

## EDITORIAL COMMENT

# Expectations for MIRACLE-AF

## Ensuring Guideline-Recommended AF Treatment Strategy Is More Than Pie in the Sky



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**A**trial fibrillation (AF) management has evolved significantly over the past few decades. Initially, treatment focused primarily on stroke prevention through anticoagulation and symptom control to manage heart failure and reduce hospitalizations.<sup>1</sup> However, as the understanding of AF and its associated risks deepened, the importance of a more comprehensive approach became evident. This comprehensive approach is now encapsulated in the European Society of Cardiology guidelines as the ABC pathway: “A” for anticoagulation to prevent stroke, “B” for better symptom management, and “C” for cardiovascular and other comorbidity risk reduction.<sup>2</sup>

Historically, the prognosis of AF patients was largely determined by the presence of various risk factors.<sup>3</sup> This understanding led to the development of numerous risk scores aimed at predicting outcomes such as ischemic stroke. The CHADS<sub>2</sub> and CHA<sub>2</sub>DS<sub>2</sub>-VASc scores, for instance, have become globally recognized tools for estimating stroke risk in AF patients.<sup>4</sup> Likewise, several risk scores have been proposed to predict major bleeding<sup>5</sup> and other cardiovascular events,<sup>6</sup> reflecting the multifaceted nature of AF and its impact on patient outcomes.

Despite the widespread adoption of these risk scores and the validation studies supporting them, it has become increasingly clear that the same level of risk does not translate into identical outcomes across different cohorts.<sup>4,7</sup> This discrepancy underscores a critical insight: The degree of intervention in managing these risk factors, including hypertension,

diabetes, and obesity, ultimately determines patient outcomes.<sup>8</sup>

The advent of direct-acting oral anticoagulants and their incorporation into clinical practice has further refined AF management.<sup>9,10</sup> However, the success of these treatments depends not only on their appropriate use, but also on the broader context of patient care. Differences in patient outcomes due to variations in care are particularly notable in 2 registries from Japan. The Fushimi-AF registry revealed that age was a significant risk factor for stroke,<sup>11</sup> largely because anticoagulant therapy was inadequately administered in general practitioner’s clinics. In contrast, in the J-ELD AF registry comprising specialist facilities, where apixaban was administered at an on-label dose for all participants, age was not a significant predictor of stroke,<sup>12</sup> illustrating the profound impact of appropriate anticoagulation therapy on the modulation of risk factors. Moreover, catheter ablation has emerged as a transformative treatment option for reducing the burden of AF. Successful ablation has been associated with improved outcomes, because it directly addresses the arrhythmia itself, thereby reducing the risks of both AF-related stroke and heart failure.<sup>13</sup> However, access to catheter ablation may be limited by medical availability or socioeconomic factors.<sup>14</sup>

In today’s era, where effective treatments and well-established guidelines are available,<sup>2</sup> it is critical to recognize that patient outcomes can still vary widely, even among cohorts with similar baseline characteristics.<sup>4,7</sup> One of the key factors contributing to these differences is the degree of risk factor management<sup>8</sup> and the presence or absence of appropriate therapeutic interventions.

The presence of healthcare disparities, where facilities unable to provide adequate care see worse patient outcomes, is a growing concern.<sup>15</sup> Addressing these disparities and ensuring that all patients have access to appropriate treatment should be a new

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movement within health care.<sup>16</sup> This movement must prioritize interventions that bridge the gap in care quality and ensure that the advances in AF management benefit all patients, regardless of their geographic or socioeconomic status.

In this issue of *JACC: Asia*, Li et al<sup>17</sup> reported the protocol of the MIRACLE-AF (a novel Model of Integrated Care of oLdEr patients with Atrial Fibrillation in rural China) trial. The MIRACLE-AF trial, which explores a telemedicine-based, village doctor-led model of AF care in rural China, represents a significant step forward in addressing the challenges of AF management in resource-limited settings. This trial is particularly timely, because it aligns with the growing recognition of the need for integrated care approaches that can be tailored to the specific needs of vulnerable populations, such as the elderly in rural areas. By leveraging a digital health support platform, the MIRACLE-AF trial seeks to empower local healthcare providers to deliver comprehensive, guideline-driven AF management in line with the ABC pathway.

The potential implications of the MIRACLE-AF trial extend far beyond the specific setting of rural China. If successful, this model could be adapted for use in other rural or resource-limited settings globally, providing a blueprint for enhancing chronic disease management through telemedicine. Moreover, the study underscores the importance of continuous education and support for local healthcare providers, enabling them to offer high-quality care that meets current clinical guidelines.

However, the implementation of this model is not without its challenges. The success of telemedicine relies heavily on the availability of technological

infrastructure and digital literacy, both of which may be lacking in rural areas. Additionally, the engagement of patients and their families in the telemedicine process is crucial for the model's success.

Furthermore, although the MIRACLE-AF trial is innovative in its approach, it is important to consider the long-term sustainability of this model. Future research should explore how to maintain patient engagement and compliance with the ABC pathway over time, especially as the novelty of telemedicine wears off and the realities of managing a chronic condition in a resource-limited setting come to the fore.

In conclusion, the MIRACLE-AF trial offers a promising approach to improving AF management in rural China, with potential applications in similar settings worldwide. The trial's outcomes will provide valuable insights into the feasibility and impact of integrating telemedicine into rural healthcare systems, potentially transforming the landscape of chronic disease management in underserved communities. As we anticipate the results of this trial, it is imperative that we remain focused on ensuring that the guideline-recommended AF treatment strategies do not remain mere aspirations but become practical, effective solutions that can be implemented across diverse healthcare settings.

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## REFERENCES

1. Chung MK, Refaat M, Shen W-K, et al. Atrial fibrillation: JACC council perspectives. *J Am Coll Cardiol*. 2020;75(14):1689-1713.
2. Hindricks G, Potpara T, Dagres N, et al. 2020 ESC guidelines for the diagnosis and management of atrial fibrillation developed in collaboration with the European Association for Cardio-Thoracic Surgery (EACTS): the Task Force for the Diagnosis and Management of Atrial Fibrillation of the European Society of Cardiology (ESC) developed with the special contribution of the European Heart Rhythm Association (EHRA) of the ESC. *Eur Heart J*. 2021;42(5):373-498.
3. Investigators SPAF. Risk factors for stroke and efficacy of antithrombotic therapy in atrial fibrillation. Analysis of pooled data from five randomized controlled trials. *Arch Intern Med*. 1994;154(13):1449-1457.
4. van der Endt VHW, Milders J, Penning de Vries BBL, et al. Comprehensive comparison of stroke risk score performance: a systematic review and meta-analysis among 6 267 728 patients with atrial fibrillation. *Europace*. 2022;24(11):1739-1753.
5. Dzeshka MS, Lane DA, Lip GYH. Stroke and bleeding risk in atrial fibrillation: navigating the alphabet soup of risk-score acronyms (CHADS<sub>2</sub>, CHA<sub>2</sub> DS<sub>2</sub>-VASc, R<sub>2</sub> CHADS<sub>2</sub>, HAS-BLED, ATRIA, and more): stroke and bleeding risk scores in AF. *Clin Cardiol*. 2014;37(10):634-644.
6. Pandey A, Kim S, Moore C, et al. Predictors and prognostic implications of incident heart failure in patients with prevalent atrial fibrillation. *JACC Heart Fail*. 2017;5(1):44-52.
7. Quinn GR, Severdija ON, Chang Y, Singer DE. Wide variation in reported rates of stroke across cohorts of patients with atrial fibrillation. *Circulation*. 2017;135(3):208-219.
8. Hendriks JM, Gallagher C, Middeldorp ME, Lau DH, Sanders P. Risk factor management and atrial fibrillation. *Europace*. 2021;23(23 suppl 2):ii52-ii60.
9. Gadsbøll K, Staerk L, Fosbøl EL, et al. Increased use of oral anticoagulants in patients with atrial fibrillation: temporal trends from 2005 to 2015 in Denmark. *Eur Heart J*. 2017;38(12):899-906.
10. Teppo K, Airaksinen KEJ, Jaakkola J, et al. Ischaemic stroke in women with atrial fibrillation: temporal trends and clinical implications. *Eur Heart J*. 2024;45(20):1819-1827.
11. Yamashita Y, Hamatani Y, Esato M, et al. Clinical characteristics and outcomes in extreme elderly (age ≥ 85 years) Japanese patients with atrial fibrillation: the Fushimi AF Registry. *Chest*. 2016;149(2):401-412.

12. Okada M, Inoue K, Tanaka N, et al. Clinical outcomes of very elderly patients with atrial fibrillation receiving on-label doses of apixaban: J-ELD AF Registry subanalysis. *J Am Heart Assoc.* 2021;10(15):e021224.
13. Hindricks G, Packer DL. Catheter ablation of atrial fibrillation: recent advances and future challenges. *Europace.* 2022;24(suppl 2):iii–ii2.
14. Tzeis S, Gerstenfeld EP, Kalman J, et al. 2024 European Heart Rhythm Association/Heart Rhythm Society/Asia Pacific Heart Rhythm Society/Latin American Heart Rhythm Society expert consensus statement on catheter and surgical ablation of atrial fibrillation. *Europace.* 2024;26(4):euae043. <https://doi.org/10.1093/europace/euae043>
15. Chen X, Giles J, Yao Y, et al. The path to healthy ageing in China: a Peking University-Lancet Commission. *Lancet.* 2022;400(10367):1967–2006.
16. GBD 2019 Healthcare Access and Quality Collaborators. Assessing performance of the Healthcare Access and Quality Index, overall and by select age groups, for 204 countries and territories, 1990–2019: a systematic analysis from the Global Burden of Disease Study 2019. *Lancet Glob Health.* 2022;10(12):e1715–e1743.
17. Li M, Chu M, Shen Y, et al, the MIRACLE-AF Trial investigators. A novel model of integrated care of older patients with atrial fibrillation in rural China. *JACC Asia.* 2024;4(10):764–773.

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