Editorial

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Promoting an international consensus on frailty assessment: An urgent call to address the challenges of perioperative management in an aging population

Ying Xia[1,2], Wei Tang[3,4,*]

[1] Department of Neurosurgery, Integrated Neuroscience Center, Geriatric Hospital of Hainan, Haikou, China;
[2] Department of Neurosurgery, Haikou Affiliated Hospital of Central South University Xiangya School of Medicine , Haikou, China;
[3] International Health Care Center, National Center for Global Health and Medicine, Japan Institute for Health Security, Tokyo, Japan;
[4] Hepato-Biliary-Pancreatic Surgery Division, Department of Surgery, Graduate School of Medicine, University of Tokyo, Tokyo, Japan.

SUMMARY: As populations age at an unprecedented pace globally, frailty has emerged as a critical challenge in perioperative care. While clinicians broadly acknowledge the value of frailty assessment, embedding it systematically in care pathways remains difficult to implement systematically. We compared perioperative frailty guidelines from the United Kingdom, United States, Europe, and the Asia-Pacific, finding significant inconsistencies in tool selection, risk stratification criteria, and pathway design. Strikingly, approximately 99.6% of frailty research remains confined to risk characterization, whereas only 0.4% is directed toward improving care, highlighting a substantial gap between evidence and practice. Digital technologies promise a wider uptake of frailty screening, and yet algorithmic bias threatens to under-detect frailty in underserved groups if left unchecked. We outline five policy priorities: first, an internationally coordinated consensus on core assessment standards needs to be reached; second, end-to-end pathways that span screening, graded assessment, targeted intervention, and outcome tracking need to be devised; third, digital technology needs to be accelerated along with the devising of explicit safeguards for equity; fourth, high-quality evidence needs to be generated through function-centered outcomes and cost-effectiveness analyses to demonstrate the real-world value of frailty-focused care pathways; and fifth, frailty management needs to be integrated into national chronic-disease frameworks. Closing the gap between detection and action will require global collaboration and a reframing of frailty, not as a passive label but as a call to intervene.

Keywords: frailty assessment, perioperative management, international consensus, aging population, chronic disease management, healthcare policy

1. Introduction

Globally, rapid population aging is fundamentally reshaping healthcare systems (*1,2*). The World Health Organization (WHO) projects that adults age 60 and older will nearly double from 1 billion in 2020 to 2.1 billion by 2050 (*3*). Japan, which has the world's first super-aged population with over 29.3% of its population age 65 or older, offers a preview of the challenges other nations will soon face (*4,5*). Against this demographic backdrop, frailty has evolved from a niche research concept into a central target for clinical management (*6*). Defined as a state of diminished physiological reserve across multiple organ systems that compromises homeostasis and heightens vulnerability to stressors, frailty affects an estimated 12–24% of community-dwelling older adults globally (*7*). Crucially, frailty has proven to be an independent predictor of adverse outcomes, hospital admission, postoperative complications, and mortality (*6*).

Yet despite a broad consensus on the clinical value of frailty assessment, its systematic integration in perioperative care pathways remains elusive. Although frailty-related publications have surged worldwide, roughly 99.6% use the construct solely for risk profiling or prognostic validation; only 0.4% translate assessment findings into prospective redesign of care processes (*8*). This gap between evidence generation and clinical implementation underscores the urgent need for an international consensus.

2. Assessment heterogeneity: The case for a unified framework

The most significant barrier to perioperative frailty

assessment is the striking heterogeneity in tool selection and risk thresholds (*9*). An international comparison reveals divergent approaches. The United Kingdom designates the Clinical Frailty Scale (CFS) as the gateway tool and mandates documentation at three key junctures: referral, preoperative assessment, and hospital admission.(*10*). In contrast, the United States does not mandate a specific instrument; instead, frailty assessment is integrated into a broader best-practice framework for the care of geriatric surgical patients (*11*). The European Society of Anaesthesiology and Intensive Care (ESAIC) 2024 guidelines position frailty as one component of multidimensional preoperative risk evaluation rather than as a stand-alone entity (*12*).

The Asia-Pacific region presents a distinctive, public-health-oriented model. Japan employs a government-led strategy in which the Kihon Checklist (KCL) and the Questionnaire for Medical Checkup of Old-Old (QMCOO) are embedded within the system for eligibility for Long-Term Care Insurance (LTCI) (*13,14*). China is progressively adopting a closed-loop paradigm centered on screening, a comprehensive geriatric assessment, and targeted intervention (*15*). South Korea has established a primary-care gatekeeper model for systematic screening (*16*).

Such heterogeneity creates a threefold challenge. First, divergent risk-stratification criteria across instruments impede data comparability between institutions and regions. Second, structural discontinuities disrupt the transfer of frailty information from community screening to acute-care settings. Third, no universally accepted threshold exists for triggering a comprehensive geriatric assessment or multidisciplinary intervention. An internationally coordinated consensus framework is therefore imperative. It should define a core toolkit of validated instruments, harmonize risk-stratification criteria, and specify requirements for data interoperability.

3. Digital transformation: Opportunities and equity considerations

The rapid evolution of digital health technologies presents transformative opportunities for frailty assessment. Japan's "e-Frailty Navi" system, for example, uses AI algorithms to analyze household electricity-consumption patterns, enabling non-invasive detection of frailty risk among older adults living alone (*17*). Wearable devices continuously capture dynamic metrics such as gait speed and physical-activity intensity. The electronic Frailty Index (eFI), derived from electronic medical records (EMR), has been deployed at scale across NHS England; a validation study encompassing roughly 900,000 patient records has demonstrated that the eFI has strong predictive power for mortality, hospitalization, and long-term care admission (*18*).

Digital frailty detection, however, raises equity concerns that cannot be ignored. A landmark study by Obermeyer *et al*. revealed substantial racial bias in certain commercial care-management algorithms: at equivalent risk scores, black patients bore significantly higher actual disease burdens than white patients (*19*). This bias arose because the algorithm used healthcare expenditure as a proxy for health need, and systematic disparities in access to care led to underestimation of need among underserved populations. eFI-type algorithms may embed similar biases. In under-resourced areas or minority communities, EMR documentation tends to be less complete and of lower quality, introducing missingness bias that systematically underestimates the prevalence of frailty precisely among those in whom intervention is most needed (*20*).

Scaling digital frailty detection must therefore be accompanied by equity safeguards: stratified subgroup analyses during algorithm validation, fairness metrics such as equalized odds and calibration across demographic groups, and governance frameworks that incorporate bias audits and community engagement.

4. From detection to intervention: Shared decision-making and care continuity

The ultimate goal of perioperative frailty management extends beyond risk prediction to the initiation of individualized intervention. Best-practice guidelines issued by the American College of Surgeons and the American Geriatrics Society explicitly state that preoperative discussions should prioritize outcomes that matter most to patients, including functional decline, loss of independence, and potential need for skilled nursing care (*21*). For high-risk patients (*e.g.*, a CFS score of $\geq$ 5), clinical pathways should mandate multidisciplinary shared decision-making conferences involving surgery, anesthesiology, geriatrics, and the patient's family.

Current guidelines, however, reveal gaps in the standardization of shared decision-making tools and decision aids (*21*). Future pathways should integrate frailty assessment results with prognostic prediction models to provide quantified risk evidence for shared decision-making, ensuring that care plans genuinely reflect the life goals and value preferences of frail older adults.

Achieving continuity of care likewise depends on an interoperable information infrastructure. Japan's experience is instructive: although a data-linked framework connecting the National Database (NDB) with LTCI records has been established, routine interoperability in clinical practice between community health screening records (such as KCL or QMCOO scores) and hospital EMRs remains limited, with information exchange often relying on traditional or ad hoc channels (*22*). South Korea faces analogous challenges: data linkage between National Health Insurance Service (NHIS) claims data and individual

hospital EMRs is constrained by legal and privacy protection requirements (*23*).

5. Policy recommendations: Towards a systemic framework

The analysis above points to five priorities for advancing perioperative frailty management.

First, an international consensus is needed. The WHO or major geriatric medicine societies should establish a working group charged with defining a core set of validated tools and common risk-stratification thresholds. Because the CFS already anchors several regional guidelines, a CFS score of 5 or higher represents a reasonable threshold to trigger a comprehensive geriatric assessment. In parallel, agreed-upon data standards would allow the results of community screening to accompany patients across acute-care settings.

Second, clinical pathways must be redesigned end to end. Frailty-informed care should not stop at the preoperative visit. Intraoperative protocols and postoperative follow-up should be fully incorporated in the clinical pathway, thereby linking screening, graded assessment, tailored intervention, and outcome tracking. When a patient is identified as frail, the pathway should require a multidisciplinary conference that brings together surgeons, anesthesiologists, geriatricians, and family members. After discharge, dynamic monitoring and clear community hand-off protocols can curb functional decline and preventable readmissions.

Third, digital adoption should be accelerated while safeguarding equity. Electronic frailty indices embedded in primary care records can be used to automate screening at scale. Yet this promise comes with a caveat: algorithms must be stress-tested for fairness. Certification schemes, subgroup-stratified validation, periodic bias audits, and secure interoperability platforms linking community and hospital data are all essential guardrails.

Fourth, high-quality evidence must be generated. The lack of rigorous data remains the chief obstacle to wider implementation of frailty-directed pathways. Multicenter pragmatic trials and stepped-wedge designs should be used to evaluate whether pathway redesign actually improves outcomes and reduces resource use. Outcome sets need to extend beyond 30-day mortality and readmission, as functional trajectories, disability-free survival, and quality of life are more meaningful to older patients, and cost-effectiveness analyses are indispensable for policymakers when evaluating scalability.

Fifth, frailty should be integrated into chronic disease policy. Frailty management should be positioned alongside diabetes and cardiovascular-disease programs within national chronic-care frameworks. Standardized perioperative assessment protocols and quality metrics are needed for older adults living with multimorbidity. Looking ahead, national strategies should embed community-based screening into health system interventions, shifting the focus from treating disease to preserving function.

6. Conclusion

Frailty profoundly shapes perioperative outcomes, yet guideline implementation lags far behind scientific understanding. The imperative now is to complete a paradigm shift by moving from treating frailty as a static risk label to using it as a dynamic trigger for intervention. This demands consensus risk thresholds that activate prehabilitation and monitoring protocols, the integration of automated screening into clinical decision-support systems, and an interoperability infrastructure that enables seamless data transfer across care settings. Only by closing the gap between detection and action can frailty-directed care fulfill its promise of improving surgical outcomes and advancing health equity for older adults.

As aging continues to accelerate globally, forging an international consensus on perioperative frailty assessment is not merely an academic exercise; it is a public health priority affecting the well-being of hundreds of millions of older people. The international community must work together to translate an evidence-based consensus into actionable clinical pathways and policy frameworks, proactively addressing the healthcare challenges of an aging population.

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**Address correspondence to:*
Wei Tang, International Health Care Center, National Center for Global Health and Medicine, Japan Institute for Health Security, Tokyo 162-8655, Japan.
E-mail: politang-tky@umin.ac.jp

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