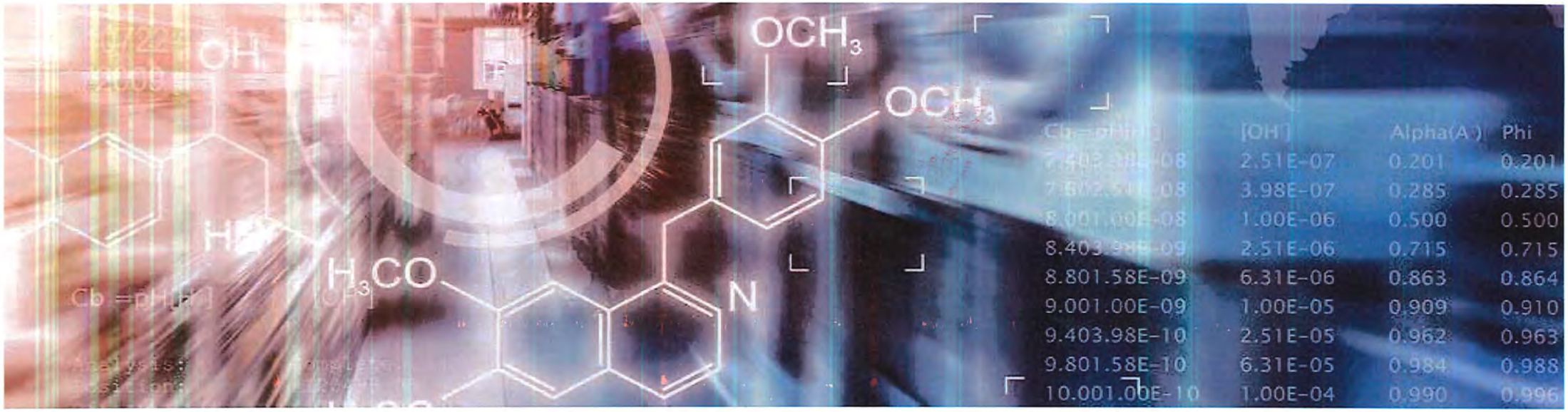

China Insights Consultancy

Industry report on medical device market around the globe and in China

Aug 2026

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II. Overview of Life Support Medical Device Industry

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IV. Overview of In Vitro Diagnosis Industry

Classification and definition of medical device industry

Introduction and classification of medical devices

Category	Description
Medical imaging devices and consumables	• CT, MRI, ultrasound equipment, mammography, nuclear medicine technology, DSA,CAD, etc.
Minimally invasive surgery related device and consumables	• All kinds of endoscopic devices, such as laparoscope, gastroscope, colonoscope, arthroscope, hysteroscope, etc.; energy system ,imaging system, and related disposables, etc.
In vitro diagnosis device and consumables	• Biochemical analyzer, hematology analyzer, immunoassay analyzer, molecular biological diagnostic device, genetic diagnosis device, blood gas analyzer, etc.
Reusable medical consumables	• Reuse of isolation suits, reusable instrument sheets, endoscopic reusable single shot clamping forceps laparo-clip, reusable electric lumpectomy anastomosis and components, etc.
Disposable medical consumables	• Disposable injector, infusion set, transfusion set, drainage pack, drainage tube, catheter, sterile gloves, surgical sutures, surgical seaming, surgical blades etc., which includes a variety of types and models and has wide application.
Healthcare IT system	• Hospital information system, clinical lab information system, PACS, remote medical system, pharmacy department information system, computerized physician order entry, electronic medical recorder management, etc.
Patient monitoring device and consumables	• Single and double parameter patient monitor, multi-parameter patient monitor, maternal and fetus patient monitor, central monitor station, anesthetic patient monitor, medical ventilator, anesthetic machine, etc.
Other medical devices	• Other general medical devices such as hospital beds, operating tables, medical devices containers, etc.

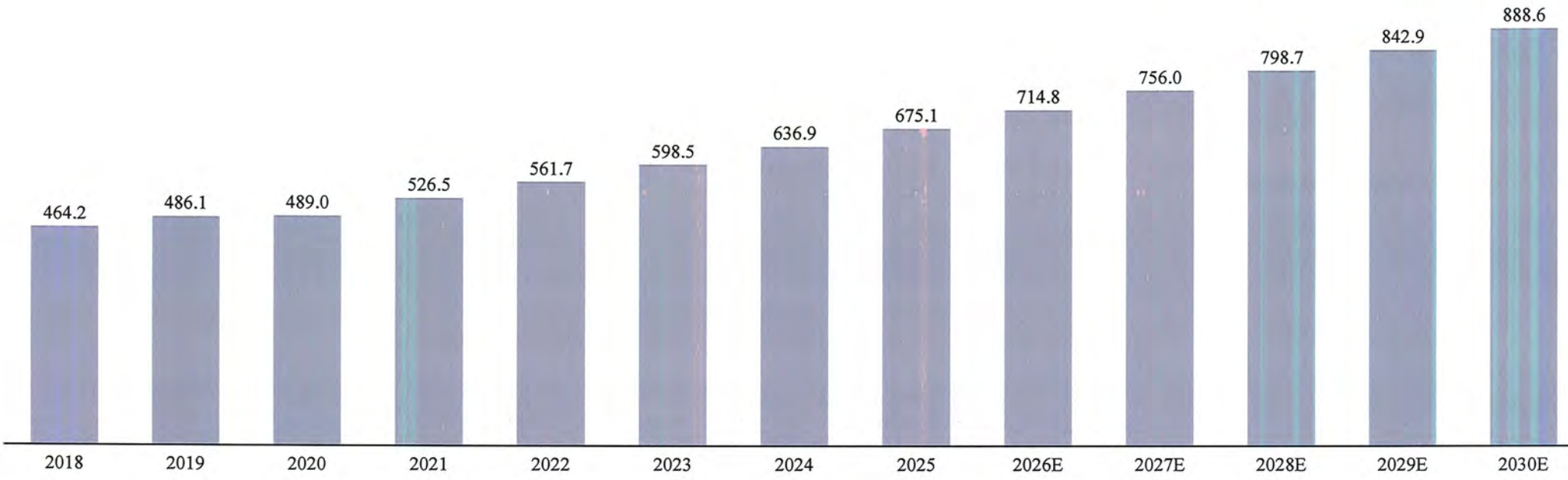
Source: China Insights Consultancy

Market size and forecast of medical device around the globe, 2018-2030E

Market size and forecast of medical device around the globe*, 2018-2030E

CAGR	2018-2025	2025-2030E
Medical device	5.5%	5.6%

Billion USD



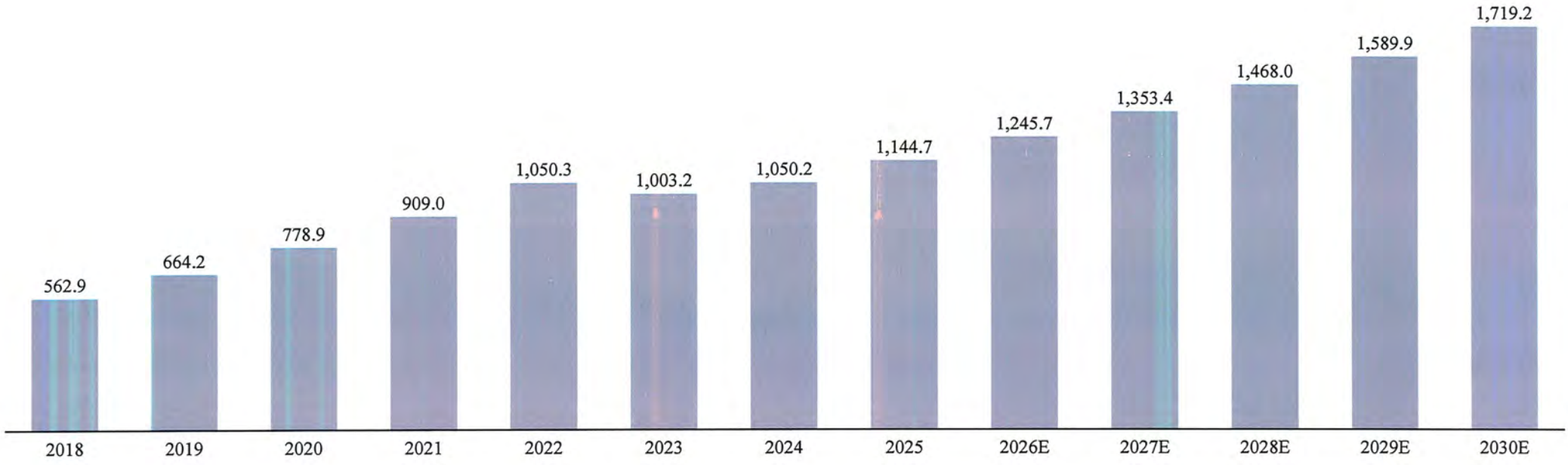
Source: China Insights Consultancy

Market size and forecast of medical device in China, 2018-2030E

Market size and forecast of medical device in China*, 2018-2030E

CAGR	2018-2025	2025-2030E
Medical device	10.7%	8.5%

Billion RMB



Source: China Insights Consultancy

Value chain analysis of Global and China's medical device industry

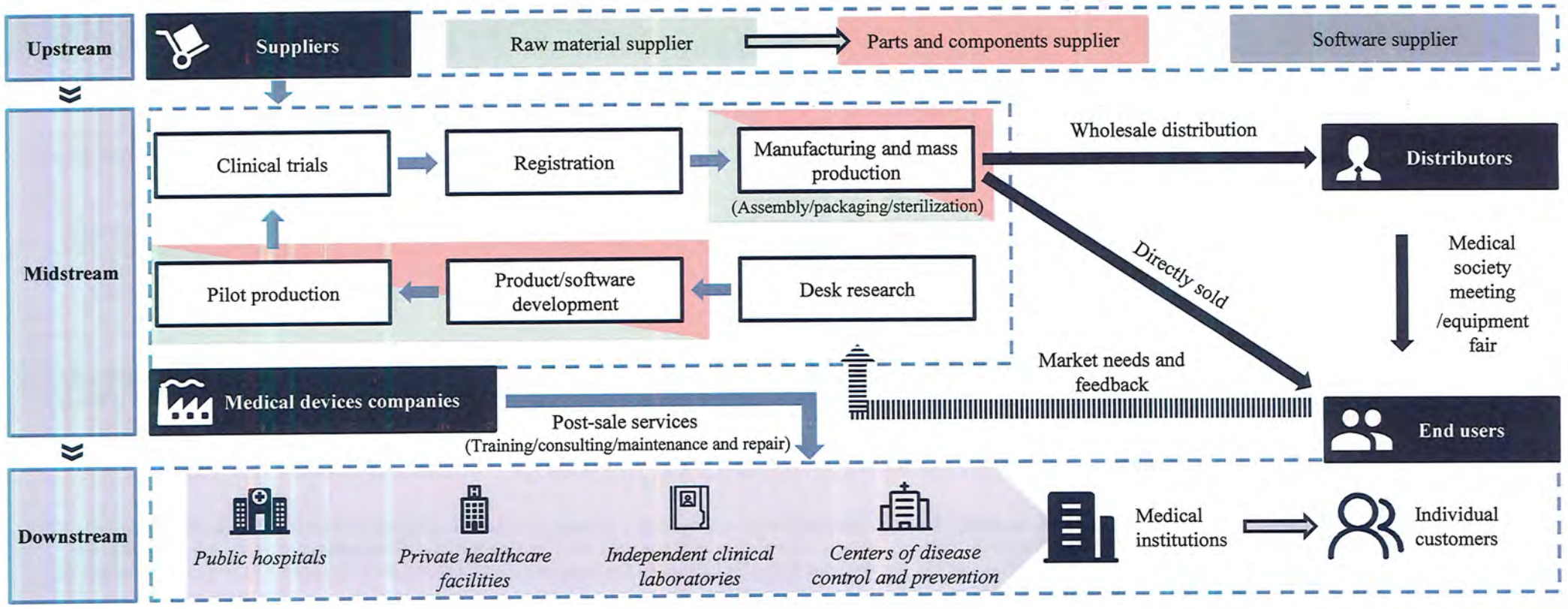
Value chain of China medical device market

	R&D	*Manufacturing*	*Assembly*	*Distribution*	*Marketing & sales*	*Post-sales service*
Activity	• Design / Prototype • Process development • Regulatory approval • Sustaining engineering	• Software development • Electrical components • Precision metal works • Plastics extrusion & molding • Weaving / Knitting textiles	• Assembly • Packaging • Sterilization	• Wholesale distribution • Directly sold to hospitals (public & private)	• Medical society meeting • Medical equipment fair	• Training • Consulting • Maintenance & repair
Key issues	• R&D focusing on clinical needs is the mostly invested sector of the value chain for medical devices and accounts for an estimated 60% of the final cost • The success rate of new drug development is low, with the chance of final approval of a therapy candidate entering Phase I clinical trials is about 7.9%	• Manufacturing and assembly represent the product validation stages of the medical device value chain. The activities related to this segment include: – The production of components – The quality control of components and final products to make sure of satisfactory product quality		• Medical devices are generally sold via distributors • A key principle is that the product / service requirements match the factors affecting physicians' purchasing decisions. Encouraging KOLs who endorse the product to writer papers and make presentations at medical society meetings is an effective strategy to market products • The ability to improve after-sales service for medical devices remains an important consideration		

Source: China Insights Consultancy

Value chain analysis of Global and China's medical device industry

Value chain of China medical device market



Source: Journal of Engineering Studies; China Insights Consultancy

Entry Barriers of Medical Device Industry around the globe and in China (1/3)

Entry Barriers of Medical Device Industry around the globe and in China

Entry barriers	Description
Heavy R&D investment and high risks	• Medical device industry is an undoubtedly high-tech industry that integrates materials, mechanical manufacturing, electronic engineering etc., where sophisticated technology is a must. Therefore, manufacturers should investment a lot in R&D • However, heavy investment may not achieve ideal success which means R&D of medical devices are ventures of high risk. What's more, despite extensive testing of products both ex vivo and in vivo, the chance of later failure of new products may cause serious medical problems for the individual and financial disaster for the producer
Strict approval processes and regulatory issues	• Medical devices, especially implantable devices which belong to Class III have strict requirements for getting to the market and are required to undergo premarket approval. Governments all almost use a slightly different classification system. For example, In the US, this process is controlled by the FDA, a government agency. In Europe, the process is conducted by so-called Notified Bodies, which may be private companies or foundations. The FDA requires evidence of safety and efficacy from new devices, while premarket evaluation in Europe requires proof of safety. All these requirements make new manufacturers much more difficult to enter medical device industry
Comprehensive product portfolio and solutions	• Different procedures and symptoms require various types of specifications of medical devices. Even the same type of disease can have different therapies, and different medical devices are needed for coordinated treatment. A comprehensive product portfolio can eliminate compatibility concerns by providing one-stop and tailor-made treatment which will be welcomed by professionals. This consequently involves synergies for R&D, manufacturing and commercialization activities and growing economies of scale, with which new entrants are difficult to compete
Customer stickiness and end-user recognition	• Medical devices are mainly utilized by professional doctors in hospitals and clinics. Doctors have their own preferences for the use of medical devices. Some brands will cultivate their own user stickiness. Such process could take years of efforts for a brand to establish solid relationships with physicians and hospitals, especially with top-tier hospitals. And it could be difficult for a new entrant to break such stickiness and cultivate its own end-user recognition

Source: China Insights Consultancy

Entry Barriers of Medical Device Industry around the globe and in China (2/3)

Entry Barriers of Medical Device Industry around the globe and in China

Entry barriers	Description
High barriers in strategic acquisition	• Currently, the medical device industry is witnessing a trend towards investment, financing, and mergers and acquisitions (M&A). This capital trend is driven by the manifold benefits that M&A can bring. For instance, M&A enables companies to achieve rapid expansion and increase market share, supplement and enhance product lines, as well as gain technological and R&D advantages. • However, despite the numerous advantages, M&A also entails certain risks and challenges. For example, underperformance of acquired targets, difficulties in integrating after cross-departmental mergers, and failure to realize synergies can lead to M&A failures. Consequently, such capital business activities place high demands on involved parties. Only industry-leading companies with certain capabilities can relatively smoothly advance integration and acquisitions. Conversely, most small-scale companies or those lacking the corresponding M&A capabilities may encounter setbacks during the acquisition process, facing significant risks of M&A failures that could even affect the overall future earnings of the company. • For example, in 2021, MicroPort Medical accelerated mergers and acquisitions and investments. It acquired 45% of the shares of Kery Pharm for 111 million yuan, fully acquired Hemovent GmbH, a German company, for 123 million euros, acquired estate in Shanghai Pudong New Area for 650 million yuan, and acquired 38.33% of the shares of Argus Scientific Inc for 372 million yuan. This series of mergers, acquisitions, and investments led to increased borrowing and continuous cash flow deficits. Along with the continuous losses over the past four years and the limited "blood-making" capabilities of the acquired businesses, MicroPort Medical is facing a cash flow crisis. • Similarly experiencing "blood-making" failures after mergers and acquisitions is blood dialysis industry giant Baxter, which recently announced the closure of its manufacturing facility in Acton. This facility was acquired in a major acquisition in 2021 ($12.5 billion). At that time, Baxter acquired Hill-Rom Holdings Inc., achieving business complementarity. However, such a large-scale acquisition did not bring new business growth to Baxter but instead resulted in a downward trend in related revenues. This situation led to a significant drop in Baxter's stock price. In November 2022, Baxter announced a $3.1 billion impairment related to the acquisition, confirming the poor performance of Baxter's acquisition behavior. In July 2023, Baxter implemented large-scale cost-cutting measures, including significant layoffs at the factory, and in February 2024, chose to divest businesses and close facilities to reduce further losses. • For instance, in recent years, numerous failed M&A cases in the medical device industry have demonstrated the severity of risks associated with such endeavors. Moreover, the complexity of M&A operations in the medical device industry is further compounded by the potential occurrence of black swan events, such as legal litigation and dealing with non-performing assets, which may lead to considerable economic losses and reputational risks for companies. Additionally, successful M&A requires both parties to possess high levels of execution and cooperation capabilities to ensure smooth integration. Regulatory scrutiny and compliance issues may also pose obstacles during the M&A process. • Therefore, companies must exercise caution, conduct comprehensive evaluations of acquisition targets and risks, and devise appropriate integration strategies to realize long-term benefits from M&A. This necessitates companies to possess comprehensive business assessment capabilities and capital, while emphasizing collaborative cooperation and risk management, thereby minimizing the risk of failure and ensuring successful implementation of acquisitions.

Source: China Insights Consultancy

Entry Barriers of Medical Device Industry around the globe and in China (3/3)

Entry Barriers of Medical Device Industry around the globe and in China

Entry barriers	Description
High barriers in strategic acquisition	• The medical device industry is highly fragmented and technologically diverse, where becoming a competitive comprehensive solutions provider often requires targeted strategic acquisitions to build a broader product portfolio and technology stack. However, such acquisitions in the medical device industry come with inherent challenges, such as clinical approval pathways, regulatory alignment, and post-acquisition integration of R&D and production capabilities. In addition, achieving synergies across diverse product lines and compliance regimes adds to the complexity. As a result, only companies with deep sector expertise, strong regulatory know-how, and seasoned M&A experience are typically capable of executing and integrating such acquisitions effectively.

Source: China Insights Consultancy

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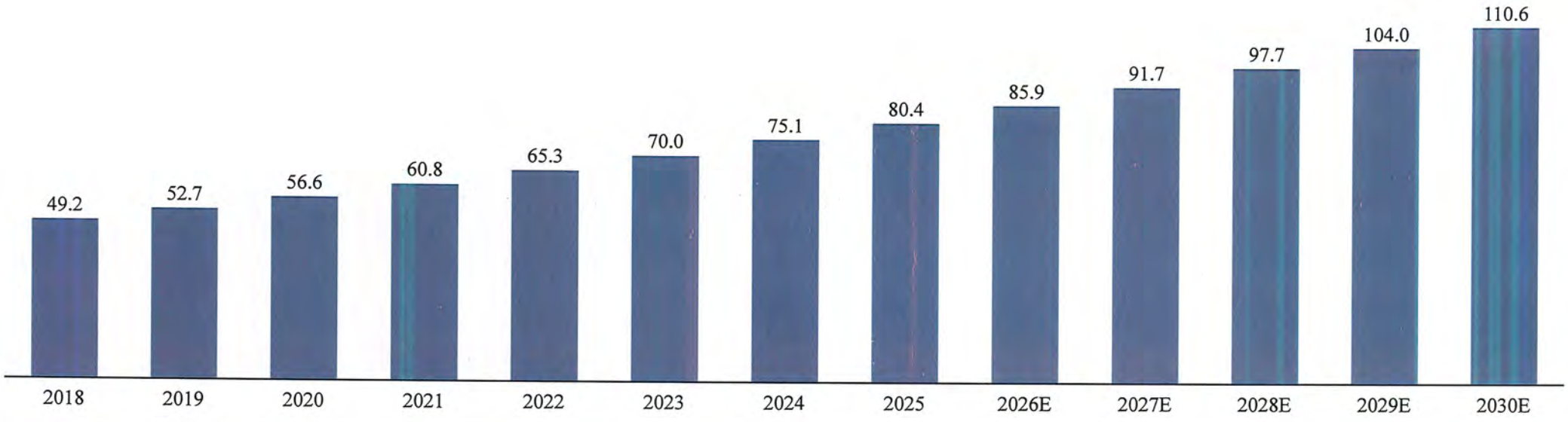
Market size and forecast of life support medical device around the globe, 2018-2030E

Market size and forecast of life support medical device around the globe*, 2018-2030E

	2018-2025	2025-2030E
life support medical device	7.3%	6.6%

Billion USD



* *In terms of ex-factory prices*

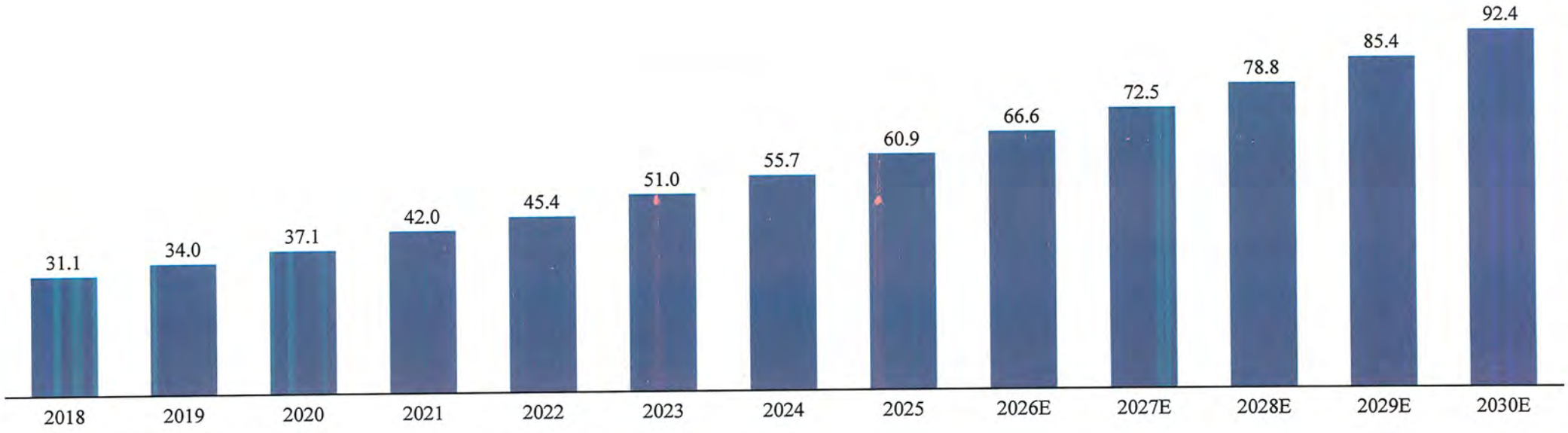
Source: China Insights Consultancy

Market size and forecast of life support medical device in China, 2018-2030E

Market size and forecast of life support medical device in China*, 2018-2030E

Billion RMB

	2018-2025	2025-2030E
life support medical device	10.1%	8.7%



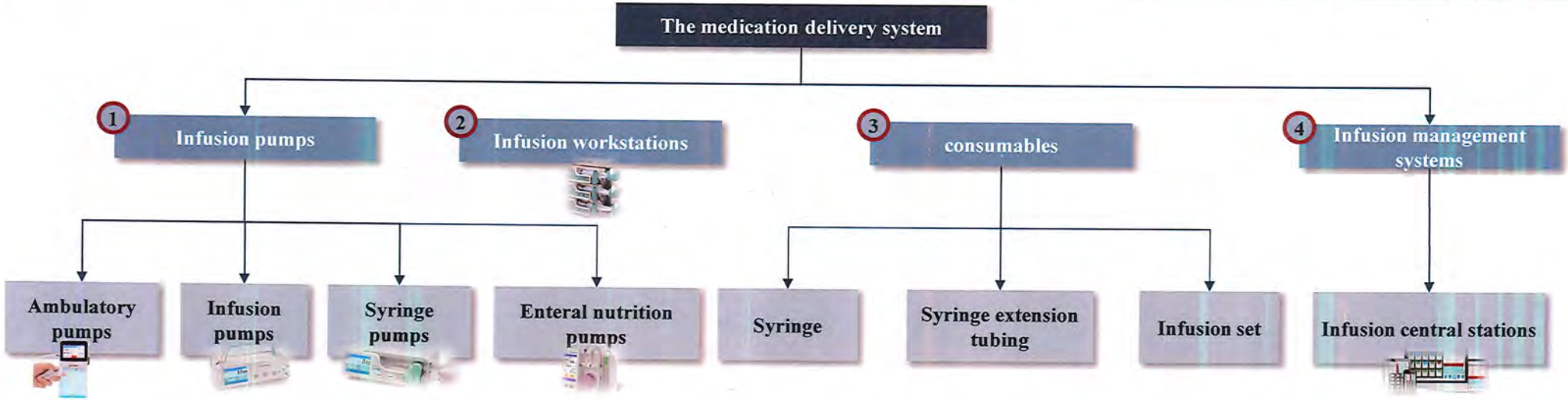
* *In terms of ex-factory prices*

Source: China Insights Consultancy

The medication delivery system can be divided into infusion pumps and consumables and infusion management systems; the infusion pump enable patients' infusion with higher accuracy and safety

Composition of the medication delivery System

- The medication delivery system can be divided into **infusion pumps, infusion workstations, consumables, and infusion management systems.**
- The **medication delivery pump** is an automatic and controllable infusion device, which uses mechanical driving force to accurately **control the number of drops or the flow rate of the infusion**, ensuring precise and safe delivery of the dose into the patient's body. **The infusion workstations** arrange and manage individual infusion pumps in the same physical space, covering combination infusion pumps, syringe pumps, and enteral nutrition pumps.
- The use of **infusion management systems** can achieve more efficient, flexible, and safer infusion for patients. **The infusion central station** is a central monitoring and management system that can provide real-time monitoring of the infusion workstations.



Source: China Insights Consultancy

① The infusion pumps and consumables can be categorized as infusion, syringe and enteral feeding pumps, among which syringe pumps are also known as micro-infusion pumps

Categories of the infusion pumps

Categories	Description	Application
 **Infusion pumps**	• **The device uses mechanical or electronic control of the infusion catheter** to control the infusion rate of medical equipment products and a peristaltic device to squeeze the infusion tube to control the quantitative movement of the liquid in the tube. • **It uses precise control of mechanical pressure to replace gravity**, thereby continuously, accurately and evenly pumping small amounts of medication into the patient's body. • The peristaltic modes of infusion pumps can be classified as **full squeezing, semi-squeezing, and disc-type squeezing.**	• Infusions of medications that require strict control of dosage or volume include antihypertensive drugs, antidiabetic drugs (e.g. insulin), anti-arrhythmic drugs, anesthetics, intravenous infusions for infants and young children, and opioid analgesics used in late-stage cancer patients.
VS		
 **Syringe pumps**	• **A type of small injection device.** The programmatically controlled power mechanism drives the propulsion mechanism for linear motion, which in turn drives the piston rod of the syringe to generate positive pressure, aiming to inject liquid into the human or animal body in order to achieve accurate drug delivery and long-term continuous administration. • **The dosage is very precise**, characterized by small doses, slow administration speed, and long-term constant delivery. The accuracy of the syringe pump is higher than that of the infusion pump, typically producing an accuracy error of less than 5%.	• Commonly used for critically ill patients in the Intensive Care Unit (ICU), Cardiac Care Unit (CCU), Neurosurgery, and other specialized departments.
 **enteral feeding pumps**	• Continuously infuses nutrients into the patient's body using the propulsion of a peristaltic pump and the gravity of the nutrient solution. • According to the patient's gastrointestinal adaptation capacity, intermittent feeding and accurately adjusting various parameters such as nutrient flow rate, speed, and time are carried out. This helps to preserve the integrity of the intestinal mucosa and normal secretory functions, enhance the resistance of the gastrointestinal mucosa and reduce the incidence of complications.	• Patients who have difficulty eating due to recent surgery leading to poor digestion or various gastrointestinal dysfunctions.

Main takeaways

- **Infusion pumps are generally referred to as volumetric pumps, while syringe pumps, also known as micro-infusion pumps, serve as a high-precision tool supplementing volumetric pumps for administering small doses of medication.** Comparatively, volumetric pumps have a larger capacity, wider flow rate range, and fewer restrictions on liquid types, while syringe pumps offer higher accuracy, more flexible drug capacity, and easier solutions for desktop placement.

② The infusion management system consists of infusion workstation and infusion central station; the MRI compatible infusion station can be utilized for patients during MRI examination

Categories of the infusion management system

Categories	Description	Advantage
 **Infusion workstation**	• The infusion workstations are generally used in conjunction with infusion pumps, syringe pumps, and monitoring workstations and **provide a combined space for infusion pumps.** Currently, enteral feeding pumps can also be integrated into infusion workstations. ✓ **The MRI compatible infusion workstation** overcomes the impact of magnetic field radio frequency on MRI imaging environment and electronic interference of itself. **It can meet the infusion needs for patients during MRI examination and surgery combined with MRI technology.**	• Adopt a plug-in and modular design, allowing for flexible and convenient adjustment of the number of infusion pumps according to infusion needs, which is conducive to the centralized management of infusion systems. • Utilize intelligent cascading to achieve automatic continuous infusion, reducing the risks associated with frequent and intermittent medication changes, and meeting the seamless infusion needs of high-risk medications. • Precisely control the dosage, concentration and speed of medicine to enhance the safety of infusion and significantly reduce the workload of medical staff.
 **Infusion central station**	• The infusion central station **is an infusion management system equipped with a host computer, printer, microphone, speakers, and wireless router.** • The system is installed with central station software, which transmits real-time infusion information from syringe pumps, infusion pumps, and infusion workstations in various wards to the computer through WIFI signals, monitoring the operational status information of each device.	• **Real-time automatic collection of infusion data from all channels,** centralized monitoring of the data, applicable to locations such as operating rooms, ICU, outpatient departments, general wards, etc. • Users can access information on each patient's injections and infusions at the bedside, nursing station, office or any other location.

Source: China Insights Consultancy

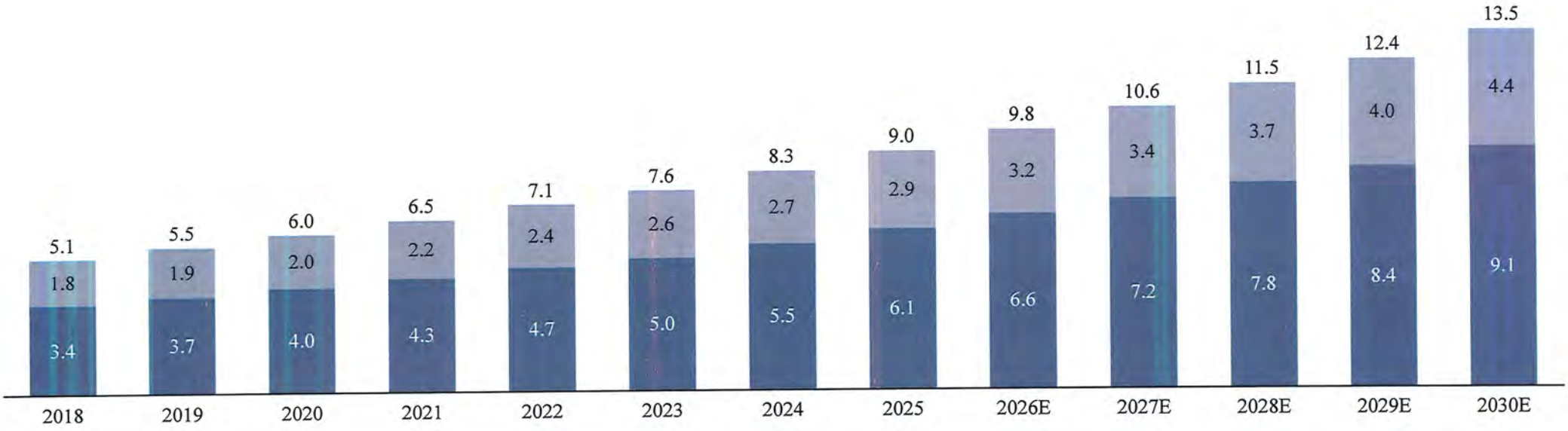
Market size and forecast of medication delivery system around the globe, 2018-2030E

Market size* and forecast of medication delivery system around the globe, 2018-2030E

Billion USD

	2018-2025	2025-2030E
Equipment	7.6%	8.4%
Consumables	8.8%	8.4%
Total	8.4%	8.4%

- **Equipment** includes infusion pump, syringe pump, enteral nutrition pumps, infusion workstation and central monitoring system.
- **Consumables** include pre pump tubing set, specialized tubing for nutrition pump, nutrition bag, other pump consumables and infusion-related consumables.



** In terms of ex-factory prices*

Source: China Insights Consultancy

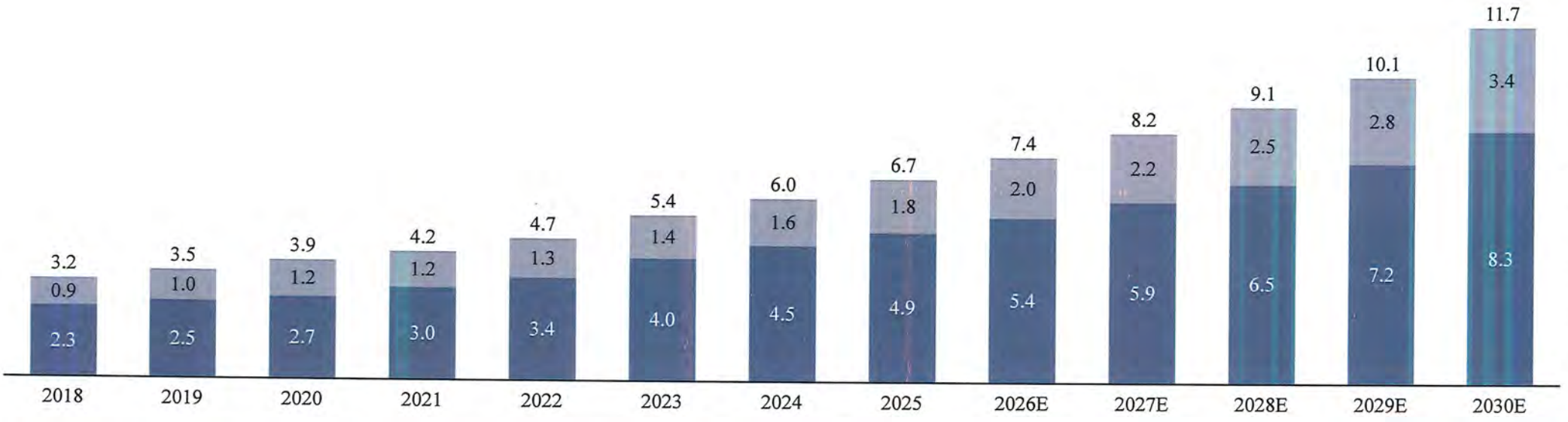
Market size and forecast of medication delivery system in China, 2018-2030E

Market size* and forecast of infusion system in China, 2018-2030E

	2018-2025	2025-2030E
Equipment	10.1%	14.3%
Consumables	11.2%	11.1%
Total	10.9%	12.0%

Billion RMB

- **Equipment** includes infusion pump, syringe pump, enteral nutrition pumps, infusion workstation and central monitoring system.
- **Consumables** include pre pump tubing set, specialized tubing for nutrition pump, nutrition bag, other pump consumables and infusion-related consumables.



* *In terms of ex-factory prices*

Source: China Insights Consultancy

Competitive landscape of the medication delivery system market in China

Competitive landscape of medication delivery system* market in China, 2025

Ranking	Company	Type of brand	Market share by sales value**
1	Company A	Domestic	21.1%
2	**The Company**	**Domestic**	**9.9%**
3	Company B	Imported	9.0%
4	Company C	Imported	7.4%
5	Company D	Domestic	6.7%

Notes:

(1) Company A is a public company established in the 1990s and headquartered in Shenzhen, which was listed on the Shenzhen Stock Exchange and primarily engages in life information and support, in vitro diagnostics, and medical imaging.

(2) Company B is a private company established in the 1830s and headquartered in Germany, which primarily engages in medical devices and pharmaceuticals.

(3) Company C is established in the 1990s and headquartered in Germany, which primarily engages in infusion, blood delivery and clinical nutrition. The parent group of Company C was listed on the Frankfurt Stock Exchange.

(4) Company D is a private company established in the 2000s and headquartered in Shenzhen, China, which primarily engages in life support, in vitro diagnostics, medical imaging, and medical information technology.

** The medication delivery system includes infusion pumps, syringe pumps, infusion workstation, central stations and consumables; ** In terms of ex-factory prices*

Source: China Insights Consultancy

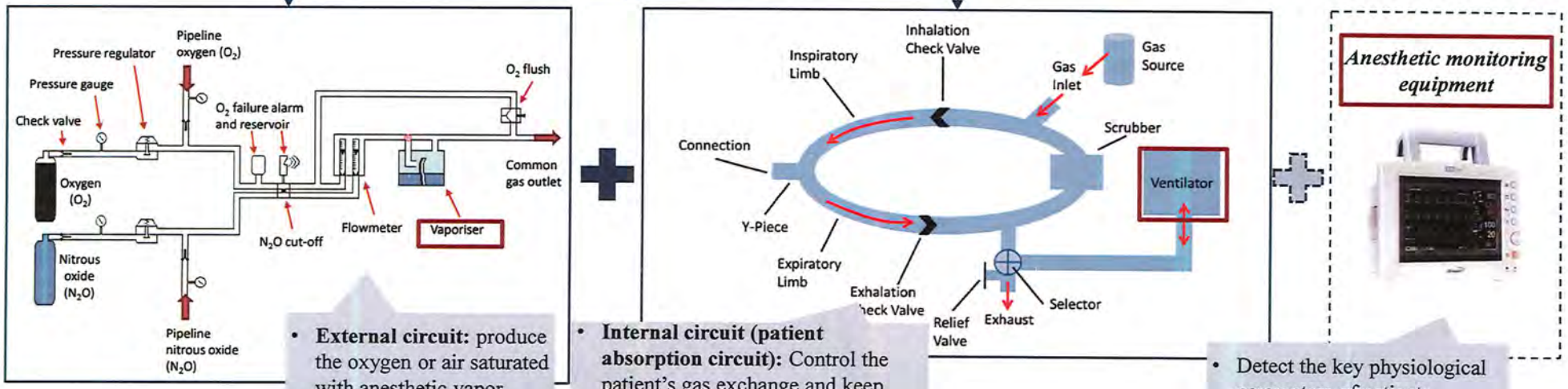
The anesthetic machine's function is to precisely deliver dope to patients and facilitate their ventilation; the main structure of anesthetic machine includes the external circuit, internal circuit and the monitoring equipment

The introduction of anesthetic machine

- **The anesthetic machine** is a primary equipment in hospital operating rooms and is a key type of life support product. **Its basic function is to facilitate ventilation for surgical patients and accurately deliver volatile anesthetic medicine to achieve the appropriate general anesthesia state for patients.** It also monitors the equipment itself and the patient's condition to ensure the patient's safety. Modern anesthesia machines are also equipped with electronic, computer control and monitoring instruments to improve the safety of anesthesia and mechanical ventilation treatments.

The structure of anesthetic machine

Conventional structure of anesthetic machine

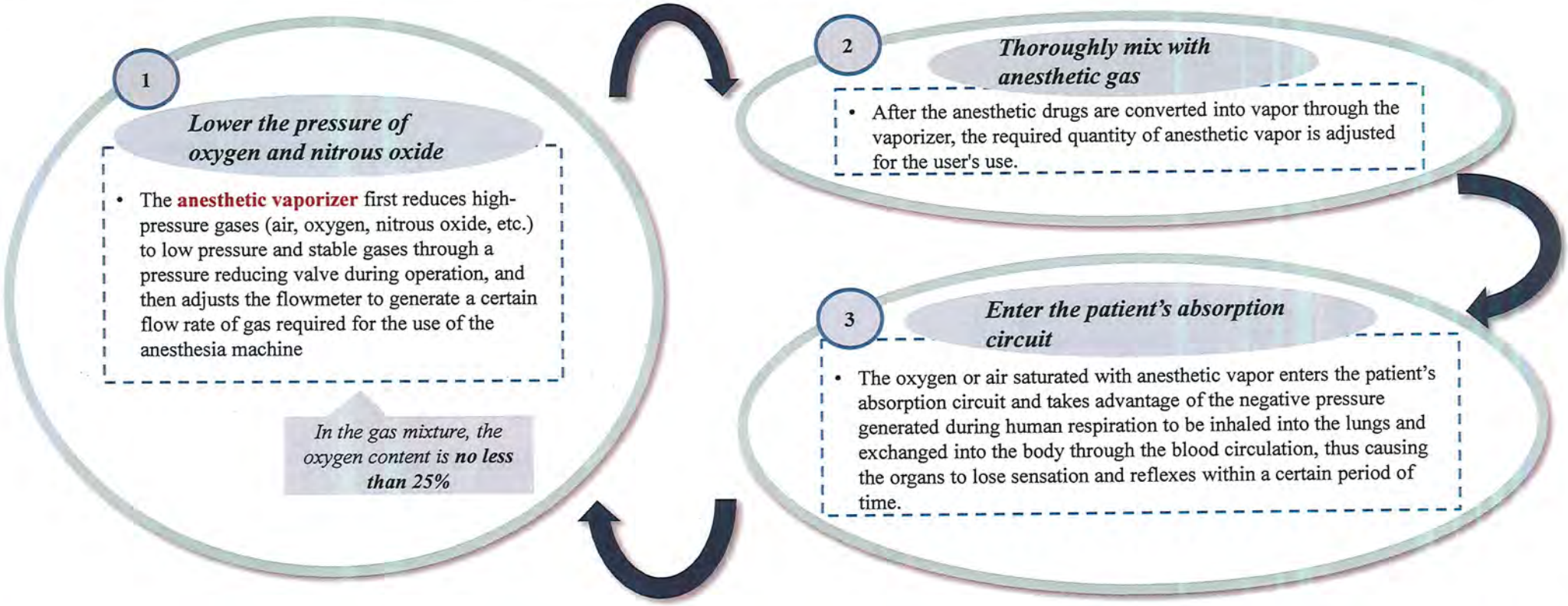


- **External circuit:** produce the oxygen or air saturated with anesthetic vapor
- **Internal circuit (patient absorption circuit):** Control the patient's gas exchange and keep appropriate ventilation
- Detect the key physiological parameters of patients

Source: China Insights Consultancy

The working process of anesthetic machine includes 3 main steps; in the 1st step, the anesthetic vaporizer plays a main role by reducing the pressure of gases and adjusting their flowmeter

Working process of anesthetic machine



Source: China Insights Consultancy

The main vital components of anesthetic machine consist of anesthetic vaporizer, anesthetic ventilator and anesthetic monitoring equipment

Important components of anesthetic machine

Categories	Description
 Anesthetic Vaporizer	• The evaporator of a modern anesthesia machine is a dual-path variable bypass vaporizer, with the temperature compensation mechanism located outside the circuit. The concentration control knob at the top of the evaporator **determines the airflow distribution ratio through the bypass and the evaporation chamber**. The airflow entering the evaporation chamber carries saturated anesthetic vapor, and the dilution airflow merges with the carrier airflow at the output port, forming a mixed anesthesia gas with a certain proportion, which enters the anesthesia circuit. **The temperature compensation device helps maintain a stable evaporator output concentration within a wide temperature range.**
 Anesthetic Ventilator	• For a typical ventilator, its bellows are fixed on the anesthesia breathing circuit, placed inside a clean plastic chamber, and containing anesthetic gas. • During expiration, ventilator pressure is set to positive end expired pressure (PEEP), inhalation valve is closed and exhalation valve is opened, while during inspiration, constant ventilator pressure is applied, exhalation valve is closed and inhalation valve is opened.
 Anesthetic Monitoring equipment	• Anesthetic monitoring equipment enables doctors and technicians to monitor the gas flow and ensure its consistency. Any variations in the flow will be displayed on the screen and alert the technician. • The monitored parameters generally include: airway pressure, CO_2 concentration, anesthetic drug concentration, inhaled oxygen concentration, blood oxygen saturation concentration, blood pressure, electrocardiogram, etc. • Alarms can be classified as high, medium, low, and can also be automatic or manual. Nowadays, anesthesia machines are well-equipped in terms of monitoring to ensure patient safety.

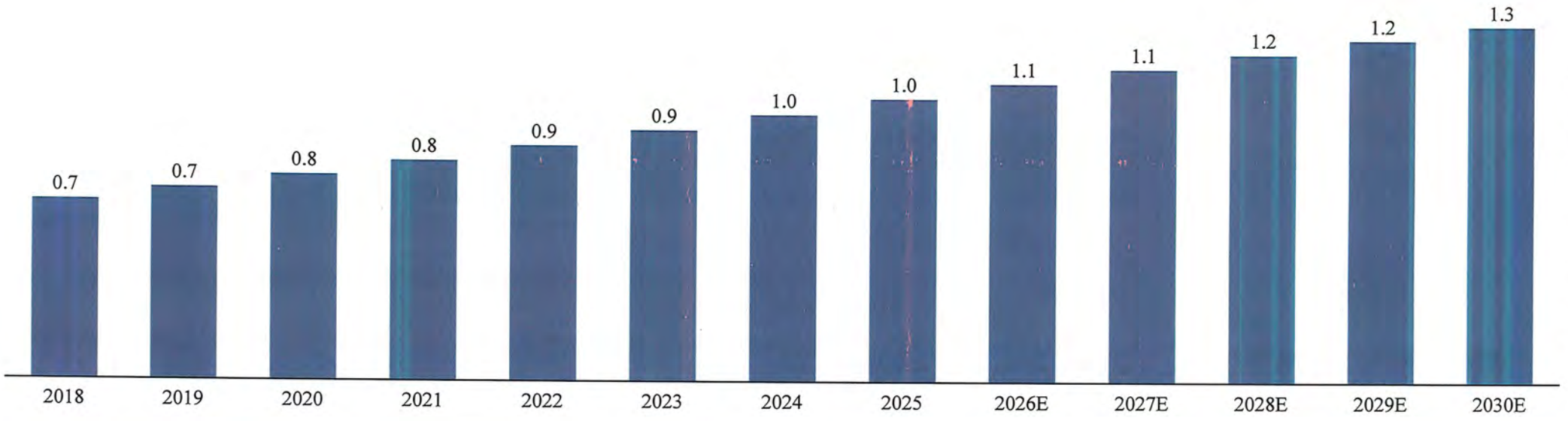
Source: China Insights Consultancy

Market size and forecast of anesthetic machine around the globe, 2018-2030E

Market size and forecast of anesthetic machine around the globe*, 2018-2030E

	2018-2025	2025-2030E
Anesthetic machine	6.7%	4.7%

Billion USD



* *In terms of ex-factory prices*

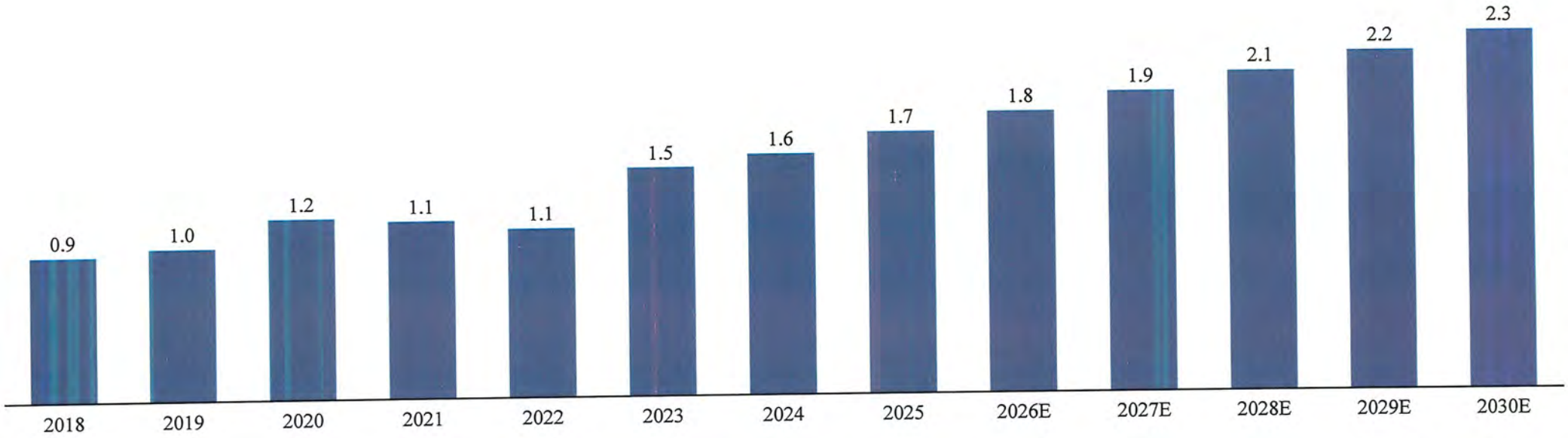
Source: China Insights Consultancy

Market size and forecast of anesthetic machine in China, 2018-2030E

Market size and forecast of anesthetic machine in China*, 2018-2030E

Billion RMB

	2018-2025	2025-2030E
Anesthetic machine	8.8%	6.4%



* *In terms of ex-factory prices*

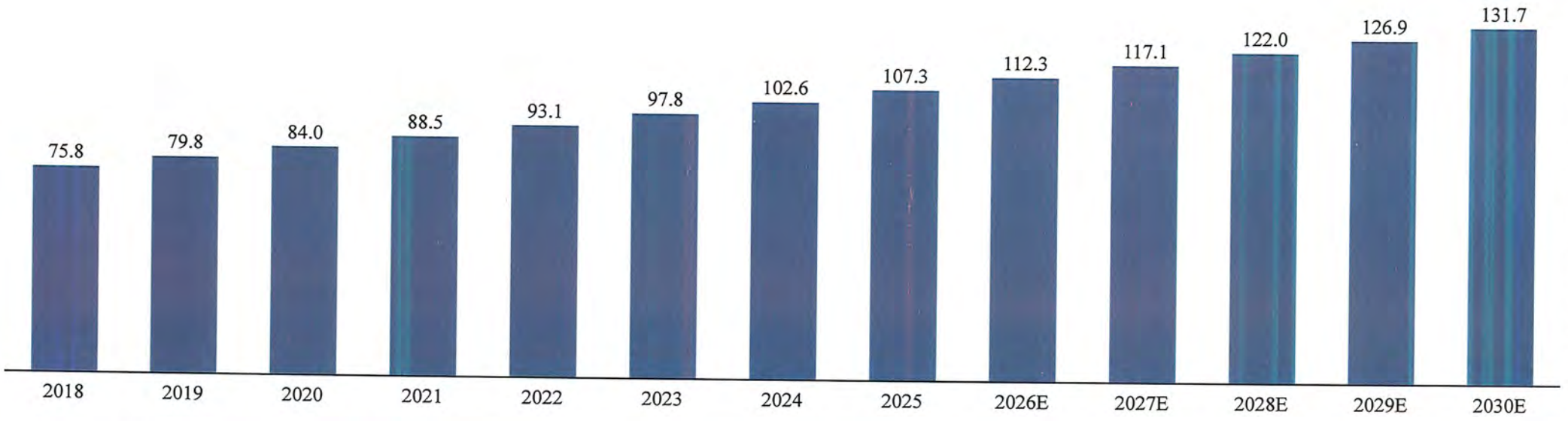
Source: China Insights Consultancy

Market size and forecast of Anesthetic Vaporizer around the globe, 2018-2030E

Market size and forecast of Anesthetic Vaporizeraround the globe, 2018-2030E

	2018-2025	2025-2030E
Anesthetic Vaporizer	5.1%	4.2%

Million USD



* 以出厂价格计算

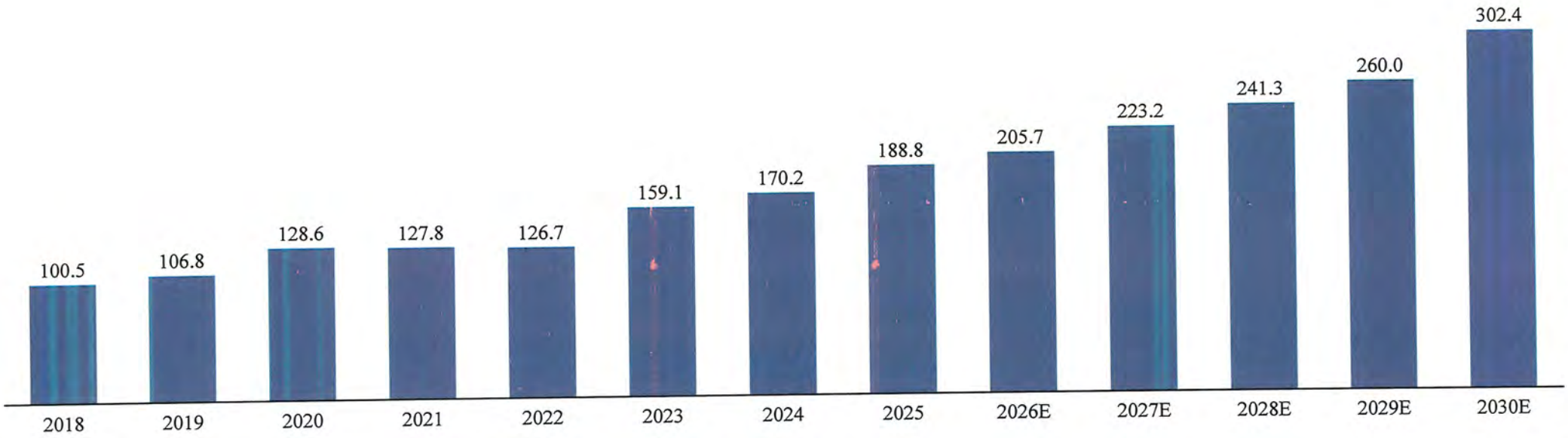
Source: China Insights Consultancy

Market size and forecast of Anesthetic Vaporizer in China, 2018-2030E

Market size and forecast of Anesthetic Vaporizer in China, 2018-2030E

Million RMB

	2018-2025	2025-2030E
Anesthetic Vaporizer	9.7%	9.5%



* 以出厂价格计算

Source: China Insights Consultancy

Competitive landscape of anesthetic machine market around the globe

Competitive landscape of anesthetic machine market around the globe*, 2025

Ranking	Company	Company origin	Market share by sales value
1	Company I	Overseas	21.2%
2	Company J	Overseas	17.7%
3	Company K	Overseas	15.6%
4	Company L	Overseas	10.3%
5	Company A	China	4.8%
6	Company M	Overseas	4.0%
7	**The Company**	**China**	**2.4%**
8	Company N	Overseas	2.0%
9	Company D	China	1.9%
10	Company O	Overseas	1.8%
	Subtotal		~81.5%

** In terms of ex-factory prices*

Source: China Insights Consultancy

Competitive landscape of anesthetic machine market

Competitive landscape of anesthetic machine market around the globe*, 2024

Notes:

(1) Company I is a public company with a history of over 100 years and headquartered in Chicago, USA, which was listed on the Nasdaq and primarily engages in medical imaging, ultrasound equipment, patient monitoring, and digital healthcare solutions.

(2) Company J is a public company established in 1880s and headquartered in Germany, which was included in the German DAX index and primarily engages in a series of medical equipment and technologies, including anesthesia workstations, ventilators, patient monitoring equipment, thermal insulation equipment, and medical gas management systems.

(3) Company K is a public company established in 1890s and headquartered in Netherlands, which was listed on the New York Stock Exchange and primarily engages in health technologies, encompassing diagnostic imaging, image-guided therapy, patient monitoring, health information technology, home care, and personal health.

(4) Company L is a public company established in 1900s and headquartered in Sweden, which was listed on the Stockholm Stock Exchange and primarily engages in acute care, surgical procedures, and life sciences.

(5) Company M is a private company established in the 1910s and headquartered in Illinois, USA, which primarily engages in medical device and consumables manufacturing, surgical solutions and infection control, distribution and supply chain services.

(6) Company N is a private company established in the 1940s and headquartered in the UK, which is part of another public company and primarily engages in the research and development, manufacturing, and sales of medical devices and equipment, including infusion systems and vascular access systems.

(7) Company O is a private company established in the 1880s and headquartered in Germany, which primarily engages in the research, development, manufacturing, and sales of high-end medical equipment, including anesthesia workstations and respiratory therapy systems.

The airway management is a essential tool of ensuring vital signs of patients, in the process of which the visual laryngoscope is the key treatment device

The introduction of airway management

- For critically ill patients with respiratory distress and surgical anesthesia patients, when respiratory distress or respiratory depression occurs, oxygen therapy or mask ventilation is an effective method to maintain their oxygen saturation. **Nevertheless, when respiratory failure or airway difficulty occurs, patients need to establish an artificial airway immediately, otherwise they will experience hypoxia in a short time, which can lead to cardiac arrest and even death.**
- Airway management involves using auxiliary tools such as laryngoscopes to insert a tube through the upper airway into the trachea or directly into the trachea to establish an artificial air passage. This passage can provide favorable conditions for effective drainage and patency of the airway or for the treatment of diseases. **According to the method of establishing the artificial airway, airway management can be divided into invasive and non-invasive types, with non-invasive being the predominant method of airway management.**

Tool Category	Device Subdivision	Description
Laryngoscope	Direct Laryngoscope	Including curved and straight blades, composed of various sizes and types of blades and different models of laryngoscope handles.
	Visual Laryngoscope	**It can transmit images from the top of the device, providing indirect imaging of the larynx. The advantage is that it magnifies the field of view and improves the view based on the blade's angle.**
Face Mask Ventilation	/	A device equipped with a mask and an automatic filling compartment or bag, which can deliver air directly from the atmosphere or pure oxygen from a supplementary system.
Supraglottic Airway	Airway	Including oropharyngeal and nasopharyngeal airways, these are non-tracheal intubation devices that can prevent the tongue from falling back, quickly open the airway, and establish a temporary artificial airway.
	Laryngeal Mask Airway	A device that maintains the patency of the upper airway between a mask and tracheal intubation, available in single and double lumen types. Features high success rate for placement, can improve ventilation, and can replace tracheal intubation for maintaining the airway.
	Intubating Laryngeal Mask	Composed of a ventilation mask, tracheal tube, metal handle, and inflation tube. The advantage is that it can address both difficult ventilation and difficult tracheal intubation simultaneously.
	Laryngeal Tube	Composed of an oropharyngeal cuff, esophageal cuff, tracheal tube, and gastric drainage tube. Available in single and double lumen laryngeal tubes, it does not require a laryngoscope. An artificial airway is established by inflating the oropharyngeal and esophageal cuffs.
	Esophageal-Tracheal Combitube	A double-cuff and double-lumen tube that can ventilate whether the tube is inserted into the esophagus or the trachea.
	Others	Including non-inflatable laryngeal masks and other supraglottic tools, non-inflatable laryngeal masks, etc.
Tracheal Intubation	Nasal/Oral Tracheal Intubation	The most common method for airway management in clinical practice, does not require special equipment.
	Lightwand	Utilizes the translucency of the anterior neck soft tissues and the fact that the trachea is more superficial than the esophagus for assisted intubation. It can be used for patients with limited mouth opening and restricted head and neck movement.
	(Non-visual) Stylet	Including rigid stylets, flexible stylets, and intubation probes, which require laryngoscope assistance. The method is simple and can increase the success rate of intubation.
	Visual Stylet	A fiberoptic stylet with a "U"-shaped tip at the front, combining the advantages of a lightwand and an electronic laryngoscope, offering a quick and visual intubation.
	Bronchoscope	**Including rigid, fiberoptic and electronic bronchoscopes, suitable for various difficult airway situations, especially tracheal intubation under awake sedation with topical anesthesia. However, it is generally not suitable for emergency airways, and operation requires certain training.**

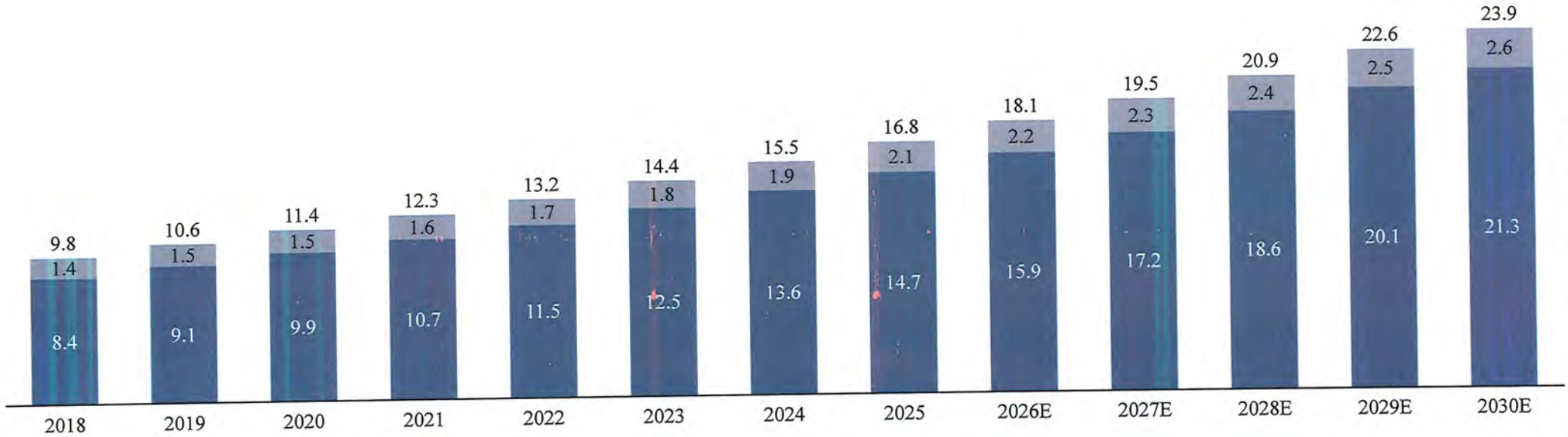
Source: China Insights Consultancy

Market size and forecast of airway management equipment and consumables around the globe

Market size and forecast of airway management equipment and consumables around the globe*, 2018-2030E

Billion USD

	2018-2025	2025-2030E
Equipment	5.8%	5.1%
Consumables	8.3%	7.6%
Total	8.0%	7.3%



* *In terms of ex-factory prices*

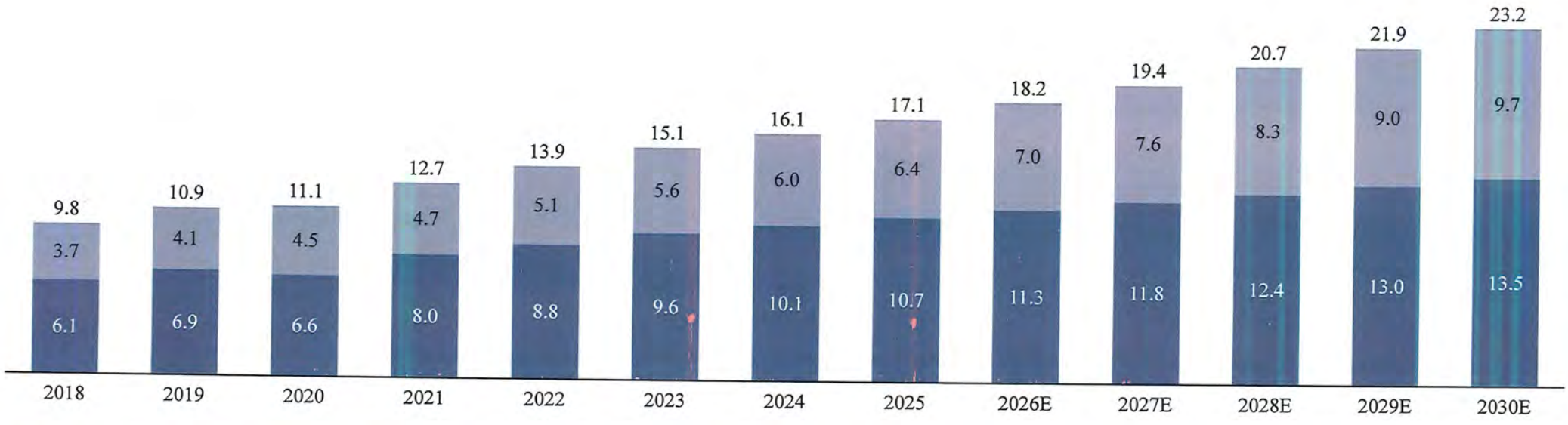
Source: China Insights Consultancy

Market size and forecast of airway management equipment and consumables in China

Market size and forecast of airway management equipment and consumables in China*, 2018-2030E

	2018-2025	2025-2030E
Equipment	8.4%	8.7%
Consumables	8.3%	4.8%
Total	8.3%	6.3%

Billion RMB



* *In terms of ex-factory prices*

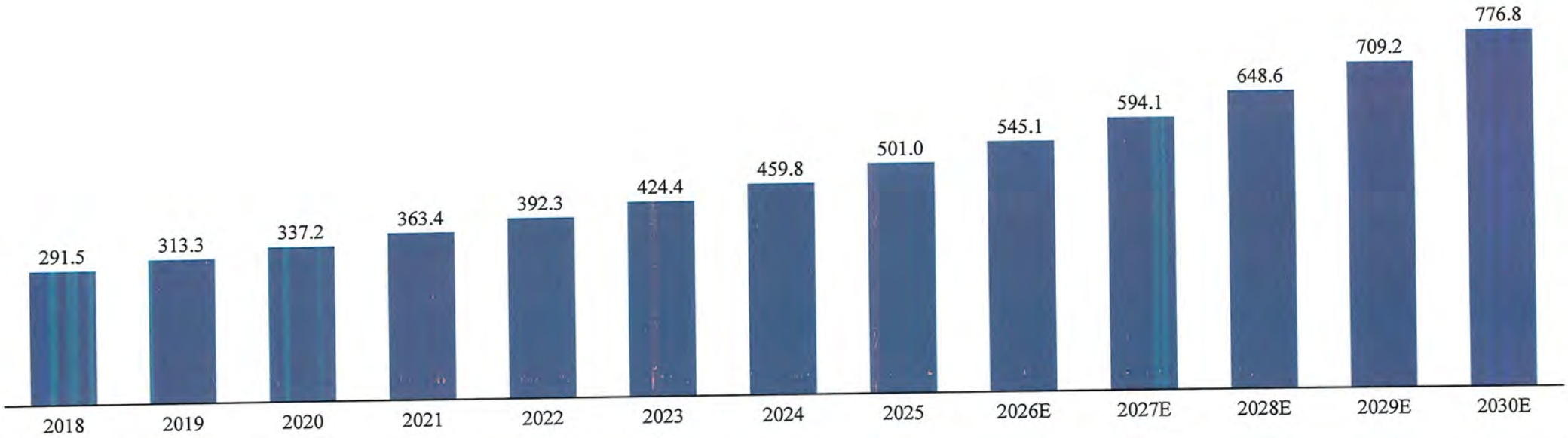
Source: China Insights Consultancy

Market size and forecast of video laryngoscope equipment around the globe

Market size and forecast of video laryngoscope equipment around the globe*, 2018-2030E

Million USD

	2018-2025	2025-2030E
video laryngoscope equipment	8.0%	9.2%



* *In terms of ex-factory prices*

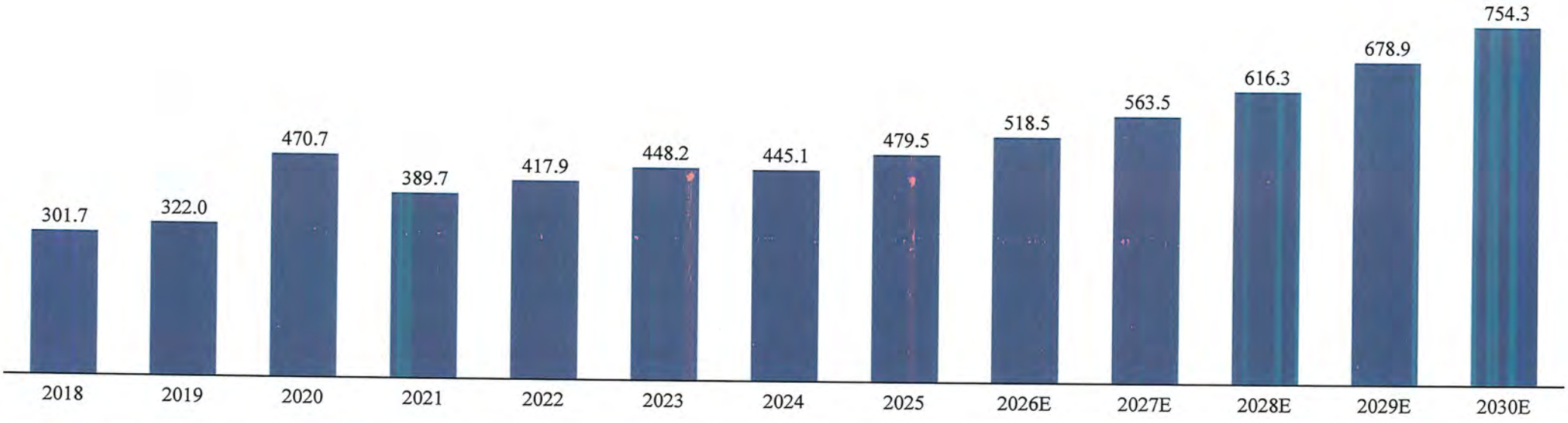
Source: China Insights Consultancy

Market size and forecast of video laryngoscope equipment in China

Market size and forecast of video laryngoscope equipment in China*, 2018-2030E

	2018-2025	2025-2030E
video laryngoscope equipment	6.8%	9.5%

Million RMB



** In terms of ex-factory prices*

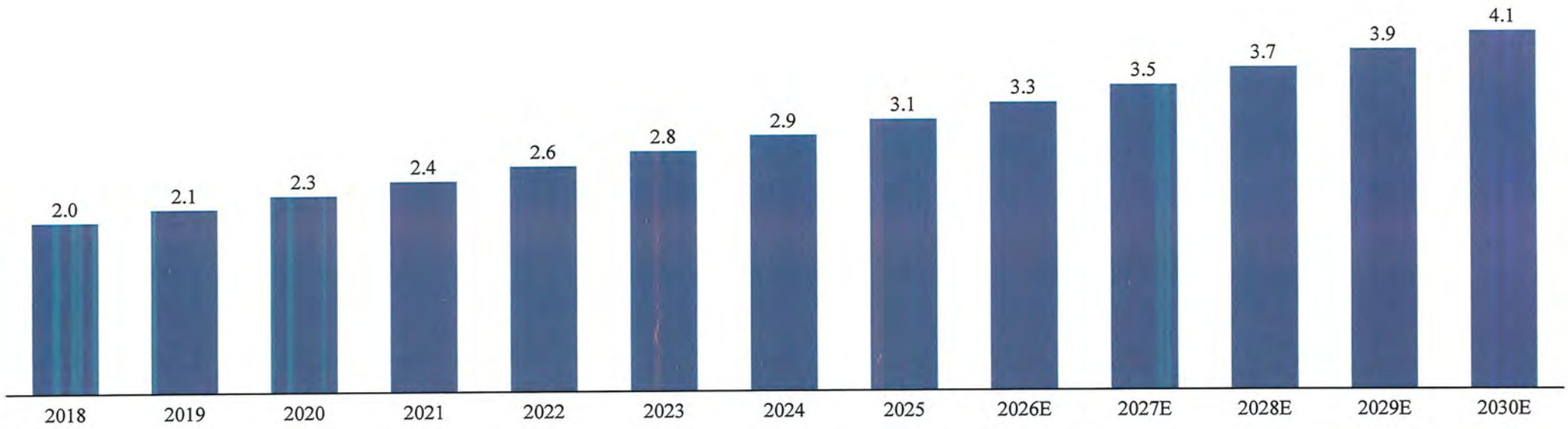
Source: China Insights Consultancy

Market size and forecast of bronchoscope equipment around the globe

Market size and forecast of bronchoscope equipment around the globe*, 2018-2030E

	2018-2025	2025-2030E
bronchoscope equipment	6.8%	5.7%

Billion USD



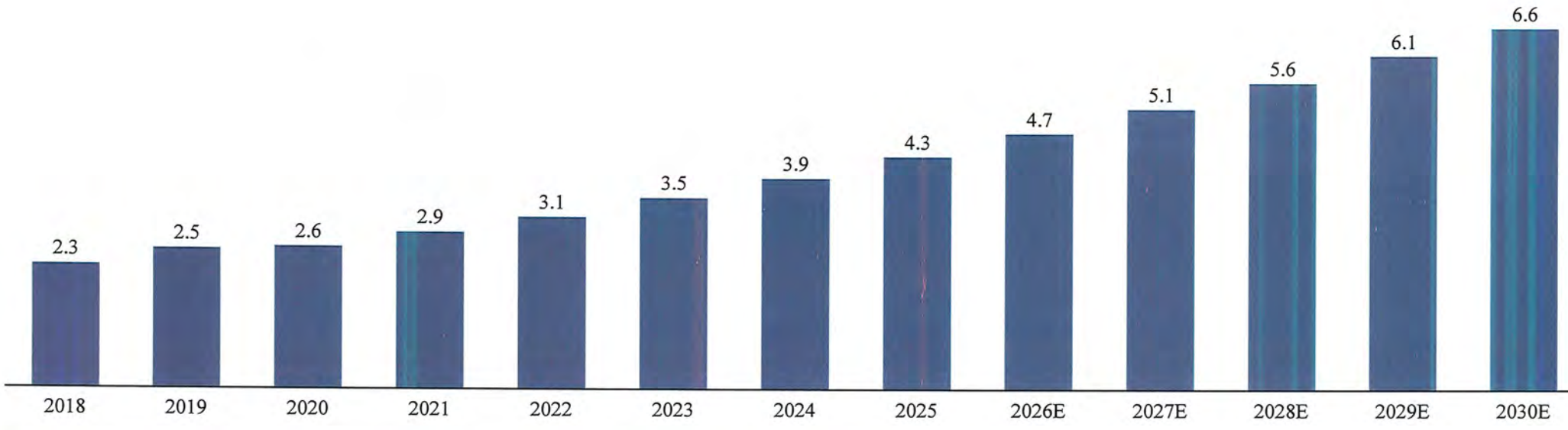
** In terms of ex-factory prices;*

Market size and forecast of bronchoscope equipment in China

Market size and forecast of bronchoscope equipment* in China, 2018-2030E**

Billion RMB

	2018-2025	2025-2030E
bronchoscope equipment	9.5%	9.3%



* *In terms of ex-factory prices*

Pulmonary function testing equipment works by measuring the volume, speed and content of exhaled air; the portable pulmonary function equipment serves as a supplement to the pulmonary function testing workstation

The introduction of pulmonary function testing equipment

- **The pulmonary function testing equipment is used to assess lung function by analyzing a series of parameters of the exhaled gas from the subject,** such as oxygen content, carbon dioxide content, slow vital capacity (SVC), forced vital capacity (FVC), minute ventilation (MV), etc.
- The pulmonary function testing equipment has the functions of routine ventilation and bronchodilator test, serving as an instrument for measuring respiratory and lung function status. By measuring the volume, content and speed of exhaled air, the machine can assist in evaluating various lung diseases.

Categories of pulmonary function testing equipment

Pulmonary function testing workstation

- The pulmonary function testing workstation involves various tests, usually including lung diffusion and lung capacity examinations, and even the detection of electrocardiograms and blood oxygen levels.

✓ **The pulmonary function testing workstation is typically used in large hospitals and health examination centers.**

*Portable pulmonary function equipment has the advantages of **being small, portable, easy to operate, and cost-effective**. It can serve as a supplement to pulmonary function testing workstation and **are suitable for community health facilities and primary healthcare institutions.***

Portable pulmonary function equipment

- **The portable pulmonary function device consists of a spirometer and a computer system, with the core component being the flow sensor.** It retains the core functions of a pulmonary function testing workstation, namely routine ventilation and bronchodilator test. However, it lacks the capability to measure lung volumes, residual volume, and diffusion function.

✓ **The portable pulmonary function device can be further divided into desktop and handheld device and is suitable for community health facilities and primary healthcare institutions.**

Source: China Insights Consultancy

Desktop portable pulmonary function equipment is mainly applied in primary care hospitals and is expected to promote the early screening for respiratory chronic diseases

The application scenarios and importance of pulmonary function testing equipment

Categories		*Functions*	*Application scenarios*	*Types of sensor*	*Data transmission*
Pulmonary function testing workstation		✓ Routine ventilation function (FVC, SVC, MVV) ✓ Provocation test, relaxation test, lung capacity measurement, diffusion function determination, airway resistance determination, respiratory mechanics measurement…	✓ Large hospitals and health examination centers	✓ The differential pressure sensor	✓ Local database
Portable pulmonary function equipment	**Desktop equipment**	✓ Routine ventilation function (FVC, SVC, MVV) ✓ Provocation test	✓ **Mainly primary care hospitals**	✓ The differential pressure sensor	✓ Data transmission via internet
	Handheld equipment	✓ Routine ventilation function (FVC)	✓ Home or personal use	✓ The ultrasonic, turbine, strain-gauge and thermal conductivity sensor	✓ GPRS, Bluetooth, USB

Favorable policy-driven factors

- In July 2020, the National Health Commission issued the Notice on the Issuance of the Management Work Plan for Central Epidemic Control Projects Funded by the National Debt, requiring primary health institutions to **achieve a target coverage rate of >50% for pulmonary function testing equipment and a pulmonary function testing rate of ≥25% for residents over 40 years old by 2025**.
- **Portable pulmonary function testing equipment meets the strategic needs of the country and can be widely used in primary hospitals, community clinics and physical examination centers, effectively promoting the early screening and intervention capacity for respiratory chronic diseases. In addition, portable pulmonary function testing equipment can also provide a flexible solution for diagnosing occupational lung diseases or conducting pulmonary function testing in remote areas.**

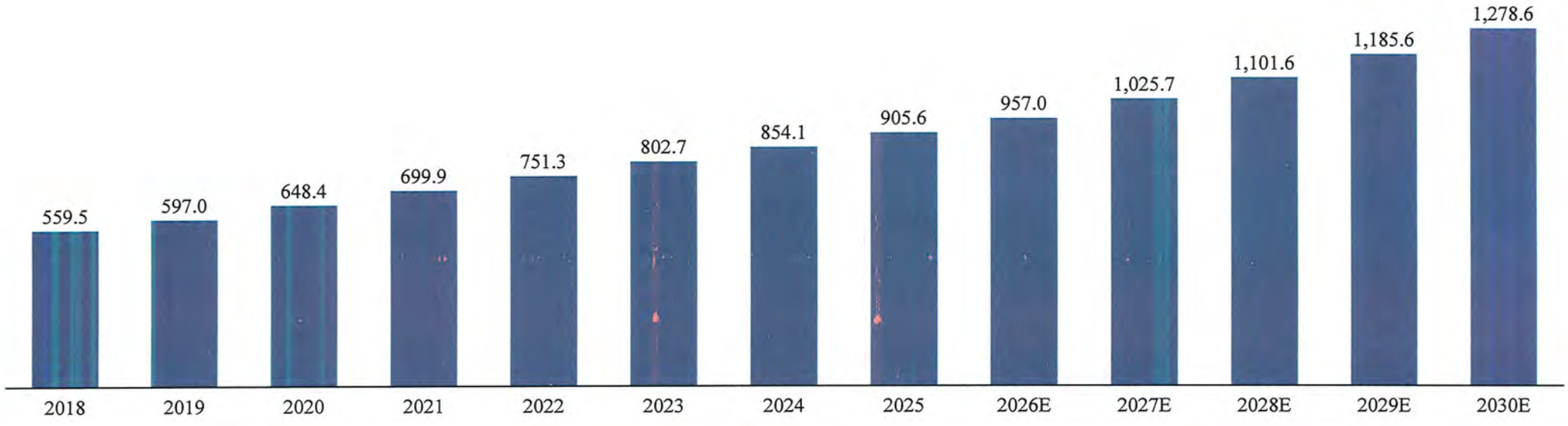
Source: China Insights Consultancy

Market size and forecast of pulmonary function equipment around the globe

Market size and forecast of pulmonary function equipment around the globe*, 2018-2030E

Million USD

	2018-2025	2025-2030E
pulmonary function equipment	7.1%	7.1%



** In terms of ex-factory prices*

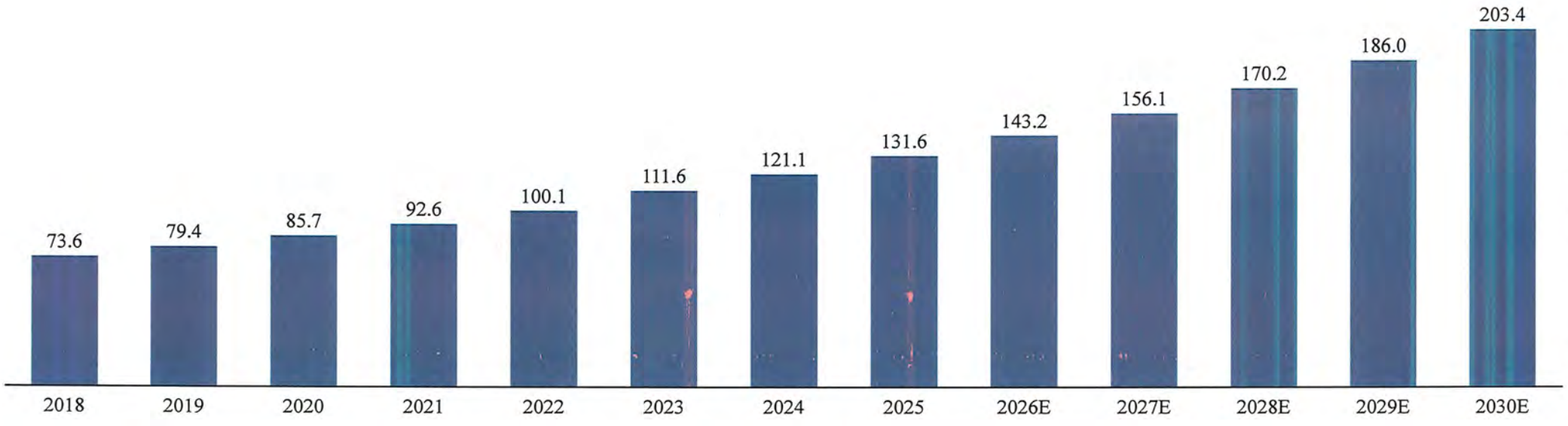
Source: China Insights Consultancy

Market size and forecast of pulmonary function equipment around the globe

Market size and forecast of pulmonary function equipment around the globe*, 2018-2030E

Million RMB

	2018-2025	2025-2030E
pulmonary function equipment	8.7%	9.1%



** In terms of ex-factory prices*

Source: China Insights Consultancy

VTE prevention method is a crucial intervention that significantly improves patient safety and is more cost-effective compared to VTE treatment

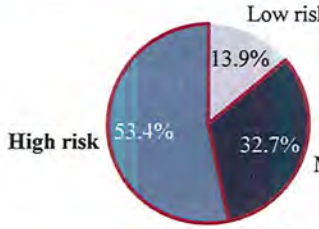
The introduction to venous thromboembolism

- **Venous Thromboembolism (VTE)** includes **Deep Vein Thrombosis (DVT)** and **Pulmonary Thromboembolism (PTE).**
- PTE is a disease caused by the abnormal clotting of blood in the deep veins. Detachment of a deep vein thrombus can lead to pulmonary artery embolism, resulting in impaired gas exchange, thromboembolic pulmonary hypertension, right heart failure, and in severe cases, respiratory distress, shock, or even death.
- **Due to the high incidence of both DVT and PE, and since 90% of the emboli in PE originate from DVT, DVT and PE can be considered different stages of VTE. Effective prevention of lower limb DVT can effectively prevent PTE.**

Given the necessity of VTE prevention, there is significant potential for increasing its penetration ratio in the future

- **Extensive research data has demonstrated that VTE prevention is regarded as a crucial intervention that significantly improves patient safety and is more cost-effective.** The total costs associated with VTE treatment, such as hospitalization, anticoagulant usage, potential inferior vena cava filter placement and post-thrombotic syndrome management, far exceed the expenses of using antithrombotic prophylaxis. **Inpatients are at higher risk of VTE, and VTE prevention measures can effectively reduce this risk. However, the current penetration rate of these preventive measures remains low.**

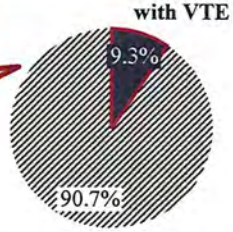
VTE risk rating composition of of surgical inpatients



Nearly~87% surgical inpatients need to be treated with VTE prevention method

Proportion of surgical inpatients receiving VTE prevention treatment

Only ~9% surgical inpatients receive VTE prevention treatment

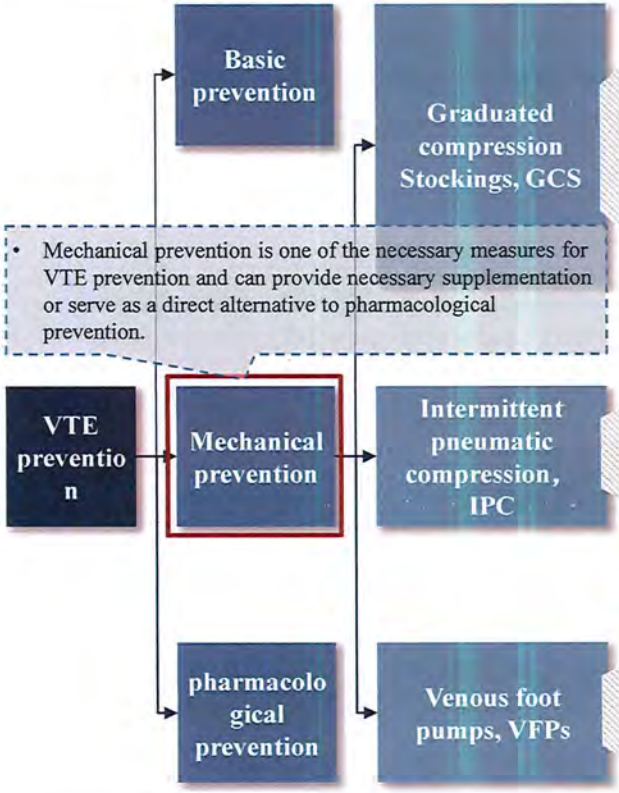


***LOW** penetration of preventive measures*
***HIGH** proportion of moderate and high risk patients*

Source: China Insights Consultancy

VTE prevention can be categorized into basic, mechanical and pharmacological prevention, among which mechanical prevention serves as a direct alternative to pharmacological prevention

Methods and working principles of VTE prevention



- The application of CGS (Compression Garment System) involves applying gradient pressure from the ankle to the leg to **promote blood flow from the superficial veins through the perforated veins to the deep veins, increasing the velocity and volume of blood flow in the deep veins.** Additionally, it improves valve function and enhances the muscle pump action of the leg muscles. Patients with lower limb movement disorders should be advised to engage in passive movement when wearing CGS.
- **CGS comes in knee-length, calf-length, and waist-to-foot-length types. For VTE prevention, the calf-length CGS is more effective than the knee-length type.**

- The working principle of IPC (Intermittent Pneumatic Compression) is to accelerate blood flow and promote venous and lymphatic reflux through the physiological mechanical drainage effect generated by sequential filling from the distal end to the proximal end using a pressurized pump device. Gradual pressure treatment can improve blood stasis, activate and improve blood hypercoagulability, and the pressure itself can also improve endothelial cell dysfunction.
- **According to length, IPC sleeves can be divided into knee-length and thigh-length types, and specific selection can be made in accordance with patient preferences and hospital conditions.**

- VFPs (Venous foot pumps) work by **rapidly stimulating the veins in the sole of the foot** with pulsating gas, providing a pulse-like acceleration to the venous blood in the affected limb with braking or paralytic conditions, similar to the pulsatile acceleration experienced during normal walking in healthy individuals. This improves blood flow velocity and enhances the blood supply to the distal part of the limb, thereby accelerating the reduction of limb edema.

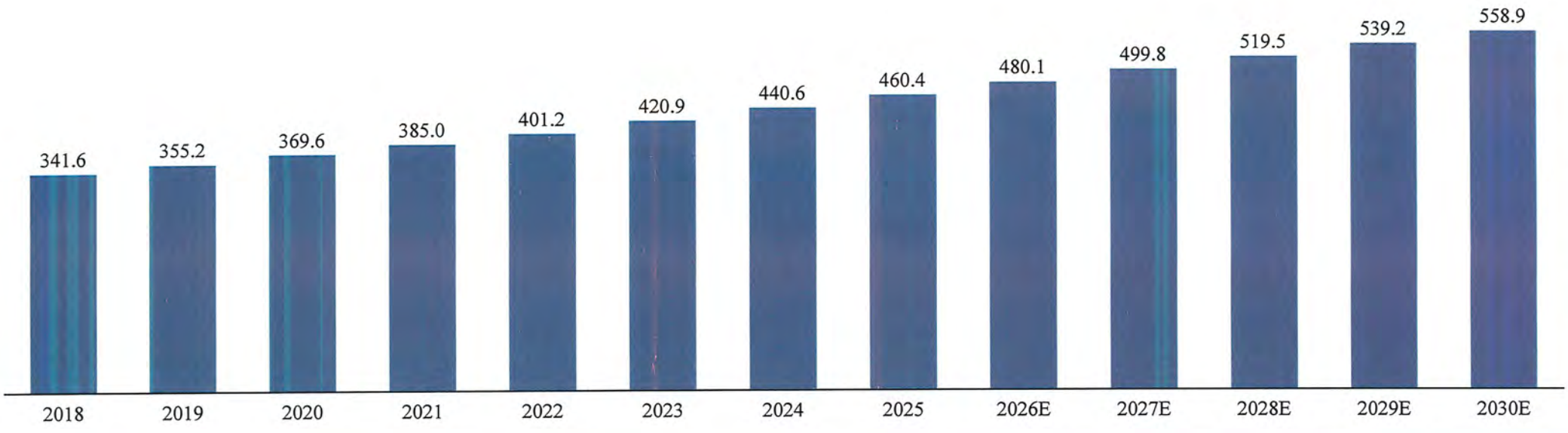
Source: China Insights Consultancy

Market size and forecast of VTE prevention equipment around the globe

Market size and forecast of VTE prevention equipment around the globe*, 2018-2030E

Million USD

	2018-2025	2025-2030E
VTE prevention equipment	4.4%	4.0%



** In terms of ex-factory prices*

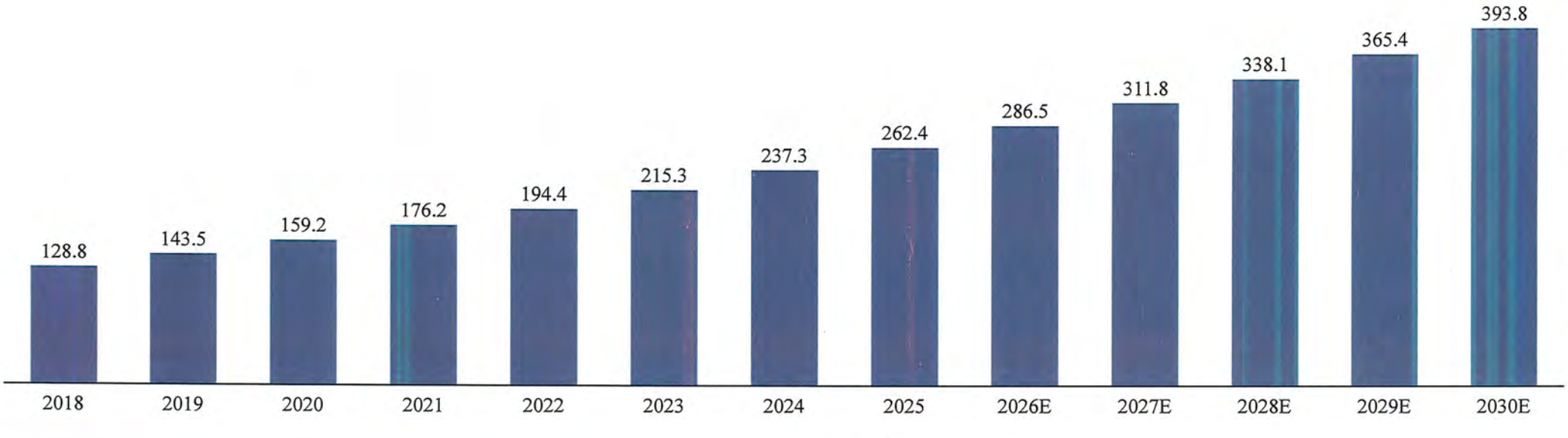
Source: China Insights Consultancy

Market size and forecast of VTE prevention equipment in China

Market size and forecast of VTE prevention equipment in China*, 2018-2030E

	2018-2025	2025-2030E
VTE prevention equipment	10.7%	8.5%

Million RMB



* *In terms of ex-factory prices*

Source: China Insights Consultancy

The oxygenator produces oxygen by employing the molecular sieve or semi-permeable membrane to generate a constant oxygen source from the air, and can be categorized into medical and health type

The introduction of oxygenator

- An oxygenator is a motor-driven medical device for producing oxygen, **with core hardware components including a compressor, molecular sieve, four-way valve, filter, cooling and noise reduction system.**
- Its working principle is as follows: it first inhales air, uses the physical adsorption and desorption technology of the molecular sieve or semi-permeable membrane for gas separation, removes nitrogen, then generates a continuous oxygen source, and delivers the concentrated oxygen in a controllable manner to patients who require respiratory support.

Classification of oxygenator

Category	Concentration of oxygen	Oxygen Flow	Feature	Range of application	Price (RMB)
Medical type	Above 90% (93%±3%)	Above 3L/min	Huge size	• Used for patients with severe hypoxia, respiratory diseases, or other chronic conditions as an adjunctive therapy to help improve hypoxemia and enhance cardiopulmonary function	~3,000-10,000
Health type	~90%	1-2L/min	Small size, easy to carry and use	• Primarily used for daily health care, it is suitable for students, office white-collar workers, and others to provide blood oxygen concentration through oxygen inhalation, thereby improving the quality of life	~1,000-3,000

Source: China Insights Consultancy

The duration and frequency of use, as well as the volume of oxygenators vary for different types of patients

Oxygenator | Application

The main applicable patients of oxygenator

Types of patients	Students & pregnant women	Critically ill patient	Cardiovascular and cerebrovascular diseases patient	Insomniac	Diabetic Patients
Duration & frequency of use	**30 to 45 mins & twice a day**	**24 hours & a day**	**30 to 45 mins & twice a day**	**1-2 hour & 3 times a day**	**1-2 hour & 2-4 times a day**

Selection of the oxygenator's volume

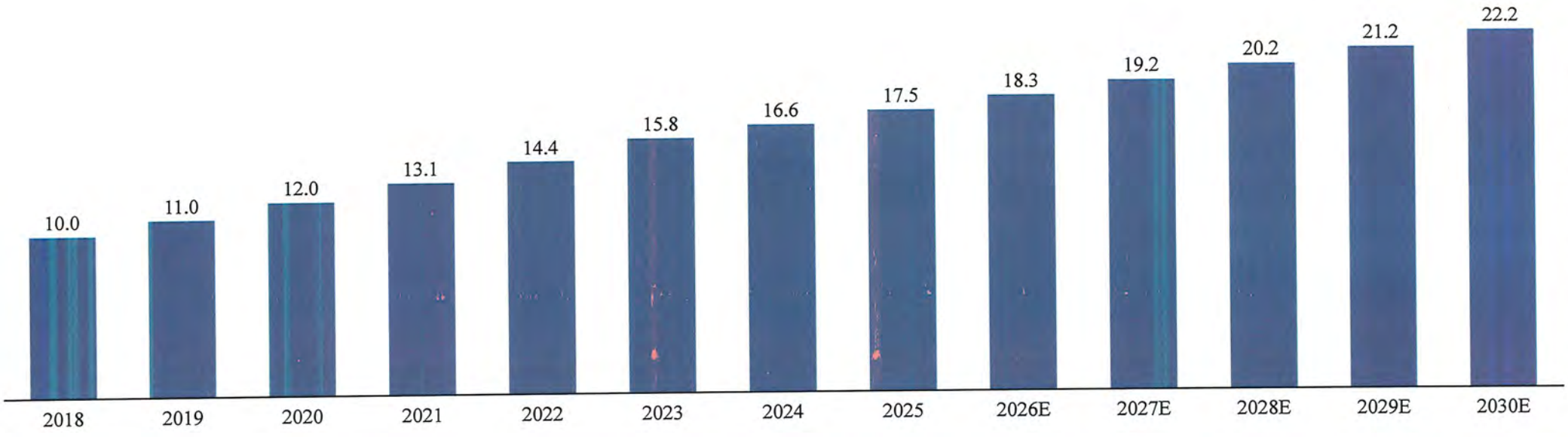
The volume of oxygenators	Applicable group
1 L	• For beauty and health oxygen use (not commonly sold in pharmacies)
3 L	• Mild chronic obstructive pulmonary disease (COPD) patients, those with high blood pressure, high blood sugar, and high cholesterol
5 L	• Severe COPD patients, heart and lung failure (to be used with a bi-level ventilator as per medical advice)
10 L	• Clinical rescue of severe COVID-19 infected patients

Market size and forecast of oxygenator around the globe

Market size and forecast of oxygenator around the globe*, 2018-2030E

Billion USD

	2018-2025	2025-2030E
oxygenator	8.2%	4.9%



* *In terms of ex-factory prices*

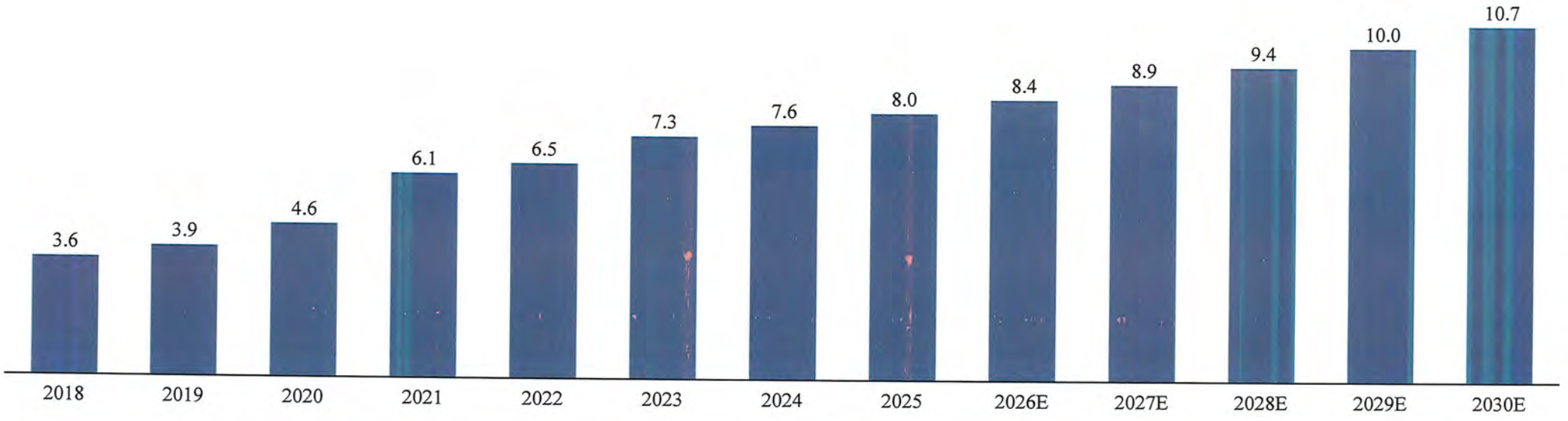
Source: China Insights Consultancy

Market size and forecast of oxygenator in China

Market size and forecast of oxygenator in China*, 2018-2030E

	2018-2025	2025-2030E
oxygenator	12.2%	5.9%

Billion RMB



* *In terms of ex-factory prices*

Source: China Insights Consultancy

The patient monitor can collect, analyze and transmit vital physiological parameters of patients in real-time and can be classified into beside, central and discharge monitor according to its function

The introduction of patient monitor

- The patient monitor is a product of the combination of information and medical technology which can collect, analyze and transmit various physiological parameters of patients in real-time, such as respiration, pulse, body temperature, blood pressure, heart rate and blood oxygen saturation, to medical staff for analysis of the patient's current condition and to make correct judgments and treatments.
- The patient monitor is widely used in **operating rooms, intensive care units, emergency departments, psychiatric wards, CT rooms, pediatric and neonatal care units, obstetrics and other areas.**

The classification of patient monitor

Classification standards

- **Monitoring parameter:** single-parameter monitor and multi-parameter monitor
- **Structure:** portable monitor, plug-in monitor, telemetry monitor and HOLTER(24 hour HOLTER) ECG monitor
- **Function:** bedside monitor, central monitor and discharge monitor

Categories	Introduction
Bedside monitor 	• It continuously monitors various physiological parameters or certain conditions of the patient, displaying alarms or recording. It can also be integrated with a central monitor to function as a whole.
Central monitor 	• It consists of a main monitor and several bedside monitors. The main monitor can control the operation of the bedside monitors, allowing for the simultaneous monitoring of multiple patients and the automatic recording of various abnormal physiological parameters and medical histories.
Transportation monitor 	• It refers to small, portable electronic monitors that patients can carry with them, enabling continuous monitoring of a specific physiological parameter both inside and outside the hospital for non-real-time examination by doctors.

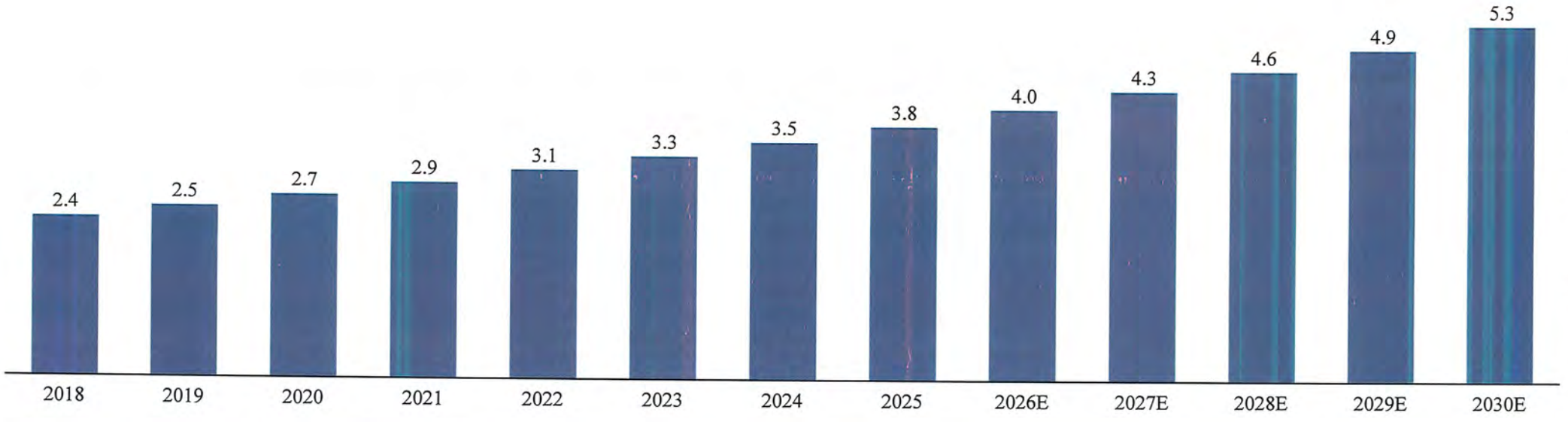
Source: China Insights Consultancy

Market size and forecast of patient monitor around the globe

Market size and forecast of patient monitor around the globe*, 2018-2030E

	2018-2025	2025-2030E
patient monitor	6.8%	7.0%

Billion USD



** In terms of ex-factory prices*

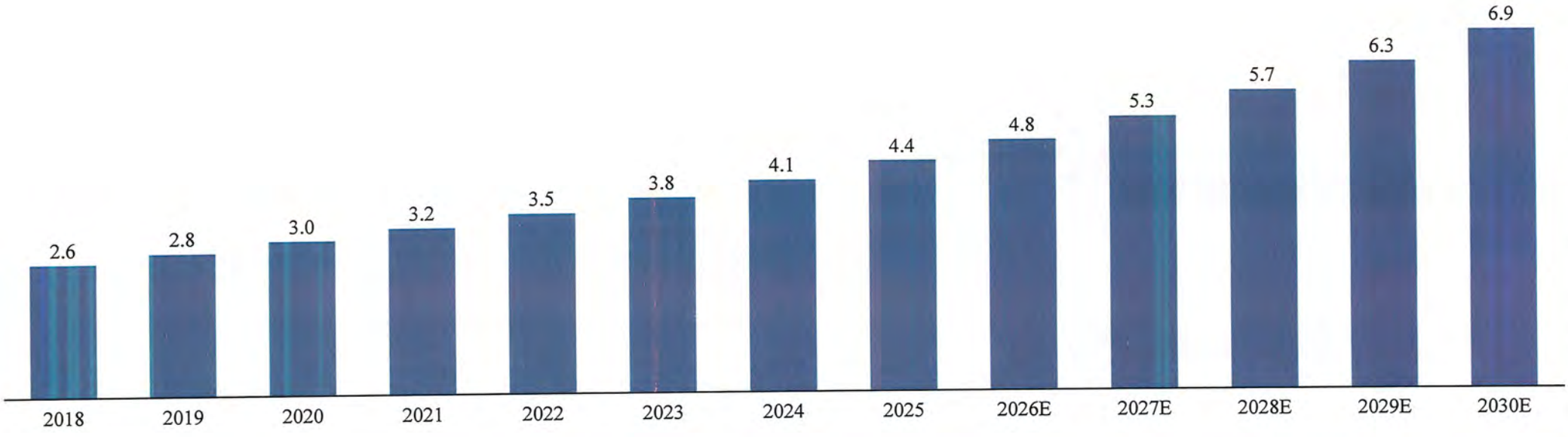
Source: China Insights Consultancy

Market size and forecast of patient monitor in China

Market size and forecast of patient monitor in China*, 2018-2030E

Billion RMB

	2018-2025	2025-2030E
patient monitor	8.1%	9.3%



** In terms of ex-factory prices*

Source: China Insights Consultancy

Market Challenges and Entry Barriers of Life Support Industry

Life Support Industry → Barrier

1 Regulatory and product certification

◆Life support devices are subject to stringent regulatory oversight. Depending on their risk classification and intended use, new products must undergo comprehensive type testing and technical validations such as reliability and stability assessments, and may also be required to conduct clinical evaluation or clinical trials. The long and costly approval process, together with uncertain regulatory outcomes, presents a substantial barrier for new entrants.

2 R&D and technological barriers

◆Life support products may involve an integration of precision mechanics, embedded software, intelligent algorithms, and biocompatible materials. Their development requires sustained R&D investment and strong interdisciplinary capabilities, resulting in a high technological threshold.

3 Capital support

◆The life support industry is capital-intensive. Setting up GMP-compliant cleanrooms, production lines, and a reliable global supply chain requires substantial investment. Established players benefit from economies of scale, enabling them to lower unit costs and maintain competitive pricing, making it difficult for new entrants to compete.

4 Brand Reputation and Customer Loyalty

◆Hospitals prioritize clinical track records and brand credibility when selecting life support products. Leading brands enjoy long-standing customer trust and institutional relationships. New entrants must invest heavily in clinical validation, and relationship-building.

Source: China Insights Consultancy

Market drivers & future trends for life support medical device markets

Market drivers & future trends for life support medical device markets

- **In the field of life support, products are expanding towards the portable direction, with gradually enriching application scenarios.** For example, portable monitoring devices are convenient to carry, have a simple structure, and stable performance. They can promote hospital operations and are used in community services, on-site emergency rescue, and other scenarios.
- Portable infusion pumps are not constrained by power sources, allowing patients to carry them, significantly improving patients' comfort and satisfaction with nursing care during intravenous infusion. This helps reduce their time spent bedridden and is particularly suitable for postoperative care, childbirth, cancer pain management, and tumor chemotherapy.

4 Gradually enriching application scenarios

1 The improving level of informatization and intelligence

- The monitoring device can quickly transmit patient information to experts, assisting them in conducting remote consultations. It can also transmit real-time vital sign data of patients for continuous dynamic observation of the patients' condition.
- The infusion pump can collect and feedback the patient's infusion data to the central infusion monitoring system in real time. The system will issue warnings for any anomalies during the infusion process, prompting nursing staff to intervene.

Future trends

2 The rising demand for home medical devices

- The focus of global disease burden is shifting from addressing infectious diseases to managing chronic conditions, especially among the elderly population, who are more susceptible to prevalent health issues such as cardiovascular diseases, diabetes, and cancer.
- With the aging of populations, healthcare systems face mounting challenges in meeting the increasingly complex needs and growing demand for diagnosis, prevention, and rehabilitation, both during and after hospitalization.
- Home-care devices are essential tools for patients to take charge of their own health and will play a critical role in preventing healthcare systems from becoming overwhelmed with the aging population.

- **Under the planning of ICU and public hospital construction policies, there is a great potential for growth in the life support equipment market.** According to the "Program for Building Public Health Control and Treatment Capacity" released in 2020, it is necessary to strengthen ICU construction and equip it with bedside monitoring systems, ventilators, extracorporeal membrane oxygenation (ECMO), and other related equipment. At the same time, the number of ICU beds per capita in China is much lower than that in developed countries. The construction of ICUs will drive the sales growth of life support products. In 2021, according to "Variation in intensive care unit beds capacity in China from 2007 to 2021", China had 4.8 ICU beds per 100,000 people, while according to OECD, developed countries like the United States had as many as 21.2 beds.
- In 2021, the Central Committee for Comprehensive Deepening of Reforms reviewed and approved the "Opinions on Promoting the High-quality Development of Public Hospitals," which affirmed the pivotal role of public hospitals and provided clear guidelines for "accelerating the expansion of high-quality medical resources and achieving a balanced regional layout." This will promote the expansion of the medical new infrastructure market and the capacity of public hospitals.

3 The government's increasing emphasize on public hospital construction

Source: Variation in intensive care unit beds capacity in China from 2007 to 2021, OECD, China Insights Consultancy

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Introduction to minimally invasive interventional surgery

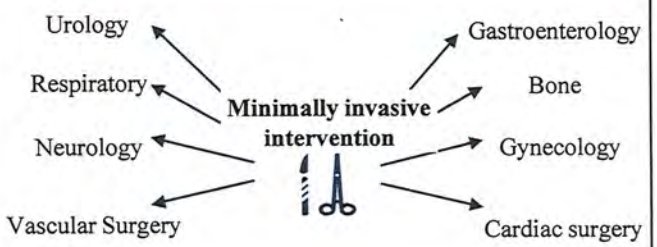
- ***Minimally invasive interventional surgery:*** Under image guidance, with minimal trauma, interventional instruments are used to enter the patient through vascular channels or non-vascular channels for diagnosis and treatment.
- ***Non-vascular interventional surgery :*** Refers to minimally invasive surgery that approaches the lesion through the natural orifice of the human body or through a small incision in the human body without entering the vascular system.
- ***Minimally invasive interventional surgery medical devices:*** Common minimally invasive interventional medical devices mainly include endoscopes, puncture needles, dilation balloons, guide wires, catheters, stents, lithotomy baskets, etc.

Comparison between minimally invasive interventional surgery and traditional surgery

	Minimally invasive interventional surgery	VS.	Traditional surgery
Skin Incision	• Surgery performed through the body's natural orifices without any surgical incisions • Percutaneous puncture surgery will leave a 0.5-1.5 cm wound and basically leave no scars		• Wounds that affect the appearance of the body, usually more than 10 cm
Bleeding	• Minor bleeding during surgery		• There may be massive bleeding during the operation
Pain	• Preoperative anesthesia, the patient will feel slight or no pain after the operation		• Preoperative anesthesia, resulting in unbearable pain after surgery
Recovery Time	• Recovery time is usually shorter due to less damage and disruption to organs		• Longer recovery time due to potential damage from infection of muscles, blood vessels and tissues
Length of stay	• Usually within one week of hospitalization		• Usually stay in the hospital for one to two weeks

Application of minimally invasive interventional surgery

- Minimally invasive interventional surgery can be divided into vascular interventional surgery and non-vascular interventional surgery according to different operating methods. Non-vascular access is mainly performed **through the natural orifice of the human body or into the interior of the human body through tiny incisions.**



Source: China Insights Consultancy

Introduction to the endoscopy

Definition:

- Medical endoscopes integrate modern electronics, traditional optics, precision machinery, ergonomics, image algorithms, and video processing software into one testing instrument. The medical endoscope system consists of a light source, a display, a camera system, a camera and an endoscope body.
- Using endoscopes and special endoscope instruments to enter the human body through natural orifices or artificially established channels to observe, sample, excise, drain, repair or reconstruct local lesions.

Classification of endoscopy

- **Imaging principle**
  - Optical endoscope
  - Electronic endoscope
- **Number of uses**
  - Reusable endoscope
  - Single-use endoscope
- **Product structure**
  - Rigid endoscope
  - Flexible endoscope

Application of endoscopy

Department	Endoscopy	Diagnosis	Treatment
Gastroenterology	Gastrointestinal endoscopy, choledochoscopy	Esophageal cancer, chronic gastritis, small intestinal tumors, etc.	Polypectomy, esophageal variceal ligation, etc.
Urology	Laparoscopy, cystoscopy, ureteroscopy, nephroscopy	Cystitis, kidney stones, kidney tumors, hematuria, etc.	Prostatectomy, cystectomy
Respiratory	Bronchoscopy	Lung cancer, refractory cough, upper respiratory tract obstruction	Insert bronchial stent
Gynecology	Laparoscopy, hysteroscopy, Colposcopy	Pelvic inflammatory disease, cervicitis, female infertility, etc.	Ovariectomy, hysterectomy, sacral ligament suspension
Hepatobiliary	Laparoscopy	Hepatitis, liver cancer, ascites, gallstones, cholecystitis	Liver transplantation, gallstone removal, cholecystectomy
Stomatology	Intraoral camera	Periodontitis and tartar detection	Periodontal care, tartar removal
Otolaryngology	Nasopharyngoscope, Laryngoscope	Rhinitis, nasal polyps, sinusitis, middle ear infection, etc.	Polypectomy, functional endoscopic sinus surgery, etc.

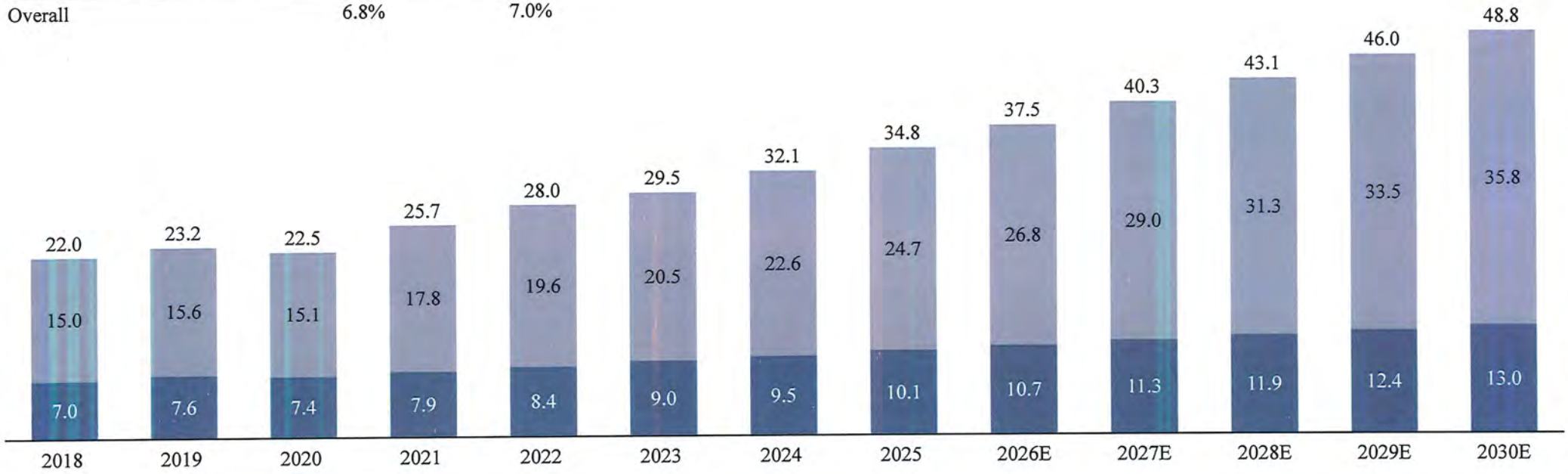
Source: China Insights Consultancy

Market size and forecast of endoscopic minimally invasive interventional surgery equipment and consumables around the globe

Market size and forecast of endoscopic minimally invasive interventional surgery equipment and consumables around the globe, 2018-2024, 2024-2030E

Billion USD

CAGR	2018-2025	2025-2030E
Endoscope	7.4%	7.7%
Consumable	5.5%	5.1%
Overall	6.8%	7.0%



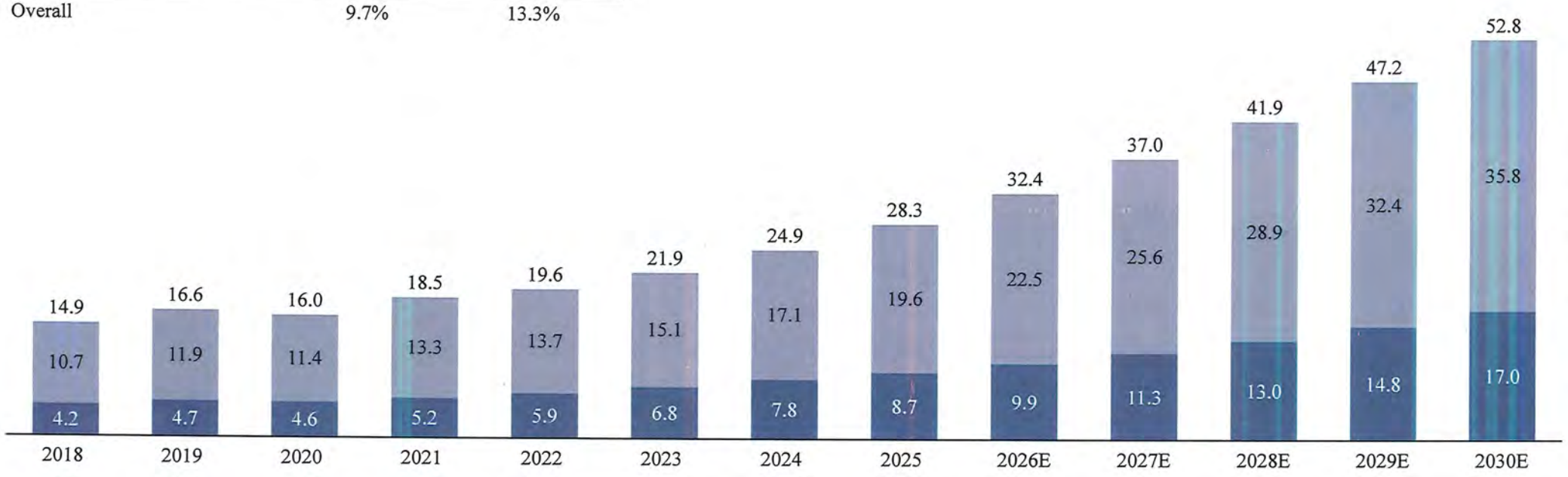
Source: China Insights Consultancy

Market size and forecast of endoscopic minimally invasive interventional surgery equipment and consumables in China

Market size and forecast of endoscopic minimally invasive interventional surgery equipment and consumables in China, 2018-2024, 2024-2030E

CAGR	2018-2025	2025-2030E
Endoscope	9.1%	12.8%
Consumable	11.2%	14.2%
Overall	9.7%	13.3%

Billion RMB



Source: China Insights Consultancy

Market Segment (1/2)—Introduction to major diseases of digestive system

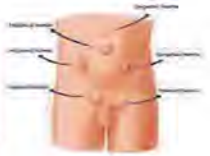
Biliary and pancreas cancers		Definition
Gallbladder & Biliary Tract Cancer		• Gallbladder cancer occurs when malignant cancer cells form in the tissues of the gallbladder. The gallbladder is a small, pear-shaped organ located next to the liver. Its role is to store bile, a fluid that aids with digestion and fat absorption in the small intestine. Biliary tract cancer (also known as cholangiocarcinoma) is cancer that occurs in the bile ducts (tubes that transport bile from the liver). Biliary tract cancer can form anywhere along the bile ducts.
Pancreatic cancer		• Cancer that begins in the tissues of the pancreas -- an organ that sits behind the stomach. It releases enzymes that help digest foods (especially fats) and hormones that help control blood sugar levels. The pancreas has two types of cells--exocrine and endocrine--which form different types of tumors.

Gastrointestinal cancers		Definition
Gastric cancer		• The definition of advanced gastric cancer is still debated. Different stadiating systems lead to slightly different stadiation of the disease, thus leading to variations between the single countries in the treatment and outcomes. Advanced stomach cancer also means that a cancer that began in the stomach has spread to at least one other part of the body, such as the liver or lungs.
Liver cancer		• Early liver metastases may be asymptomatic. Nonspecific symptoms of cancer (eg, weight loss, anorexia, fever) often develop first. The liver may be enlarged, hard, or tender; massive hepatomegaly with easily palpable nodules signifies advanced disease. Hepatic bruits and pleuritic-type pain with an overlying friction rub are uncommon but characteristic.

Source: China Insights Consultancy

Market Segment (1/2)—Introduction to major diseases of digestive system

Biliary and pancreas stone diseases		Definition
Choledocholithiasis		• Gallbladder stones occur in the gallbladder and are mainly cholesterol stones or mixed calculi dominated by cholesterol • Any factor that affects the ratio of cholesterol to phospholipid bile acids and causes cholestasis may lead to gallstone formation
Cholecystolithiasis		• Biliary duct stones can be divided into intrahepatic bile duct stones and extrahepatic bile duct stones. • Biliary tract infection, biliary tract obstruction, parasites, cholestasis may lead to cholecystolithiasis
Pancreatic duct stones		• Pancreatic duct stones are a common complication during the natural course of chronic pancreatitis and often contribute to additional pain and pancreatitis. Abdominal pain, one of the major symptoms of chronic pancreatitis, is believed to be caused obstruction of the pancreatic duct system

Intra abdominal diseases		Definition
Inflammatory bowel disease		• Inflammatory bowel disease (IBD), which includes Crohn disease and ulcerative colitis, is a relapsing and remitting condition characterized by chronic inflammation at various sites in the gastrointestinal tract, which results in diarrhea and abdominal pain
Colorectal cancer		• Colorectal cancer (CRC) most often occurs as transformation within adenomatous polyps. About 80% of cases are sporadic, and 20% have an inheritable component. Predisposing factors include chronic ulcerative colitis and Crohn colitis
Abdominal hernia		• Abdominal hernias are classified as either abdominal wall hernias or groin hernias. About 75% of all abdominal hernias are inguinal. Strangulated hernias are ischemic because of physical constriction of their blood supply can result in bowel infarction, perforation, and peritonitis.

Source: China Insights Consultancy

Market Segment (1/2)— Introduction to endoscopic retrograde cholangio-pancreatography (ERCP)

Digestive system > ERCP

Definition of ERCP procedures:

- ERCP combines endoscopy through the second portion of the duodenum with contrast imaging of the biliary and pancreatic ducts. The papilla of Vater is cannulated through an endoscope placed in the descending duodenum, and the pancreatic and biliary ducts are then injected with a contrast agent.
- **So far there are three main indications that ERCP applied in real-world clinical cases**, including sphincterotomy for Biliary stricture diagnosis and treatment , stone extraction for Choledocholithiasis and placement of fully covered self-expanding stent for Pancreatic Cyst.
- **All procedures begin with** the instruction of the endoscope into the descending part of the duodenum and the straightening and visualization of the papilla which can be seen clearly, the general procedures according to each indication are introduced below, cases might differ due to the patient situation.

1 *For biliary Strictures*

Reached the tip of the endoscope's working channel the cannulation is carried out in slow movements, in order to approach the orifice as gently as possible. Then the further cannulation of the bile duct with the guidewire begins	Introduced the cutting wire into the papilla with the cutting wire under light tension and the sphincterotome is then performed step by step with extra care during the juxtapapillary diverticulum in order to avoid a perforation	Cut the sphincter completely and bile would be flowing out of the opening papillary, locking the short wire by lifting the forceps elevator which can then be used for the rest of the procedures

2 *For choledocholithiasis*

Extracted the stone by a guidewire-compatible extraction basket, to establish a secure hold of the stone in the event of a juxtapapillary diverticulum and to minimize the risk of perforation	Stretched through the distal tip of the closed basket, the basket is inserted into the scope and then the bile duct the assistant then open the basket and pulled all the way through the bile duct	Closed the basket a little until it has a firm hold of the stone then extracted lengthwise from the bile duct

3 *For pancreatic disease*

Rinsed the delivery system before it is introduced via the wire, once the guide wire is in place and fixed with the forceps elevator the delivery system can be pushed toward the tip of the endoscope quickly	Supported from the assistant and the endoscopist, placed past the stenosis into the desired target position	Reached the target position and opened the safety lock on the delivery system to release the stent, the correct position is documented by radiology, and the delivery system can be removed

Source: Chinese guideline for ERCP 2018; China Insights Consultancy

Market Segment (1/2)— Introduction to endoscopic submucosal dissection (ESD)

Introduction to EMR and ESD:

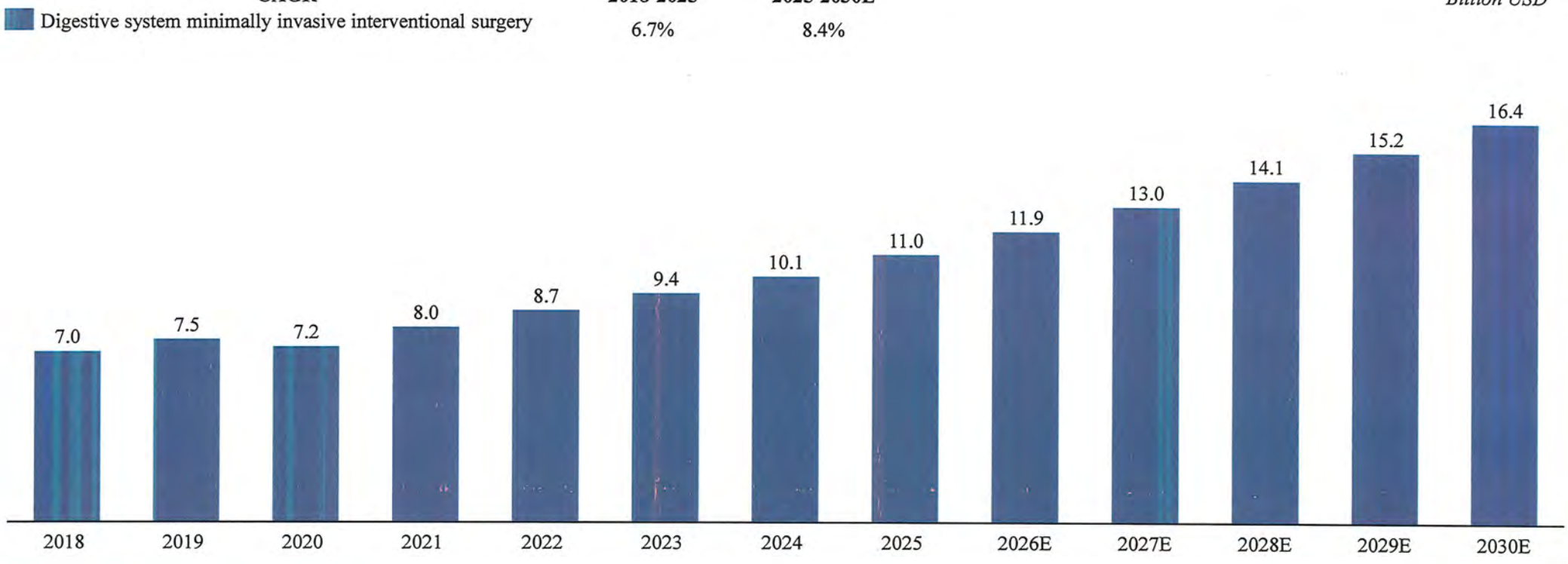
➢ **EMR and ESD** may be used for definitive therapy of premalignant and early stage malignant lesions of the digestive tract. EMR and ESD also can be used to obtain larger histologic specimens (compared with standard endoscopic tissue sampling techniques) and can provide an accurate histologic T stage for these superficial malignancies.

	Indication	Main consumable	Device
 **Endoscopic mucosal resection (EMR)**	• **EMR** is an endoscopic technique developed for removal of sessile or flat neoplasms confined to the superficial layers (mucosa and submucosa) of the GI tract. EMR is typically used for removal of lesions smaller than 2 cm.	• **Electrocautery snare** : A unique range of electrocautery snare designed to cut, coagulate, resect, and retrieve, when remove tumors or polyps.	✓ **Gastroscope:** Gastroscope is a thin, flexible tube called an endoscope is used to look inside the oesophagus, stomach and first part of the small intestine. ✓ **Enteroscope:** Enteroscopes are designed for deep intubation and examination of the small intestine. Enteroscopes are forward-viewing endoscopes but are substantially longer than gastroscopes and have devices designed to assist with intubation of the jejunum and ileum.
 **Endoscopic submucosal dissection (ESD)**	• **ESD** has been developed for en bloc removal of large (usually more than 2 cm), flat GI tract lesions.	• **High-frequency knives** : For ESD, a high-frequency current is output by an external device to form a loop by a human body, and a high-density current is formed at a knife wire portion with a relatively small sectional area to realize cutting.	

Source: Science Direct; China Insights Consultancy

Market size and forecast of digestive system minimally invasive interventional surgery equipment and consumables around the globe

Market size and forecast of digestive system minimally invasive interventional surgery equipment and consumables around the globe, 2018-2025, 2025-2030E



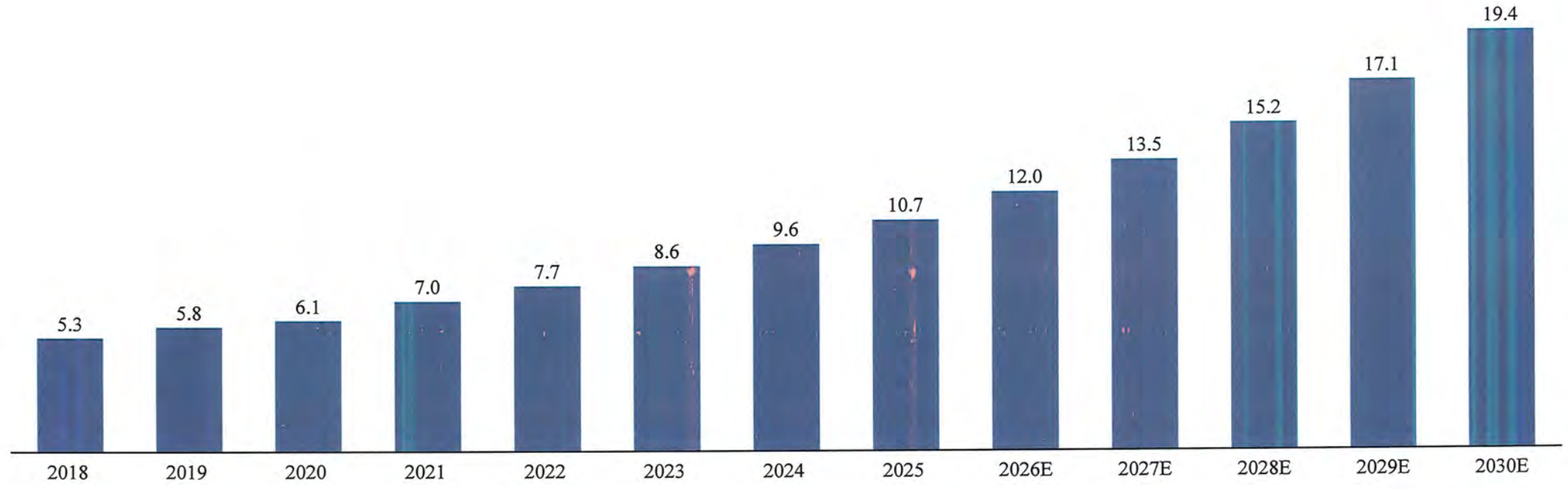
Source: China Insights Consultancy

Market size and forecast of digestive system minimally invasive interventional surgery equipment and consumables in China

Market size and forecast of digestive system minimally invasive interventional surgery equipment and consumables in China, 2018-2025, 2025-2030E

	CAGR 2018-2025	CAGR 2025-2030E
Digestive system minimally invasive interventional surgery	10.6%	12.6%

Billion RMB



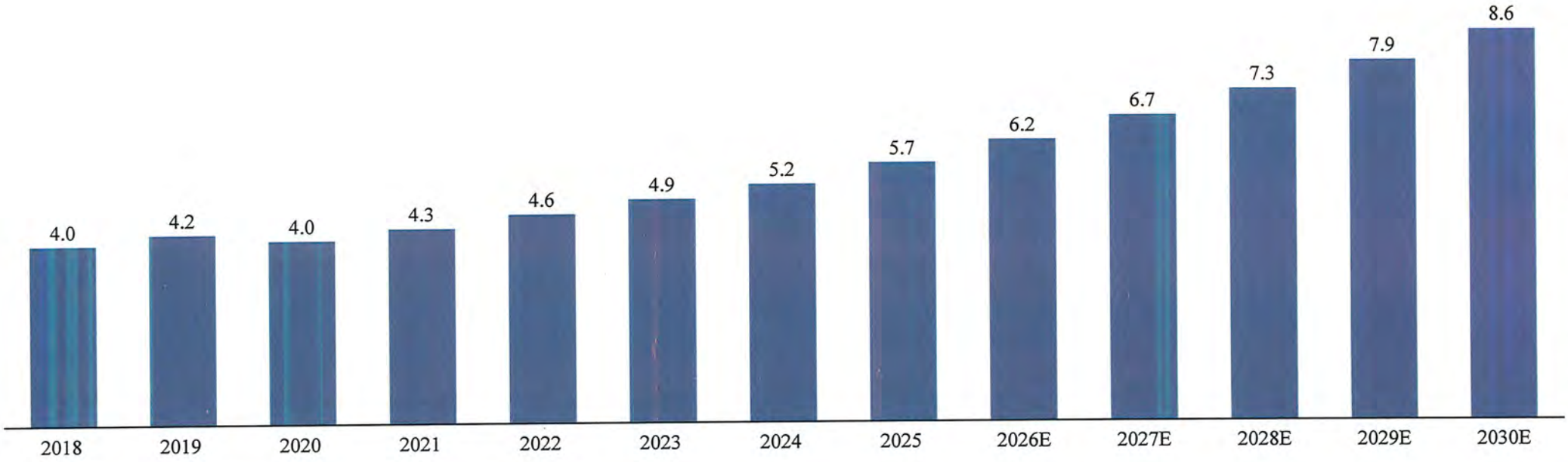
Source: China Insights Consultancy

Market size and forecast of digestive system minimally invasive interventional surgery consumables in global

Market size and forecast of digestive system minimally invasive interventional surgery consumables in global, 2018-2025, 2025-2030E

	CAGR 2018-2025	CAGR 2025-2030E
Digestive system minimally invasive interventional surgery consumables	5.4%	8.6%

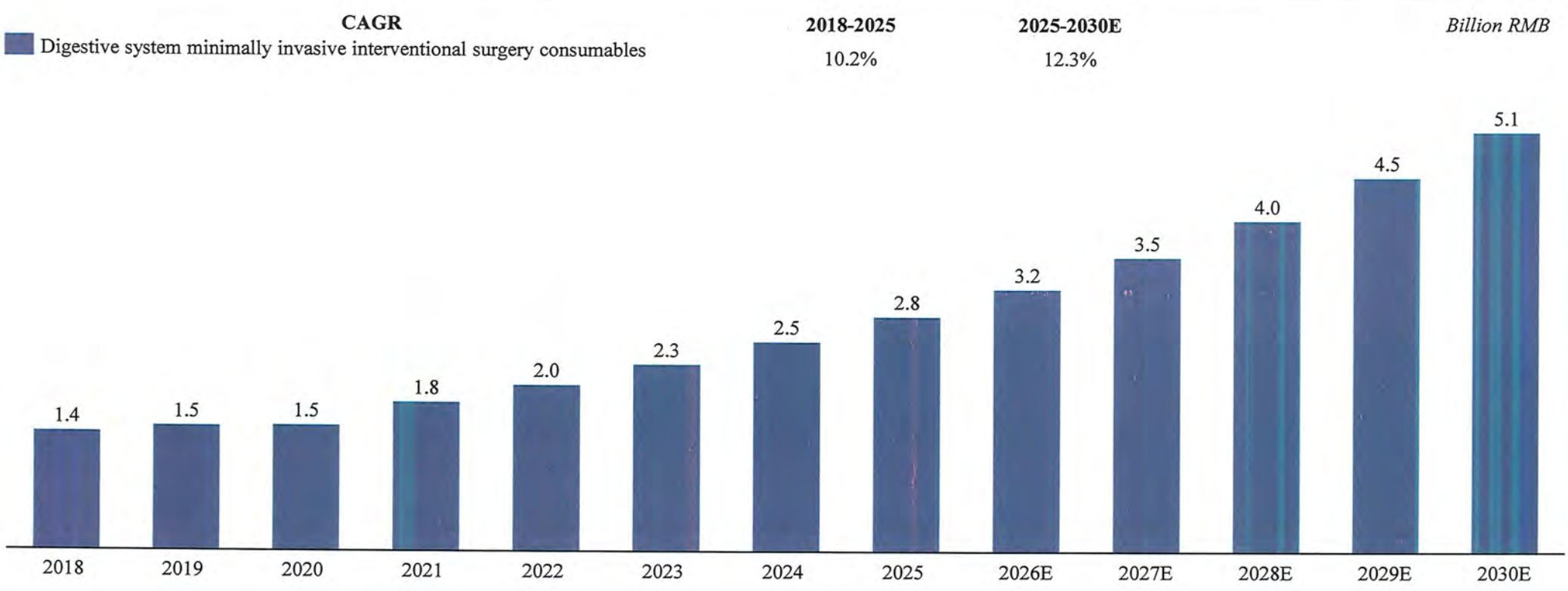
Billion USD



Source: China Insights Consultancy

Market size and forecast of digestive system minimally invasive interventional surgery consumables in China

Market size and forecast of digestive system minimally invasive interventional surgery consumables in China, 2018-2025, 2025-2030E



Source: China Insights Consultancy

Market Competition Landscape of digestive system minimally invasive interventional surgery consumables in China, 2025

Digestive system minimally invasive interventional surgery consumables		
Ranking	Company	Market share
1	Company V	38.5%
2	Company W	22.9%
3	**The Company**	**21.5%**
4	Company X	8.0%
5	Company Y	3.5%
	Others	5.6%
	Total	100%

Notes:

(1) Company V is a public company established in the 2000s and headquartered in Nanjing, which was listed on the Science and Technology Innovation Board of the Shanghai Stock Exchange, and primarily engages in the research, development, manufacturing, and sales of minimally invasive medical devices.

(2) Company W is a public company established in the 1970s and headquartered in Massachusetts, USA, which was listed on the New York Stock Exchange and primarily engages in the research, development, production, and sales of medical devices, including interventional cardiology and oncology products. Its increased market share in 2025 primarily resulted from an acquisition completed during the year.

(3) Company X is a public company established in the 2010s and headquartered in Hangzhou, which was listed on the Shanghai Stock Exchange's Science and Technology Innovation Board and primarily engages in medical manufacturing of minimally invasive endoscopic diagnostic and therapeutic devices.

(4) Company Y is a public company established in the 1910s and headquartered in Tokyo, Japan, which was listed on the Tokyo Stock Exchange Prime Market and primarily engages in endoscopy systems and full-spectrum medical solutions.

Market Segment (2/2)—Introduction to urology disease

Urology system | Diseases

- **Urology system stones**, also known as urinary lithiasis, is the general name of kidney calculi, ureteral calculi, bladder calculi and urethral calculi, and is one of the most common diseases of urinary system. Urinary stone is a global disease, and there are regional differences in incidence among the world. Britain, Central Europe, Mediterranean, Southeast Asia and South China are all high incidence areas.
- In addition, in terms of gender for patients with urinary stones, the incidence rate of men is about twice that of women, and the number of patients with upper urinary stones is higher than that of patients with lower urinary stones. With the rapid development of economy in recent years, the incidence of lower urinary tract stones in China has dropped rapidly, while the incidence of upper urinary tract stones has an obvious increasing trend.

Upper urinary stone

Kidney calculi

- Kidney calculi are hard deposits made of minerals and salts that form inside your kidneys. Diet, excess body weight, some medical conditions, and certain supplements and medications are among the many causes of kidney stones.

Ureteral calculi

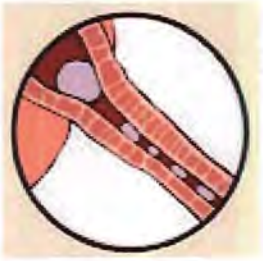
- Ureteric calculi or stones are those lying within the ureter. They are the classic cause of renal colic-type abdominal pain. They are a subtype of the broader pathology of urolithiasis.

Lower urinary stone

Bladder calculi

- Bladder calculi are caused by a buildup of minerals. They can occur if the bladder is not completely emptied after urination. Eventually, the leftover urine becomes concentrated and minerals within the liquid turn into crystals.

Urethral calculi



- Migrant urethral calculi, is more common condition, a calculus formed in the kidney or bladder moves to and blocks the urethra. Migrant calculi can cause pain, feeling of pelvic pressure, acute urinary retention and irritative symptoms.

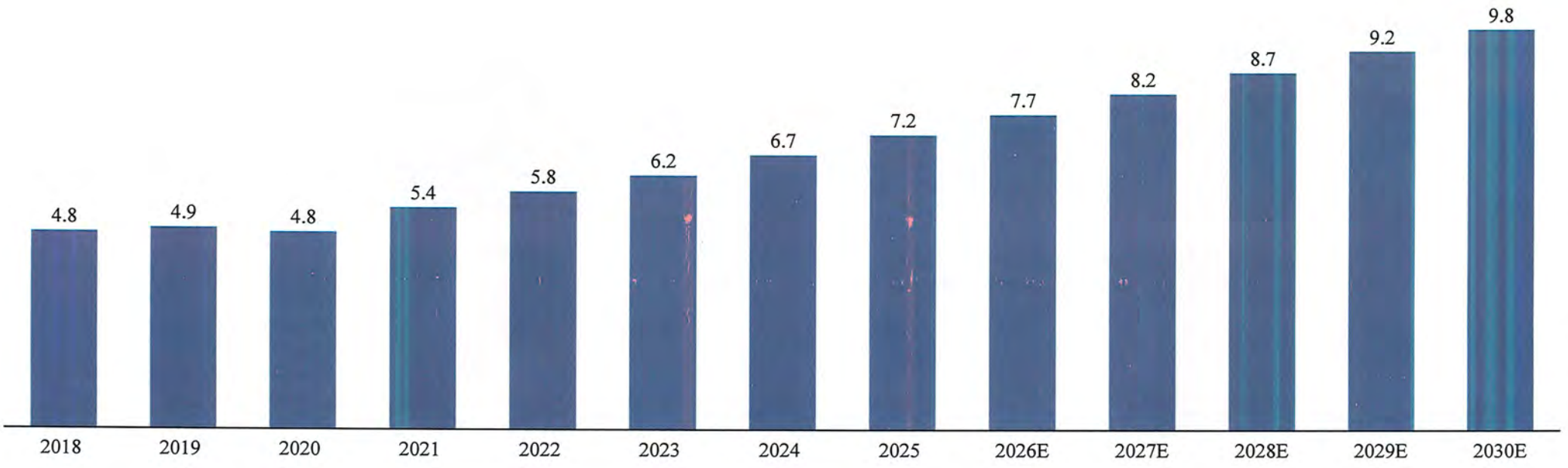
Source: China Insights Consultancy

Market size and forecast of urology minimally invasive interventional surgery equipment and consumables around the globe

Market size and forecast of urology minimally invasive interventional surgery equipment and consumables around the globe, 2018-2025, 2025-2030E

	CAGR	2018-2025	2025-2030E
Urology minimally invasive interventional surgery		5.9%	6.3%

Billion USD



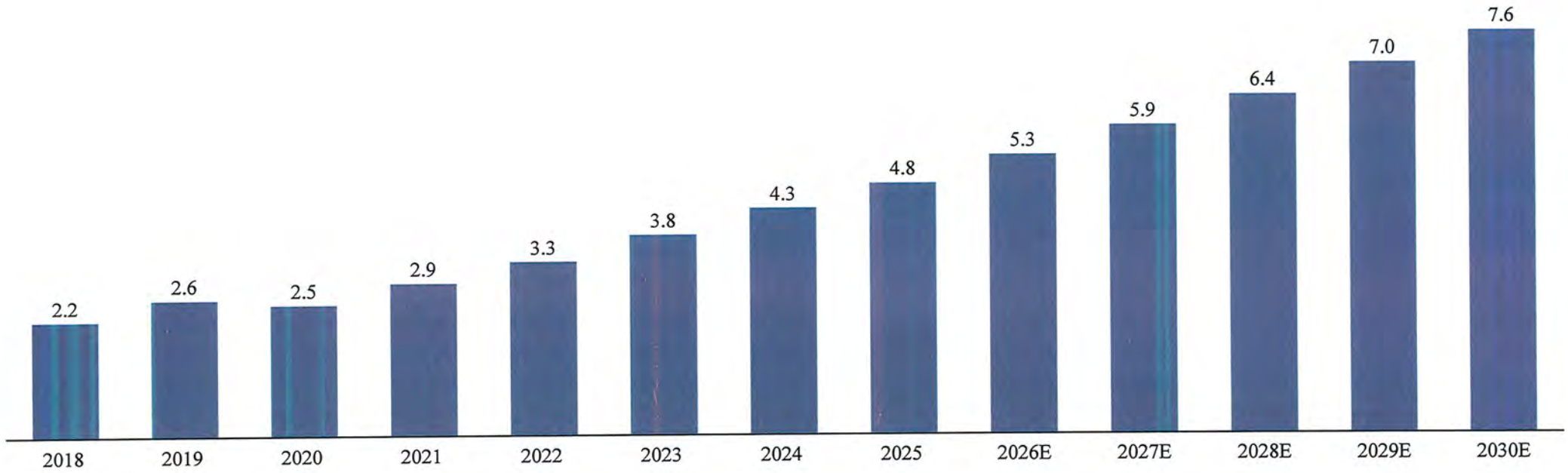
Source: China Insights Consultancy

Market size and forecast of urology minimally invasive interventional surgery equipment and consumables in China

Market size and forecast of urology minimally invasive interventional surgery equipment and consumables in China, 2018-2025, 2025-2030E

CAGR	2018-2025	2025-2030E
Urology minimally invasive interventional surgery	11.7%	9.9%

Billion RMB



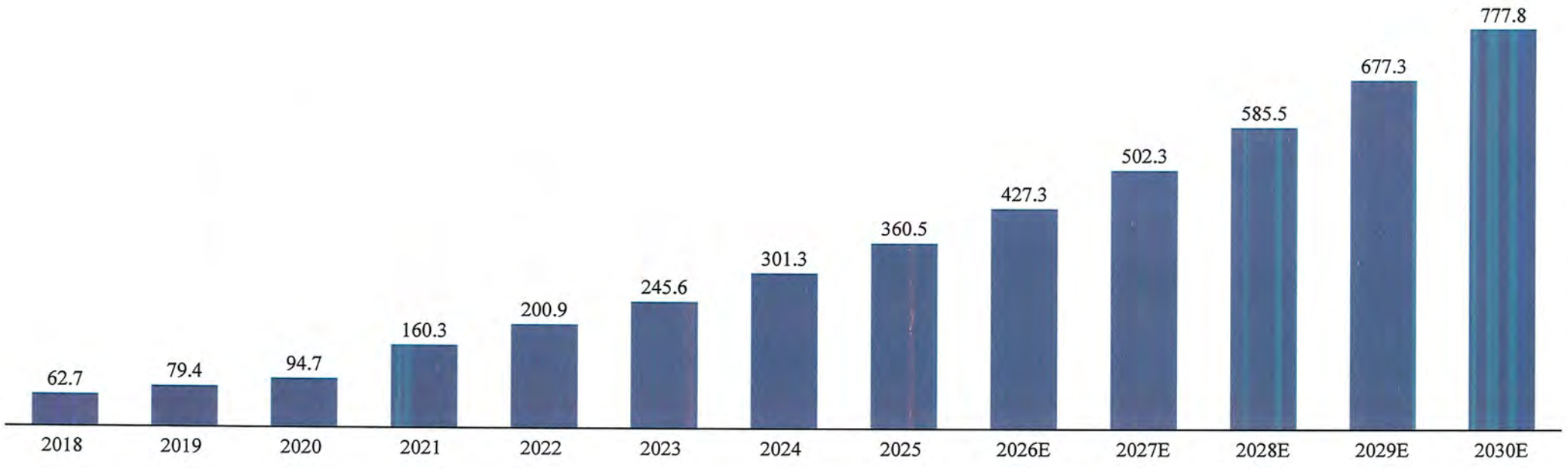
Source: China Insights Consultancy

Market size and forecast of single-use ureteroscope around the globe

Market size and forecast of single-use ureteroscope around the globe, 2018-2025, 2025-2030E

CAGR	2018-2025	2025-2030E
Single-use ureteroscope	28.4%	16.6%

Million USD



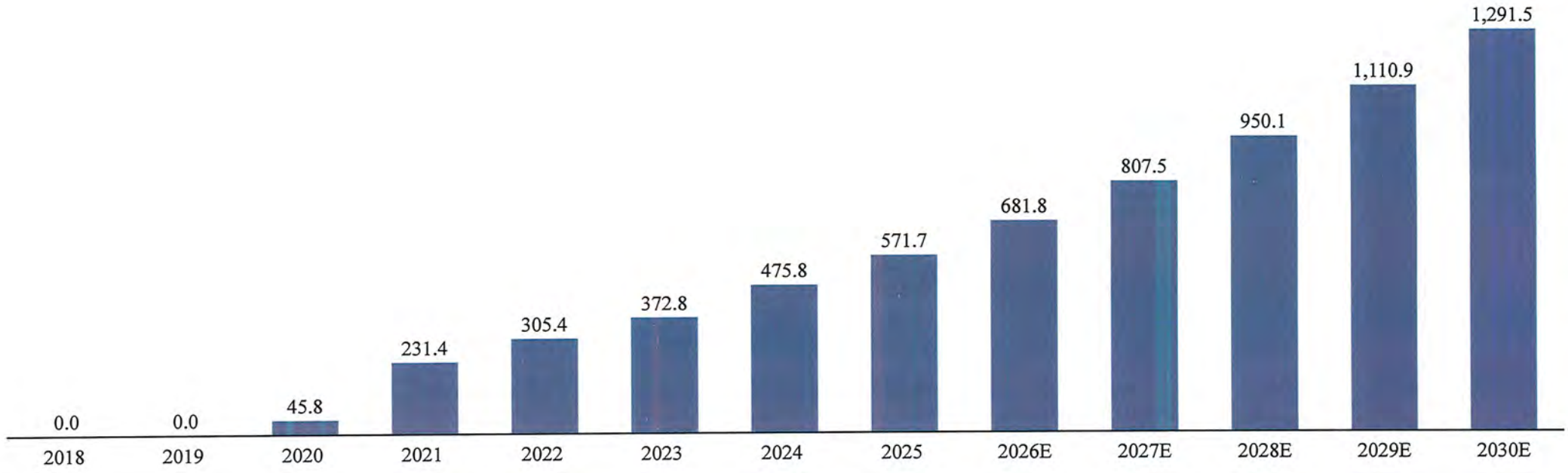
Source: China Insights Consultancy

Market size and forecast of single-use ureteroscope in China

Market size and forecast of single-use ureteroscope in China, 2018-2025, 2025-2030E

Million RMB

CAGR	2020-2025	2025-2030E
Single-use ureteroscope	65.7%	17.7%



Source: China Insights Consultancy

Entry barriers for minimally invasive interventional endoscopes industry

Talent and technology barrier	• The R&D and manufacturing of medical endoscopes require the intersection and integration of multidisciplinary knowledge. R&D requires a large number of experienced interdisciplinary talents with multi-professional knowledge and R&D experience in optics, image processing, precision instrument manufacturing, etc. At the same time, the medical endoscope industry is a knowledge, technology, and talent-intensive industry, which has high requirements for the R&D efficiency and innovation capabilities of enterprises in the industry. Most enterprises that have entered the industry need years of industrial practice to gradually improve the R&D system. construction and accumulation of technology. The need for interdisciplinary R&D talents, rich technology accumulation, and adequate R&D system construction has created high talent and technology barriers in the industry.
Financial barrier	• Medical endoscope products include light sources, scopes, camera systems, and display screens. They have high technical content and complex technical paths. From research and development to commercialization of results, products cover many steps such as design, clinical trials, registration approval, etc., and the research and development time is relatively long. It is long-term and has high initial capital investment requirements, creating high financial barriers for new entrants.
Brand barrier	• In the field of medical endoscopes, foreign endoscope manufacturers were established earlier and have deep R&D accumulation, complete product matrix and strong brand influence. They have long dominated the global and Chinese endoscope markets. At the same time, the endoscope products of existing mainstream brands have a complete sales network under the long-term market layout, and their endoscope products have been used and verified by users for a long time, and have customer stickiness and high market influence, forming a high brand barrier for new entrants.
Qualification barrier	• New companies entering the medical endoscope industry are managed by the drug regulatory department and must obtain a license before they can carry out business activities. At the same time, medical endoscope products can only be sold after obtaining a product registration certificate issued by the regulatory authorities. The strict regulatory system for medical endoscope manufacturers and medical endoscope product registration has set up high industry entry qualification barriers for new entrants.

Source: China Insights Consultancy

Market drivers of minimally invasive interventional endoscopes industry

	Growth Driver	Description
1	**Increasing number of patients**	• With the aging and lifestyle changes, stones and cancer have become one of the most common chronic diseases. Besides the increasing demand for endoscopes during treatment, there is a huge demand for endoscopes in disease screening. The increase in per capita disposable income will also promote the development of the endoscopy market.
2	**Increasing numbers of early diagnosis of digestive cancers**	• China has a high incidence of digestive tract diseases, and the 5-year survival rate of gastric cancer is much lower than that of Japan. This is mainly due to the insufficient penetration rate of early diagnosis of digestive tumors in China. The rate of gastroscopy and colonoscopy in China is far lower than that of developed countries. As people's awareness of early diagnosis increases, and the number of hospitals open for flexible endoscopy treatment increases, the potential market of flexible endoscopy is large.
3	**Growing popularity of domestic products to promote import substitution**	• Under the policies of grading diagnosis and treatment, encouraging import substitution and centralized procurement, domestic brands with high cost performance are expected to rapidly increase their market share. Domestic brands have certain development space and import substitution basis. Hospitals below the second level will be the main incremental market of domestic endoscopic equipment in the future.
4	**Increased penetration of single-use endoscopes**	• Compared with repetitive device, single-use minimally invasive surgical instruments have many advantages such as ease of use, sharpness, elimination of cross-infection, and strong sealing. The penetration rate in top-level and second-level hospitals is increasing year by year. The application of endoscopic minimally invasive surgery has involved many clinical departments such as general surgery, thoracic surgery, urology, gynecology, and orthopedics, and has gradually become the mainstream development direction of surgery.

Source: China Insights Consultancy

Future trends of minimally invasive interventional endoscopes industry

Update products and more application

- In recent years, artificial intelligence technology has shown great potential in medical image recognition and auxiliary diagnosis and has achieved good results in multiple medical fields. **Artificial intelligence-assisted systems that can efficiently and accurately extract image information** will gradually be integrated into the field of endoscopy and will also become an important trend in the future development of endoscopy, such as 3D imaging technology.
- In recent years, minimally invasive endoscopic interventional surgery has entered a period of rapid development. For example, EMR and ESD in the field of digestive field have gradually become widely accepted endoscopic treatment strategies for early diagnosis cancers around the world. At the ESE, STER, ERAT, EFR and other **new clinical applications** will also continue to develop, and endoscopes will be used in more departments in the future.

High-definition endoscope images

- As image sensing technology develops from CCD technology to CMOS technology, imported and domestic endoscope manufacturers have gradually applied CMOS image sensing technology to endoscope systems and greatly **improved the details of endoscope imaging**. Clear endoscopic images can help doctors identify the relationship between important anatomical structures and surrounding tissues, avoid damage to nerves, blood vessels, lymph nodes and other parts, allowing them to perform more sophisticated minimally invasive surgeries.
- The **application and development of image high-definition technology** provides the endoscopic system with clearer detailed images of organs and tissues and wider color reproduction, which can improve the accuracy of positioning based on endoscopic imaging and contribute to the improvement of surgical quality and safety.

Increasing penetration of single-use endoscope

- Since single-use endoscopes are **safer and have less infection risk**, the penetration rate in tertiary and secondary hospitals will continue to increase in the future.
- At the same time, with the continuous advancement of image processing technology and image sensor technology of single-use endoscopes, the quality and clarity of the images they transmit continue to improve, and single-use endoscopes will be used in more clinical diagnoses and treatments. In addition, with the continuous development of domestic endoscopic diagnosis and treatment technology, **more and more doctors are willing to engage in endoscopic diagnosis and treatment**, which will also make single-use endoscopes have larger development potential.

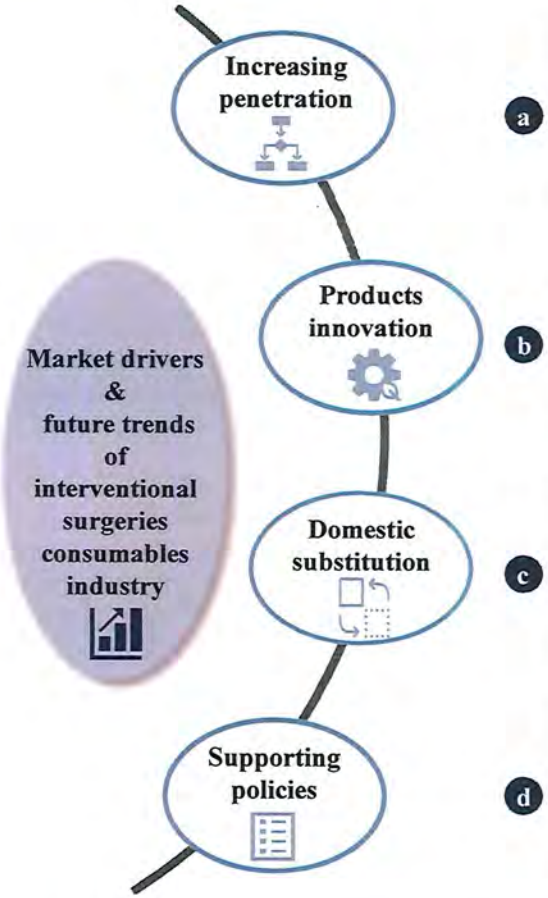
Source: China Insights Consultancy

Entry barriers for minimally invasive interventional surgeries consumables industry

	Entry barriers	Description
1	**Product development and technology barrier**	• The research and development and manufacturing of minimally invasive interventional surgeries consumables involve many disciplines such as biomedicine, manufacturing engineering, material science, ergonomics and so on. Established market participants have accumulated years of technology and know-how, industry experience and in-depth understanding of the clinical needs of different product lines and markets, enabling them to seize market opportunities more successfully and launch new or upgraded products, which is unmatched for new entrants.
2	**Regulatory and qualification barrier**	• Minimally invasive interventional surgeries consumables are subject to strict safety and effectiveness registration standards in China. Class II/III endoscopic consumables generally require product registration testing and clinical trials, unless clinical trials are exempted by NMPA. In addition, companies need to invest a lot of time and energy to obtain and maintain manufacturing licenses and comply with GMP requirements and other regulations in China.
3	**Brand barrier**	• Doctors prefer to use familiar consumables, which have been proved to be safe and effective. A well-known brand with high recognition in doctors and hospitals, especially top hospitals, may take years of efforts and investment to build up. In addition, Some companies will pack multiple consumables into bundles. For example, the "ERCP package" contains a guidewire, a balloon dilatation catheter, a stone retrieval basket, etc. to increase doctors' dependence on a specific brand product, and help doctors to decrease the cost of switching to another brand.
4	**Channel barrier**	• Participants in the minimally invasive interventional surgeries consumables market highly rely on the distribution and sales model. For example, distributors of Class II and III consumables must have licenses or record-filing proof from regulatory authorities (such as business operation license of medical devices), get recognition from the hospitals, and provide professional after-sales service. New entrants need a lot of time and investment to build a qualified distributor network.

Source: China Insights Consultancy

Market drivers and future trends of minimally invasive interventional market



a
- The increase in the per capita disposable income of Chinese residents and the increase in medical expenditure will drive the continuous development of consumables related to minimally invasive interventional procedures.
- As the aging of the population continues to deepen, minimally invasive interventional surgery is more suitable for the elderly due to its advantages such as smaller incisions and lower risk of infection, and its application will continue to increase.

b
- Although minimally invasive interventional surgery has greatly reduced the pain of patients compared with traditional surgery. However, there are still some adverse clinical events of minimally invasive interventional surgery. For example, obvious bleeding after EST operation, gastric perforation after ESD operation and so on. Many R&D teams are developing new products to reduce the occurrence of such postoperative complications.

c
- For low-value consumables, domestic products have gained an inspiring market share, but for high-value consumables, the products of multinational companies still have a high market share. With the continuous investment in innovation and development of domestic products and the support of relevant policies, domestic non-vascular consumables will gradually substitute the international products.

d
- Relevant policies to guide and support the development of related industries issued. For example, some interventional surgery consumables have been included in centralized procurement, which has promoted the admission rate.
- In the past, in underdeveloped areas, the repeated use of consumables caused cross infection among patients. Industry regulatory authorities will put forward stricter usage specifications for interventional consumables to prevent the repeated use of consumables.

Source: China Insights Consultancy

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I. Overview of Medical Device Industry

II. Overview of Life Support Medical Device Industry

III. Overview of Minimally Invasive Interventional Industry

IV. Overview of In Vitro Diagnosis Industry

Classification and definition of in vitro diagnostic

- In vitro diagnostics are tests done on samples such as blood or tissue that have been taken from the human body, which can be divided into biochemical diagnosis, immunologic diagnosis, molecular diagnostics and POCT

Classification and definition of in vitro diagnostic

- According to the definition of WHO, in vitro diagnostics (IVDs) are tests that can **detect disease, conditions and infections.** In vitro simply means 'in glass', meaning these tests are typically **conducted in test tubes and similar equipment**, as **opposed to in vivo tests**, which are conducted in the body itself.
- In vitro tests may be **done in laboratories, health care facilities or even in the home.** The tests themselves can be performed on a variety of instruments ranging from small, handheld tests to complex laboratory instruments. They allow doctors to diagnose patients effectively and work to provide appropriate treatments.

Classification	Biochemical diagnosis	Immunodiagno--sis	molecular diagnostics	Microbiological diagnosis	Blood diagnosis	Morphological detection
Mechanism	Mainly through biochemical reaction	Through immune response between antigens and antibodies	Molecular biology techniques like Sequencing of nucleic acids by nucleic acid hybridization	Through drug sensitivity test, microorganism culture and morphology observation and biochemical reaction	Through the hemolysis phenomenon and the observation of blood cells under the equipment	Observe morphological features of objects under a microscope
Applications	Renal function, blood routine and rheumatism	Infectious diseases and cancers	Cancers, genetic diseases and infectious diseases	Bacterial or fungal infections	Erythrocyte, leukocyte, platelet test and blood type test	Blood cell/body fluid/faeces detection
Main technologies	Latex enhanced immune turbidimetric technology, enzyme circulation technology	Enzyme immunoassay, collaurum, chemiluminiscence	PCR, NGS	Bacterial culture, drug sensitivity test and automatic microbial analysis system	Microscopy, blood cell analysis and flow cytometry	Morphology

Key takeaway

- In China, the biochemical, microbiological and blood diagnosis are relatively developed, and the market tends to be stable. They all have certain advantage in some detection items which means they would not be replaced completely.
- Immunodiagnostics, mainly chemiluminescence and enzyme-linked immunity, have been the mainstream of in vitro diagnosis in China. Products related to fully automatic chemiluminescence immunotechnology will be the main driving force for future development.
- **molecular diagnostics** is the cutting-edge in vitro diagnosis technology. With the promotion of precision medicine, molecular diagnostics mainly based on PCR and NGS will be further developed. Digital PCR, single molecule sequencing and other innovative technologies also have huge market potential.

Source: China Insights Consultancy

Application direction of in vitro diagnosis

Application direction of in vitro diagnosis

Coagulation test

- The significance of coagulation testing is increasingly recognized. There is a growing awareness of coagulation disorders and their impact on health, leading to more routine screening and early diagnosis.
- The move towards personalized medicine, where treatment is tailored to the individual patient, underlines the importance of precise and comprehensive diagnostic tools. Coagulation testing is crucial in this regard, as it helps in customizing anticoagulation therapy for patients, ensuring optimal dosing that maximizes efficacy while minimizing the risk of bleeding complications.
- Coagulation tests are often part of a larger battery of tests required for diagnosing and managing complex conditions. The integration of coagulation testing with other diagnostic tools enhances the ability to provide a comprehensive assessment of a patient's health status, making it invaluable in the diagnostic process.

Immunodiagnosis

- From the current development of in vitro diagnostic testing, immunodiagnosis is the largest sub-sector of in vitro diagnostics in China and is still in a stage of rapid growth.
- High-end chemiluminescence has gradually replaced enzyme-linked immunosorbent assay (ELISA) as the mainstream method of immunodiagnosis in China, focusing on the monitoring of already infected diseases. Moreover, imported manufacturers occupy most of the market share, while the market share of domestic manufacturers in the field of chemiluminescence is low.
- The degree of domestic substitution for low and middle-end reagents and instruments is high, but the high-end market overall, such as tertiary hospitals, is still monopolized by foreign giants. In the future, import substitution in the high-end immunodiagnosis market will be the main direction of development.

Molecular diagnostics

- Molecular diagnostics possess unique detection advantages in the diagnosis of infectious diseases and screening for genetic diseases. Future technological directions mainly focus on high-throughput, closed systems, and timeliness. Technologies such as NGS, melting curve analysis, isothermal amplification, rapid extraction, single-molecule sequencing and detection, CRISPR, etc., are the main directions.
- The first phase in the 1980s was based on in situ hybridization technology for the diagnosis of genetic diseases; the second phase in the 1990s was based on PCR technology, especially real-time quantitative PCR and digital PCR for molecular diagnostics; the third phase was based on gene chips for multi-index, high-throughput genetic testing; the fourth phase involves applications based on gene sequencing technology in non-invasive prenatal testing, screening for hereditary tumors, and individualized medication guidance for tumors.

POCT

- With the development of IVD instruments towards speed, simplicity of operation, and miniaturization, POCT has become one of the directions for the development of IVD. POCT offers numerous advantages such as convenience, efficiency, accuracy, and relatively low cost, with broader application scenarios, especially suitable for on-site, rapid, emergency, and home self-testing. POCT rapid diagnostic reagents feature immediacy and on-the-spot testing, eliminating the complex handling procedures of specimens in laboratory testing and shortening the treatment cycle to achieve medical effectiveness and economy. The characteristic of rapid testing makes it increasingly prominent and important in diagnosis, detection, and treatment, and it is currently in a stage of rapid development with high growth expected in the future. The biggest bottleneck in the development of POCT at present is the standardization and normalization of management.

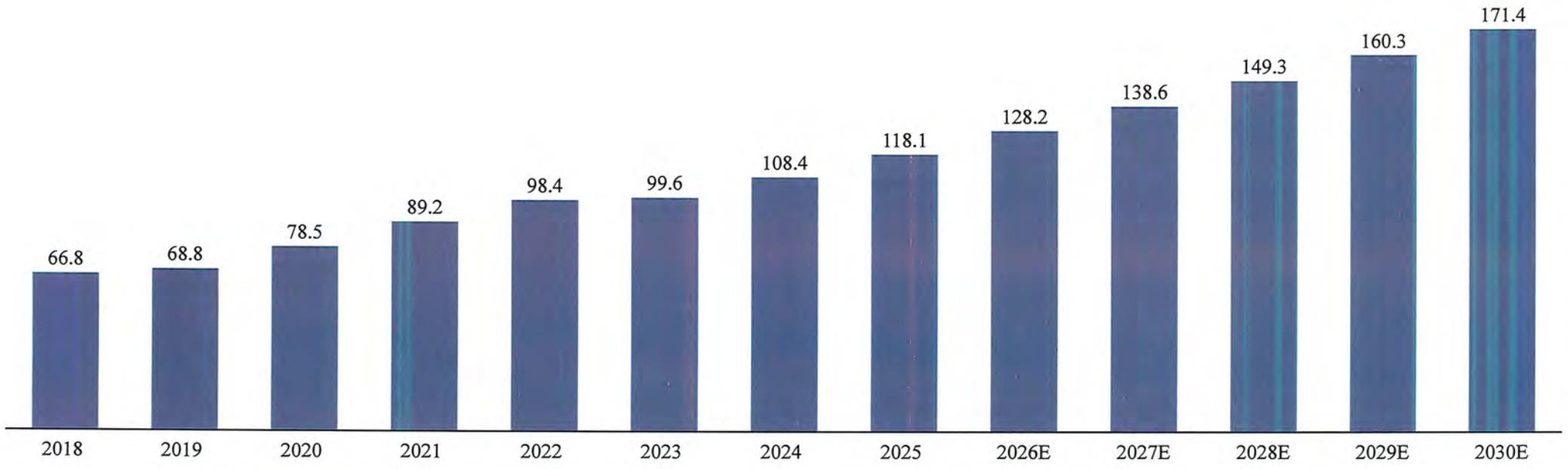
Source: China Insights Consultancy

Market size and forecast of in vitro diagnosis around the global

Market size and forecast of in vitro diagnosis around the globe*, 2018-2025, 2025-2030E

CAGR	2018-2025	2025-2030E
IVD market around the globe	8.5%	7.7%

Billion USD



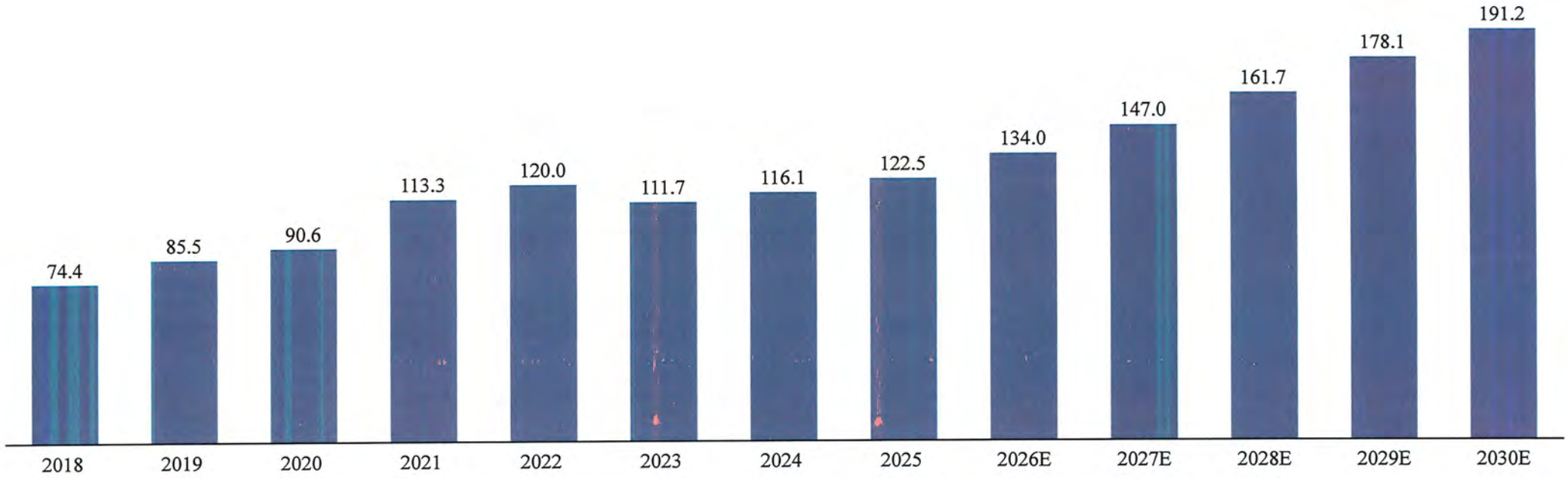
Source: China Insights Consultancy

Market size and forecast of in vitro diagnosis in China

Market size and forecast of in vitro diagnosis in China*, 2018-2025, 2025-2030E

	CAGR 2018-2025	CAGR 2025-2030E
IVD market in China	7.4%	9.3%

Billion RMB



Source: China Insights Consultancy

Market segment (1/4)-Overview of Coagulation Testing Market

Introduction, testing principle and clinical application of blood diagnosis

Definition of Blood coagulation

- Blood coagulation, or coagulation, refers to the process of blood changing from a liquid state to a non-flowing gel state, which is an important part of physiological hemostasis. The essence of blood coagulation is the process in which soluble fibrinogen in plasma becomes insoluble fibrin. The mechanism of blood coagulation includes platelet activation, adhesion and aggregation, as well as fibrin deposition and maturation.

Definition of Coagulation testing

- Coagulation testing refers to the accurate judgment of the patient's coagulation function through laboratory means, including the traditional laboratory coagulation four tests (plasma prothrombin time (PT), activated partial thromboplastin time (APTT), thrombin time (TT) and fibrinogen (FIB)) and the emerging thromboelastography test, etc. Through the detection of the corresponding indexes, it can be used for the preliminary diagnosis of coagulation disorders, the monitoring of anticoagulant drugs and the evaluation of routine coagulation function before surgery

Application

- The four items of coagulation are widely used in clinical practice as the indexes of routine detection of patients' coagulation status. It is a must-check item before operation, a pre-thrombotic examination item and an important examination item for monitoring clinical oral anticoagulant drug patients.
- For patients with acute and critical conditions, such as myocardial infarction (acute coronary syndrome), stroke, etc., and patients who may need to install stents or receive thrombolytic therapy, coagulation testing is an important clinical indicator to judge the development of the patient's disease and determine the follow-up treatment path of the patient.

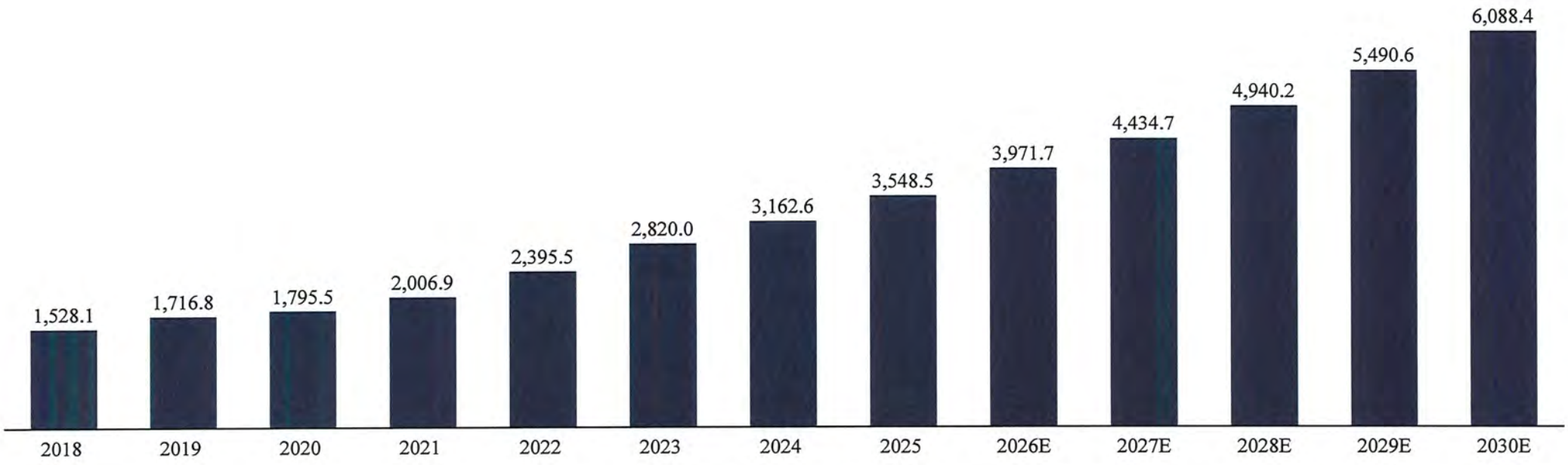
Item	Testing principle	Clinical application
PT	• When sufficient amount of tissue thromboplastin (tissue factor, TF) and calcium ions are added to plasma, the re-calcified plasma activates coagulation factor X into Xa through exogenous activation pathway in the presence of tissue factor, and Xa converts prothrombin into thrombin, and thrombin converts fibrinogen into fibrin and coagulates. The coagulation time required for determination is prothrombin time.	➢ PT is used to screen for the deficiency of exogenous and co-coagulation pathway coagulation factors (I, II, V, VII, X); ➢ PT is the primary monitoring indicator for oral warfarin therapy. ➢ PT can also be used to detect disseminated intravascular coagulation and to detect protein synthesis in the liver.
APTT	• When calcium ions and XII factor activators (diatomaceous earth, silica, etc.), APTT reagent containing phospholipids and calcium chloride are added to the plasma, fibrin is converted into insoluble fibrin and coagulates. The time required for coagulation is the activated partial thrombin interval.	➢ APTT is used to screen for deficiencies of endogenous and cocoagulation pathway coagulation factors (I, II, V, VIII, IX, X, XI, XII).Monitoring heparin anticoagulant therapy and clotting factor replacement therapy in hemophilia patients.
TT	• The "standardized" thrombin solution is added to the tested plasma, and the fibrinogen is converted into insoluble fibrin and coagulated, and the time required for determination is the thrombin time.	➢ TT mainly reflects the conversion time of fibrinogen to fibrin.
FIB	• In the presence of a high concentration of thrombin, the coagulation time of measured diluted plasma was inversely related to its fibrinogen (FIB) content. The coagulation time of the diluted plasma was measured and the resulting fibrinogen concentration was converted.	➢ FIB was used for quantitative determination of fibrin. ➢ FIB is the primary monitoring index of thrombolytic therapy.

Market size and forecast of Coagulation Testing around the globe

Market size and forecast of Coagulation Testing around the globe , 2018-2025, 2025-2030E

	CAGR 2018-2025	CAGR 2025-2030E
Coagulation devices around the globe	12.8%	11.4%

Million USD



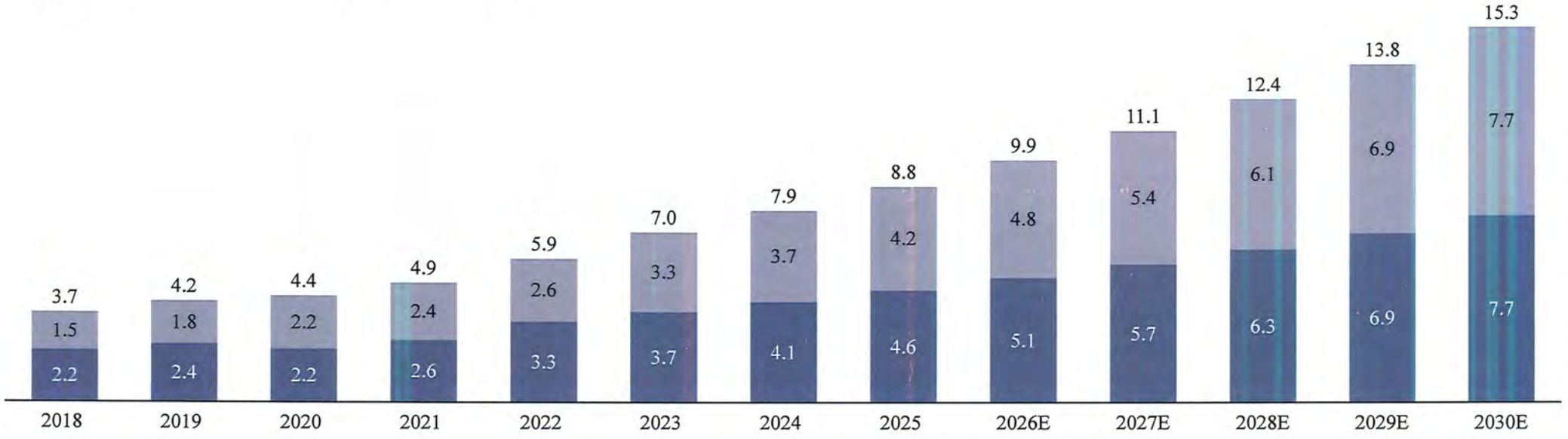
Source: China Insights Consultancy

Market size and forecast of Coagulation Testing in China

Market size and forecast of Coagulation Testing in China, 2018-2025, 2025-2030E

CAGR	2018-2025	2025-2030E
Equipment	15.1%	12.7%
Reagent	11.5%	10.7%
Overall	**13.3%**	**11.7%**

Billion RMB



Source: China Insights Consultancy

Thrombelastography (TEG)

Introduction of thrombelastography

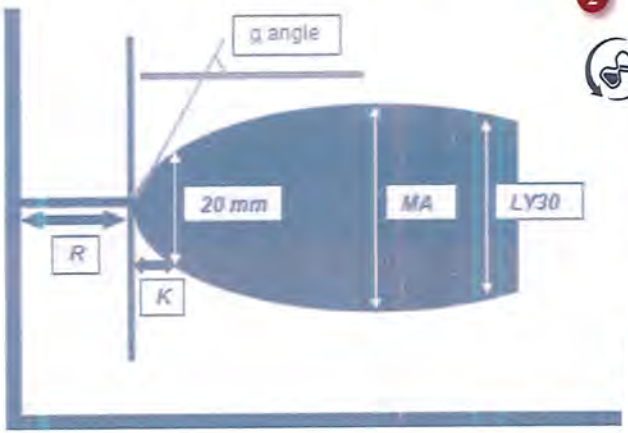
Definition:

- Thrombelastography (TEG), as an important test method for coagulation analysis and blood diagnosis, is an indicator that reflects the dynamic changes of blood coagulation (including the formation rate of fibrin, the dissolution state, the solidity of coagulation, and the elasticity).
- Medical workers can use this indicator to assist diagnosis and treatment activities and monitor thrombosis. At present, it has become the most important indicator for monitoring coagulation function in perioperative period, and it is also an important tool for judging whether blood products such as albumin are used clinically in major developed countries in the world

Thrombelastography instrument

➢ At present, thrombelastography is tested by thrombelastography instrument. It is a diagnostic analyzer for the overall evaluation of coagulation and fibrinolysis process. Natural whole blood method, whole blood recalcification method or plasma recalcification method are used to simulate slow venous blood flow in vitro, induce blood clot formation by adding activators, measure the time and amount of thrombosis with receptors, and draw blood coagulation speed and intensity curve (TEG) by computer.

Main Indexes:



1 ➢ **R time** (min) reflects the comprehensive effect of coagulation factors participating in the process of coagulation initiation

2 ➢ **K time** (min) represents the time required from the end of R time to the description range of 20mm, indicating that the rate of blood clot formation reflects the function of fibrinogen

3 ➢ **MA value** (mm) is the maximum amplitude of the curve, reflecting the maximum intensity of blood clot, mainly affected by platelet and fibrinogen two factors, of which the role of platelet accounted for about 80%

4 ➢ **LY30** (30%) represents the amplitude attenuation rate after the amplitude, indicating the degree of blood dissolution, and is an indicator of fibrinolysis diagnosis.

5 ➢ **α Angle** represents the Angle between the tangential line and the horizontal line from the point of blood clot formation to the maximum curve curve of the graph, and is also used to represent the rate of blood clot formation. Together with K time, it reflects the function of fibrinogen

- TEG will also calculate all the parameters to obtain a coagulation composite index (CI value) to reflect the coagulation comprehensive status of the blood sample, which has a predictive value for thrombus and bleeding risk

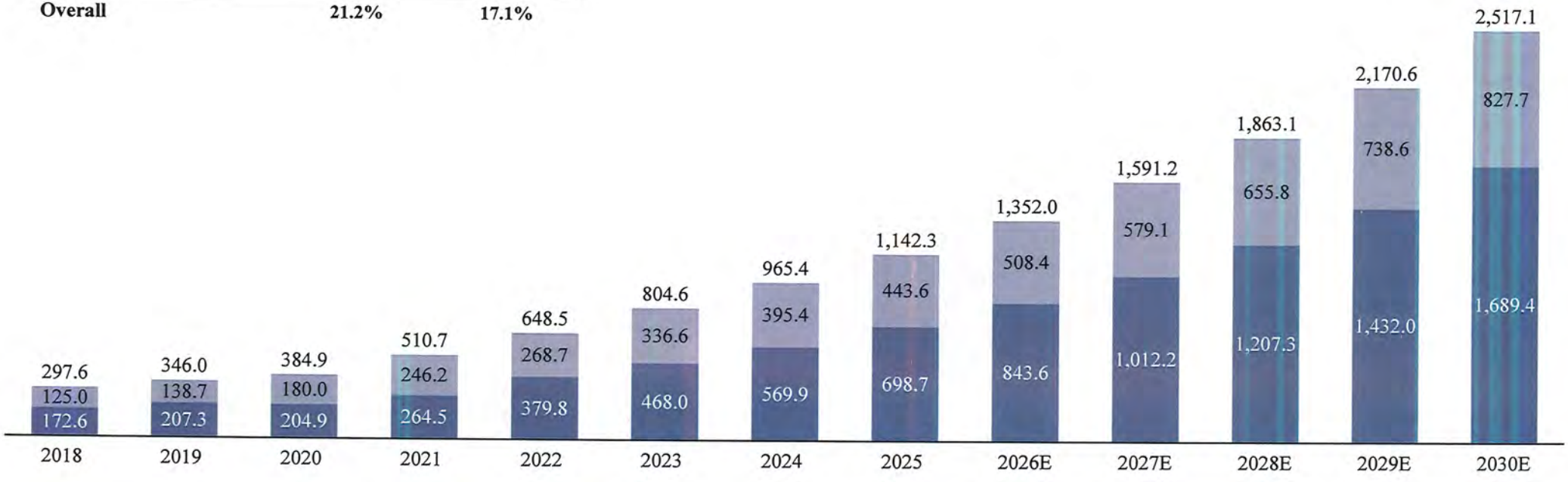
Source: China Insights Consultancy

Market size and forecast of TEG in China

Market size and forecast of TEG in China, 2018-2025, 2025-2030E

CAGR	2018-2025	2025-2030E
Equipment	19.8%	13.3%
Reagent	22.2%	19.3%
Overall	**21.2%**	**17.1%**

Million RMB



Source: China Insights Consultancy

Market segment (2/4)-Overview of Blood Grouping Market

Introduction of Blood Grouping

Definition:

- Blood groups are classified according to the blood group antigens contained in human blood, the most common type is ABO blood group (that is, type A, type B, type O and type AB), in addition to RH and other special blood group classification.
- The **ABO blood** group system is identified by adding the subjects' red blood cells to standard serum A (containing sufficient anti-B antibodies) and standard serum B (containing sufficient anti-A antibodies) to observe for agglutination. Test subjects for A and/or B antigens on their red blood cells.

ABO Blood group identification table

Standard serum + Subject red blood cells			Standard red blood cell + Subject serum			Blood type identified
Antiserum A	Antiserum B	Antiserum AB	Type A erythrocyte	Type B erythrocyte	Type O erythrocyte	
+	−	+	−	+	−	Type A
−	+	+	+	−	−	Type B
+	+	+	−	−	−	Type AB
−	−	−	+	+	−	Type O

Rh blood identification

➢ **Rh blood grouping** generally refers to the detection of D antigen in the Rh system, according to whether the patient's red blood cells carry D antigen, divided into Rh positive and Rh negative

Note: "+" means positive, "-" means negative

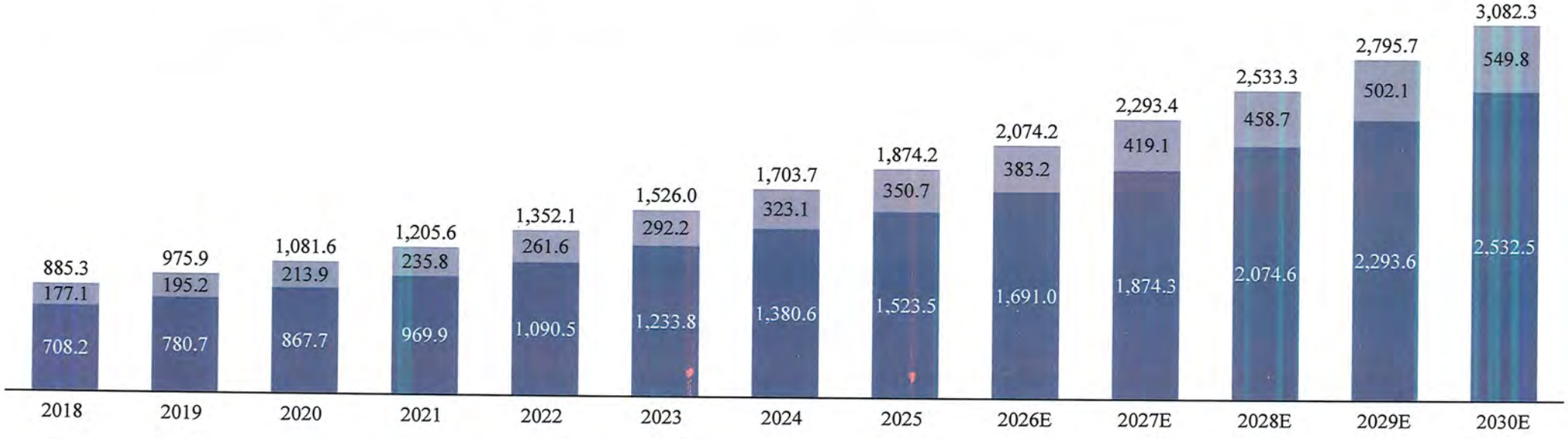
Source: China Insights Consultancy

Market size and forecast of blood grouping in China

Market size and forecast of blood grouping in China, 2018-2025, 2025-2030E

CAGR	2018-2025	2025-2030E
Equipment	10.0%	9.4%
Reagent	11.3%	10.7%
Overall	**11.3%**	**10.5%**

Million RMB



Source: China Insights Consultancy

Market competition landscape of blood grouping device in China, 2025

Competition landscape of blood grouping device in China, 2025

Ranking	Company	Company origin	Market share by sales value
1	Company FF	China	28.5%
2	Company GG	Overseas	19.2%
3	Company HH	China	14.3%
4	Company II	China	9.9%
5	**The Company**	**China**	**3.9%**

Notes:

(1) Company FF is a private company established in the 2000s and headquartered in Jilin, which primarily engaged in the research, development, production, and sales of in vitro diagnostic reagents, including microcolumn gel immunoassay technology, monoclonal antibodies, and molecular detection technology.

(2) Company GG is a public company established in the 1930s and headquartered in New Jersey, USA, which was listed on the Nasdaq and primarily engages in in vitro diagnostics of laboratory testing and blood grouping solutions.

(3) Company HH is a private company established in the 2000s and headquartered in Guangdong, which primarily engages in enzyme-linked immunosorbent assay, blood grouping, chemiluminescence immunoassay and point-of-care testing.

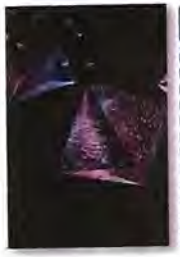
(4) Company II is a private company established in the 2000s and headquartered in Jiangsu, which primarily engages in blood cell serological grouping, molecular biological testing, and oncology testing solutions.

Market segment (3/4)-Overview of Chemiluminescence Market

Introduction, classification and comparison of chemiluminescence

- Chemiluminescence immunoassay is a new immunoassay technique after radioimmunoassay, enzyme immunoassay and fluorescence immunoassay. Chemiluminescence is a kind of molecular luminescence spectral analysis. Its basic principle is based on the principle that the concentration of the substance to be measured in the chemical detection system and the chemiluminescence intensity of the system show a linear quantitative relationship under certain conditions, and use the instrument to detect the chemiluminescence intensity of the system to determine the content of the substance to be measured.
- Since the late 1970s, with the development of new markers and labeling technologies, new solid phase materials such as magnetic particles, and automated immunoassay, chemiluminescence immunoassay has become an important routine immunoassay technology in clinical laboratories, covering cancer, cardiovascular, infectious diseases, endocrine and other fields, and basically covering all immunodiagnostic items. According to the way of chemiluminescence, it can be further divided into direct chemiluminescence, enzyme chemiluminescence, electrochemical luminescence and luminescent oxygen channel immune test.

Types of chemiluminescence	Direct chemiluminescence	Enzymatic chemiluminescence	Electrochemiluminescence	Luminescent oxygen channel
Chemical luminous agent	Acridinium ester	ALP/HRP	Tripyridinium ruthenium	Photosensitive particle
Immune response pattern	Sandwich method, competition method	Sandwich method, competition method	Sandwich method, competition method	Sandwich method, competition method
Optical signal	Flash	Glow	Electrically excited flash	Exciting light
Reaction speed	Fast	Relatively fast	Fast	Fast
Influence factor	Little	Much	Little	Little
Reaction type	Heterogeneous	Heterogeneous	Heterogeneous	Homogeneous



Direct chemiluminescence characteristics

1) The chemical reaction is simple, the magnetic particle is used as the separation agent, the coated area is increased, and the reaction speed is accelerated;
2) The luminous process is fast, and the whole process is completed within 2 seconds;
3) Direct labeling of antigens or antibodies does not affect the biological activity and physical and chemical properties of the markers, the binding is stable, and the reagent has a long validity period.

Key takeaway

- Since chemiluminescence method has the characteristics of non-radioactive contamination, automation, high sensitivity and high specificity, it has been widely used in clinical practice for various hormones, tumor markers, therapeutic drug concentration monitoring, infectious disease screening, prenatal examination of birth defects, and clinical determination of cytokines. It is a large subsection with the most abundant clinical application scenarios in the in vitro diagnosis industry.

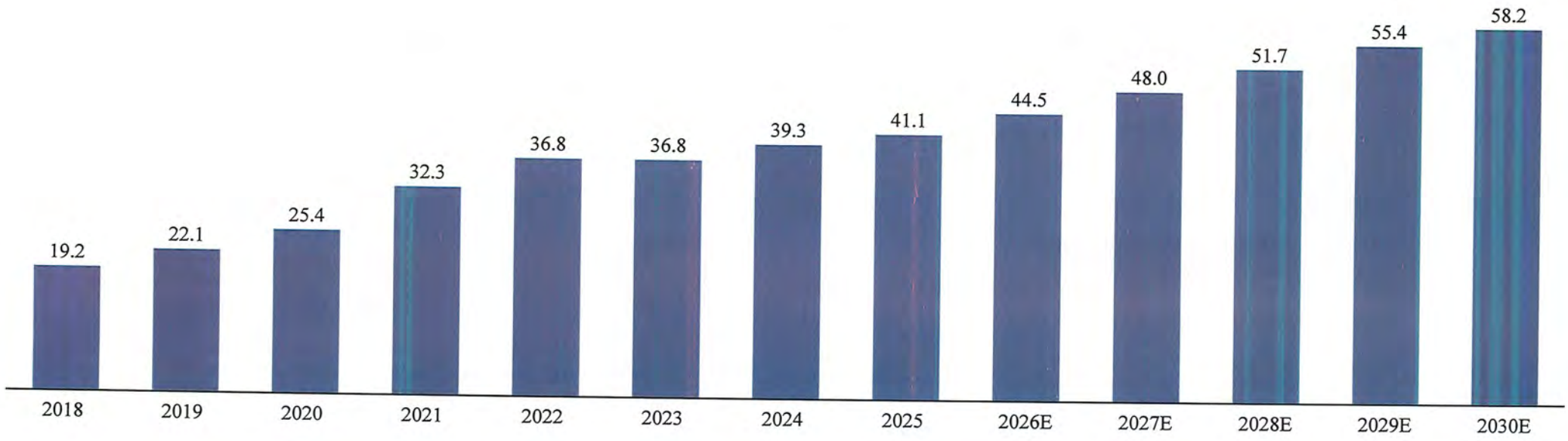
Source: China Insights Consultancy

Market size and forecast of Chemiluminiscence in China

Market size and forecast of Chemiluminiscence in China, 2018-2025, 2025-2030E

	CAGR 2018-2025	CAGR 2025-2030E
Chemiluminiscence market in China	11.5%	7.2%

Billion RMB



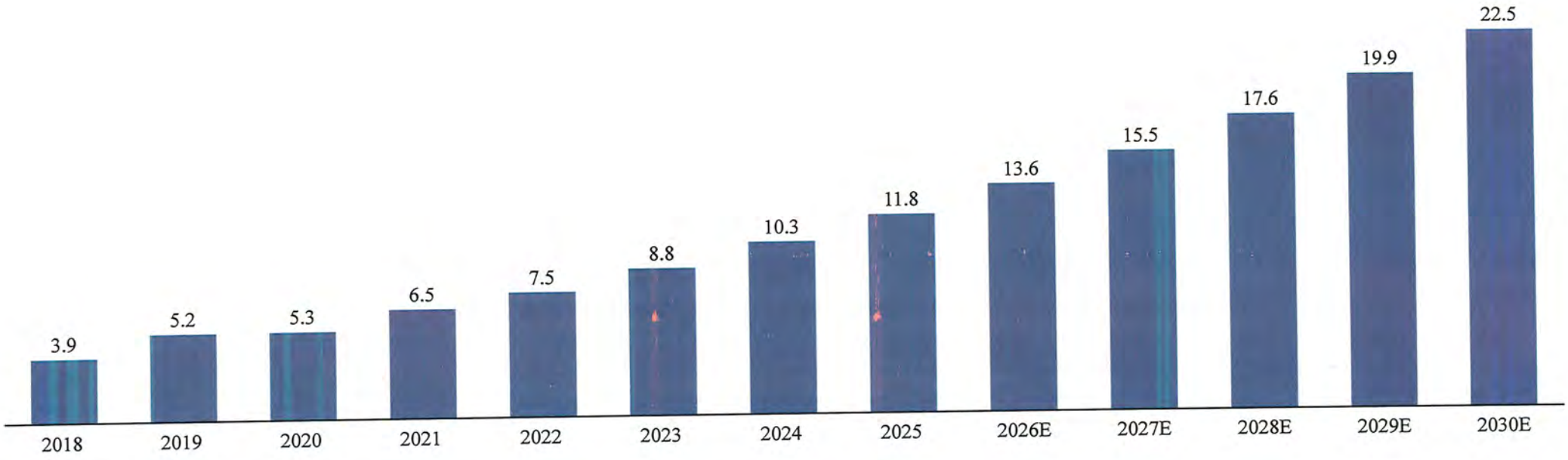
Source: China Insights Consultancy

Market size and forecast of Chemiluminiscence POCT in China

Market size and forecast of Chemiluminiscence POCT in China, 2018-2025, 2025-2030E

Billion RMB

	CAGR 2018-2025	2025-2030E
Chemiluminiscence POCT market in China	17.3%	13.7%



Source: China Insights Consultancy

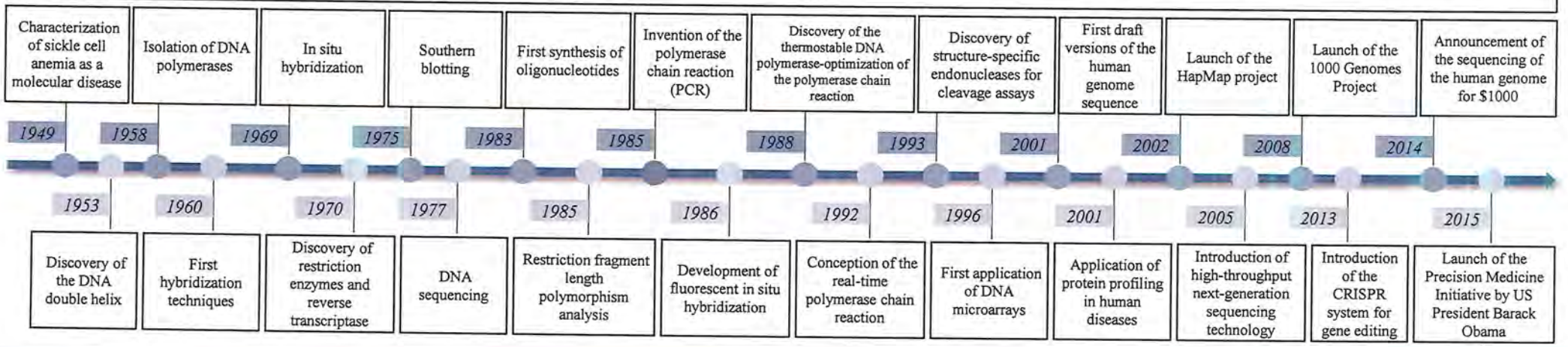
Market segment (4/4)-Overview of Molecular Diagnostics

- molecular diagnostics has experienced decades of development and has shown its significance, efficacy and more potential in the in vitro diagnosis of cancer, and more innovative molecular diagnostics technologies will revolutionize the precision diagnosis for cancer

Introduction and development history of molecular diagnostics

Introduction to molecular diagnostics

- Molecular (or nucleic acid) diagnosis of human diseases refers to the **detection of pathogenic (like cancer) and/or benign genomic variants in DNA and/or RNA samples** in order to facilitate **detection, diagnosis, subclassification, prognosis and monitoring of response to treatment**. In simple terms, all methodological technologies based on the level of molecular biology belong to molecular diagnostics technologies, **such as PCR and gene detection**. molecular diagnostics is increasingly used in **oncology, epidemiology, clinical chemistry, and reproductive health (NIPT).**
- Benefiting from discoveries in the fields of molecular biology and genomic technology, molecular diagnostics have revolutionized the way clinical and public health laboratories study **the genomes of humans, viruses, and other microbes, and the products their gene encode** in the past few decades since 1940s.
- The identification and fine characterization of the genetic basis of inherited diseases is vital for **the accurate provision of diagnosis. Gene discovery**, via high-throughput methods, such as next-generation sequencing or genome-wide association studies, provides invaluable insights into the mechanisms of disease, and genomic markers allow physicians to not only **assess disease predisposition** but also to **design and implement accurate diagnostic methods**. Molecular diagnostics has gradually become a clinical reality with its roots deep into the basic science of gene expression and gene function.



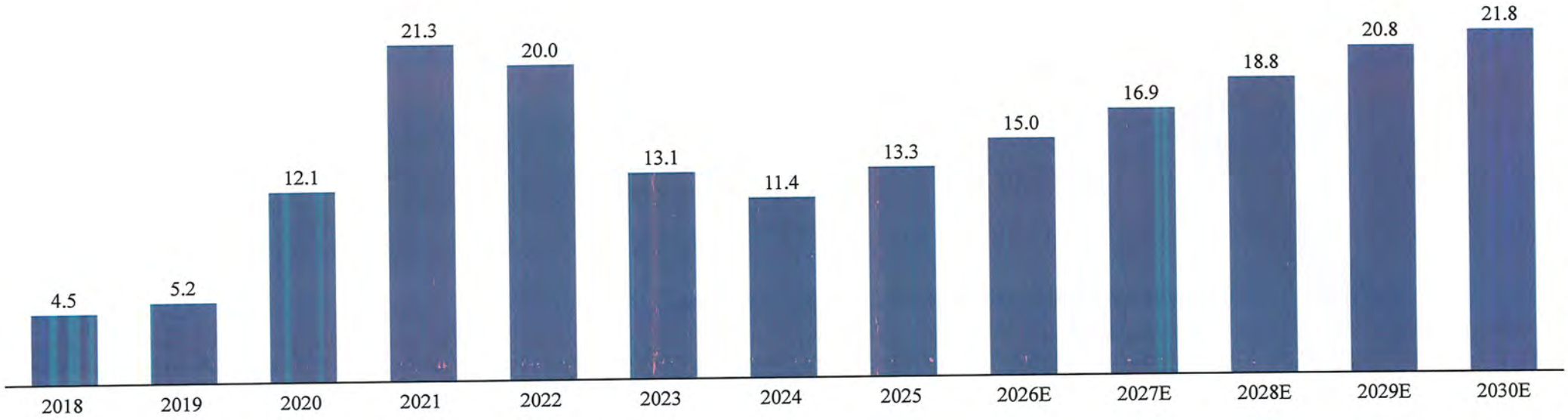
Source: China Insights Consultancy

Market size and forecast of PCR in China

Market size and forecast of PCR in China, 2018-2025, 2025-2030E

Billion RMB

CAGR	2018-2025	2025-2030E
PCR market in China	16.7%	10.4%



Source: China Insights Consultancy

Market Challenges and Entry Barriers of In Vitro Diagnostics Industry

Product registration and quality control requirements.

- As regulated medical products, in vitro diagnostic reagents and instruments are subject to mandatory registration or filing with the NMPA. In addition, companies must establish and maintain a robust quality management system in accordance with the Good Manufacturing Practices for Medical Devices. These requirements result in lengthy registration cycles and substantial capital investment, forming an administrative and compliance barrier to market entry.

Capital-intensive "Reagent + Instrument" business model

- The in vitro diagnostics industry commonly adopts a bundled business model that combines the sale of diagnostic instruments with the ongoing sale of proprietary reagents. To secure long-term customer retention, companies must bear the upfront costs of instrument R&D, manufacturing, or depreciation from equipment placement. New entrants without sufficient financial strength or a sustainable pipeline of proprietary reagents often find it difficult to operate under this model.

Sales channel establishment and specialized service requirements

- Effective distribution of in vitro diagnostics products relies on extensive sales networks that cover hospitals, third-party laboratories, and primary healthcare institutions. In parallel, dedicated sales and technical support teams with professional clinical laboratory knowledge are needed to deliver timely services such as instrument installation, user training, maintenance, and troubleshooting.

Source: China Insights Consultancy

Market drivers of IVD market

Market drivers of IVD market around the globe and in China

Increasing patient number	• As the global phenomenon of an aging population becomes more pronounced, the coexistence of various chronic diseases has become a major issue affecting the health of the elderly. How to prevent, treat, and manage chronic diseases has become a topic of concern for all parties. The above situation necessitates the support of In Vitro Diagnostics (IVD) for diagnosis and monitoring, thereby promoting the rapid development of IVD.
Increased awareness of disease diagnosis	• With the significant improvement of the living consumption level of Chinese residents, the awareness of health management of residents has gradually increased, physical examination has become normal, the demand for disease diagnosis has continued to rise, and more diversified physical examination items such as preventive physical examination have promoted the consumption of in vitro diagnostic reagents and equipment. At the same time, due to the vigorous promotion of DRG and the increasing popularity of the concept of precision medicine in the medical service side, the frequency of doctors using in vitro diagnosis is gradually increasing, and the demand for in vitro diagnostic reagents and equipment in hospitals, clinics and community health service centers is rising, promoting the development of the in vitro diagnosis market.
Guideline recommendation	• In many guidelines and consensus, in vitro diagnosis is considered to be an important step in disease prevention and diagnosis and is the key to ensuring human health. For example, the WHO List of Essential Diagnostics, which has been published annually since 2018, clearly recommends a basket of in-vitro diagnostics that all countries should make available at health sites and laboratories to improve the timeliness of diagnosis and save lives. As testing influences most medical decisions, the use of appropriate diagnostic tests in all countries will help inform evidence-based treatment and responsible drug use, thereby improving resource allocation and health outcomes.
Expanded application scenarios	• With the increasing variety of IVD products and the continuous improvement of techniques, the application scenarios of IVD are constantly expanded, gradually expanding from the traditional hospital laboratory to the third-party medical diagnosis institutions, physical examination centers, families and other primary health care institutions. Enriched application scenarios have fully released the demand for different types of in vitro diagnostic reagents, which has promoted the rapid development of the industry.
Increased health insurance coverage	• The core of medical insurance fee control is to improve the use efficiency of medical equipment and drugs, and in vitro diagnosis affects about 60%-70% of medical decisions. The development and application of in vitro diagnosis industry helps optimize the use process of medical equipment and drugs, and conforms to the purpose of medical insurance fee control. Therefore, the state has been encouraging and supporting in vitro diagnosis. The current promotion trend of medical insurance is very conducive to the overall development of the in vitro diagnosis industry.
Application of Digitalization and Automation Technologies	• The development of artificial intelligence, machine learning, big data analytics, and other technologies is making IVD equipment more intelligent and automated. These technologies improve the accuracy and efficiency of diagnostics, reduce human errors, and can handle more complex datasets, offering deeper insights to physicians.

Source: China Insights Consultancy

Future trends of IVD market

Future trends of IVD market around the globe and in China

Global Health Initiatives and Collaborations	• Increasing global health initiatives and international collaborations are expected to drive advances in IVD to address global health challenges. This includes efforts to combat antimicrobial resistance, improve infectious disease surveillance, and enhance chronic disease management on a global scale. Partnerships between governments, NGOs, and private sectors are crucial in mobilizing resources and coordinating efforts for research, development, and deployment of IVD solutions worldwide.
Domestic substitution	• For IVD equipment, consumables, and reagents, domestic companies have achieved a certain market share. However, the raw materials of IVD have been monopolized by international companies such as Roche, ThermoFisher, HyTest, Meridian life science etc. for a long time. At present, domestic IVD raw material manufacturing enterprises are mostly small in scale, single in product structure, few in high-end varieties, and the homogenization competition is more serious. With the development of science and technology in the future, more local enterprises will appear in IVD raw material market.
Regulatory Innovations and Harmonization	• As the IVD landscape evolves, regulatory frameworks are adapting to ensure patient safety while fostering innovation. Efforts by group like the IMDRF (International Medical Device Regulators Forum) aim to harmonize the regulatory requirements for medical products that vary from country to country to streamline the approval process for new IVD products. This global approach facilitates quicker access to the latest diagnostics technologies and encourages innovation by simplifying the path to market for new developments.
Consumer Empowerment and Health Literacy	• An informed and health-conscious consumer base is pushing for more control over their health management, including access to diagnostic tests. The rise in health literacy is driving demand for direct-to-consumer (DTC) diagnostic tests and wellness testing, encouraging IVD companies to develop consumer-friendly testing kits and digital health tools that allow individuals to monitor their health conditions or risk factors more proactively.
Preconception and prenatal testing	• Preconception and prenatal testing, also known as reproductive genetic testing, has become increasingly prevalent. This includes carrier screening, preimplantation genetic testing, and prenatal screening/diagnosis, which provide valuable insights into genetic disorders and chromosomal abnormalities in embryos or fetuses. As awareness grows and technology advances, more individuals and couples are opting for these tests to assess the risk of passing genetic conditions to their offspring or to make informed decisions about pregnancy management. This rising demand for reproductive genetic testing directly stimulates the demand for related diagnostic products and services in the in vitro diagnostics market.
Expansion of grassroots maternal and child health hospitals	• The expansion of grassroots maternal and child health hospitals, especially in underserved regions, contributes to improved access to healthcare services for expectant mothers and infants. These hospitals typically offer a wide range of maternal and child healthcare services, including routine prenatal care, childbirth assistance, and postnatal care. With more hospitals being established or upgraded to provide comprehensive care, there is a corresponding increase in the demand for diagnostic equipment and consumables necessary for conducting various tests and screenings. This includes instruments for biochemical analysis, molecular diagnostics, and imaging techniques, among others, all of which fall under the umbrella of in vitro diagnostics.

Appendix

- The company (i) ranked first in China's infusion workstation market in terms of sales value in each year from 2018 to 2025, and (ii) ranked first in the enteral feeding pump market in terms of sales value in each year from 2021 to 2025.
- The company (i) ranked second by sales value in China market for minimally invasive intervention consumables targeting the digestive system in each year from 2022 to 2025; and (ii) ranked among top five in the single-use cholangioscope market of China in terms of sales value in each year from 2023 to 2025.
- The company ranked among top five in China's blood grouping device market in terms of sales value in 2025.
- In 2025, the top ten market players accounted for approximately 44.7%, 72.2% and 71.1% of the life support, minimally invasive intervention, and in vitro diagnostics markets in China, respectively, in terms of sales value.
- The company's innovative and high-quality medical products, along with our extensive coverage across clinical departments, position us as one of the most comprehensive medical device companies in China.
- The company is one of the very few players in China to have achieved this extensive global network at scale, which offers significant advantages such as closer proximity to local customers worldwide and the diversification of regional and political risks.
- Strategic acquisitions have emerged as a key growth strategy in the medical device industry, particularly among global players seeking to broaden their capabilities across multiple specialties and geographic markets.
- The company ranked first in China's infusion workstation market in 2025, with a market share of 26.1% in terms of sales value.
- The company's SYS series introduced the first touchscreen-equipped syringe pump in China's market.
- The company developed and launched the world's first remotely controlled infusion system, the MS-100 Infusion System.
- The company ranked first in China's enteral feeding pump market in 2025, with a market share of 26.9% in terms of sales value.
- Since its launch in 2023, The company's Cholangioscope Direct Visualization System has maintained a top-five position in China's single-use cholangioscope market by sales value. In 2025, it accounted for approximately 7.5% of the market share, ranking fourth nationwide.
- PCR has been widely used as a standalone molecular diagnostic technique and serves as a crucial amplification step in next-generation sequencing.
- In 2025, the top ten market players for infusion workstations accounted for a substantial portion of the market share both the Chinese and global markets. In the minimally invasive intervention field, the Chinese market is dominated by a few leading players, with imported brands holding a slight advantage. In the in vitro diagnostics field, competition is more fragmented due to the variety of sub-markets, such as coagulation, chemiluminescent assays, blood grouping, and molecular diagnostics.
- There were 35,758 certified medical device companies in China in 2025 and approximately 95% of M&A transactions in China's medical device sector over the past two years had a valuation of less than RMB1 billion.

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