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Systemic Design for Change in Community Care for Older Adults: the Shanghai Jing'an "five-bed linkage" care model

Jing Chen, Wen Lu, Min Hu, Qi Chen, Amina Pereno, Silvia Barbero and Long Liu

The Linfen Community is situated in the "shanty kingdom" of Zhabei District, towards the northern part of Shanghai's city centre. In 2015, Zhabei District merged with the economically affluent Jing'an District to form the new Jing'an District. This district's demographic structure resembles an "inverted pyramid," with a significant proportion, 41.5%, of its population being older adults aged 60 and above. As one of the foremost areas in Shanghai to confront profound ageing challenges, the Linfen Community Health Service Centre (LFCHS) is at the vanguard of fostering innovations in community nursing to address the healthcare accessibility delays prompted by an ageing population.

This research aims to enhance the existing care model by integrating systemic design methodologies. It aims to dismantle the "last kilometre" barrier in older adult care, facilitate the transition from China's innovative "Five-Bed Linkage" service model to a sustainable care model, and forge a new service model while making recommendations for future advancements. Through the interpretation of systemic design tools, it analyzes the current state of integrated care services in both China and globally. By employing qualitative interviews and utilizing stakeholder maps, among other design tools, the study seeks to thoroughly understand the current service model, identify challenges from a cross-cutting scale perspective, explore challenges, and engage various stakeholders in the co-creation of a new model via design workshops. The outcome of this research is developing a tailored approach for older adult individuals at varying stages of the disease, aiming to construct a more complete, efficient, and human-centred

integrated healthcare and care service system. This system is envisioned as sustainable from different perspectives and information dissemination channels. This comprehensive approach promises to address current needs and adapt to future developments in healthcare provision for ageing populations.

KEYWORDS: community care, care model, five-bed linkage, older adults, systemic design

RSD TOPIC(S): Health & Well-Being

Background

The global trend of population ageing is significantly reshaping societies worldwide, particularly in China, where Shanghai stands as the epicentre of this demographic shift (United Nations, nd). As the city with the world ‘s largest and fastest-growing ageing population, Shanghai is characterised by its high density of older adults. Within this city, the Linfen Community Health Service Centre (LFCHS) in Jing'an District, where the project is located, results from the merger of Zhabei District, Shanghai's "Kingdom of Shantytowns," and the economically developed "Former Jing'an District." It has a complex demographic structure, and a population of older adults over 60[1] ranks 4th out of the 16 large communities in Shanghai, accounting for 41.5 per cent of the total population (Shanghai Statistics Bureau, 2023).

As Jing'an District moves into a profoundly ageing society, the community care challenges for older adults are becoming more numerous and complex. Ageing presents both challenges and opportunities. It will increase demand for primary and long-term care, require a more significant and better-trained workforce, and intensify the need to make physical and social environments more age-friendly (World Health Organization, nd). Since 2013, China has made yi-yang-jie-he, the integration of health care with long-term care across care settings, a priority on the aged-care policy agenda; however, the progress on integration has been slow (Chen et al., 2022). To improve the quality of life of older adults and continuously enhance the level of basic public services for older

[1] In China, the national legal retirement age for enterprise workers is 60 for men, 50 for women workers and 55 for women cadres. Based on this criterion, we will temporarily use people over 60 years of age as the basis for dividing China's older population groups.

adult care, Jing'an District has implemented measures such as the "15-minute Happy Ageing Life Circle" to continuously improve the home-based older adult care service system (Figure 1). Before project implementation, as of the end of 2023, pension institutions (including respite care homes for older adults) with a medical licence accounted for less than a fifth of the beds in all facilities (Jing'an District Health Commission, 2023). Several problems have arisen, as observed in our preliminary research, where pension institutions often provide 'more care but insufficient medical services.' Additionally, there are significant challenges in effectively addressing the daily care and health management needs of older adults receiving home-based care. The traditional healthcare integration model faces problems of homogeneous health service content and low integration of service models.

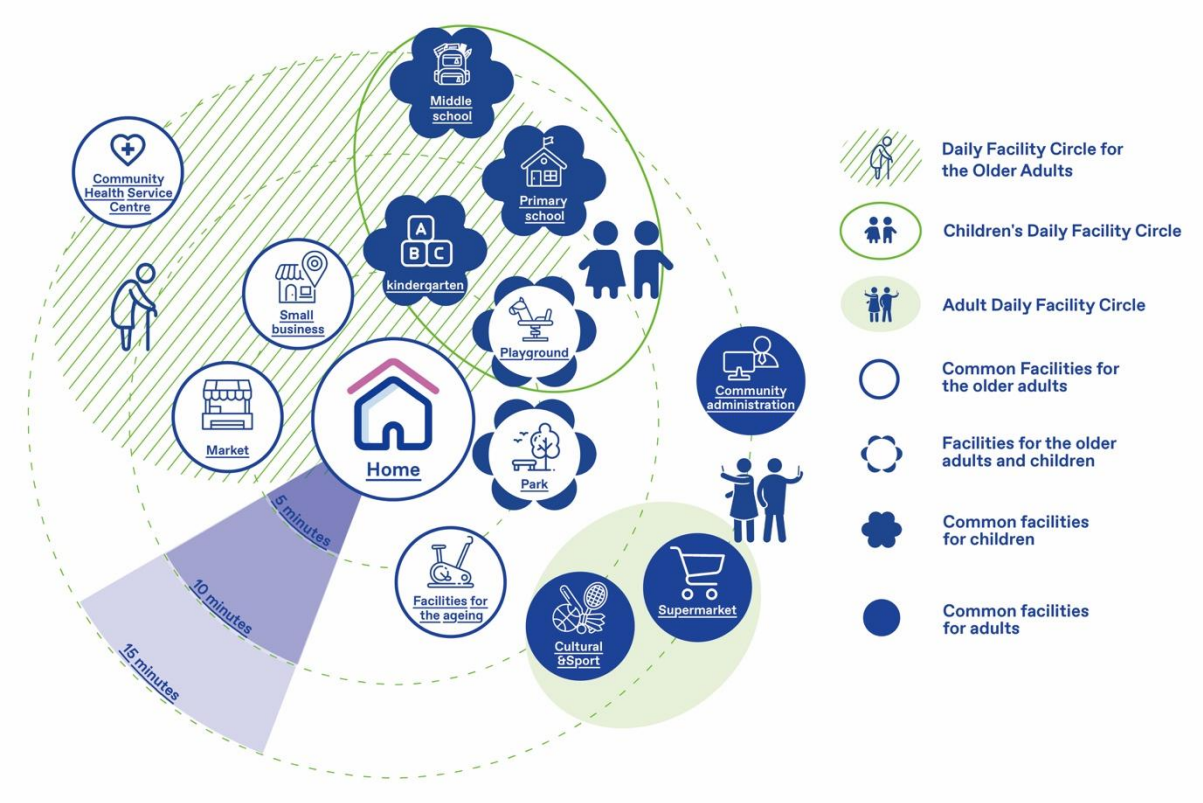


Figure 1. Shanghai 15-minute community living circle. Source: Lu W., Barbero S., Pereno A., 2023.

To effectively address this challenge, Jing'an District (headed by LFCHS) officially launched the "Five-Bed Linkage" model, which establishes service referrals, information exchange, and resource sharing among home care beds, institutional care beds, home

medical beds, hospital medical beds (treatment beds in level one and two hospitals within the district), and hospice care beds (end-of-life care beds) in August 2023. This aims to meet the comprehensive needs of older adults for health prevention, disease diagnosis and treatment, long-term care, and end-of-life care, forming a mutually sustainable linkage model between the "five beds". However, implementing the 'Five-Bed Linkage' model faces multiple research and implementation challenges. The model still lacks a scientific, rational, and sustainable theoretical framework. Addressing these challenges involves integrating holistic care theories specifically adapted to Jing'an District's conditions. By assessing the impacts and needs of each stakeholder, the goal is to develop targeted services that satisfy all parties and enhance the project's integrity and coherence with strategic communication and engagement. Based on this, our research team participated in the entire project's optimisation exploration process in November 2023. This project focuses on meeting the medical and care needs of the ageing. Systemic design adapts the human-centred design approach to complex, multi-stakeholder service systems (Jones P., and Van Ael K., 2022). To address the complexity and wicked problems faced by the system and delve deep into the potential of community health services from a systemic design perspective, aiming to address issues among stakeholders in the traditional healthcare integration model. To ensure service continuity and optimize referral mechanisms, we explore the needs of various stakeholders and the contradictions that arise when the needs of one group conflict with those of another, particularly at different referral and information exchange nodes and their impact on service continuity. By using a stakeholder map from a systemic design, we identify and analyse the needs, expectations, and effects of all key stakeholders (including older adults, doctors, nurses, community healthcare service workers, family members and managers of institutions, etc.). Meanwhile, combining the theory of integrated care services, we propose and test a series of service quality improvement strategies. By exploring the "tension relationship" between micro-design and system change in service design, we examine how localised micro-designs can drive systemic innovation, creating a complete healthcare and older adult care cycle to address the health needs of older adults and the challenges of an ageing society, moving towards holistic lifecycle health management. The process was primarily guided by the researchers along with the deputy director of the Linfen Community Health

Service Center, who is the key person responsible for driving the "Five-Bed Linkage" initiative. This collaboration ensured that the work was anchored in both academic research and practical implementation, allowing for a comprehensive and grounded approach to stakeholder mapping, co-creation workshops, and interviews.



Figure 2. Shanghai Heyang Linfen Pension Institution. Source: Shanghai Jingan District Civil Affairs Bureau.



Figure 3. Shanghai Heyang Pengfu Pension Institution. Source: Shanghai Jingan District Civil Affairs Bureau.

Summary of Semi-structured Interview Results: pension institutions

Following the initial list of pilot pension institutions for the "Five-Bed Linkage" project, in-depth research was conducted on two older adult care institutions and one older adult care service company in Pengpu Town and Linfen Street (Figures 2 and 3). The study employs systemic design methodologies to identify and analyze the various stakeholders. Field interviews were conducted with 17 individuals, including 5 older adults, 3 family members, 2 doctors, 3 nurses, 2 caregivers, 1 manager, and 1 third-party manager. For detailed information, please refer to Table 1.

No.	NAME	ROLE	AGE	LENGTH OF STAY/SERVICE IN THE CARE FACILITY
1	Ms. Tan	older adult	77	40 months
2	Ms. Mo	older adult	85	41 months
3	Mr. Cao	older adult	85	8 months
4	Ms. Zou	older adult	91	8 months
5	Ms. Shen	older adult	91	72 months
6	Ms. Liu	family member	68	mother has been in the care facility for 24 months
7	Ms. Xiao	family member	62	parents have been in the care facility for 24 months
8	Mr. Shen	family member	65	father has been in the care facility for 3 months
9	Mr. Zhang	assistant director	49	48 months
10	Mr. Weng	external manager	40	36 months
11	Ms. Guo	doctor	36	12 months
12	Ms. Zhou	doctor	28	36 months
13	Ms. Shen	head of nursing	43	24 months
14	Ms. Huang	head of nursing	56	432 months
15	Nurse Zhang	nurse	35	204 months
16	Mr. Chang	caregiver	51	24 months
17	Ms. Han	caregiver	45	24 months

Table 1. Interviewee details

Summary of Stakeholder Needs

In the existing community care system, the medical service relationships between the Health Commission, Civil Affairs, and older adults are entirely separate (Figure 4). Under the Health Commission's oversight, older adults need more medical information sharing in community health service centres, hospice care centres, and secondary and tertiary hospitals, with referrals needing more standardised easy procedures. The process is often cumbersome when older adults need referrals between different medical facilities. With the growing demand for medical care support among institutions care beds regulated by the Civil Affairs system, the old adults, their families, and relevant community departments, the existing system fails to provide timely and effective general medical care. For instance, older adults requiring professional medical attention must take leave from the institutions care bed, register at other medical institutions, and wait for treatment, a process unsuitable for many due to their physical conditions. When their health status changes, it becomes nearly impossible for those in institutions care beds to access effective medical services due to the need for referrals across different medical systems. As a result, many older adults who could be cared for in institutions care beds must reside in hospitals for medical care, thus straining healthcare resources.

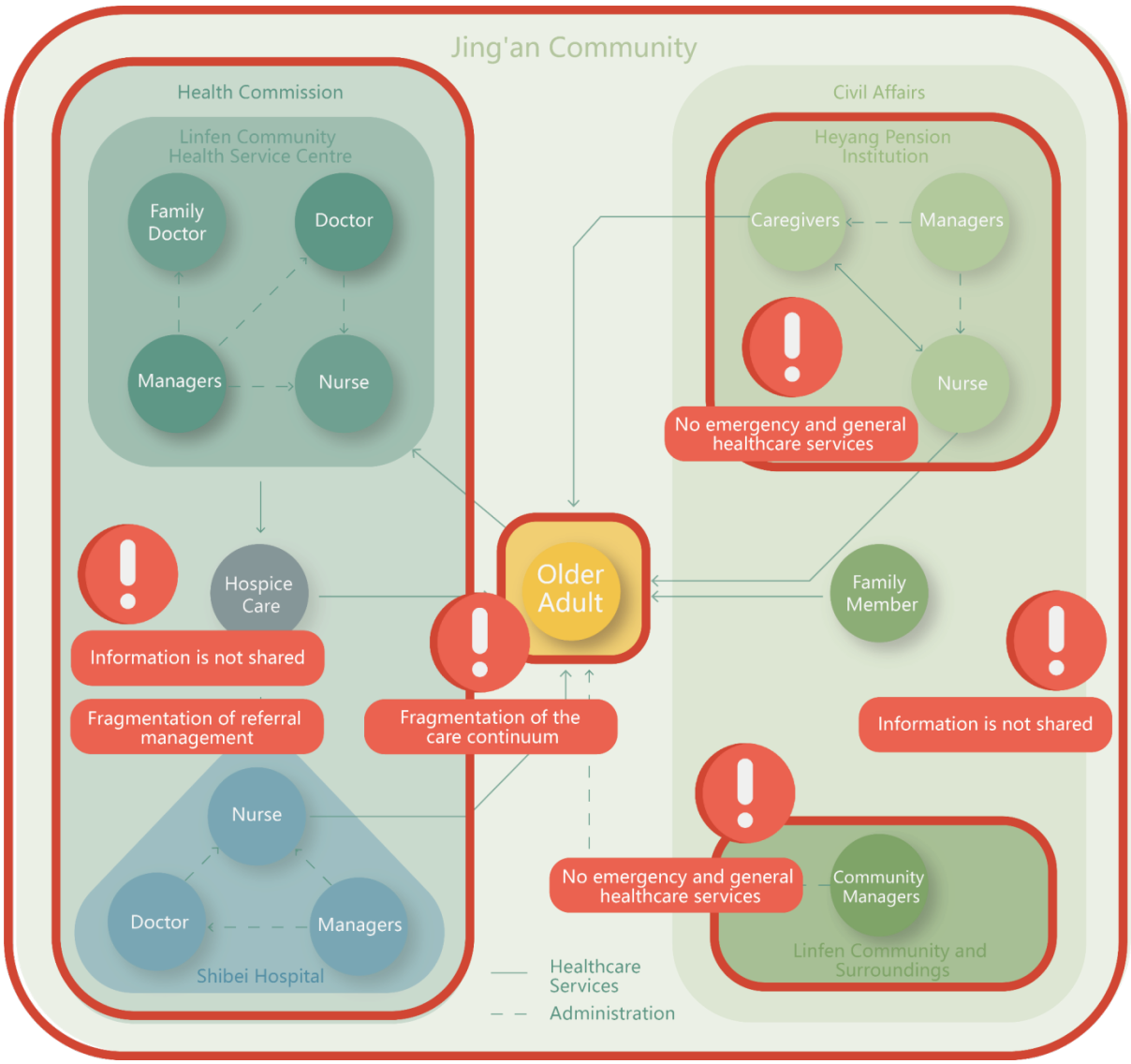


Figure 4. Jing'an community care old stakeholder map. Source: Lu W., and Chen J.

Residents in Pension Institution

Residents primarily require professional daily caregiving and timely emergency referral services. They often have severe chronic illnesses, necessitating extensive monitoring and care, which their family member cannot provide at home, leading to reliance on institutional care for safety and medical oversight.

Healthcare and Nursing Staff

Healthcare and nursing staff working across healthcare and pension institutions (institutions care bed) face intertwined roles and challenges like heavy patient

communication, extra duties, overtime, and learning new equipment. The sustainability of the "Five-Bed Linkage" model hinges on their motivation, which is achievable through workload management, shift rotations, and possibly increased salaries.

Management layer

Management focuses on implementing effective linkage policies to improve service satisfaction for older adults while balancing the quality of care, staff workload, and cost efficiency. They aim to enhance the institution's reputation and reduce bed vacancy rates, ensuring long-term service provision.

Workshop Results

The co-creation workshop aimed to enhance the "Five-Bed Linkage" model for community health services, optimising care for older adults. It was structured around the service experiences of older residents, addressing 30 identified pain points, and took place on December 15th, 2023, with extensive preparatory work. Table 2 below outlines the roles assigned to participants in each of the three groups during the workshop. The roles include facilitators, role-players for older adults and family members, designers and recorders, doctors, and other key participants. The design workshop brought together doctors from Linfen Community Health Center and Tongji Design researchers to address challenges in the "Five-Bed Linkage" system collaboratively. The workshop involved three key steps: introducing the workshop's objectives and discussing findings through storyboards that highlighted issues faced by elderly individuals, defining problems by analyzing a stakeholder map and conflicts between service providers and recipients, and finally, reviewing processes where participants brainstormed solutions for service pain points, leading to improved frameworks and strategies.

Discussions led to a revaluation of human roadmaps and modifications to the linkage framework. Pain points were visualized during the workshop for clear communication, highlighting issues such as incomplete service offerings, overreliance on medical staff, communication difficulties, and systemic inefficiencies.

GROUP	FACILITATOR	OLDER ADULT & FAMILY ROLE-PLAYING	DESIGNER & RECORDER	DOCTER	OTHER PARTICIPANTS
group 1	facilitator A	role-player A	designer A	doctor A	
group 2	facilitator B	role-player A	designer B	doctor B	
group 3	facilitator C	role-player B	designer C		planner A, director of research department A

Table 2. Workshop participant roles by group

The comparative analysis of human roadmaps revealed similarities, like a common misunderstanding of service content across all groups and differences in communication efficiency and service enhancements. These insights suggest shifts toward more flexible service models that accommodate evolving human needs and refine pricing strategies, recognising the distinction between fixed and mobile service beds to improve communication and coordination within the healthcare system (Figure 5).



Figure 5. The co-creation workshop human roadmaps. Source: Chen J.

Stakeholder Map for the "Five-Bed Linkage" Model

Following the method used in systemic design for creating stakeholder maps, we analysed the existing cooperation relationships among stakeholders within the current healthcare system. We then identified and marked with red lines the barriers within the original system that could hinder cooperative linkages. By establishing new connections, we overcome these barriers, resulting in a strategically significant ideal stakeholder

map. The ultimate purpose of this map is not to propose specific solutions for current issues but to describe a macroscopic vision of the ideal operational mode for the future. The exact steps for implementation are as follows:

- Identifying challenges. First, we separated the Health Commission and Civil Affairs system according to management levels. Reviewing the division of labour and cooperation method between the two systems, we identified significant challenges such as lack of information sharing, fragmentation of care within the health system, and inefficient medication dispensing processes between pension institutions and hospitals.
- Seeking opportunities. Based on the identified challenges, we proposed further opening community health access, strengthening the connection between primary community health services and secondary and tertiary hospitals, and establishing a green referral channel. These proposals align with the current "Five Beds Linkage" model and confirm the correct direction for improvement.

New "Five-bed Linkage" Care Model Stakeholder Map

Through semi-structured qualitative interviews with various stakeholders in the different systems combined with a workshop co-created human roadmap by designers, doctors, and nurses, identify the leading causes of communication barriers between healthcare providers and patients, enhance understanding of the importance of physical and functional differences between bed types to facilitate interaction and coordination within services. The distinction between beds under the Civil Affairs system and beds under the Health Commission system is functional. It clarifies the role of healthcare providers in the linkage system to improve operational efficiency. A clear distinction between the services provided by the different systems will facilitate the development of pricing strategies that reflect the specific services and resources used for each bed type.

In the newly designed stakeholder map (Figure 6), which connects the systems of the Health Commission and the Civil Affairs, an older adult may be categorised as being able to take care of himself/herself, partially able to take care of himself/herself, or completely unable to take care of himself/herself, depending on his/her state of living.

This determines the specific geographic location of the older adult on the right side of the Civil Affairs system, such as able to take care of himself/herself, home is his/her living scenario, such as partially able to take care of himself/herself, but also depending on the specific circumstances, to determine whether the older adult will be at home or in pension institution (institutions care bed). In this integrated system, an older adult can still receive primary medical care if they opt to reside in a pension institution. This arrangement helps optimise healthcare resources by freeing up hospital medical beds for those with more severe conditions (Figure 7).

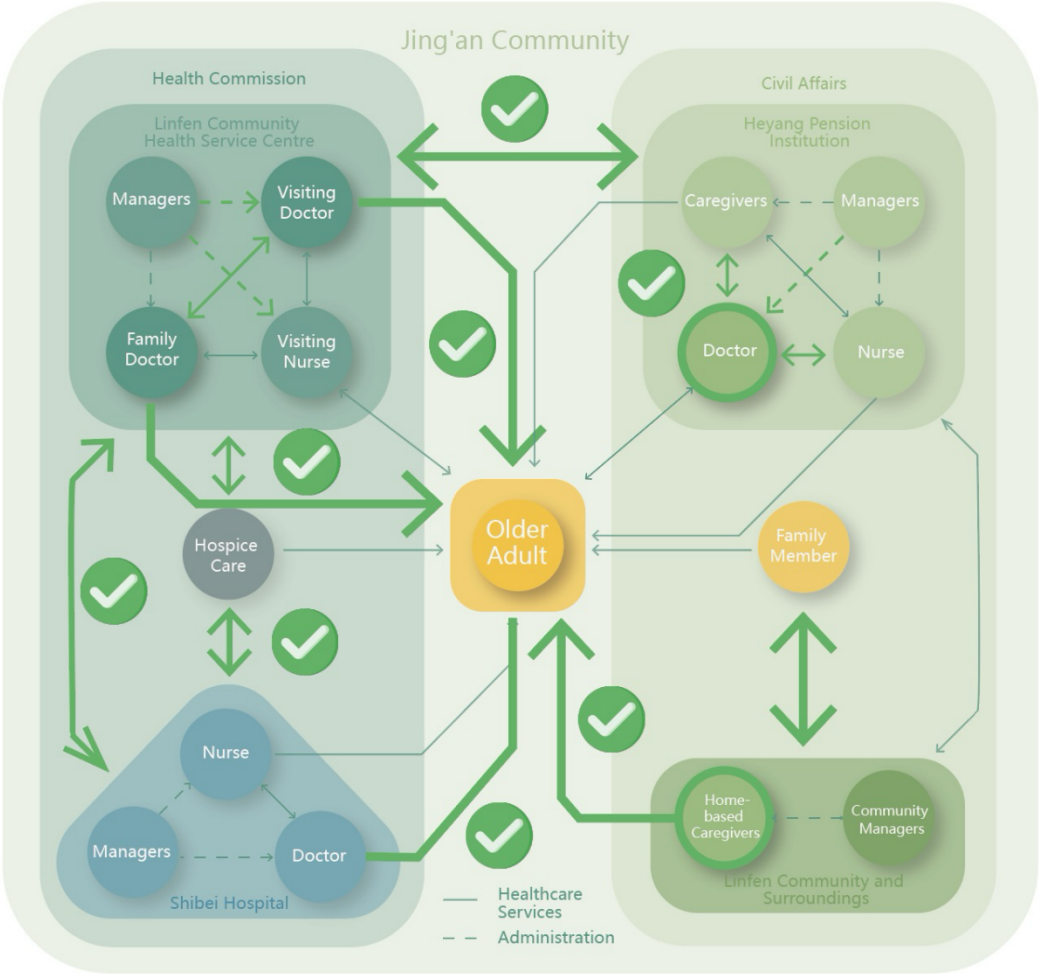


Figure 6. Jing'an community care's new "five-bed Linkage" care model stakeholder map. Source: Lu W. and Chen j.

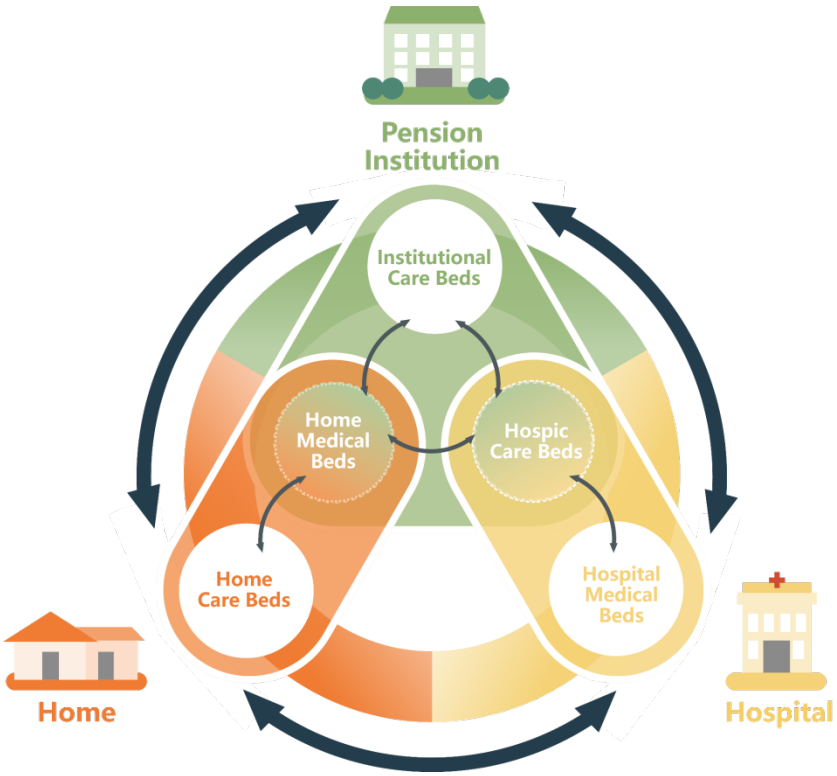


Figure 7. New "five-bed linkage" care model. Source: Chen J., Lu W., and Hu M., and Chen Q.

Conclusion

Incorporating systemic design and a comprehensive stakeholder map, the "Five-Bed Linkage" model strategically aligns medical and older adult care services, ensuring efficient, continuous care tailored to the needs of the older adult. This model streamlines the process and clarifies the roles and expectations of all involved parties, fostering better communication and cooperation.

The project meticulously outlines the interactions and dependencies among various service components within the "Five-Bed Linkage" model by leveraging systemic design principles and a detailed stakeholder map. This approach ensures that each service element is well-integrated and that all stakeholders know their roles well. This improves coordination across different care settings, from home-based care to institutional and hospital care, and optimises resource allocation.

Implementing the "Five-Bed Linkage" model has significantly improved the quality of care for older adults, leading to higher satisfaction rates among service humans and providers. The new model has been fully implemented and promoted across Jing'an District through official documentation issued by the Jing'an District Government. The project is well-positioned to expand its influence by integrating into broader silver economy initiatives and sustainable development goals, thereby enhancing the scalability and sustainability of older adult care services across the region and potentially nationwide.

References

1. United Nations. (n.d.). ***Global Issues Ageing***. United Nations. Retrieved April 27, 2024, from https://www.un.org/en/global-issues/ageing.
2. World Health Organization. (n.d.). ***Health topics: Ageing***. World Health Organization. Retrieved April 27, 2024, from https://www.who.int/health-topics/ageing#tab=tab_2.
3. Chen X., Giles J., Yao Y., Yip W., Meng Q., Berkman L., Chen H,, ChenX., Feng J., Feng Z., Glinskaya E., Gong J., Hu P., Kan X., Lei X., Liu X., Steptoe A., Wang G., Wang H., Wang H., Wang X., Wang Y., Yang L., Zhang L., Zhang Q., Wu J., Wu Z., Stausst., Smith J., and Zhao Y. (2022). ***The path to healthy ageing in China: a Peking University–Lancet Commission***. The Lancet Commissions, 400(10367), 1967-2006. https://doi.org/10.1016/S0140-6736(22)01546-X.
4. Jones P. and Ael Van K. (2022). ***Design Journeys through Complex System: Practice Tools for Systemic Design***. BIS Publishers. https://lib.ugent.be/catalog/rug01:003134824.
5. Lu W., Barbero S., Pereno A. (2023). A Comparision on Healthy Ageing in the City: Systemic design Perspectives on Urban Ageing Community Care in Shanghai and Turin. ***OFFICINA 44***. Shanghai 15-minutes community living circle [Figure]. Modified from Shanghai Urban Planning and Land Resources Administration Bureau. (2016) Schematic Layout of Community Facilities Circle [Figure]. Retrieved from https://up.caup.net/file/life-circle.pdf.

6. Shanghai Jing'an District Health Commission. (2023, April 26). ***Reply from the Jing'an District Health Commission to Proposal No. 086 at the Second Session of the Second Committee of the District Political Consultative Conference.***Retrieved April 28, 2024, from https://www.jingan.gov.cn/xxgk/002012/002012001/002012001009/002012001009003/20230426/93bb9c5e-e72a-4a39-a326-db1cb58a759f.html.
7. Shanghai Statistics Bureau. (2023). ***Shanghai Statistical Yearbook 2023***.Retrieved April 28, 2024, from https://tjj.sh.gov.cn/tjnj/nj23.htm?d1=2023tjnj/C0207.html.
8. Shanghai Jing'an District Civil Affairs Bureau. (2022). ***Response to the 30th Proposal from the First Session of the Second People's Congress of the District***.Retrieved April 28, 2024, from https://www.jingan.gov.cn/xxgk/002012/002012001/002012001008/002012001008002/20220829/a9c82a54-4d03-4cb7-aeda-217e272f5d42.html
9. Shanghai Jing'an District Statistical Bureau. (2024). ***Statistical Communiqué on the National Economic and Social Development of Jing'an District***, Shanghai for the Year 2023. Retrieved April 28, 2024, from https://www.jingan.gov.cn/govxxgk/JC5/2024-04-09/cd30f64a-3542-403f-9012-42675effe756.html?type=2.

Authors

Jing Chen, PhD, Tongji University, https://tjdi.tongji.edu.cn/TeacherDetail.do?id=5349&lang=, tegobao@tongji.edu.cn

Wen Lu, PhD candidates, Politecnico di Torino, https://www.polito.it/personale?p=wen.lu, wen.lu@polito.it

Min Hu, Deputy Director, Shanghai Jing'an District Linfen Community Health Service Center, lfyyhumin@126.com

Qi Chen, Director of Research Department, Shanghai Jing'an District Linfen Community Health Service Center, lfcq7777@126.com

Amina Pereno, PhD, Politecnico di Torino, https://www.polito.it/personale?p=020191, amina.pereno@polito.it

Silvia Barbero, PhD, Politecnico di Torino, https://www.polito.it/personale?p=silvia.barbero, silvia.barbero@polito.it

Long Liu, PhD, Tongji University, https://tjdi.tongji.edu.cn/TeacherDetail.do?id=4185&lang=, liulong@tongji.edu.cn