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Promoting Scalable and Cost-Effective Integrated People-centred Eye Care (IPEC) for People with Diabetes in Rural China: Integrating Eye Care Services with Assistance of AI Technology to Primary Health Care (PHC) System

Background & objectives

One in four people with diabetes resides in China. **Diabetic retinopathy** (DR) is the leading cause of blindness among the working-age population worldwide. However, many township hospitals still lack qualified healthcare professionals to conduct DR examinations. Thanks to **artificial intelligence** (AI), this project has provided DR screening for over 150,000 individuals in the less developed Anhui province.

Methodology

The project employs a comprehensive **AI-DR grading digital system** to establish an effective pathway for township screening, referral, and county treatment channels. It adopts a three-pronged approach: (1) capacity building for integrated diabetic care, (2) service delivery and community empowerment, and (3) advocacy for strengthening eye care.
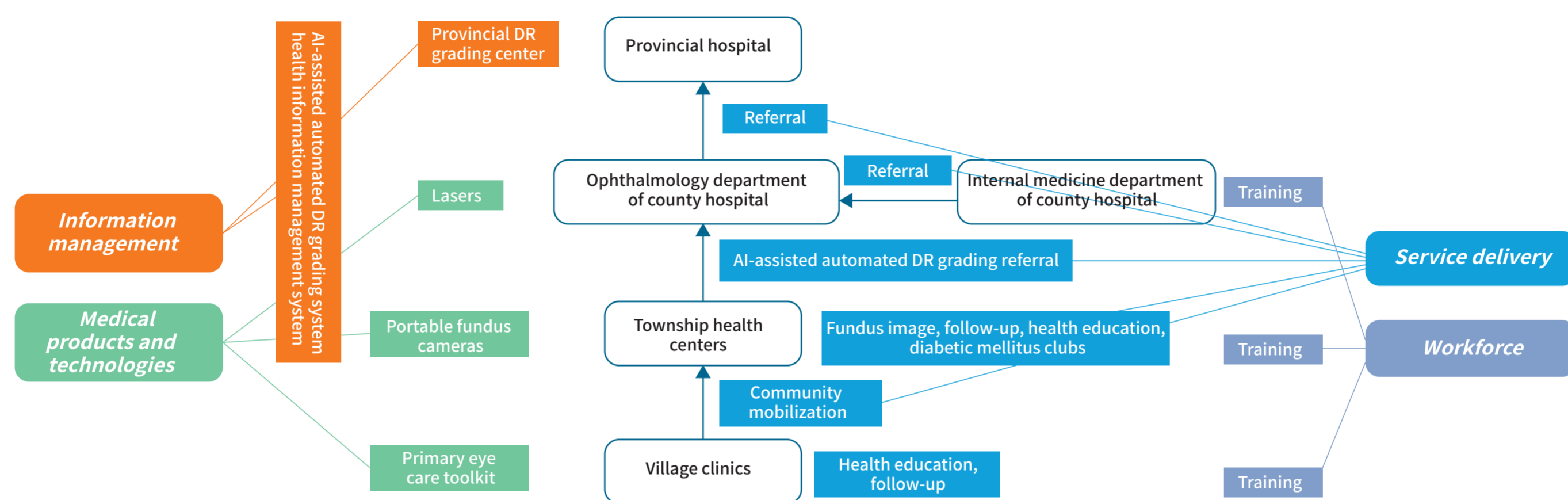

Figure. The Anhui Hierarchical Artificial Intelligence-Enabled Integrated Diabetic Eye Care Model

Results

The project improves access to integrated diabetic eye care in rural regions by empowering township health centers with **AI-enabled screening** and health education initiatives. It establishes an integrated hierarchical healthcare system and improves the capacity of ophthalmologists in county hospitals to manage DR treatment effectively. **Patient satisfaction** with AI-enabled screening is notably high, with 95.6% of respondents indicating a willingness to continue to receive screening at township hospitals. Additionally, 95.6% of patients express trust in township doctors, and 92.4% have confidence in the results generated by AI. Moreover, patients have demonstrated increased **health literacy** regarding eye care and awareness of DR, as evidenced by the finding that 94.8% recognize the importance of regular eye check-ups for diabetic patients.

DR care	Total, N	Women, n (%)		≥50 years old, n (%)	
Participating in Health education activities	23284	12297	52.8%	19087	82.0%
DR screening at Primary level	47318	25847	54.6%	40965	86.6%
Referral form township health centers to county/city-level hospitals	3392	1870	55.1%	2817	83.0%
Diagnosed with DR	4444	2494	56.1%	3765	84.7%
Receiving Intravitreal Injection	1548	858	55.4%	1400	90.4%
Receiving Laser Treatment	791	408	51.6%	700	88.5%
Receiving Vitrectomy	123	72	58.5%	123	100%

Table. DR-Related Services Received by Patients, Stratified by Gender and Age Group (May 2022– April-2024)

Conclusion & policy recommendations

The project's success in enhancing DR screening and management across rural China highlights the significance of integrated health interventions that incorporate technological innovations, such as **AI-assisted diagnosis**, alongside organizational innovations including strengthening of primary eye health care, task-shifting, and the establishment of an integrated healthcare system. The application of AI effectively addresses healthcare workforce shortages and promotes health equity, contributing to **universal health coverage**.