CHINA

Expansion of elderly care robots mooted

Officials champion the advancement of tech to offset nursing labor shortage

By **LI MENGHAN** and **ZHAO YIMENG**

As China grapples with a shortage of nursing personnel, national lawmakers and political advisers have turned to technology, proposing elderly care robots as a practical and warm solution for an aging society during the recently concluded two sessions.

"As China enters the stage of moderate aging, we all expect that robots will become the mainstay of elderly care in the future, compensating for the shortage of nursing labor and addressing issues such as caregiver impatience, inadequate attention, and even some extreme cases of misconduct," said Zhao Xiaoguang, a member of the 14th National Committee of the Chinese People's Political Consultative Conference and a professor at the University of Chinese Academy of Sciences.

Zhao said robots, especially humanoid ones with flexible joints and humanlike problem-solving capabilities, can assist caregivers in performing physically demanding or repetitive tasks in elderly care.

These include transferring elderly people from a bed to a wheelchair, providing feeding assistance that requires sustained patience, and delivering storytelling services to offer emotional companionship.

"Currently, China leads the global development of humanoid robots, demonstrating strong competitiveness in key technologies and product performance," she said, adding that their large-scale application is still in an exploratory phase worldwide.

Unlike industrial robots, which have evolved over 70 years, humanoid robots have rapidly advanced in the past few years with the development of AI large models. However, they face major challenges in areas such as technical maturity, social acceptance, liability definition, and privacy security.

"The sustainable and rapid development of an emerging technology often require concerted efforts from developers, enterprises, the public, and government," said Zhao, highlighting the importance of aligning technological design with the well-being of the elderly, directing research and development to meet market demand, and adopting an agile governance approach by adjusting regulatory intensity based on the maturity of the technology.

Lu Jianhua, a CPPCC National Committee member and an academician with the Chinese Academy of Sciences, also expressed positive prospects for the future development of elderly care robots.

Lu, however, noted that in current nursing institutions, the service capabilities and functions of elderly care robots are confined to basic tasks and require further upgrading. "Elderly care robots should serve as partners to human caregivers, not replacements," he added.

Chen Wei, a deputy to the 14th National People's Congress and associate dean of the Third Affiliated Hospital of Zhejiang Chinese Medical University, in an interview with The Paper, stressed the need for a new "AI+ human" model to ensure high-quality, dignified last days for the elderly.

Chen suggested that enterprises should increase R&D investment to develop robots and smart home tools that would cater to the needs of the elderly.

Chen also proposed that the government strengthen policy support to reduce the price of AI-powered elderly care devices, making them affordable and accessible for all. In addition, unified age-friendly standards for such technologies should be introduced.

Data from the National Bureau of Statistics showed that by the end of 2025, the population aged 60 and above in China reached 323 million, accounting for 23 percent of the total population. It is estimated that this population group will surpass 400 million by around 2035, accounting for over 30 percent of the total population, according to the National Health Commission.

To address this, a proactive response to population aging is emphasized in both this year's Government Work Report and the outline of the 15th Five-Year Plan (2026-30) for national economic and social development.

Both documents propose expanding the supply of inclusive elderly care services and promoting the integrated development of elderly care services and industries, ensuring that the seniors are well cared for, engaged, and able to enjoy their later years.

Elderly care will extend from nursing institutions to families, communities, and hospitals, and intelligent service systems, along with intelligent auxiliary equipment, will greatly alleviate the strain.

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Joining the ranks

New recruits clad in camouflage uniforms, with red flowers — a traditional Chinese symbol of honor — pinned to their chests, prepare to depart for military service during a send-off ceremony in Wanzai county, Jiangxi province, on Sunday. The event marked the enlistment of soldiers for the first half of 2026. DENG LONGHUA / FOR CHINA DAILY

Leukemia therapy tackles relapse risks

By **LI MENGHAN**
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Chinese scientists, with the aim of enhancing leukemia treatment, have developed a kind of "double-sided tape" that helps the body's own soldiers — engineered immune cells — hold onto cancer cells more tightly, making treatment far more effective without complicated genetic modifications.

The breakthrough, published recently in the journal Cell, offers a promising new strategy to combat relapse, which occurs in more than half of patients following CAR-T therapy. The approach works by both enhancing the CAR-T cells' ability to spot their target and delivering chemotherapy drugs directly to leukemia cells.

CAR-T therapy, hailed as "groundbreaking" after its introduction, involves extracting a patient's immune cells, known as T cells, modifying them in a laboratory and then reinfusing them into the patient to target and destroy leukemia cells. However, leukemia cells can evade this attack by altering or losing the antigens that CAR-T cells are designed to recognize, which can ultimately lead to relapse.

The traditional method to address this problem involves returning to the lab and redesigning the CAR-T cells through additional gene editing — a process that is time-consuming, expensive and technically challenging. Now Chinese scientists have developed a novel biomimetic platform to address the problem after analyzing a large number of clinical samples.

Their analysis revealed that CD71 — a protein involved in transporting iron into cells — is highly expressed on leukemia cells across different leukemia types and disease stages, as well as on CAR-T cells.

Based on this feature, the researchers precisely controlled the solvent environment to induce the ordered self-assembly of CD71 in the lab, creating a molecular "double-sided tape" known as the ferritin aggregation cell engager, or FACE.

During CAR-T cell preparation, the FACE platform can be anchored to the surface of CAR-T cells through CD71 after just 30 minutes of co-incubation. Once infused, FACE also attaches to CD71 on leukemia cells, bridging the two cell types to enhance their interaction and boost the CAR-T cells' ability to recognize and eliminate leukemia cells.

In mouse models using patient-derived leukemia cells, the approach achieved the same therapeutic effect as conventional CAR-T therapy using only one-fifth of the cell dose, while also significantly reducing side effects.

Notably, even when antigen levels dropped below 10 percent of normal — a condition that makes leukemia cells almost "invisible" to conventional CAR-T cells — the FACE-enabled CAR-T cells were still able to target and kill cancer cells, with all tested mice surviving.

Taking advantage of the platform's cage-like structure, the researchers also developed a drug-loaded version that delivers chemotherapy directly to leukemia cells. This integration of CAR-T therapy and chemotherapy further boosts the therapeutic effect, especially against cancer cells with antigen-negative "escapees".

"Our FACE platform is composed of an endogenous protein and polymer derivatives approved by the United States Food and Drug Administration, and it can be prepared through a simple and scalable process," said Wei Wei, corresponding author of the study and a professor at the Chinese Academy of Sciences' Institute of Process Engineering, highlighting the method's clinical translation potential.

"Importantly, it can be seamlessly integrated into existing CAR-T cell manufacturing workflows as a culture supplement that is co-incubated with CAR-T cells prior to infusion, without any additional genetic engineering," Wei added.

Ma Guanghui, an author of the study and an academician of the Chinese Academy of Sciences at the Institute of Process Engineering, said the FACE platform was validated in multiple mouse models and human patient samples, demonstrating "its broad applicability across multiple leukemia subtypes and treatment-resistant settings". To further support clinical translation, Ma said the team also established an efficacy database and developed an AI-assisted predictive framework capable of accurately forecasting FACE-mediated enhancement.

Peer reviewers at Cell described the findings as "a promising translational approach" to improving responsiveness against leukemia and other blood cancers. They emphasized that the strategy's lack of additional genetic engineering could allow it to be implemented in a wide variety of clinical settings and highlighted its potential to combat the variability of leukemia antigens.

Stronger support urged for rural senior citizens

By **XU NUO** and **ZHU XINGXIN**

Lawmakers have proposed strengthening policy and hiking financial support for China's 120 million rural elderly, who make up about a quarter of the rural population.

"The plight of elderly people in rural areas is that they often have limited pensions and have to rely on their children for support. However, with many children migrating to urban areas for work and those who remain struggling with low-wage jobs and farming, elderly care services are often unaffordable," said Ma Jinlian, a deputy to the National People's Congress, during this year's two sessions.

Substantial national support for rural elderly care is therefore crucial, said Ma, who oversees three local elderly care institutions in Lyuliang city, Shanxi province.

While China has made significant efforts to improve the supply and quality of rural elderly care services in recent years, more effective implementation is needed to ensure that policies translate into tangible benefits for seniors, she said.

Ma cited a policy introduced by the Ministry of Civil Affairs and the Ministry of Finance that provides a monthly subsidy of up to 800 yuan ($116) for elderly care services to seniors with moderate or severe disabilities.

However, applying for and redeeming the subsidy through online platforms poses challenges for many rural seniors, she said.

"Many elderly people in rural areas are not adept at using smartphones, and some are reluctant to trust others with their phones, making it cumbersome to claim the subsidy," Ma said.

Ma Jinlian, an NPC deputy, talks with an elderly resident at a senior care service center in Xiaocheng village, Lyuliang city, Shanxi province, on Feb 28. ZHU XINGXIN / CHINA DAILY

She suggested streamlining the process, including distributing subsidies directly to seniors or applying them to offset costs at elderly care institutions, to reduce the burden on both seniors and employees at rural care facilities.

Since becoming an NPC deputy in 2023, the Shanxi native has consistently submitted suggestions related to rural elderly care during the annual two sessions.

"Each of my suggestions has received a response from the government, and many have been implemented," she said.

Xu Lianhong, another NPC deputy from Shanxi, echoed Ma's view.

"The development of rural elderly care requires collaboration among the government, care institutions, families and society," said Xu, who works at an elderly care institution in Zhongyang county in the city of Lyuliang.

The county is home to more than 6,500 seniors aged 70 and above, many of whom live alone or have been left behind.

The county government launched an elder assistance project in 2023, allocating 10 million yuan annually to fund public services for seniors and provide operational subsidies to local elderly care institutions.

The county currently has more than 100 elderly care facilities, including nursing homes, community dining centers, day care centers and elderly assistance courtyards managed by local villagers.

These facilities serve nearly 5,000 elderly and vulnerable individuals, providing services that include meals, cleaning, bathing and medical assistance.

Xu's institution, a medical-care integrated nursing home with 200 beds, charges between 2,000 and 4,000 yuan depending on residents' needs. The county government supports the facility by subsidizing each bed with 200 yuan and covering rental costs.

While the nursing home is currently just breaking even, Xu said it is expected to become profitable in the long run.

"Elderly care is a long-term commitment, not an immediate profit-maker. Building a good reputation and attracting more residents is key to achieving profitability," Xu said, emphasizing the government's role in ensuring the sustainability of care institutions.

Xu also called for eliminating occupational bias and discrimination against workers in the elderly care sector. She stressed the need to attract skilled professionals in order to build a comprehensive talent pool.

The goal, Xu said, is to allow seniors to enjoy their later years in a "dignified, warm and happy manner".

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Innovation elevates gold exploration

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On a wide field in Wuchengdaren village in Laizhou, Shandong province, a 30-meter drilling tower rises against the flat farmland horizon. In about six months, this rig will have pierced nearly 3 kilometers into the Earth, retrieving rock cores that could verify the presence of gold deposits.

The project, launched on Thursday by the Shandong Provincial Bureau of Geology and Mineral Resources, is part of a broader campaign comprising 36 exploration projects with a total investment of 76 million yuan ($11 million). The goal is to add 20 to 50 metric tons of gold reserves in the Jiaodong area within a single year.

Jiaodong, a peninsula along the southern coast of the Bohai Sea in eastern Shandong, already holds a quarter of China's proven gold reserves, making it the world's third-largest gold district.

However, after intensive mining for decades, even centuries in some places, easily accessible surface and shallow deposits have long been exhausted in the region.

Therefore, efforts in recent years have been redirected toward deeper explorations into the Earth.

In the past, drilling depths were mostly below 2,000 meters. Nowadays, the bureau has mastered the core technology of ultra-deep, ultra-inclined and ultra-difficult small-diameter drilling.

The bureau now undertakes 83 percent of the nation's scientific drilling projects that are above 3,000 meters. It even set a new record of full core extraction at a depth of 2,843.17 meters in global marine scientific drilling.

In 2023, the No 6 geological team uncovered a large gold deposit in Xilaokou village, Rushan of Weihai, with nearly 50 tons of gold metal identified, making it the largest gold deposit in the Weihai area to date and marking a significant breakthrough in deep mineral exploration in the northeastern margin of the Jiaolai Basin.

Contrary to traditional methods, modern gold prospecting no longer involves wandering onto a field and digging at random. The process begins months before the first drill bit turns.

"We conduct geological research with physical detection methods such as electrical and magnetic surveys, along with chemical analysis, to identify subsurface anomaly zones," said Ma Xiaopeng, deputy director of the exploration engineering division with the No 6 geological team of the provincial bureau.

"Once we pinpoint the target areas, drilling helps us further narrow down the scope," he said.

Once cores are extracted, field geologists will analyze the samples in laboratories. "After receiving assay results, we comprehensively analyze the ore body's occurrence conditions, grade and depth," Ma added.

With technological innovation, the bureau has continuously opened new frontiers.

In Laizhou Bay, the bureau has adopted 2D reflection seismic technology — typically used on land — for marine exploration of the gold-bearing fault zone in recent years.

"We are building digital models that integrate geological, geophysical, geochemical, and drilling data with artificial intelligence," said Zhang Chengwei, Party secretary and director of the provincial bureau. "We are shifting gold prospecting from an experience-driven to an intelligence-driven model."

At the end of 2025, 10 departments in Shandong jointly issued the implementation plan for high quality development of gold industry (2025-2027), focusing on promoting deep exploration in the Jiaodong region.

The push comes as China continues to lead the world in both gold production and consumption. Last year, demand for gold bars and coins surpassed that for gold jewelry for the first time, a structural shift in the market. Industrial demand, particularly from electronics and new energy sectors, is also rising steadily.

"Ensuring national resource and energy security is the primary responsibility of the geological and mineral system," Zhang said.