the rapidly growing elderly
 population and ensure healthcare equality in all regions in China while circumventing
 rising healthcare costs.



High-end Medical Devices: In 2022, the centralized procurement of high-value consumables is one of the most significant policies to watch. The key trend is that domestic medical devices replace imported medical devices, and the main driving force is DRG hospital cost control and China's restrictions on purchasing imported equipment. The market for domestic replacement is at least RMB 100 billion. Since 2015, domestic manufacturers have consistently improved their products in chemiluminescence, high-end ultrasound, and endoscopes. The speed of domestic replacement among these products has increased significantly. It is expected that domestic manufacturers will continue to improve their research and development capabilities in the future and achieve a greater proportion of domestic replacements. In the near future, we will focus on the replacement of non-medical insurance consumer consumables and equipment.

Company	Industry	Market Cap	Horizon Insights View
SonoScape Medical 300633.SZ	Medical Devices	221.2	No. 2 in ultrasound and a leader in endoscopes in China.
			Recent Updates China's medical infrastructure reform accelerates the revenue growth.
Acrobiosystems 301080.SZ	Reagents	100.8	Strong overseas operations as one of a few companies provide raw materials. Cell and gene therapy raw materials will bring growth opportunities in long-term. Recent Updates High growth of the overseas business in Q3, domestic business growth under pressure.
Mindray 300760.SZ	Medical Devices	3866.2	A leader in medical devices with international capabilities.
			Recent Updates High certainty of growth after the subsidized loans policy.

Innovative Drugs: After the release of the new clinical trial guidelines, domestic innovative drugs have entered a new era. The rapid development of biological drugs (especially cell gene therapy) has brought a new opportunity to upstream consumables and equipment and CDMO development. The shift of global production of CDMO gives a boost to the development of domestic companies. Domestic innovative drugs entering overseas markets accelerates the development of CRO companies as the clinical demand expands globally. We remain optimistic about the future of the innovative drug industry in China, though the financing activities in the primary market declined, and the performance of innovative drug companies in the secondary market lagged. Innovation is the only way out for domestic pharmaceutical companies.

Company	Industry	Market Cap	Horizon Insights View
Luye Pharma Group 2186.HK	Drug Manufacturers	103.3	Focus on R&D of microspheres and neurological products. Make revenues next year. Recent Updates The company's new products will be approved for sale on a large scale this year and next year. The main business has bottomed out and will resume growth next year.
Genscript Biotech 1548.HK	Cell Gene Therapy	487.7	Leading company in cell and gene therapy, covering entire industry from upstream, such as consumables, equipment, and outsourcing services, to downstream pharmaceuticals. Recent Updates The cell therapy drug of the Company's subsidiary Legend Biotech accelerates growth, and the Company maintains a growth of 20% after excluding the high base number associated with the pandemic.
Jingxin Pharmaceutical 002020.SZ	Innovative Drugs	110.9	A rich reserve of innovative drug products, and will start to apply for approval and listing next year. The impact of centralized procurement eased for its generic drugs. Entering retail market next year. Recent Updates An innovative drug for insomnia is applied for listing, and the impact of the centralized procurement of the main business has bottomed out, and growth has gradually resumed.
Jiangsu Hengrui Pharmaceuticals 600276.SH	Drug Manufacturers	2583.5	A leading company in innovative drugs. Clinical data for new products and R&D in overseas are the key to watch for next year. Recent Updates The inventory of product channels hit low, and revenues should bottom out after the last round of centralized procurement at the end of the year.
Zhejiang Wolwo Bio- Pharmaceutical 300357.SZ	Allergic Diseases Drugs	269.6	Non-medical insurance products. Good competitive landscape and growth potentials in the market. Recent Updates Q2 and Q3 2022 earnings were affected by the pandemic

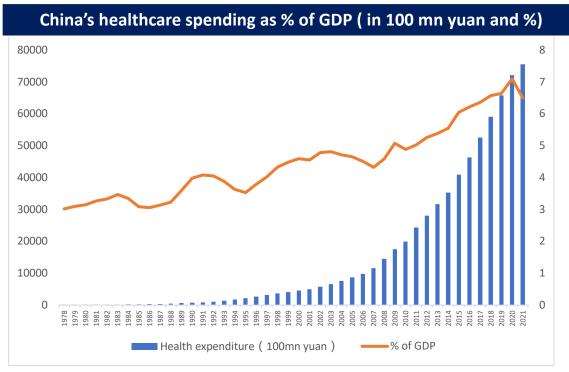
Medical Services: The aging population and the health anxiety of the emerging middle class contributed to the rising demand for the medical services industry, giving leading companies

an opportunity to achieve a double leap in market shares and valuation by establishing a business model of chain operations. With strong policy support and stable demand growth, listed companies in oncology, ophthalmology, assisted reproduction, and oral medicine will continue to increase their market shares and penetrate to new markets by leveraging their standardized services and rising company reputation. These companies can leverage the advantages of demand, technology, and management established by their massive patient resources to serve patients in both domestic and overseas markets and seize the opportunity to become a leader in their specific industry in the global medical service market.

Company	Industry	Market Cap	P Horizon Insights View
Hygeia Healthcare 6078.HK		294.8	Promotion of DRGS is slower than expected due to Covid-19 pandemic. DRGS is expected
			to speed up in 2023. Cost control will enhance its competitive edges.
	Medical Care Facilities		Operational and finance advantages push to accelerate development.
			Recent Updates
			The impact of the pandemic in Chongqing has increased and is expected to affect
			the Company's business, but the Company has not lowered its earnings guidance;
			Hygeia in Chongqing is expected to be put into use by the end of 2022.
		48.8	New milk powder standard will be effective on Feb. 2023. The market has room to expand.
Cabio Biotech			Oversea DSM patents will expire, and it is planning to expand to overseas markets.
Wuhan	Food Products		Recent Updates
688089.SH			The inventory of milk powder channels has bottomed out, and the use of synthetic
			biology in food additives in China is in the draft stage for comments.
			The only global ophthalmology chain with a high degree of scarcity with clear competitive
Aier Eye Hospital	0.141.1.1		advantages over competitors.
Group	Ophthalmology Chain	1975	Recent Updates
300015.SZ			Centralized procurement for Ortho-k in Hebei province in Q4, and it is expected to
			have an impact on earnings of about 10%.
			Despite the negative impact of the pandemic, macroeconomics, and lockdowns in Wuhan
			to the company's operations, the company will have a valuation recovery if these factors
Jinxin Fertility	Assisted		ease.
Group	Reproductive Services	135.2	Recent Updates
1951.HK			The pandemic in Shenzhen in H1 and in Chengdu in H2. The Company's key
			business segments were affected by the control of the pandemic. The growth in
			2022 is a stress test for the Company.
A17.84 II I	Orthopedic Joint Implants	92.6	Domestic joint products to replace imported products as the policy of the centralized
AK Medical			procurement has come out.
Holdings			Recent Updates
1789.HK			Centralized procurement landed. Revenues bottomed out.
D			Domestic joint products to replace imported products as the policy of the centralized
Beijing	Orthopedic Medical Device	80.5	procurement has come out.
Chunlizhengda 688236.SH			Recent Updates
			Centralized procurement landed. Revenues bottomed out.
GemPharmatech 688046.SH	Humanized Animal Models	142.5	A leader in humanized animal models with a full range of products. Strong competitiveness
			in China market and great potentials in oversea markets.
			Recent Updates
			Growth for humanized animal models slowed down, but the high growth of the drug
			efficacy business drove the overall growth.

China Healthcare Spending and Cost

 In terms of controlling rising healthcare costs, most medical service providers across China have begun to implement the Diagnosis Related Grouping (DRG) health insurance reimbursement program. Health insurance providers use The DRG reimbursement system to determine and control healthcare cost by: 1) devising a total healthcare cost budget, and 2) imparting an inpatient reimbursement payment limit for a single diagnosed treatment. The overall goal of the DRG program is to control, stabilize, and steadily manage any additional & rising healthcare costs, and at the same time, provide health insurance coverage to as many patients as possible.



Source: Horizon Insights

- In terms of implementation, standardized services and drug treatments are provided for each treatment subgroup, along with a standardized medical payment range per treatment.
- Medical service providers basically incur treatment costs at 3-5% lower than the DRG reimbursement amount by controlling their own costs; that is, by using more costeffective medical consumables, controlling overall staffing and salary expenses, and improving operating efficiency via increasing the hospital bed turnover rate.
- China Health Insurance Administration has classified the DRG program's National General
 Core Group Coding Standard into 376 core groups on basis of which local healthcare
 authorities can further structure its own subdivision groups or directly use the central
 government's CHS-DRG's subdivision groups for standardized medical payments.

Shortage of Medical Professionals

 With increasing stress and workloads, physician burnouts will also be a major problem going forward, especially when doctors, nurses, and other medical professionals all have been overworked due to the Covid-19 pandemic.

- At present, it is estimated that there are nearly 4 million doctors and around 4.5 million nurses in China for a population of 1.3 billion. Consequently, China currently has slightly less than 3 doctors per 1000 population, up from 1.9 million doctors or 1.5 doctors per 1,000 population in 2005. However, despite the increase, there is still a shortage of welltrained medical professionals at present.
- To alleviate this manpower shortage problem, encouraging private investments in private medical service chains is a good strategy to implement. For example, investment in especially those private online healthcare providers that can provide healthcare services such as those mentioned previously: 1) 24/7 online consultations, 2) health management program, 3) prescription drugs delivery, and 4) second medical opinions, will be a much-desired complement to China's well-regarded public medical service sector.
- In addition, by encouraging private sector investments in not only private online healthcare providers, but also in private commercial health insurance (which currently represents less than 10% of all healthcare medical payments), the private health insurance sector can also grow to relieve the burden of government's rising healthcare expenditure.



Source: China Health and Family Planning Statistical Yearbook, Horizon Insights

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