持续完善脑卒中防治政策 探索慢病共管新路径

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摘要

脑卒中是中国高发的重大心脑血管疾病之一，具有高发病率、高致死率、高致残率的流行病学特征，并有发病低龄化趋势，且与高血压、糖尿病、高脂血症等心肾代谢慢病病理生理相互作用密切相关[2]。脑卒中的疾病进展不仅会导致患者肢体、认知、语言等多方面功能受损，还需要长期的治疗、康复，给患者家庭带来沉重的照护与经济负担，同时加剧医疗系统服务压力和公共卫生经济支出压力。因此脑卒中疾病防控成为影响国民健康水平、制约公共卫生事业发展的亟需解决的问题之一。

虽然中国从 2011 年起就逐步加强了脑卒中防治政策，但在人口老龄化加剧、慢病危险因素暴露率居高不下的背景下，中国脑卒中防治形势依然严峻，脑卒中已成为健康中国建设中重大慢病防控的关键领域之一。近年来国家层面将脑卒中纳入《“健康中国 2030”规划纲要》及《健康中国行动（2019—2030 年）》，并出台《健康中国行动——心脑血管疾病防治行动实施方案（2023—2030 年）》等一系列政策文件，将脑卒中防治纳入国家慢病防控战略布局，从全链条防治、体系建设等方面做出了部署，为脑卒中防治工作开展奠定了政策基础。“十五五”规划纲要将“加强慢性病综合防控，发展防治康管全链条服务，健全早筛早诊早治体系”作为未来五年工作重点之一，进一步强调慢病防控的综合性。

[1] 本报告仅代表企业相关研究观点，不代表论坛主办单位和承办单位立场和观点。

[2] Ndumele C E, Neeland I J, Tuttle K R, et al. A synopsis of the evidence for the science and clinical management of cardiovascular-kidney-metabolic (CKM) syndrome: a scientific statement from the American Heart Association[J]. Circulation, 2023, 148(20): 1636-1664.

为进一步精细化落实国家脑卒中防治相关政策，破解当前防控工作中慢病协同管理不足、科普宣教触达不足、急救体系不统一、区域防治资源不均衡、基层服务能力薄弱等现实问题，推动构建脑卒中与心肾代谢慢病一体化共管体系，本提案建议从以下五方面切入：

- **将心肾代谢疾病统筹管理纳入国家慢病综合防控战略，全面提升脑卒中防治水平**

推动脑卒中与心肾代谢疾病从独立防控转向共同管理。一是扩大多病种协同筛查，依托现有项目分年龄段实现高危人群全覆盖，将核心代谢与肾功能早期筛查指标纳入基本公共卫生免费体检；二是建立联动评估，统一风险评估标准，实现高危人群早识别、早干预；三是夯实基层管理，加强对基层医疗机构培训，促进与家庭医生签约，规范对心肾代谢疾病的治疗和管理，控制危险因素，从源头阻断脑卒中和严重心肾疾病的发病链条，最终实现脑卒中和心肾代谢疾病协同防控、源头共治。

- **大力普及健康知识，强化认知科普**

开展分众化精准科普，立足不同年龄、职业、健康状况人群的认知特点与健康需求，长期推行脑卒中防治分众化、精准化科普宣教；充分发挥全媒体传播矩阵效能，推动脑卒中防治领域医媒深度融合，通过多元传播渠道普及疾病防治、急救识别、慢病管理等核心知识，提升全民脑卒中防治意识与自救互救急救能力。

- **健全急救体系协同机制，推进急救服务标准化建设**

健全标准化急救体系，构建全域协同的脑卒中防治服务格局。加快制定全国统一的脑卒中急救全流程标准，完善区域卒中中心网络建设，打造院前院内一体化的黄金救治通道；夯实基层防治基础，强化卒中急救地图建设，将社区实体地图与数字化地图相结合，精准补齐基层急救能力短板，强化基

层医疗机构设施配备与人员专业培训。

- **稳步落实分级诊疗制度，将分级诊疗要求落实到脑卒中防治全流程**

将脑卒中防治融入基层慢病管理体系，落实分级诊疗制度。由高级卒中中心单位和基地医院牵头，建立以基层医疗卫生机构为基础网点的脑血管病专科联盟体系，以适应分级诊疗制度，实现脑卒中筛查、急救、诊疗、康复的全链条贯通。

- **鼓励地方试点，推广试点经验，提升市县脑卒中防治水平**

结合第六批国家慢性病综合防控示范区建设，遴选防治基础好、信息化程度高、改革意愿强的市县开展综合性试点，对脑卒中防治综合管理、慢病融合管理进行试点，结合实际在脑卒中防治关键领域大胆探索、创新突破，树立成功典范。中央相关部委强化试点地区政策指导、资金支持与技术帮扶，建立常态化跟踪督导和成效评估机制，及时总结可复制、可推广的经验做法，提炼标准化操作路径。以点带面、梯次推进试点成果全国落地，逐步提升市县脑卒中防治整体水平，为全国政策完善夯实实践基础。

一、背景及价值分析

（一）脑卒中带来严重的疾病负担和社会经济负担

脑卒中是一种对家庭和社会造成严重影响的疾病。脑卒中是一种医学急症，主要因脑部血流受阻或发生出血而引起，可能造成脑组织损伤并引发严重后果，部分病例可危及生命。[1]其发病多与高血压、糖尿病等可控危险因素密切相关[2]。脑卒中（中风）可分为两种类型：缺血性脑卒中和出血性脑卒中。

[1] 定义来源：https://www.who.int/news-room/fact-sheets/detail/stroke

[2] O'Donnell M J, Chin S L, Rangarajan S, et al. Global and regional effects of potentially modifiable risk factors associated with acute stroke in 32 countries (INTERSTROKE): a case-control study[J]. The lancet, 2016, 388(10046): 761-775.

缺血性脑卒中，俗称脑梗死和脑血栓，相较于出血性脑卒中发病率更高，占总脑卒中病例数的 70%以上。从 2010 年到 2021 年，中国脑卒中年龄标准化患病率整体呈上升趋势，其中缺血性脑卒中的患病率略有上升，出血性脑卒中的患病率则略有下降，但依然维持在较高水平[1]。

无论何种类型的脑卒中，其在中国的发病及死亡水平均高于国际平均水平。中国目前脑卒中的流行病学特征是：高发病率、高致死率、高致残率、发病呈年轻化趋势。根据全球疾病负担（2019）数据，2019 年中国有 218.9 万人死于脑卒中，1990 年～2019 年缺血性脑卒中的死亡人数增加了 171.1%，年龄标化死亡率为 62.2/10 万[3]，而在美国这项数据是 34.3/10 万[2]。中国脑卒中发病总体呈现出越发年轻化的趋势，根据《中国脑卒中防治报告（2024）》[3]，中国 40 岁及以上脑卒中患者首次发病的年龄集中在 60.9～63.4 岁，首次发病年龄构成中 40～64 岁占比超过 66.6%。一项对中美缺血性脑卒中患者的比较研究显示，中国脑卒中疾病发生的中位数为 65 岁，而美国患者为 72 岁[3]。

脑卒中发病后的存活者中，70%～80%的患者因为残疾而不能独立生活，给家庭和社会造成了巨大负担[4]。中国脑卒中发病与死亡形势极为严峻，平均每 10 秒就有 1 人新发或复发脑卒中，每 28 秒便有 1 人因脑卒中离世；而在庞大的幸存者群体中，约 75%的患者会遗留不同程度的后遗症，其中 40%为重度残疾[5]。多数患者患病后会丧失劳动能力，无法继续参与工作获取收入，导致家庭经济来源大幅减少甚至中断，形成支出激增同时收入锐减的困

[1] 国家卫生健康委加强脑卒中防治工作减少百万新发残疾工程专家委员会,吉训明.《2024 年中国脑卒中防治报告》概要[J].首都医科大学学报,2025,46(06):947-960.

[2] Park J H, Chang Y, Park S, et al. Burden of stroke in the United States of America, 1990–2021: a systematic analysis for the US burden of disease study 2021[J]. Frontiers in Neurology, 2025, 16: 1609508.

[3] Wangqin R, Laskowitz D T, Wang Y, et al. International comparison of patient characteristics and quality of care for ischemic stroke: analysis of the China National Stroke Registry and the American Heart Association get with the guidelines—stroke program[J]. Journal of the American Heart Association, 2018, 7(20): e010623.

[4] 张通,公维军.脑卒中早期康复的重要性[J].中国医学前沿杂志(电子版),2012,4(04):25-26.

[5] 数据来源：《中国大众脑卒中认知调查报告》，北京大学，2025 年 1 月 16 日

境；随着脑卒中发病年龄逐步年轻化，中青年脑卒中患者占比逐年提升，给社会劳动力资源造成严重损耗。从社会层面看，脑卒中的高发性、高致残性，大幅增加了政府社会公共服务的支出压力，加重了公共财政负担[1]；据《中国卒中疾病负担与经济负担的整合分析》[2]的调研和预测，2004～2020 年中国的缺血性卒中和脑出血次均住院费用均明显上升，随着人口老龄化的快速进程，未来卒中造成的疾病负担和经济负担仍将继续攀升。从全球水平来看，脑卒中为中国带来的疾病负担显著高于全球主要发达国家，以伤残调整生命年（DALYs）这一核心指标进行国际横向对比，中国的疾病负担差距尤为突出：2021 年，中国缺血性脑卒中 DALYs 高达 1646.84/10 万人，远超日本（1103.68/10 万人）、美国（654.77/10 万人）、法国（641.01/10 万人）及英国（585.62/10 万人）[3]，凸显了中国在脑卒中防治领域的紧迫性与艰巨性。

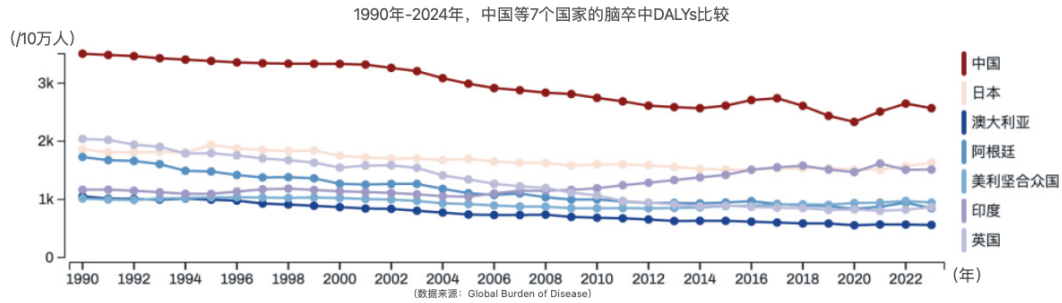

图 1 中国与其他 6 个国家缺血性脑卒中 DALYs 比较

根据现有的临床经验，脑卒中是可防可治的一类疾病。美国的相关实践经验表明，高血压等相关因素的控制，对脑卒中防治工作有着重要影响，是死亡率显著下降的关键驱动因素。[4]因此，针对有可能导致脑卒中的风险因

[1] Gerstl JVE, Blitz SE, Qu QR, et al. Global, Regional, and National Economic Consequences of Stroke. Stroke. 2023;54(9):2380-2389. doi:10.1161/STROKEAHA.123.043131

[2] 翟屹,杨帆,李天琪,等.中国卒中疾病负担与经济负担的整合分析[J].中国卒中杂志,2025,20(05):566-580.

[3] 数据来源于 GBD Results（Global Burden of Disease Study）

[4] Lackland D T, Roccella E J, Deutsch A F, et al. Factors influencing the decline in stroke mortality: a statement from the American Heart Association/American Stroke Association[J]. Stroke, 2014, 45(1): 315-353.

素积极进行提前的有效干预，将有助于降低脑卒中发病率，减轻脑卒中所带来的疾病负担，提高脑卒中患者的生存质量。

（二）脑卒中疾病政策的历史沿革

国家卫生健康委员会在过去十余年已颁布多项关于脑卒中防治的专项政策与方案，脑卒中防治体系建立并不断发展。并且在原卫生部脑卒中筛查与防治工程委员会、现“百万减残”工程专家委员会统筹推进下，全国卒中中心网络、急救地图、高危筛查与规范诊疗等工作稳步落地。

在王陇德院士的倡议下，中国于 2012 年发布《脑卒中高危人群筛查和干预试点项目管理办法（试行）》，在全国多地开展“脑卒中高危人群筛查和干预”项目。2014 年成立脑卒中防治工程委员会及专家组（以下简称“脑防委”），持续推动脑卒中筛查与防治工作。依托脑防委及王陇德院士的相关工作推动，2016 年《“健康中国 2030”规划纲要》明确提出实施慢性病综合防控战略，将脑卒中等重大疾病的防治与筛查工作列为重点内容。同年，国家发布《脑卒中综合防治工作方案》，在临床层面进一步明确了脑卒中防治工作的目标、内容、工作步骤与具体要求。此后的相关政策致力于持续强化脑卒中诊疗与管理体系。2021 年，国家卫生健康委等部门发布了《加强脑卒中防治工作减少百万新发残疾工程综合方案》的通知，该方案是迄今为止参与部门最多、措施最为综合的脑卒中防治政策，不仅设立了针对血压的管理预期目标，而且对门诊普查、科普教育也提出了要求，以有效降低脑卒中发病率、致残率。同年，国家卫生健康委办公厅印发《中国脑卒中防治指导规范（2021 年版）》，这一指导规范集合了国内最新循证医学证据与专家共识，为全国各级医疗卫生机构开展脑卒中防治提供了统一、权威的技术遵循，是落实各项政策的技术基石。2023 年，“脑防委”工作组调整改组为“百万减残工程专家委员会”（以下简称“百万减残专委会”）；同年《健康中国行

动——心脑血管疾病防治行动实施方案（2023—2030 年）》提出脑卒中防治的广泛开展，要求“探索将冠心病、脑卒中患者的二级预防和康复治疗纳入家庭医生签约服务范围。鼓励具备条件的社区卫生服务机构设立卒中门诊，加强脑卒中高危人群的健康管理，开展脑卒中预防及脑卒中患者的康复管理”。在一系列政策目标的指引下，脑卒中防治成为推进健康中国建设、降低疾病负担、提升全民健康素养的抓手。

在地方层面，部分省市推进脑卒中筛查、诊疗与防控体系建设，并纳入城市健康中国行动目标。以北京为例，依托国家脑卒中筛查与防治基地医院资源，北京市出台了《北京市加强脑卒中防治工作减少百万新发残疾工程实施方案》，其中要求推动脑卒中筛查预防、急诊急救、规范诊疗、康复治疗、健康随访等管理服务，健全完善脑卒中防治体系，加强脑卒中防治专业队伍建设。湖北省将脑卒中防治相关目标纳入《健康湖北行动——湖北省心脑血管疾病防治行动实施方案（2025—2030 年）》以协调省内资源。四川省出台《健康四川行动——“四大慢病”防治行动实施方案（2025～2030 年）》，提出优化心脑血管疾病同防同治路径，加强个体化心脑血管疾病风险综合评估服务，逐步扩大脑卒中、心血管疾病早期筛查与综合干预项目覆盖面。同时，截至 2023 年年底，接近半数省份的地市级卒中中心覆盖率或直辖市已达 100%[1]，各省份每个地市至少有一家符合标准的卒中中心，对于后续脑卒中防治工作的深化奠定了坚实的基础。

由此可见，脑卒中“可治”的目标已在临床层面得到有效落实，患者就医可及性得到一定程度提升；同时，“可防”工作亦得到相应重视，国家围绕高危因素筛查、健康宣教等出台了系列政策，为脑卒中防治的综合管理奠定了基础。部分地方也同步出台纲领性政策文件，为地方脑卒中防治工作落

[1] 国家卫生健康委加强脑卒中防治工作减少百万新发残疾工程专家委员会,吉训明.《2024 年中国脑卒中防治报告》概要[J].首都医科大学学报,2025,46(06):947-960.

实提供了制度保障。中国脑卒中防治工作迎来提质升级的关键阶段，完善脑卒中防治政策，既是落实健康中国战略的必然要求，也是降低国民疾病负担、提升全民健康素养的重要举措。在此背景下，如何持续完善脑卒中政策，继续推动脑卒中防治工作“疾病治疗”向“健康管理模式”转型，具有重要现实意义。

（三）脑卒中与心肾代谢等慢病高度关联，国家政策持续强化脑卒中相关高危因素综合防控

脑卒中并非孤立的脑血管疾病，其与高血压、糖尿病、高脂血症、冠心病、慢性肾病等心肾代谢性慢病存在高度重叠的病理生理机制、风险叠加、病程互促的高度关联性。临床研究发现，脑卒中与心肾代谢领域慢病存在病理生理相互作用，高血压、糖尿病、血脂异常、心衰、肥胖等心肾代谢相关危险因素，是脑卒中最重要、最核心的可干预危险因素。已有研究数据显示，中国 90.7%的脑卒中发生均与高血压、糖尿病、高血脂及不良生活方式等可干预性危险因素相关[1]，这类危险因素的长期失控，会直接加剧脑血管病变风险，成为脑卒中发病的重要推手。同时，以慢性肾脏病、肝脏疾病为代表的慢性代谢相关性疾病，与心血管疾病之间也存在深度的病理关联，不仅表现为高度紧密的共病特征，更存在显著的不良预后联动效应[2]，此类代谢与脏器慢病的叠加存在，会进一步放大脑卒中的发病概率与不良结局风险，凸显出脑卒中与心肾代谢类慢病“同源共病、风险联动”的核心特征。以脑卒中疾病为抓手，对脑卒中疾病进行防控，通过有效对糖尿病、高血压等慢病及其他疾病的共同高危因素进行联合管控，将对防治心肾代谢等慢病的多病共患有着重要意义。

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[1] 刘昭,陈敏霞,申斗,等.医防融合背景下卒中高危人群防治策略优化与体系建设[J].中国卒中杂志,2025,20(03):270-276.

[2] Skou, S.T., Mair, F.S., Fortin, M. et al. Multimorbidity. Nat Rev Dis Primers 8, 48 (2022). https://doi.org/10.1038/s41572-022-00376-4

脑卒中相关高危病因综合防控已得到国家政策层面的重视与支持。在国家卫生健康委员会发布的《脑血管病防治指南（2024 年版）》中要求将高血压、糖尿病、血脂异常、超重肥胖等可干预的脑血管病危险因素纳入重点评估，作为脑血管病的一级预防策略。《“十四五”国民健康规划》明确提出提高心脑血管疾病、癌症、慢性呼吸系统疾病、糖尿病等重大慢性病综合防治能力，强化预防、早期筛查和综合干预，要求“在医院就诊人群中开展心脑血管疾病机会性筛查”；提出推进“三高”（高血压、高血糖、高血脂）共管，并规定高血压、II 型糖尿病患者基层规范管理服务率达到 65% 以上。通过共同高危因素的预防、筛查、干预，同样对脑卒中等重大慢性病防治有着重要作用。此外，《健康中国行动—心脑血管疾病防治行动实施方案（2023～2030 年）》将“心脑血管疾病发病率及危险因素水平上升趋势得到有效控制”作为目标之一，并提出创新心脑血管疾病同防同治路径，持续推进心脑血管疾病早期筛查与综合干预工作；鼓励具备条件的社区卫生服务机构设立卒中门诊，加强脑卒中高危人群的健康管理。

总体而言，上述举措虽为脑卒中相关的高危病因防控，但对提升心肾代谢类慢病高危因素的知晓率与控制率具有客观促进作用，同时初步构建起心肾代谢疾病协同管理的工作基础。

（四）持续完善脑卒中防治政策的意义

在全面推进“健康中国”建设的时代背景下，脑卒中防治已超越单纯的临床医学范畴，上升为衡量公共卫生体系效能、检验医疗服务公平程度、推动分级诊疗落地的综合性治理命题。在此背景下，系统推进脑卒中防治工作、健全全链条防治体系，既是回应群众健康诉求、增进民生福祉的重要举措，也是落实国家慢病综合防控战略、减轻社会医疗负担、实现全民健康目标的有力支撑。

1. 持续完善脑卒中政策，推动筑牢公共卫生防线，降低国家疾病负担。脑卒中作为中国高发、高致残、高致死的重大慢性疾病，给个人、家庭带来沉重的医疗与生活负担，也加剧了医疗卫生资源的消耗。完善脑卒中防治政策，能从顶层设计构建“预防—急救—治疗—康复”全链条防治体系，推动防治工作从“疾病治疗”向“健康管理”转型，从源头上降低脑卒中的发病率、致残率与复发率，减少疾病引发的社会医疗支出，缓解医疗卫生资源供需矛盾，筑牢全民公共卫生健康防线。

2. 持续完善脑卒中政策有助于提升医疗服务均质化水平，促进健康公平落地。研究显示，社会经济地位较低的人群面临更高的心肾代谢疾病风险，且更易获得质量较低的医疗服务，并经历更差的健康结局，这其中也包括脑卒中[1]。改善系统性的心肾代谢疾病筛查与预防，是减少这些不公平现象的关键。通过重点人群心肾代谢疾病筛查管理、标准化急救体系建设、康复服务普惠化政策设计、分众化科普精准落地、智能化技术基层推广等举措，能推动完善脑卒中防治政策，使优质防治资源下沉，弥补基层防治短板，缩小区域、城乡防治差距。

3. 以脑卒中防治为抓手将助力分级诊疗制度落实。脑卒中具有发病率高、波及人群广、病程周期长、诊疗环节多、分级服务需求清晰等特点，是中国重点防控的重大慢性疾病。其“预防—急救—治疗—康复”的全周期、长链条病程特点，与分级诊疗核心要求高度契合。以脑卒中防治为突破口，有利于打通基层高危人群筛查、急性期规范转诊救治、稳定期专科治疗、恢复期社区康复的全流程通道，统摄基层到各级医院的功能，推动医疗机构功能定位清晰化、资源配置合理化、服务流程一体化，可以作为破解分级诊疗落地难题、推动分级诊疗制度走深走实的抓手。

[1] Li J, Lei L, Wang W, et al. Social risk profile and cardiovascular-kidney-metabolic syndrome in US adults[J]. Journal of the American Heart Association, 2024, 13(16): e034996.

4. 中国持续推动脑卒中这一全球关注议题，展现引领作用和大国担当。2025 年，世界卫生组织执委会在日内瓦审议并通过了《减轻卒中负担：加强预防、急救、康复以及卫生系统准备度》（*Reducing the burden of stroke: strengthening prevention, acute care, rehabilitation and health-system readiness*[1]）决议草案，并将提交在今年 5 月世界卫生大会上讨论。这一决议所倡导的综合性、全链条脑卒中防控思路得到了世界卒中组织的正式支持。联合国可持续发展目标（SDG 3.4）明确提出，到 2030 年将非传染性疾病导致的过早死亡率降低三分之一。作为全球最大的卫生体系之一，中国在心脑血管疾病防控方面的政策实践与制度创新，已对全球产生重要影响。在此关键时刻，加大对脑卒中预防、治疗和康复的政策支持力度，强化系统性、前瞻性的慢病综合防控模式，有助于提升中国在全球健康治理中的引领作用，推动形成更加公平、可及、可持续的国际卒中防控格局。

二、脑卒中防治面临的主要挑战

（一）脑卒中防治能力地区差异化明显，西南部、农村体系有待完善

基于 2007～2018 年脑卒中疾病负担及防治相关研究数据[2]，中国脑卒中死亡率与发病率之比（mortality-to-incidence ratio，MIR）存在明显地域分化，其中西南地区该比值最高，东部、南部沿海地区最低，这一特征也反映出中国脑卒中防控的成效主要集中在大城市及城市区域。而 2010～2021 年期间农村地区脑卒中死亡率持续超过城镇地区，农村地区持续增加的脑卒中负担可能与高血压、糖尿病、高血脂患病率高且控制不理想有关[3]。城乡及区域间

[1] 世界卫生组织. Factors Influencing the Decline in Stroke Mortality: A Statement From the American Heart Association/American Stroke Association [EB/OL]. (2026-02-03)[2026-03-15]. https://apps.who.int/gb/ebwha/pdf_files/EB158/B158_CONF9-en.pdf.

[2] Wu S, Wu B O, Liu M, et al. Stroke in China: advances and challenges in epidemiology, prevention, and management[J]. The Lancet Neurology, 2019, 18(4): 394-405.

[3] 国家卫生健康委加强脑卒中防治工作减少百万新发残疾工程专家委员会,吉训明.《2024 年中国脑卒中防治报告》概要[J].首都医科大学学报,2025,46(06):947-960.

的防治资源配置失衡、医疗服务能力差距进一步加剧了这一差异，城市地区不仅拥有更完善的卒中中心诊疗体系、更普及的溶栓取栓等关键技术，还能实现高危人群筛查、健康宣教、术后康复的全链条管理，而农村地区基层医疗机构防治能力薄弱、专业医护人员匮乏，加之居民健康意识偏低、院前急救体系不完善，使得脑卒中的早筛、早诊、早治难以落地。这种地区差异化的防治现状，不仅拉大了不同区域的居民健康差距，也成为中国实现脑卒中整体防控目标、降低全国疾病负担的重要制约因素。

（二）基层急救与诊疗能力薄弱，院前延误是核心痛点

基层医疗机构在急救、诊疗等环节存在能力短板，在承担脑卒中“早发现、早干预、早管理”的基层责任的能力上略显薄弱。中国三级医院脑梗死静脉溶栓率约 5%[1]，而美国农村非卒中中心约为 22%[2]。据一项对中国 8000 多名基层医生的调研显示，目前中国基层医生中高素质人才缺乏，危急重症应急处置能力相对较低[3]；另有研究表明，仅 49.6%的基层医生自认掌握常见急救基本理论与技能[4]，多数医务人员认为自己存在急救知识储备不足等问题。在设备配置方面基层医院也存在明显的短板，乡镇服务院在专业性仪器设备（如心电图机等）配备率相对较低[5]。此外，卒中急救的院前延误依然是阻碍。研究表明，中国卒中患者院前延误现象在 65 岁以上独居老人、农村地区及经济欠发达地区人群中尤为突出[6]，亟需采取更具针对性的干预措施以

[1] Ye Q, Zhai F, Chao B, et al. Rates of intravenous thrombolysis and endovascular therapy for acute ischaemic stroke in China between 2019 and 2020[J]. The Lancet Regional Health–Western Pacific, 2022, 21.

[2] Man S, Bruckman D, Uchino K, et al. Rural hospital performance in guideline-recommended ischemic stroke thrombolysis, secondary prevention, and outcomes[J]. Stroke, 2024, 55(10): 2472-2481.

[3] 练璐,陈家应,王萱萱,等.中国基层医生医疗服务能力现状与对策研究[J].中国全科医学,2023,26(34):4246-4253.

[4] 刘爱花,黄清,甘永雄.基层医务人员对急救能力的认知情况和培训效果分析[J].浙江医学,2022,44(20):2243-2246.

[5] 周颖.基层医疗卫生机构慢性病防控现状研究[D].成都中医药大学,2020.DOI:10.26988/d.cnki.gcdzu.2020.000623.

[6] 廖雨琦,曹黎明,任力杰.急性缺血性卒中院前延误现状和改进措施的研究进展[J].中国卒中杂志,2023,18(05):594-600.

缩短院前延迟。中国卒中急救地图信息平台显示，尽管发病至到院时间、到院至溶栓时间、到院至穿刺时间等关键时间指标有缓步提升，但院前延误依然是核心痛点。

（三）当前大众对脑卒中防治知识知晓度仍相对较低

当前中国居民的脑卒中防治意识仍处于较低水平。据 2025 年北京大学《中国大众脑卒中认知调查报告》[1]显示，许多公众对中国脑卒中严峻的疾病负担缺乏清晰认知；对“中风 120”等早期症状识别口诀的掌握亦不全面。其中，老年人作为脑卒中高发人群，相关知识知晓率显著偏低，且公众脑卒中防治知识水平存在明显的地区与人群差异。同时，调查也发现大众对于增加中风危险的深层次慢病因素（如糖尿病、心脏病、外周动脉疾病）知晓程度也相对较低。在一项对甘肃省脑梗患者的调查[2]中，只有近一半脑梗死者听过卒中（55.8%）。此外，除了急救层面的知识，患者对于脑卒中防治知识的知晓程度也相对较低，患者对糖尿病和血脂异常的知晓率相对较低，会影响脑卒中危险因素的控制[3]。

（四）康复治疗需求迫切，但资源分布不均

脑卒中康复治疗资源的城乡与区域配置失衡现象显著，据《全国医疗卫生服务体系规划纲要》[4]相关评估数据显示，中国康复医院、护理院等专业康复医疗机构不仅整体数量缺口较大，且资源高度集中在大中型城市，优质康

[1] 北京大学健康传播团队. 《中国大众脑卒中认知调查报告》出炉[EB/OL]. 健康报, (2025-01-16). [2026-03-16].https://mp.weixin.qq.com/s?__biz=MjM5NDg4OTEwMQ==&mid=2668872179&idx=2&sn=c501050dbd9bfebd9d8dfa4c0181a8b1&chksm=bd3482b1fc4c62d480a640dfc7b66785b90c5c6e8141d9fdc6e4b02834f627c37bd33743d229&scene=27.

[1] 刘琦,陈万强,王颖,等.甘肃地区缺血性脑卒中患者卒中认知调查及影响因素分析[J].国外医学(医学地理分册),2017,38(02):115-121.

[3] Chen J, Zhu Q, Yu L, et al. Stroke risk factors of stroke patients in China: a nationwide community-based cross-sectional study[J]. International Journal of Environmental Research and Public Health, 2022, 19(8): 4807.

[4] 国务院办公厅关于印发全国医疗卫生服务体系规划纲要(2015-2020 年)的通知[J].中华人民共和国国务院公报,2015,(10):25-39.

复服务的可及性呈现明显的地域差异。农村地区作为脑卒中患病及致残高发区域，患者对术后康复、功能恢复的需求迫切且庞大，但目前缺乏系统化的康复服务下沉机制，基层医疗机构既无充足的康复专业人员与设备，也未形成与上级医院的康复转诊衔接体系，导致农村脑卒中患者难以获得规范、持续的康复治疗[1]。而康复介入的滞后与缺失，极易加重患者的肢体、语言等功能障碍，大幅降低其生活质量，也进一步增加家庭照护与社会医疗的双重负担。

（五）脑卒中与心肾代谢等慢病的政策协同性未受重视

尽管现有研究已证实脑卒中与心肾代谢慢病之间存在明确的危险因素联动关系，但现行政策尚未对这种联动关系予以系统性体现与制度性安排。《“健康中国 2030”规划纲要》提出实施慢性病综合防控战略，加强国家慢性病综合防控示范区建设，但强化慢性病筛查和早期发现聚焦“推动癌症、脑卒中、冠心病等慢性病的机会性筛查。基本实现高血压、糖尿病患者管理干预全覆盖，逐步将符合条件的癌症、脑卒中等重大慢性病早诊早治适宜技术纳入诊疗常规。加强学生近视、肥胖等常见病防治。”相关表述重点围绕重点疾病的早筛早治和单病种管理展开，尚未对脑卒中、肥胖及其他心肾代谢慢病的关联关系作出专门阐述。《国务院办公厅关于印发中国防治慢性病中长期规划（2017—2025 年）的通知》提出健全政府主导、部门协作、动员社会、全民参与的慢性病综合防治机制，但所列举慢性病包括“心脑血管疾病、癌症、慢性呼吸系统疾病、糖尿病和口腔疾病，以及内分泌、肾脏、骨骼、神经等疾病”，该规划在疾病覆盖范围上具有系统性，但未提及肝脏相关疾病，且对不同慢病之间的相互影响及协同防控路径着墨相对有限，相关疾病的联动管理尚有进一步深化空间。《健康中国行动——心脑血管疾病防治行动实施

[1] 彭程远,刘思辰,王世娇,等.农村脑卒中患者康复需求现状及影响因素分析[J].中国社会医学杂志,2025,42(06):701-705.

方案（2023—2030 年）》提出到 2030 年，建立覆盖全国的心脑血管疾病综合防控和早诊早治体系，并关注风险防控，提出加强针对心脑血管疾病高危人群的健康教育，加强心脑血管疾病风险综合评估，开展覆盖 35 岁以上人群的心脑血管疾病风险监测等。然而目前相关政策文件尚未将“脑卒中—心肾代谢慢病”的病理生理联动纳入顶层防控设计，未将其应用于关联疾病的联合识别与同步干预，也未建立双向风险防控机制。

三、政策建议

（一）将心肾代谢疾病统筹管理纳入国家慢病综合防控战略，全面提升脑卒中防治水平

脑卒中的发生与心、肾、代谢系统疾病存在紧密的病理关联，高血压、糖尿病、慢性肾病、血脂异常等心肾代谢疾病更是脑卒中发生的核心驱动因素，其防控成效直接决定脑卒中前置性预防的整体水平。为此，需将心肾代谢疾病统筹管理全面纳入国家慢病综合防控战略布局，依托国家层面非传染性疾病健康发展战略规划及慢病综合防控试点建设，强化心肾代谢疾病与脑卒中防控的关联性设计，推动防控工作从单一疾病干预向多系统疾病协同防控转变。

一是，依托现有政策落实重点人群心肾代谢疾病全覆盖筛查，在脑卒中高危人群筛查和干预项目的基础上，以年龄阶段为划分，进行心肾代谢疾病高危人群筛查。推进血压、空腹血糖、糖化血红蛋白、血脂四项、肾功能、尿微量白蛋白等核心指标的常态化筛查。二是，建立心肾代谢疾病与脑卒中风险的联动评估体系，制定统一的风险评估标准，将高血压分级、糖尿病病程、血脂异常程度、肾功能损伤等级等指标与脑卒中发病风险等级挂钩，对筛查发现的异常人群开展脑卒中发病风险分层评估，实现高危人群的早识别、

早标记、早干预；三是，强化心肾代谢疾病的基础管理，强化基层医疗机构医务人员的专项培训，提升基层对高血压、糖尿病等基础疾病的长期规范化管理能力，推动家庭医生签约服务与心肾代谢慢病管理深度结合，对血压、血糖、血脂控制不佳的人群及时开展干预调整，通过对心肾代谢疾病的早期、有效、持续控制，从源头阻断脑卒中和严重心肾疾病的发病链条。

（二）大力普及健康知识，强化认知科普

1．创新机制推动政策尽早实施，提升全社会疾病认知，推动健康知识普及常态化

国际经验表明公众中风教育宣传活动对提高中风症状识别率和急救具有积极影响[1]。将脑卒中防治科普宣教规划全面纳入国家规划中，将其纳入《全民健康素养提升三年行动方案（2024—2027 年）》落地具体项目或 2027 年后方案的持续更新优化工作统筹推进。《国家基本公共卫生服务项目绩效考核指导方案》已纳入健康知识讲座、音像资料及宣传栏设置等健康教育考核指标建议进一步将脑卒中科普宣传成效纳入基本公共卫生服务项目考核体系，压实基层医疗卫生机构科普责任，推动科普工作落地见效。

在行动实施层面，以 2026 年国家卫生健康委等部门印发的《关于实施 2026 年卫生健康系统为民服务实事项目的通知》为依托，统筹整合该文件中“健康科普行—万场健康知识讲座”行动，将脑卒中防治作为重点主题之一，与“百万减残”专家委员会开展的“健康中国·卒中识别”行动联动，由国家卫健委牵头，联合疾控中心、脑卒中防治基地、行业协会等相关部门，编制并发布《脑卒中健康教育核心信息与传播指南》（拟），明确科普宣传的核心内容、传播标准与实施要求。大力普及脑卒中预防、急救、治疗、康复

[1] Tan J, Ramazanu S, Liaw S Y, et al. Effectiveness of public education campaigns for stroke symptom recognition and response in non-elderly adults: a systematic review and meta-analysis[J]. Journal of Stroke and Cerebrovascular Diseases, 2022, 31(2): 106207.

全流程科普知识，提升全民脑卒中防治知晓率、参与率，持续提高脑卒中高危因素知晓度，普及脑卒中快速识别方法。

2．立足人群特征与健康需求差异，推行脑卒中防治分众化精准科普宣教

立足不同人群的认知规律、生活场景及个性化健康需求，推行分众化、精准化、场景化科普宣教模式，如针对青少年群体将脑卒中防治科普知识纳入后续相关政策发展规划，并融入中小学常态化教育活动。国际经验表明，尽管青少年并非脑卒中高发人群，但面向该群体开展脑卒中防治健康教育，可有效影响其父母、祖父母等脑卒中高危人群，进而实现以家庭为单元的健康知识传递与行为改变。跨国项目 FAST Heroes[1]发现对 5～9 岁小朋友进行脑卒中防治教育，中风的知识能有效地从儿童传递给他们的家人[2]。针对职场人群，聚焦职场人高发高危因素开展针对性指导，将脑卒中防治科普深度融入职业健康促进体系。针对老年人群体，结合老年人群认知特点及接受习惯，依托基层社区服务中心、老年活动中心、养老院等阵地，联动家庭医生签约服务，精准对接老年人群健康需求。针对农村老年群体、偏远地区居民等科普信息盲区人群，立足基层传播特点，降低科普理解门槛，重点强化脑卒中预警信号、紧急急救方法等核心知识的宣传。

3．发挥全媒体传播矩阵效能，推动脑卒中防治医媒深度融合与科普落地

建议建立更常态化、规范化的“医学专家+媒体记者”联合策划机制，实现专业医学知识与媒体传播优势的深度融合。引导主流媒体开设脑卒中防治

[1] FAST Heroes 项目是一项面向 5–9 岁儿童、以家庭（尤其祖父母）为核心传播对象的国际脑卒中科普教育项目，核心是通过孩子向长辈传递 FAST 卒中识别与立即呼救的知识。该项目由希腊马其顿大学发起，勃林格殷格翰（Boehringer Ingelheim）的全球卒中公益平台“天使行动”（Angels Initiatives）支持，并受到世界卒中组织认可。

[2] Tsakpounidou K, van der Merwe J, Klinke M E, et al. FAST heroes: results of cross-country implementation of a global school-based stroke education campaign[J]. Frontiers in Public Health, 2022, 10: 849023.

科普专栏，形成“官方引导、媒体联动、专家支撑、全民参与”的传播格局。

（三）健全急救体系协同机制，推进急救服务标准化建设

1．制定全国统一的脑卒中急救标准化政策，推动脑卒中急救标准化流程落实

在制度层面上，出台脑卒中急救标准化政策。明确急救诊疗流程、绿色通道建设标准、全程质量控制指标，要求各级医疗机构严格落实，将急救标准化执行情况纳入医疗机构等级评审与绩效考核。出台急救能力提升专项政策，加大对基层医疗机构急救设备、人才培养的资金投入政策支持，将脑卒中急救培训、应急演练纳入医护人员继续教育必修内容，建立优质卒中中心对基层的技术帮扶与指导政策，推动急救服务标准化发展。强化脑卒中急救专业能力建设，聚焦院前急救与院内救治两大关键环节，全方位提升医护人员急救水平。

2．健全急救网络与转诊机制，加快“1 小时黄金救治圈”建设

健全脑卒中急救网络与转诊机制，筑牢脑卒中急救第一道防线。依托“百万减残”专委会现有的中国急救地图“百城百图”建设，全面推动“卒中急救地图”模式在纵深铺开。

明确卒中定点救治医院的建设标准、服务规范及救治能力要求，实现三级医院与社区卫生服务中心、乡镇卫生院等基层医疗机构的精准对接、上下联动，构建“基层初筛、快速转诊、上级救治”的闭环急救体系。推动省市地方的脑卒中急救体系向规范化、精细化、标准化方向发展。

同时，积极协调卫生健康行政部门、急救中心、各级医疗机构等多方力量，打破部门壁垒，建立脑卒中急救全程协同工作机制，细化院前急救、院内接诊、转诊衔接等各环节的职责分工，明确时间节点要求，加快“1 小时黄

金救治圈”建设，优化急救资源配置，缩短急救转运时间，最大限度减少患者从发病到接受溶栓、取栓等有效治疗的延误，全面提升脑卒中急救救治效率与整体效能。

3．补齐基层急救短板，推动基层急救体系完善

聚焦县域及农村地区等急救资源薄弱区域，破解基层急救设备匮乏、专业能力不足、救治延误等突出问题，推动脑卒中急救服务均等化发展。加大对县域及农村地区急救设备投入力度，完善基层医疗机构急救设施配置，改善基层急救条件，提升基层医疗机构对脑卒中患者的初步识别、应急处置与转诊衔接能力。

推行三级医院与县域、农村基层医疗机构“对点帮扶、结对共建”政策，建立长期稳定的帮扶机制，通过组织多批脑卒中领域临床专家、急救专家深入基层一线，开展急救技术培训、脑卒中筛查指导、卒中中心标准化建设帮扶等工作，提升基层医护人员的专业素养和急救能力。

同时，依托帮扶机制，推动三级医院与基层医疗机构建立双向转诊绿色通道、远程会诊机制，实现急救资源共享、诊疗协同，切实降低区域间急救服务差距。

（四）稳步落实分级诊疗制度，将分级诊疗要求落实到脑卒中防治全流程

以脑卒中为抓手，在疾病全程落实分级诊疗制度。依托百万减残专委会开展的“千县万镇中风识别行动”基地建设等行动，在地市卫生健康行政部门组织下，整合优势资源，组建由高级卒中中心单位和基地医院牵头，适应分级诊疗制度，建立以基层医疗卫生机构为基础网点的脑血管病专科联盟体系。明确各级医疗机构在脑卒中预防筛查、急性期救治、恢复期康复、后遗症管理及健康随访等各环节的核心职责，在脑卒中诊疗的各个阶段落实分级诊疗制度。

高级卒中中心/三级医院重点承担脑卒中急危重症救治、复杂病例会诊、技术指导及人才培训等任务；市级医院发挥区域辐射带动作用，承接辖区内脑卒中急性期常规救治、恢复期患者转诊衔接及基层医疗机构技术帮扶等工作，搭建高级卒中中心与基层网点的沟通桥梁；基层医疗卫生机构聚焦脑卒中预防宣教、高危人群筛查与干预、轻症患者接诊、康复随访及健康管理等基础工作，通过专科联盟的技术赋能和远程指导，提升中风识别、初步处置及转诊能力，打通脑卒中防治“最后一公里”。依托“百万减残”项目的专科联盟体系，各区域卒中专科联盟协助当地卫生健康部门开展卒中防治相关工作，推动卒中临床研究；在康复层面，鼓励脑卒中康复基层化，优化康复医疗资源统筹配置，引导优质医疗资源下沉。

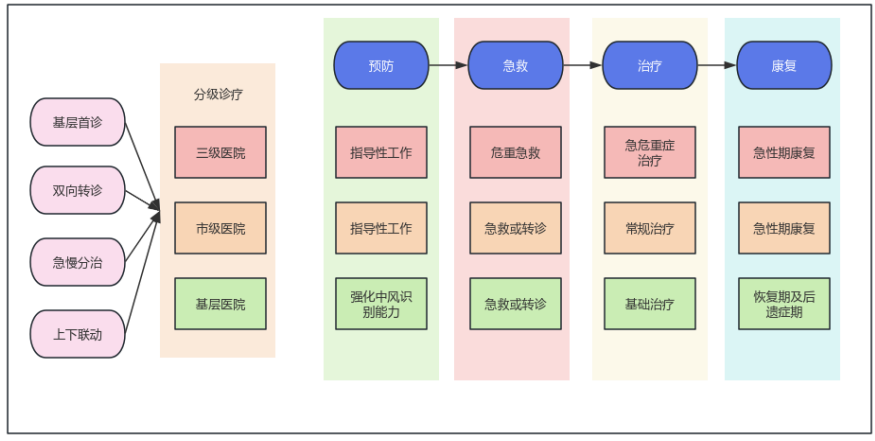

图 2 脑卒中防治各个环节与分级诊疗融合

以分级诊疗体系建设为核心抓手，聚焦脑卒中患者康复全周期需求，健全“医院—社区—居家”三级康复服务网络，构建衔接顺畅、分工明确、精准高效的康复服务体系。强化医院康复核心支撑作用，明确康复评估标准与治疗流程；加大基层社区康复投入力度提升社区康复人员的脑卒中康复评估、基础康复训练、并发症预防等专业能力。明确各级康复机构职责边界，建立

标准化的康复转诊机制，规范转诊流程、细化转诊标准，确保患者从医院急性期康复向社区恢复期康复、居家维持期康复无缝衔接，杜绝康复断档、重复诊疗等问题，让患者在康复各阶段都能获得精准适配的服务。

（五）鼓励地方试点，推广试点经验，提升市县脑卒中防治水平

2026 年 2 月，国家卫生健康委公布第六批国家慢性病综合防控示范区建设评估结果，提出“强化多病同防同治，深入开展‘体重管理年’活动，强化慢性病早筛早诊早治”的新要求。建议在后续示范区建设中能持续优化慢性病防控政策，将脑卒中防治综合管理、“脑卒中—心肾代谢慢病”的联合识别与同步干预纳入下一批示范区的政策框架与运行体系中，建立双向风险防控机制。

中央相关部委强化对试点地区的统筹指导与资源支持，通过出台专项指导意见、给予试点专项资金倾斜、组建专家指导团队等方式，为试点工作提供政策、资金、技术全方位支撑；同时建立常态化跟踪督导与成效评估机制，科学设定试点考核指标，定期开展工作进展调研、阶段性成效评估，及时总结试点中形成的成功经验、创新举措，系统梳理试点推进中的难点问题与堵点环节，针对性优化试点实施方案，提炼形成标准化、可复制、可推广的操作路径与实践范本。

Advance Stroke Prevention and Treatment Policies & Explore a New Pathway for Integrated Chronic Disease Co-Management

Boehringer Ingelheim[1]

Abstract

Stroke is a major cardiovascular and cerebrovascular disease with a high morbidity rate in China. Epidemiologically, it is characterized by high incidence, mortality, and disability rates, with a noticeable trend toward younger onset. Pathologically, it is closely related to chronic cardio-renal-metabolic (CRM) diseases such as hypertension, diabetes, and hyperlipidemia. [2] The progression of stroke not only results in physical, cognitive, and linguistic impairments but also necessitates long-term treatment and rehabilitation. This imposes a heavy caregiving and economic burden on families while exacerbating pressures on the healthcare system and public health expenditures. Therefore, stroke prevention and control are key issues affecting national health levels and the progress of public health initiatives.

Although China has been strengthening stroke prevention and treatment policies since 2011, the situation remains challenging due to an aging population and widespread exposure to chronic disease risk factors. Stroke continues to be a key issue in major chronic diseases management for Healthy China 2030 development. In recent years, China wrote stroke into the *Outline of the Healthy China 2030 Plan* and the *Healthy China Initiative (2019–2030)*. A series of policy documents have been issued, including *the Healthy China Initiatives: Implementation Plan for Cardiovascular and Cerebrovascular Disease Prevention and Treatment (2023–2030)*. The policies laid a solid foundation, integrating stroke into national chronic disease management framework and making arrangements for full-chain prevention

[1] The views expressed in this report are those of the enterprise research and do not represent the official stance or opinions of the forum host and organiser.

[2] Ndumele C E, Neeland I J, Tuttle K R, et al. A synopsis of the evidence for the science and clinical management of cardiovascular-kidney-metabolic (CKM) syndrome: a scientific statement from the American Heart Association[J]. Circulation, 2023, 148(20): 1636-1664.

and treatment and system development. The Outline of the 15th Five-Year Plan (2026-2030) identifies "strengthening the comprehensive prevention and control of chronic diseases, developing full-chain services for prevention, treatment, rehabilitation and management, and improving systems for early screening, diagnosis and treatment" as some of the key priorities for the next five years, with further emphasis on the comprehensiveness of prevention and control efforts.

To enhance the implementation of national policies and address current challenges – such as insufficient synergy in chronic disease management, limited reach of public education, inconsistencies in emergency care systems, regional disparities in resources, and inadequate primary care capabilities – this paper suggests five key areas of improvement to build an integrated management system for stroke and CRM diseases:

- **Integrate CRM disease co-management into the national chronic disease strategy to improve stroke prevention and treatment.** Promote a shift from siloed prevention and control toward integrated management of stroke and CRM diseases. First, expand multi-disease joint screenings by leveraging existing initiatives to achieve full coverage of high-risk populations across age groups and include core metabolic and early renal function tests in basic physical exams under the Basic Public Health Services. Second, establish a linked assessment mechanism, align risk assessment standards, and achieve early identification and early intervention for high-risk groups. Third, strengthen primary-level management, improve training for primary-level healthcare institutions, promote contract signing with family doctors, standardize treatment and management of CRM diseases, and control risk factors. The goal is to stop the chain of events leading to stroke and severe cardio-renal diseases at its root, achieve coordinated prevention and control of stroke and CRM diseases, and address their root causes together.
- **Strengthen public education and improve stroke awareness.** Implement long-term and targeted education tailored to different ages, occupations, and health conditions. Use all media channels effectively and integrate medical expertise with media dissemination to improve public awareness of disease

prevention and treatment, symptom recognition for emergency care and chronic disease management, and to enhance self-rescue/mutual aid capabilities for emergency.

- **Improve the coordination and standardization of emergency services.** Improve standardized emergency care systems and foster coordinated stroke prevention and control services. Accelerate the development of unified national standards for the entire stroke emergency process, enhance regional Stroke Center networks, and create an integrated pathway connecting pre-hospital and in-hospital care. Improve primary-level stroke care capabilities by strengthening the "Stroke Emergency Map", combining community physical maps and digital maps, precisely addressing gaps in primary-level emergency care capabilities, and improving equipment and professional training.
- **Implement the tiered medical system across the stroke care process.** Integrate stroke prevention into the primary-level chronic disease management system and implement tiered medical system. Establish a cerebrovascular disease alliance led by advanced stroke centers and base hospitals and participated by primary-level healthcare institutions to deliver tiered medical care across the full chain of screening, emergency care, diagnosis, treatment, and rehabilitation.
- **Encourage local pilot programs and promote pilot experience to improve stroke care at the city and county levels.** Based on the sixth batch of *National Demonstration Zones for Comprehensive Chronic Disease Prevention and Control*, select cities and counties with strong foundations, high digitalization and strong reform willingness to pilot integrated stroke and chronic disease management. Make bold explorations and innovative breakthroughs in key stroke care areas to establish successful models. The central government should provide policy guidance, funding and technical support for pilot areas, establish regular tracking and evaluation mechanisms, and summarize replicable experience and standard practices. Pilot programs can then be promoted nationwide to enhance the overall prevention and control at city and

county levels and to lay a foundation for improving national policies.

1. Background and Value Analysis

1.1 The Severe Disease Burden and Socioeconomic Impact of Stroke

Stroke imposes significant burdens on both families and society. A stroke is a medical emergency that occurs when blood flow to the brain is interrupted, either due to a blockage or bleeding. This lack of blood flow can lead to brain cell death, serious complications, and can be fatal.[1] The onset of stroke is closely associated with controllable risk factors, such as hypertension and diabetes. [2]

Stroke can be divided into two types: ischemic stroke and hemorrhagic stroke. Ischemic stroke, commonly known as cerebral infarction, has a higher incidence rate than hemorrhagic stroke, accounting for over 70% of total stroke cases. From 2010 to 2021, the age-standardized prevalence rate of stroke in China showed an overall upward trend; The prevalence of hemorrhagic stroke decreased marginally but remained relatively high. [3]

Regardless of type, both the incidence and mortality rates of stroke in China are above the international average. The current epidemiological profile of stroke in China can be summarized by high incidence, high mortality, high disability, and lower age of onset. According to the *Global Burden of Disease (2019)* data, 2.189 million people died from stroke in China in 2019; From 1990 to 2019, deaths resulting from ischemic stroke increased by 171.1%, with an age-standardized mortality rate of 62.2 per 100,000, [4] compared to 34.3 per 100,000 in the US[5]. Notably, the onset of stroke in China is occurring at increasingly younger ages.

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[1] https://www.who.int/news-room/fact-sheets/detail/stroke

[2] O'Donnell M J, Chin S L, Rangarajan S, et al. Global and regional effects of potentially modifiable risk factors associated with acute stroke in 32 countries (INTERSTROKE): a case-control study[J]. The lancet, 2016, 388(10046): 761-775.

[3] Expert Committee of the National Health Commission on Strengthening Stroke Prevention and Treatment and Reducing One Million New Disabilities, Ji Xunming. Summary of the China Stroke Prevention and Treatment Report 2024"[J]. Journal of Capital Medical University, 2025, 46(06): 947-960.

[4] Expert Committee of the National Health Commission on Strengthening Stroke Prevention and Treatment and Reducing One Million New Disabilities, Ji Xunming. Summary of the China Stroke Prevention and Treatment Report 2024"[J]. Journal of Capital Medical University, 2025, 46(06): 947-960.

[5] Park J H, Chang Y, Park S, et al. Burden of stroke in the United States of America, 1990–2021: a systematic analysis for the US burden of disease study 2021[J]. Frontiers in Neurology, 2025, 16: 1609508.

According to the *China Stroke Prevention and Treatment Report (2024)* [1], the age of first stroke onset among patients aged 40 and above in China is concentrated between 60.9 and 63.4 years, with those aged 40-64 accounting for over 66.6% of first-time cases. A comparative study of ischemic stroke patients in China and the US showed that the median age of stroke onset is 65 in China and 72 in the US[1].

Among stroke survivors, 70-80% are unable to live independently due to disabilities, placing a tremendous burden on families and society. [2] The stroke incidence and mortality rates in China are alarmingly high. On average, one person experiences a new or recurrent stroke every 10 seconds, and one person dies from stroke every 28 seconds. Among the survivors, approximately 75% experience varying degrees of sequelae, with 40% suffering from severe disabilities. [3] Most patients are unable to rejoin the workforce, leading to a substantial reduction or even complete loss of family income. This creates a predicament of soaring medical expenditure coupled with plummeting income. Meanwhile, as the age of stroke onset continues to decline, the proportion of young and middle-aged stroke patients increases annually, causing a serious depletion of labor force.

From a societal perspective, the high incidence and disabling nature of stroke place immense pressure on public service spending and government finances. [4] According to *An Integrated Analysis of Disease Burden and Economic Burden of Stroke in China*[5], the average hospitalization costs per episode for both ischemic and hemorrhagic stroke in China rose significantly from 2004 to 2020; With the rapid aging of the population, the disease and economic burdens are expected to rise further in the coming years.

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[1] Wangqin R, Laskowitz D T, Wang Y, et al. International comparison of patient characteristics and quality of care for ischemic stroke: analysis of the China National Stroke Registry and the American Heart Association get with the guidelines—stroke program[J]. Journal of the American Heart Association, 2018, 7(20): e010623.

[2] Tong Z, Weijun G. The Importance of Early Stroke Rehabilitation [J]. Chinese Journal of the Frontiers of Medical Science (Electronic Version), 2012, 4(04): 25-26.

[3] Survey Report on Public Awareness of Stroke in China, Peking University, January 16, 2025

[4] Gerstl JVE, Blitz SE, Qu QR, et al. Global, Regional, and National Economic Consequences of Stroke. Stroke. 2023;54(9):2380-2389. doi:10.1161/STROKEAHA.123.043131

[5] Yi Z, Fan Y, Tianqi L, et al. An Integrated Analysis of Disease Burden and Economic Burden of Stroke in China [J]. Chinese Journal of Stroke, 2025, 20(05): 566-580.

From a global perspective, the disease burden of stroke in China is significantly higher than in major developed countries. Using Disability-Adjusted Life Years (DALYs) as a core metric for international comparison, the disparity is particularly stark: in 2021, China's DALYs for ischemic stroke reached 1,646.84 per 100,000, far exceeding Japan (1,103.68 per 100,000), the US (654.77 per 100,000), France (641.01 per 100,000), and the UK (585.62 per 100,000). [1] These figures underscore the urgency and complexity of stroke prevention and control efforts in China.

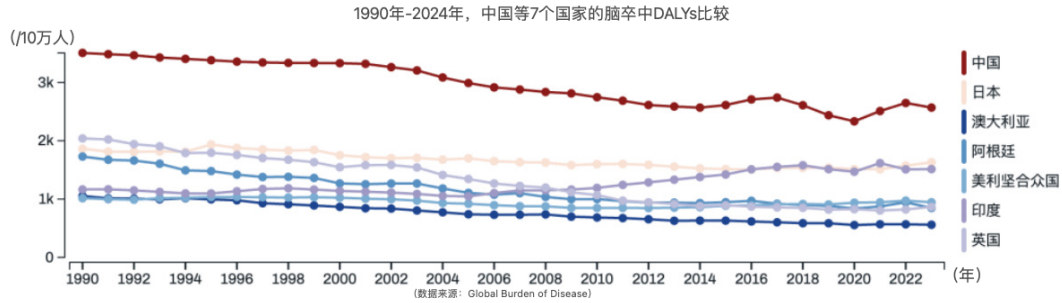

Figure 1: Comparison of ischemic stroke DALYs between China and six other countries

Based on existing clinical experience, stroke is a preventable and treatable disease. Practices in the US indicate that managing risk factors such as hypertension serves as a key driver of reduced mortality rates and plays a pivotal role in stroke prevention and treatment. [2] Therefore, effective early interventions targeting risk factors will help reduce stroke incidence, alleviate the disease burden, and improve the quality of life for stroke survivors.

[1] Global Burden of Disease Study results.

[2] Lackland D T, Roccella E J, Deutsch A F, et al. Factors influencing the decline in stroke mortality: a statement from the American Heart Association/American Stroke Association[J]. Stroke, 2014, 45(1): 315-353.

1.2 Review of Stroke Policies

Over the past decade, the National Health Commission has established and developed a robust stroke prevention and control system through specialized policies and programs. Meanwhile, with coordinated efforts of the current Expert Committee of the Project to Reduce One Million New Disabilities (formerly the Stroke Screening, Prevention and Treatment Committee of the Ministry of Health), key initiatives have been implemented, such as the national stroke center network, emergency maps, high-risk population screening, and standardized diagnosis and treatment protocols.

In 2012, at the initiative of Academician Wang Longde, China released the *Administrative Measures for Stroke High-Risk Group Screening and Intervention Pilot Projects (Trial Implementation)* and carried out the projects nationwide. In 2014, the Stroke Prevention and Treatment Project Committee and Expert Group (hereafter as "Stroke Prevention Committee") was established to further promote stroke screening, prevention and treatment. With joint efforts of the Stroke Prevention Committee and Academician Wang, *the Outline of the Healthy China 2030 Plan* released in 2016 proposed a comprehensive chronic disease control strategy with stroke as a key priority. This was further reinforced by *the Stroke Comprehensive Prevention and Control Work Plan* released the same year, which clarified objectives, content, steps and requirements of stroke prevention and treatment.

In 2021, *the Comprehensive Plan of the Project to Improve Stroke Prevention and Treatment and Reduce One Million New Disabilities* was launched, representing the most comprehensive stroke policy involving the most departments to date. The Plan set targets for blood pressure management, outpatient screening, and public education in hope of reducing stroke incidence and disability rates. That same year, *the Guidelines for Stroke Prevention and Treatment in China (2021 Edition)* collected the latest clinical evidence and expert consensus, which provided a unified

technical framework to guide all medical institutions nationwide and laid the technical foundation for policy implementation. In 2023, the Stroke Committee was reorganized into the Expert Committee of the Project to Reduce One Million New Disabilities . That same year, *the Healthy China Action – Implementation Plan for Cardiovascular and Cerebrovascular Disease Prevention and Treatment (2023–2030)* proposed integrating secondary prevention and rehabilitation of coronary heart disease and stroke patients into family doctor contracted services, and establishing stroke clinics in community health centers to improve health management of high-risk population and carry out stroke prevention and rehabilitation management. Guided by a series of policy objectives, stroke prevention and treatment has become a priority in promoting the Healthy China initiative, reducing disease burdens, and improving the health literacy of the public.

At the local level, provinces and cities have advanced stroke screening, diagnosis, treatment, and prevention systems, incorporating these into their urban Healthy China initiative goals. For example, Beijing leveraged the resources of national stroke screening and prevention center hospitals and issued *the Beijing Implementation Plan for Strengthening Stroke Prevention and Treatment and Reducing One Million New Disabilities*. The Plan proposed promoting stroke prevention and screening, emergency care, standardized diagnosis and treatment, rehabilitation, and health follow-ups, improving the stroke prevention and treatment system, and strengthening the capabilities of stroke professionals. Hubei Province has integrated stroke prevention and treatment goals into *the Healthy Hubei Action – Implementation Plan for Cardiovascular and Cerebrovascular Disease Prevention and Treatment in Hubei Province (2025–2030)* to coordinate resources within the province. Sichuan Province issued *the Healthy Sichuan Action – Implementation Plan for the Prevention and Treatment of Four Major Non-Communicable Diseases (2025–2030)*, which proposed optimizing joint prevention and treatment of cardiovascular and cerebrovascular diseases, strengthening personalized comprehensive cardiovascular and cerebrovascular risk assessment

services, and expanding the coverage of early screening and comprehensive intervention for stroke and cardiovascular diseases. Furthermore, by the end of 2023, nearly half of China's provinces or directly-administered municipalities had achieved 100% coverage of stroke centers, ensuring that every city or district has at least one qualified stroke center. [1] This has laid a solid foundation for advancing stroke prevention and treatment efforts nationwide.

It is evident that the goal of making stroke "treatable" has been realized at the clinical level, with notable improvements in patient access to stroke care. Meanwhile, significant emphasis has been placed on "prevention", as demonstrated by the introduction of policies targeting high-risk factor screening and health education, which laid the groundwork for comprehensive stroke management. Local governments have also issued policies that provide institutional support for local stroke prevention and treatment efforts. China's stroke prevention and control efforts have now entered a critical phase of quality improvement and system optimization. Improving stroke policies is not only a necessary step for advancing the Healthy China strategy but also a crucial measure to reduce the national disease burden and enhance public health literacy. Against this backdrop, exploring ways to improve stroke policies and further promote the transformation from "disease treatment" to "health management" holds profound significance.

1.3 High Interconnectivity Between Stroke and Chronic Cardio-Renal-Metabolic (CRM) Diseases, and Strengthened Comprehensive Prevention and Control of Stroke-Related Risk Factors in National Policies

Stroke is not an isolated cerebrovascular disease; it is highly correlated with chronic cardio-renal-metabolic (CRM) diseases – such as hypertension, diabetes, hyperlipidemia, coronary heart disease, and chronic kidney disease (CKD) – through overlapping pathophysiological mechanisms, cumulative risks and mutually reinforcing effects. Clinical research reveals pathophysiological

[1] Expert Committee of the National Health Commission on Strengthening Stroke Prevention and Treatment and Reducing One Million New Disabilities, Ji Xunming. Summary of the "China Stroke Prevention and Treatment Report 2024"[J]. Journal of Capital Medical University, 2025, 46(06): 947-960.

interactions between stroke and chronic CRM diseases, with hypertension, diabetes, dyslipidemia, heart failure and obesity being the core modifiable risk factors for stroke. Data show that 90.7% of stroke occurrences in China are related to modifiable risk factors like hypertension, diabetes, hyperlipidemia and unhealthy lifestyle. [1] The long-term uncontrolled presence of these risk factors exacerbates cerebrovascular risks and drives stroke occurrence. Meanwhile, chronic metabolic diseases, particularly CKD and liver disease, are also pathologically linked with cardiovascular diseases. They not only show a high degree of comorbidity but also exhibit links to adverse prognosis. [2] The coexistence of such metabolic and organ-related chronic diseases further increases the risk of stroke incidence and adverse outcomes, highlighting the core feature of "common origin, comorbidity, and linked risks". Strengthened stroke prevention and control and effective joint management of shared risk factors for chronic diseases such as diabetes and hypertension can play a significant role in addressing the co-occurrence of CRM diseases.

Comprehensive prevention and control of stroke-related risk factors has been written into national policies. *The Guidelines for Cerebrovascular Disease Prevention and Control (2024 Edition)* issued by the National Health Commission, includes modifiable risk factors – such as hypertension, diabetes, dyslipidemia, and obesity – into key assessments as part of the primary prevention strategies for cerebrovascular diseases. *The 14th Five-Year Plan for National Health* calls for enhancing the comprehensive prevention and treatment capabilities for major chronic diseases, including cardiovascular and cerebrovascular diseases, cancer, chronic respiratory diseases, and diabetes. The Plan emphasizes strengthening prevention, early screening, and comprehensive intervention, and requires "opportunistic screening for cardiovascular and cerebrovascular diseases in hospitals". Moreover, it proposes advancing the co-management of the "Three Highs" (hypertension, hyperglycemia, and hyperlipidemia) and sets a target for the

[1] Liu Zhao, Chen Minxia, Shen Dou, et al. Optimization and System Development of Prevention Strategies for High-Risk Stroke Populations Under the Integration of Medical Care and Prevention[J]. Chinese Journal of Stroke, 2025, 20(03): 270-276.
[2] Skou, S.T., Mair, F.S., Fortin, M. et al. Multimorbidity. Nat Rev Dis Primers 8, 48 (2022). https://doi.org/10.1038/s41572-022-00376-4

standardized management service rate for patients with hypertension and type II diabetes at the primary level to exceed 65%. By addressing shared risk factors through prevention, screening, and intervention, these measures play a pivotal role in reducing the burden of major chronic diseases, including stroke. Furthermore, *the Healthy China Action – Implementation Plan for Cardiovascular and Cerebrovascular Disease Prevention and Treatment (2023–2030)* sets the goal of "effectively controlling the rising trend of cardiovascular and cerebrovascular disease incidence and risk factor levels". It advocates for innovative approaches for the joint prevention and treatment while advancing early screening and comprehensive intervention efforts. Additionally, it encourages qualified community health service centers to establish stroke clinics to strengthen the health management of populations at high risk for stroke.

While the aforementioned measures target risk factors associated with stroke, they nonetheless contribute to improving awareness and control of risk factors of CRM diseases and establishing a foundation for their co-management.

1.4 Significance of Continuously Improving Stroke Prevention and Treatment Policies

In the context of advancing the Healthy China initiative, stroke prevention and control have gone beyond the scope of clinical medicine and evolved into a governance issue that reflects the effectiveness of the public health system, tests the equity of medical services, and promotes the implementation of tiered diagnosis and treatment. Therefore, improving stroke prevention and control efforts and the full-chain system is not only a response to public health needs and people's well-being, but also an important pillar for implementing the national strategy for preventing chronic diseases, reducing the social medical burden, and achieving the goal of universal health.

1) Strengthening Public Health Defense Line and Reducing National Disease Burden: As a major chronic disease with high incidence, high disability, and high mortality, stroke imposes heavy medical and financial burdens on individuals and families while consuming considerable medical and health resources. Improving

stroke prevention and control policies enables the top-level design of a full-chain system covering prevention, emergency care, treatment, and rehabilitation. It drives the shift from disease treatment to health management, reduces the incidence, disability, and recurrence of stroke at the source, cuts social medical expenses, mitigates the imbalance between supply and demand of medical resources, and strengthens the national public health defense line.

2) Enhancing Equal Quality of Care and Promoting Health Equity: Studies show that people with lower socioeconomic status face higher risks of CRM diseases, are more likely to receive sub-standard medical services, and experience poorer health outcomes, including stroke. [1] Improving systematic screening and prevention of CRM diseases is key to reducing such inequities. Stroke policies can be improved by implementing measures such as screening and management of CRM diseases in high-risk populations, standardized emergency systems, inclusive policies for rehabilitation, delivering tailored health education and targeted delivery, and intelligent technologies at the primary level. These initiatives will guide high-quality resources to community levels, address weaknesses in primary prevention and treatment, and narrow the gaps between regions and between urban and rural areas.

3) Enabling the Implementation of the Tiered Medical System: Stroke is a major chronic disease and a priority of preventive and control efforts in China due to its high incidence rate, widespread impact, long disease course, complex diagnosis and treatment pathways, and clear demand for tiered medical services. Its full disease course – from prevention, emergency care, treatment to rehabilitation – aligns with the core principles of tiered diagnosis and treatment. Stroke prevention and control can serve as an important instrument to promote the tiered diagnosis and treatment system because it involves the entire care continuum: community screening of high-risk populations, standardized referral and treatment during the acute phase, specialized care during the stable phase, and community rehabilitation during

[1] Li J, Lei L, Wang W, et al. Social risk profile and cardiovascular-kidney-metabolic syndrome in US adults[J]. Journal of the American Heart Association, 2024, 13(16): e034996.

recovery. Improving stroke care provides an opportunity to integrate functions from primary care facilities to higher-level hospitals, promote functional differentiation, ensure rational resource allocation, and integrate service processes.

4) Demonstrating Global Leadership and Responsibility: In 2025, the WHO Executive Board reviewed and adopted the draft resolution titled *Reducing the burden of stroke: strengthening prevention, acute care, rehabilitation and health-system readiness*[1] in Geneva, which will be submitted for discussion at the World Health Assembly this May. The resolution advocates for a comprehensive, full-chain approach to stroke prevention and control, which was supported by the World Stroke Organization. The United Nations Sustainable Development Goal (SDG 3.4) explicitly calls for reducing premature mortality from noncommunicable diseases by one third by 2030. As home to one of the world's largest healthcare systems, China has had a profound impact on global policies, practices and institutional innovations in cardiovascular and cerebrovascular disease prevention and control. At this critical juncture, strengthening policy support for stroke and enhancing a systematic and forward-looking model for integrated chronic disease management will help elevate China's leadership in global health governance and promote a more equitable, accessible, and sustainable international framework for stroke prevention and control.

2. Major Challenges in Stroke Prevention and Treatment

2.1 Significant Regional Disparities of Stroke Management Capabilities, Particularly in the Southwest and Rural Areas

According to data from studies on stroke burden and prevention in China from 2007 to 2018[2], there were significant geographical variations in the stroke mortality-to-incidence ratio (MIR). The MIR was highest in the Southwest region and lowest in

[1] The World Health Organization. Factors Influencing the Decline in Stroke Mortality: A Statement From the American Heart Association/American Stroke Association [EB/OL]. (2026-02-03)[2026-03-15]. https://apps.who.int/gb/ebwha/pdf_files/EB158/B158_CONF9-en.pdf.

[2] Wu S, Wu B O, Liu M, et al. Stroke in China: advances and challenges in epidemiology, prevention, and management[J]. The Lancet Neurology, 2019, 18(4): 394-405.

the Eastern and Southern coastal areas. This disparity reflects that the advancements in stroke prevention and control are primarily concentrated in large cities and urban areas. Furthermore, from 2010 to 2021, stroke mortality rates in rural areas consistently exceeded those in urban areas. This increasing burden in rural areas may be associated with higher prevalence rates and inadequate management of hypertension, diabetes and hyperlipidemia[1]. The uneven distribution of resources between urban and rural areas and across different regions, coupled with differences in medical service capabilities, further exacerbates this disparity. Urban areas not only possess more comprehensive stroke centers and technologies like thrombolysis and thrombectomy, but also achieve full-chain management encompassing screening, health education, and rehabilitation. In contrast, rural healthcare institutions suffer from weak capabilities, a shortage of medical professionals, lower health literacy, and an inadequate pre-hospital emergency system. These limitations hinder early screening, diagnosis and treatment in rural areas. The regional imbalance widens health disparity and also constrains China's goals of stroke prevention and control and reducing the national disease burden.

2.2 Weak Primary-Level Emergency Capabilities and Pre-hospital Delays

Primary healthcare institutions have capability gaps in emergency response, diagnosis, and treatment, limiting their ability to fulfill the responsibility of early detection, intervention and management of stroke. The rate of intravenous thrombolysis in tertiary hospitals is around 5%[2], compared with the 22% in rural non-stroke centers of the US[3]. A survey of over 8,000 primary care physicians in China reveals a shortage of qualified professionals with limited capability for emergency response to critical conditions. [4] Other research indicates that only 49.6%

[1] Expert Committee of the National Health Commission on Strengthening Stroke Prevention and Treatment and Reducing One Million New Disabilities, Ji Xunming. Summary of the "China Stroke Prevention and Treatment Report 2024"[J]. Journal of Capital Medical University, 2025, 46(06): 947-960.

[2] Ye Q, Zhai F, Chao B, et al. Rates of intravenous thrombolysis and endovascular therapy for acute ischaemic stroke in China between 2019 and 2020[J]. The Lancet Regional Health–Western Pacific, 2022, 21.

[3] Man S, Bruckman D, Uchino K, et al. Rural hospital performance in guideline-recommended ischemic stroke thrombolysis, secondary prevention, and outcomes[J]. Stroke, 2024, 55(10): 2472-2481.

[4] Lian Lu, Chen Jiaying, Wang Xuanxuan, et al. A Study on the Current Situation and Countermeasures of Medical Service Capacity of Primary Care Physicians in China[J]. Chinese General Practice, 2023, 26(34):

of primary care physicians report having basic emergency theories and skills, with the majority acknowledging a lack thereof. [1] Primary hospitals also face equipment deficiencies, such as limited availability of diagnostic tools like electrocardiographs in township health centers. [2] Furthermore, pre-hospital delay remains a major obstacle. Studies show that the delay is particularly pronounced among individuals over 65 living alone, residents of rural areas, and populations in underdeveloped regions[3], highlighting the urgent need for targeted measures to shorten delays. Data from the China Stroke Emergency Map information platform also indicates that pre-hospital delay remains a core challenge despite improvements in key time metrics such as onset-to-door time, door-to-needle time and door-to-puncture time.

2.3 Low Public Awareness of Stroke Prevention and Treatment

Currently, the public awareness of stroke remains relatively low. According to the *China Public Stroke Awareness Survey Report* by Peking University in 2025[4], many lack a clear understanding of the severe disease burden of stroke and cannot fully grasp mnemonics like "Stroke 120" for recognizing early symptoms. In particular, the elderly at high-risk for strokes have significantly lower awareness of stroke knowledge. Furthermore, there are notable regional and demographic disparities in the knowledge about stroke prevention and treatment. Other surveys also reveal limited public understanding of chronic diseases that increase stroke risk, such as diabetes, heart disease and peripheral arterial disease. In a survey of cerebral infarction patients in Gansu Province[5], only slightly more than half (55.8%) heard

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4246-4253.

[1] Liu Aihua, Huang Qing, Gan Yongxiong. Analysis of primary medical staff's awareness of emergency capabilities and the effect of training[J]. Zhejiang Medical Journal, 2022, 44(20): 2243-2246.

[2] Zhou Ying. A Study on the Current Situation of Chronic Disease Prevention and Control in Primary Healthcare Institutions[D]. Chengdu University of Traditional Chinese Medicine, 2020. DOI:10.26988/d.cnki.gcdzu.2020.000623.

[3] Liao Yuqi, Cao Liming, Ren Lijie. Research Progress on the Current Status of Pre-hospital Delay in Acute Ischemic Stroke and Improvement Measures[J]. Chinese Journal of Stroke, 2023, 18(05): 594-600.

[1] Peking University Health Communication Team. "China Public Stroke Awareness Survey Report" released [EB/OL]. *Health News*, (2025-01-16). [2026-03-16]. https://mp.weixin.qq.com/s?__biz=MjM5NDg4OTEwMQ==&mid=2668872179&idx=2&sn=c501050dbd9bfebd9d8dfa4c0181a8b1&chksm=bd3482b1fc4c62d480a640dfc7b66785b90c5c6e8141d9fdc6e4b02834f627c37bd33743d229&scene=27.

[2] Liu Qi, Chen Wanqiang, Wang Ying, et al. Stroke Awareness Survey and Analysis of Influencing Factors among Ischemic Stroke Patients in Gansu Region[J]. Foreign Medical Sciences (Section of

of stroke. Moreover, beyond emergency-related knowledge, awareness of general stroke prevention and management principles is also relatively poor. For example, low awareness of diabetes and dyslipidemia can hinder efforts to control these contributors to stroke[1].

2.4 High Demand for Rehabilitation Amid Uneven Resource Distribution

There is a significant urban-rural and regional imbalance in the allocation of stroke rehabilitation resources. *Outline of the National Plan for the Healthcare Service System* indicates not only a shortage of specialized rehabilitation facilities, such as rehab hospitals and nursing homes, but also a disproportionate concentration of these resources in large and medium-sized cities[2]. This results in pronounced geographical disparities in access to quality rehabilitation services. Rural areas with higher stroke incidence and disability rates have a substantial and urgent need for rehabilitation and functional recovery services, yet there lacks a systematic mechanism for delivering such services. Primary healthcare institutions lack rehabilitation professionals and equipment, with no effective referral channels with higher-level rehab hospitals. This makes it difficult for rural stroke patients to access standardized and continuous rehabilitation therapy[3]. The delay or lack of timely rehabilitation often leads to the worsening of functional impairments, such as motor and language deficits. This significantly diminishes patients' quality of life and places a heavier burden on family and on the social healthcare system.

2.5 Insufficient Policy Synergy for Stroke and CRM Chronic Diseases

Despite extensive research confirming the interconnected risk factors between stroke and CRM diseases, current policies have yet to address or create mechanisms

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Medgeography), 2017, 38(02): 115-121.

[1] Chen J, Zhu Q, Yu L, et al. Stroke risk factors of stroke patients in China: a nationwide community-based cross-sectional study[J]. International Journal of Environmental Research and Public Health, 2022, 19(8): 4807.

[2] Notice of the General Office of the State Council on Issuing the Outline of the National Plan for the Healthcare Service System (2015-2020)[J]. Gazette of the State Council of the People's Republic of China, 2015, (10): 25-39.

[3] Peng Chengyuan, Liu Sichen, Wang Shijiao, et al. Analysis of the Current Status and Influencing Factors of Rehabilitation Needs among Rural Stroke Patients[J]. Chinese Journal of Social Medicine, 2025, 42(06): 701-705.

based on this relationship. *The Outline of Healthy China 2030 Plan* proposes implementing a comprehensive chronic disease prevention and control strategy and strengthening national demonstration areas for integrated chronic disease management. However, regarding chronic disease screening and early detection, the Outline focuses on "promoting opportunistic screening for cancer, stroke and coronary heart disease; Achieving full coverage of management and intervention for hypertension and diabetes patients; Gradually incorporating early diagnosis and treatment technologies of cancer and stroke into routine clinical practice; And strengthening the prevention and treatment of common diseases in students like myopia and obesity". While these statements emphasize early screening, treatment, and single-disease management, they fail to address the interconnections between stroke, obesity and other CRM diseases. *The Notice of the General Office of the State Council on Issuing the Medium- and Long-Term Plan for the Prevention and Treatment of Chronic Diseases in China (2017–2025)* proposes a comprehensive chronic disease prevention and treatment mechanism led by the government, and supported by departmental collaboration, social initiatives and public participation. The Notice encompasses a wide range of chronic diseases, including cardiovascular and cerebrovascular diseases, cancer, chronic respiratory diseases, diabetes, oral diseases, as well as endocrine, renal, bone, and neurological diseases. However, it notably misses liver-related diseases and provides limited discussion of the interactions and collaborative prevention pathways among different chronic diseases. This leaves room for developing an integrated approach for managing related conditions. *The Healthy China Action – Implementation Plan for Cardiovascular and Cerebrovascular Disease Prevention and Treatment (2023–2030)* aims to establish a nationwide system for comprehensive prevention, control, early diagnosis and treatment by 2030. It emphasizes risk prevention, proposing to strengthen health education for high-risk populations, enhance risk assessment, and conduct risk monitoring in populations aged 35 and above. However, existing policy documents have yet to incorporate the pathophysiological link between stroke and CRM diseases into top-level prevention and control design, promote joint identification and simultaneous intervention of interconnected diseases, and

establish a bidirectional risk prevention mechanism. The concept of managing multiple conditions together and preventing shared root causes has not been effectively implemented.

3. Policy Recommendations

3.1. Integrate the Coordinated Management of CRM Diseases into the National Comprehensive Chronic Disease Prevention and Control Strategy and Enhance Stroke Care

Stroke shares a close pathological relationship with CRM diseases. Conditions such as hypertension, diabetes, chronic kidney disease, and dyslipidemia are key contributors to stroke occurrence, and the effectiveness of their prevention and control directly influences primary stroke prevention. Therefore, it is necessary to fully integrate the coordinated management of CRM diseases into the national strategic framework for comprehensive chronic disease prevention and control. Based on national strategic plans for non-communicable disease (NCD) prevention and the development of comprehensive chronic disease prevention and control demonstration zones, the interconnections between CRM disease and stroke prevention must be strengthened, and a shift from single-disease intervention to coordinated prevention and control should be promoted.

First, leverage existing policies to implement universal screening for CRM diseases in key populations. Building on current screening and intervention programs for stroke, the efforts should be expanded to CRM diseases by age groups. Promote routine screenings of core indicators such as blood pressure, fasting blood glucose, glycated hemoglobin (HbA1c), the four key lipid indicators, renal function, and urine microalbumin.

Second, establish a linked risk assessment system for CRM diseases and stroke. Develop unified risk assessment standards that link indicators such as hypertension severity, diabetes duration, dyslipidemia severity, and chronic kidney disease stage with stroke risk levels. Conduct stratified stroke risk assessments for patients

identified during screening, and achieve early identification, flagging and intervention.

Third, strengthen CRM disease management at the primary level. Enhance training for primary healthcare professionals to build their capability for the standardized management of basic conditions such as hypertension and diabetes. Promote the integration of family doctor services with CRM disease management to enable timely intervention for patients with poorly controlled blood pressure, blood glucose or lipids. Through early, effective, and sustained control of CRM diseases, the pathogenesis pathway leading to stroke and severe cardio-renal diseases can be intercepted at its source.

3.2. Strengthen Public Education and Disease Awareness

3.2.1. Promote Policy Implementation through Creative Mechanisms, Enhance Disease Awareness, and Deliver Regular Public Education

International experience demonstrates the positive impact of public education campaigns in improving the recognition of stroke symptoms and emergency response. [1] It is recommended that stroke prevention and education initiatives be integrated into national strategies, for example, as projects in *the Three-Year Action Plan for Improving National Health Literacy (2024-2027)* or its subsequent updates after 2027. The *Guidelines for the Performance Assessment of National Basic Public Health Service Projects* already includes health education indicators, such as health lectures, audio-visual materials, and health promotion bulletin boards. We suggest further including stroke education effectiveness and outcomes into the above assessment criteria, thereby reinforcing the accountability of primary healthcare institutions and ensuring measurable outcomes.

At the operational level, based on *the Notice on Implementing Practical Healthcare Projects for the People in 2026* issued by the National Health Commission, stroke prevention and treatment should be incorporated into the Health Public Education

[1] Tan J, Ramazanu S, Liaw S Y, et al. Effectiveness of public education campaigns for stroke symptom recognition and response in non-elderly adults: a systematic review and meta-analysis[J]. Journal of Stroke and Cerebrovascular Diseases, 2022, 31(2): 106207.

Tour - Ten Thousand Health Lectures outlined in the Notice as a key topic. Stroke prevention could also be linked with initiatives like the Healthy China Stroke Recognition action led by the Expert Committee of the Project to Reduce One Million New Disabilities. The National Health Commission, in collaboration with the Chinese Center for Disease Control and Prevention, stroke prevention bases and industry associations, should draft and publish a *Core Information and Communication Guidebook for Stroke Health Education* to define core content, communication standards and implementation guidelines. Strengthen full-process public education covering stroke prevention, emergency care, treatment and rehabilitation, improve awareness and participation rates in stroke prevention and treatment, and enhance knowledge of risk factors and rapid symptom recognition methods.

3.2.2. Implement Differentiated and Targeted Education Based on Population Characteristics and Needs

Implement differentiated, targeted and scenario-based public education based on the cognitive habits, living environments and personal health needs. For adolescents, integrate stroke prevention into future policy frameworks and within routine educational activities. International experience shows that although adolescents are not at high risk for stroke, their knowledge can be passed on to their parents, grandparents and other high-risk individuals, resulting in household education and behavior change. For instance, the global project FAST Heroes[1] found that stroke education for children aged 5-9 effectively facilitated knowledge transfer to family members[2]. For office workers, provide targeted guidance on common workplace-specific risk factors, and integrate stroke into the occupational health promotion initiatives. For the elderly, deliver education activities in line with their cognitive

[1] The FAST Heroes project is an international stroke education initiative targeting children aged 5–9, with the family – particularly grandparents – as the core audience for knowledge dissemination. Its central goal is to transmit knowledge of FAST stroke recognition and the importance of immediate emergency calls from children to their elders. The project was initiated by the University of Macedonia in Greece, is supported by the Angels Initiative, the global stroke public welfare platform of Boehringer Ingelheim, and is endorsed by the World Stroke Organization.

[2] Tsakpounidou K, van der Merwe J, Klinke M E, et al. FAST heroes: results of cross-country implementation of a global school-based stroke education campaign[J]. Frontiers in Public Health, 2022, 10: 849023.

and learning habits. Leverage community service centers, activity centers and nursing homes and utilize family doctor services to address their specific health needs. For populations with limited access to information (e.g., the elderly in rural areas, residents in remote areas), adapt communication strategies to local contexts to lower the barrier of access and focus on stroke warning signs and emergency response methods.

3.2.3. Leverage All Media Channels to Promote Integration of Medical Expertise and Media and Implementation of Stroke Education

Establish a more regular and standardized joint planning mechanism of "medical experts + journalists" to integrate medical knowledge in media communications. Guide traditional media to set up special columns on stroke prevention and education. Foster a communication framework of official guidance, media collaboration, expert support, and public participation.

3.3. Improve Collaboration of the Emergency System and Promote the Standardization of Emergency Services

3.3.1. Formulate National Unified Policies for Stroke Emergency Care and Facilitate the Implementation of Standardized Procedures

Standardized policies for stroke emergency care should be introduced. Clearly define emergency diagnosis and treatment procedures, standards for stroke green channels, and quality control indicators for the entire process. Require all medical institutions to strictly implement the policies and incorporate their execution into hospital accreditation and performance evaluations. Issue special policies to enhance emergency capabilities and increase financial support for emergency equipment and personnel training in primary healthcare institutions. Integrate stroke emergency training and emergency drills as compulsory components of continuing education for healthcare professionals. Introduce policies for technical support and guidance from comprehensive stroke centers to primary level institutions, promoting the development of standardized emergency services. Strengthen the development of professional stroke emergency capabilities, focusing

on two critical phases of pre-hospital emergency care and in-hospital treatment, to improve the proficiency of medical staff.

3.3.2. Improve the Emergency Network and Referral Mechanism, and Accelerate the Development of the 1-Hour Rescue Model

To enhance the first line of defense in stroke emergency care, it is imperative to refine the stroke emergency network and referral mechanism. Building upon the foundation of A Hundred Maps in A Hundred Cities Project of the China Emergency Map by the Expert Committee of the Project to Reduce One Million New Disabilities, efforts should focus on the promotion and widespread adoption of the Stroke Emergency Map model.

Clearly define the construction standards, service specifications, and treatment capability requirements for designated stroke hospitals. Achieve precise connection and coordinated action between tertiary hospitals and community/township health centers. Build a closed-loop emergency system encompassing primary-level initial screening, rapid referral, and hospital treatment. Promote standardized and refined management of local stroke emergency systems.

Meanwhile, actively coordinate efforts among health departments, emergency centers, medical institutions at all levels, and other stakeholders to break down interdepartmental barriers. Establish a collaborative mechanism for the entire stroke emergency process, delineating responsibilities and setting time requirements for each stage, including pre-hospital emergency care, in-hospital reception, and referral coordination. Accelerate the development of the 1-Hour Rescue model, optimize emergency resource allocation, shorten emergency transport times, and minimize delays from symptom onset to effective treatments like thrombolysis and thrombectomy. These measures will comprehensively enhance the efficiency and effectiveness of stroke emergency care.

3.3.3. Address Weaknesses in Primary-Level Emergency Care and Improve Its System

Efforts should be concentrated on regions with limited emergency resources, such

as counties and rural regions, to address insufficient emergency equipment, inadequate professional capacity, and treatment delays, promoting the equity of stroke emergency services. Increase investment in emergency equipment for underserved areas, improve their emergency infrastructure, and strengthen their capacity for initial patient assessment, emergency response, and referral coordination.

Pair up tertiary hospitals and county-level/rural primary-level healthcare institutions through long-term, stable support mechanisms. Deploy medical and emergency experts to the grassroots level to conduct emergency technique training, deliver stroke screening guidance, and help build standardized stroke centers, in order to enhance the professional capabilities of primary-level healthcare professionals.

Furthermore, the support mechanism will promote two-way referral green channels and teleconsultation mechanisms between tertiary hospitals and primary-level institutions. It will facilitate the sharing of emergency resources, achieve coordinated diagnosis and treatment, and effectively reduce inequity across regions.

3.4. Implement the Tiered Medical System Throughout the Entire Stroke Care Continuum

Implement the tiered medical system throughout the entire continuum of stroke care. Building on initiatives such as the “Stroke Identification Campaign in A Thousand Counties and Ten Thousand Towns” led by the Expert Committee of the Project to Reduce One Million New Disabilities, municipal health departments can integrate resources and establish cerebrovascular disease alliances. Such alliances will be led by advanced stroke centers and base hospitals, aligned with the tiered medical system, and supported by primary healthcare institutions as network nodes. The core responsibilities of medical institutions at each level will be clearly defined for all stages of stroke care, including prevention and screening, acute-phase treatment, recovery-phase rehabilitation, long-term sequelae management, and follow-up checks. The tiered medical system will be applied in every phase of stroke diagnosis and treatment.

Advanced stroke centers and tertiary hospitals will focus on the emergency treatment of critical and severe stroke cases, consultation for complex cases, technical guidance, and medical personnel training. Municipal hospitals will serve as regional hubs, providing routine acute stroke care within their jurisdictions, managing patient referrals during recovery, and offering technical support to primary institutions. They act as a crucial bridge connecting advanced stroke centers with community-level facilities. Primary institutions will concentrate on basic tasks, including stroke prevention education, screening and intervention for high-risk populations, management of mild cases, rehabilitation follow-up, and health management. Through technical support and remote guidance from the alliance, their capabilities in stroke identification, initial management and patient referral will be strengthened, effectively delivering stroke services to patients' doorsteps. Relying on the alliance system under the Project to Reduce One Million New Disabilities, regional stroke alliances will assist local health authorities in implementing related initiatives and promoting clinical research. Regarding rehabilitation, encourage community-based stroke rehabilitation, optimize the allocation of rehabilitation resources and channel quality resources to the grassroots level.

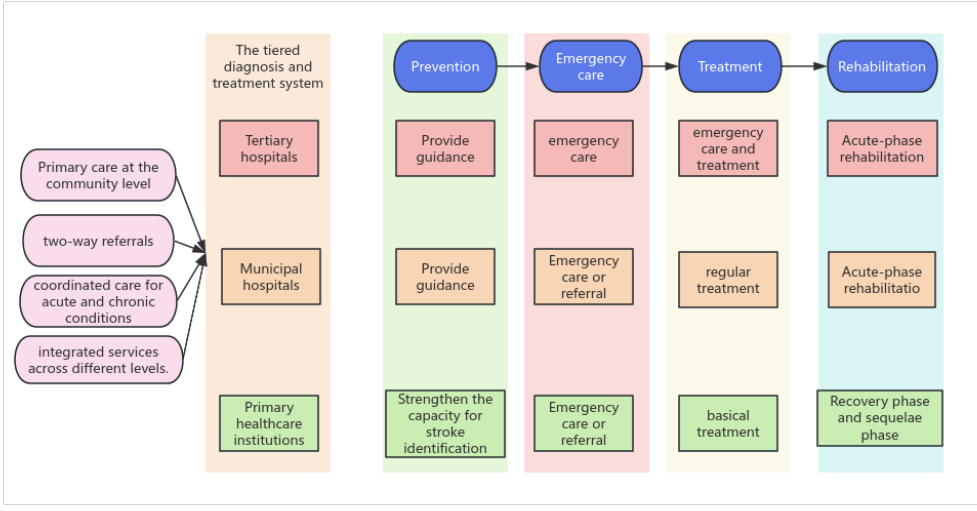

Figure 2: Integration of the Tiered Medical System Across All Stages of Stroke Care

With the tiered medical system as a core strategy and the entire patient pathway considered, a three-tiered rehabilitation service network involving “hospital-community-family” will be improved to become a well-coordinated and efficient rehabilitation service system. Strengthen the central role of hospitals in rehabilitation, and set clear rehabilitation assessment criteria and treatment protocols. Increase investment in community-based rehabilitation, and improve the professional skills of community rehabilitation staff in stroke rehabilitation assessment, basic rehabilitation exercises, and complication prevention. Define clear boundaries of responsibility for rehabilitation institutions, establish standardized referral mechanisms, procedures and criteria to ensure seamless transitions from hospital-based acute rehabilitation to community-based recovery rehabilitation and to home-based long-term rehabilitation. This will ensure that patients receive targeted services at every stage of their recovery and avoid interruptions in care or repetitive treatment.

3.5. Encourage Local Pilots and Promote Successful Experiences to Improve Stroke Care at the City and County Levels

In February 2026, the National Health Commission announced the evaluation results for the sixth batch of National Demonstration Areas for Comprehensive Prevention and Control of Chronic Diseases, and introduced new requirements including “strengthening the co-prevention and co-treatment of multiple diseases, implementing the ‘Weight Management Years’ initiative, and strengthening early screening, early diagnosis and early treatment of chronic diseases”. For future demonstration areas, we suggest optimizing chronic disease prevention and control policies, incorporating comprehensive stroke management and joint identification and intervention of stroke and CRM diseases into the policy framework and operational system of the next batch of demonstration zones, and establishing a bidirectional risk prevention and control mechanism.

The central government should strengthen overall guidance and provide resource support for the pilot areas. This includes issuing specific policy guidelines,

allocating dedicated funds, and forming expert teams to provide comprehensive policy, financial and technical support for pilot projects. Meanwhile, establish a regular monitoring, supervision and evaluation mechanism, carefully define assessment indicators, and conduct regular progress reviews and periodic evaluations of outcomes. Promptly summarize successful experiences and innovative approaches, and systematically analyze difficulties and bottlenecks encountered during implementation to optimize pilot plans and produce standardized, replicable, and scalable pathways and practical models.