Advancing Perioperative Medicine for Frail Older Adults in Thailand: A Strategic Perspective from Anesthesiology

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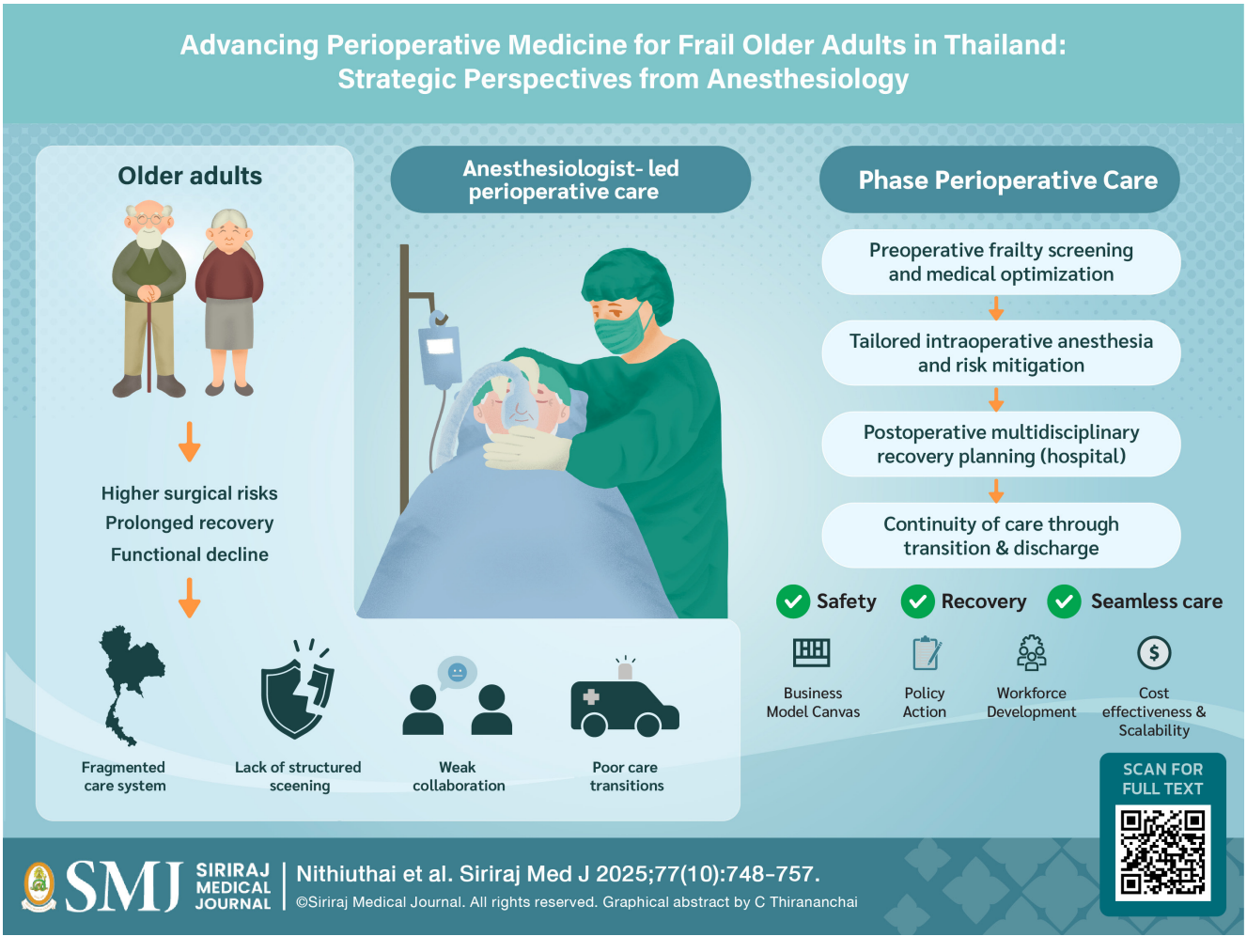

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ABSTRACT

Thailand has officially entered an aged-society phase: people ≥ 65 years already constitute > 14% of the population. This demographic transition strains surgical services; frail older adults face disproportionately high perioperative morbidity, prolonged recovery, and functional decline. Yet, perioperative care delivery in Thailand remains fragmented, with sporadic frailty screening, inconsistent multidisciplinary collaboration, and rudimentary transitional care pathways.

Using the Business Model Canvas to map current service gaps, this review delineates strategic levers for reform. At high-volume centers such as Siriraj Hospital, nearly 40% of surgical patients are aged ≥ 65 years, positioning anesthesiologists to champion frailty screening, preoperative risk optimization, and postoperative recovery planning.

Inspired by models from Singapore, the UK, and the US, we propose a four-phase, anesthesiologist-led perioperative care model spanning pre- to post-surgery. Prioritizing safety, recovery, and continuity of care, it is supported by workforce development and policy action. To manage implementation costs, a Business Model Canvas is recommended. This scalable strategy aims to enhance perioperative care for Thailand's aging population.

Keywords: Anesthesiologist; frail; elderly; perioperative care; prehabilitation (Siriraj Med J 2025; 77: 748-757)

INTRODUCTION

Official 2024 registration data show that Thailand has crossed the threshold into an aged society; people ≥ 65 years already represent a substantial proportion of the population. The consequent surge in older surgical candidates is clinically complex because multimorbidity, polypharmacy, cognitive impairment, and frailty are common.[1] Frailty—a multidimensional syndrome marked by depleted physiologic reserve and heightened vulnerability to stressors—is linked to postoperative complications, extended hospital stays, loss of independence, and mortality.[2-6] Local evidence from Siriraj Hospital—Thailand's oldest and largest tertiary academic medical center, with over 2,000 beds, more than 3 million outpatient visits, and around 80,000 inpatient admissions annually—supports these concerns. Among patients undergoing gastrectomy for gastric or esophagogastric junction cancer, advanced age is associated with increased postoperative complications and adverse events.[7,8] Those aged ≥ 80 years exhibited a significantly higher in-hospital mortality risk.

Internationally, perioperative medicine for older adults with frailty is a fully integrated discipline that unites surgeons, anesthesiologists, geriatricians, and structured recovery planning. In Thailand, however, implementation is nascent. Routine frailty screening and comprehensive geriatric assessment (CGA) are rare, multidisciplinary collaboration is inconsistent, and postoperative plans often overlook functional and cognitive endpoints. At Siriraj Hospital, older adults constitute almost 40% of the facility's 50 000 annual surgical cases. The national shortage of geriatricians therefore creates a strategic window for anesthesiologists to lead system redesign. Expanded duties could include frailty screening, orchestration of prehabilitation services, and delivery of frailty-adapted anesthesia. Over time, anesthesiologists might also coordinate discharge planning and recovery optimization.

This review applies the Business Model Canvas (BMC) to critically evaluate the existing perioperative care model for frail older adults in Thailand. Comparative exemplars from Singapore, the United Kingdom, and the United States are used to identify transferable service innovations. On the basis of this analysis, we propose a 4-phase, anesthesiologist-led model aligned with the surgical timeline to advance perioperative medicine in Thailand's aging society.

Business Model Canvas Analysis

The Business Model Canvas (BMC) is a strategic framework comprising nine interrelated domains that analyze how a service creates, delivers, and captures value. We selected the BMC as a tool to integrate clinical innovation with sustainable service delivery. In contrast to purely clinical models that focus primarily on patient outcomes, the BMC facilitates a systematic examination of value creation, resource allocation, and cost structure—key considerations in the design of perioperative services for older adults, whose care is often complex and resource-intensive. Employing the BMC framework supports not only improved clinical outcomes but also long-term financial sustainability and potential alignment with reimbursement mechanisms within the Thai healthcare system.

Our adapted design envisions a 24-week continuum—

12 weeks pre- and 12 weeks post-operation—led or co-led by anesthesiologists to address the physiologic and functional needs of frail patients. The preoperative block enables prehabilitation that enhances nutrition, physical resilience through targeted exercise, and comorbidity optimization, whereas the postoperative block emphasizes complication surveillance, rehabilitation, and readmission prevention. This extended arc enables proactive, personalized care that traditional surgical timelines often overlook, especially in frail or high-risk populations.

Each domain of the BMC was developed through a narrative synthesis of institutional insights, clinical experience at Siriraj Hospital, and comparative review of international models. These domains collectively informed the service redesign summarized in Table 1. This approach allowed us to structure a frailty-focused perioperative model that addresses Thailand's system-level challenges.

1. Customer Segments were defined based on demographic data and clinical trends indicating a growing proportion of surgical patients who are frail older adults. The role of family members and caregivers was also emphasized, as they are central to decision-making and transitions across care settings.

2. Value Proposition emerged from clear unmet clinical needs in this population—specifically, the need for safer surgery, fewer complications (e.g., delirium, postoperative cognitive dysfunction or postoperative pulmonary complication), better functional recovery, and long-term independence. Additional value lies in interdisciplinary teamwork and alignment with educational and routine service activities.

3. Channels were identified by examining current points of care delivery (e.g., pre-anesthesia clinics) and by integrating feasible innovations such as prehabilitation units, digital frailty screening tools, and telemedicine follow-up.

4. Customer Relationships reflected the need for longitudinal patient-family engagement, including preoperative counseling, shared decision-making, education, expectation setting, and continuity through discharge planning.

5. Revenue Streams were shaped by the economic challenges of elderly care, with potential cost savings from fewer complications and shorter length of stay. Future revenue may also come from reimbursement of comprehensive geriatric assessment (CGA), prehabilitation, and telehealth-supported postoperative care.

6. Key Resources included both degree and non-degree–trained anesthesiologists in geriatrics or perioperative medicine, interdisciplinary teams, validated screening instruments, clinical practice guidelines, and digital platforms to support service delivery and monitoring.

7. Key Activities were drawn from evidence-based perioperative practices, including frailty screening and CGA, interdisciplinary prehabilitation, geriatric-informed anesthesia, delirium prevention, early mobilization, and structured transitional care with follow-up.

8. Key Partnerships were identified across multiple levels: clinical (e.g., anesthesiologists, geriatricians), institutional (e.g., medical societies), policy and payers (e.g., National Health Security Office; NHSO, Social Security Scheme; SSS), care continuum (e.g., transitional and home-based services), academic (e.g., university centers), and technology providers supporting digital health integration.

9. Cost Structure was based on the initial investment required for workforce development and IT systems, balanced by long-term savings through reduced postoperative complications, readmissions, and functional decline.

Within this review, the BMC is first applied to map the current Thai perioperative ecosystem and then used to prioritize service innovations. The resulting blueprint supports strategic alignment by integrating interdisciplinary teamwork, shared decision-making among providers, patients, and families, and coordinated transitions to consistently deliver a value-based care model. This approach ensures that every component contributes to function-targeted, person-centered surgical outcomes.

Comparative Analysis (Thailand vs Singapore, UK, US)[10-12]

The Start-to-Finish model at Khoo Teck Puat Hospital (KTPH) in Singapore is a pioneering example of integrated perioperative care for frail older adults. This phase-based, transdisciplinary pathway couples structured prehabilitation, early family engagement, and coordinated rehabilitation stretching from initial assessment to community re-entry.

Guy's and St Thomas' NHS Foundation Trust in the United Kingdom developed Proactive Care of Older People Undergoing Surgery (POPS). This geriatrician-led model provides CGA across elective and emergency pathways, with ward-based multidisciplinary team meetings and structured discharge planning.

Duke University's Perioperative Optimization of Senior Health (POSH) in the United States is an interdisciplinary pathway for high-risk older adults that, through early CGA, shared decision-making, and coordinated perioperative planning, lowers postoperative complications, length of stay, and costs. POSH aligns with

TABLE 1. Anesthesiologist-Led Model for Perioperative Geriatric Care in Frailty using Business Model Canvas

BMC Domain	Targeted Redesign for Frailty-Focused Perioperative Model
1. Customer Segments	1. Frail older adults scheduled for elective or high-risk procedure 2. Families or caregivers involved in decision-making and supporting transitions across care settings
2. Value Proposition	1. Provide safe and person-centered surgical care for frail older adults by using frailty-based decision-making, aiming to reduce complications such as delirium, support functional recovery, and help patients maintain independence. 2. Working as an interdisciplinary team and planning for care transitions. 3. Integration with education and routine service activity such as interdisciplinary case conferences or postoperative care pathways
3. Channels	1. Pre-anesthesia clinic 2. Prehabilitation units 3. Digital screening platforms and telemedicine follow-up
4. Customer Relationships	Longitudinal engagement with older patients and families through preoperative counselling, shared decision-making, education, and expectation setting, with continuity of care extended through discharge planning
5. Revenue Streams	Cost savings from fewer complications and shorter hospital stays, with future revenue potential from value-based payment for the comprehensive geriatric assessment (CGA) and interventions, prehabilitation and post-operative care through telehealth
6. Key Resources	1. Anesthesiologists trained in geriatric medicine, gerontology, or perioperative medicine (formal degree programs such as diplomas, master's, or PhDs.) 2. Frontline specialists, including attending geriatricians and anesthesiologists (non-degree programs such as short courses, workshops, or certificate programs) 3.Human resources to support coordinated and interdisciplinary care such as nurses, psychologists and rehabilitation specialists 4. National and international clinical practice guidelines 5. Validated frailty screening tools and CGA instruments 6. Digital platforms and telehealth/ telemedicine
7. Key Activities	1. Systematic frailty screening and CGA 2. Interdisciplinary prehabilitation interventions including medication review, nutrition counselling, exercise prescribing, and psychological preparation 3. Geriatric-informed anesthesia and pain management; delirium prevention protocols; early mobilization and rehabilitation 4. Coordination of transitional care with structured postoperative follow-up
8. Key Partnerships	Multilevel coordination: • *Clinical Partners:* Anesthesiologists, geriatricians, surgeons, rehabilitation specialists, family medicine, nutritionists, pharmacists, mental health providers, social workers and educators • *Institutional Partners:* Ministry of Public Health, Royal College of Anesthesiologists of Thailand, Royal College of Surgeons of Thailand, Thai Gerontology and Geriatric Medicine Society and Royal College of Physicians of Thailand • *Payers and Policy Stakeholders:* Universal Coverage Scheme (UCS), Social Security Scheme (SSS) and Civil Servant Medical Benefit Scheme (CSMBS) for reimbursement and coverage alignment • *Care Continuum Partners:* Community-based facilities such as Primary Health Care (PHC), transitional care teams, intermediate care (IMC) and home healthcare services • *Academic and Training Institutions:* University hospitals and academic centers for workforce development, research, and innovation pilots • *Technology Partners:* Digital health providers and information technology (IT) platforms supporting frailty screening, CGA documentation, and outcome tracking
9. Cost Structure	1. Initial investment in workforce upskilling, care coordination 2. IT infrastructure 3. Long-term savings through improved outcomes such as reduced readmission, fewer complications, and sustained independence post-surgery

national quality programs—most notably, the American College of Surgeons (ACS) Geriatric Surgery Verification Program—and provides a scalable template for high-value, personalized surgery.

Thailand's perioperative services remain fragmented: CGA access is limited, prehabilitation infrastructure underdeveloped, and postoperative rehabilitation and discharge coordination inconsistent. This is consistent with findings from national data and local studies, including those at Siriraj Hospital, which highlight the high prevalence of geriatric syndromes and gaps in service coordination in older populations.[13] Pilot testing a hybrid Thai model that fuses best-practice elements is warranted. Essential pillars include early CGA led by geriatricians or trained anesthesiologists, structured prehabilitation embedded in tertiary centers, and postoperative discharge pathways linking surgical wards to rehabilitation units and community health services.

Adopting the POSH framework would permit phased scaling according to workforce capacity and existing resources. Alignment with the National Elderly Health Strategic Plan could enhance surgical safety, curb delirium, and accelerate functional recovery. Implementation should start within tertiary or university hospitals, harness workforce-development programs, and synchronize with the Thai Elderly Health Policy. Subsequent collaboration with the National Health Security Office could embed the model in the Universal Coverage Scheme (a government health insurance program) and secure equitable, value-based surgical care for older adults nationwide.

The expanding role of anesthesiologists in perioperative geriatric care

Anesthesiologists are moving beyond intraoperative management to oversee the entire perioperative continuum for frail older adults, a population whose surgical courses are increasingly complex. Their deep expertise in physiology, pharmacology, and perioperative risk positions them to coordinate multidisciplinary strategies that reduce surgical risk and enhance functional resilience. In models such as Start-to-Finish in Singapore, POPS in the United Kingdom, and POSH in the United States, anesthesiologists collaborate with geriatricians and interdisciplinary teams to implement frailty-adapted protocols—among them EEG-guided anesthesia, opioid-sparing analgesia, and intraoperative hemodynamic optimization. They also contribute to early frailty screening and CGA, customizing perioperative trajectories to each patient's cognitive, nutritional, and functional profiles.

Postoperatively, anesthesiologists maintain continuity by translating intraoperative events into recovery targets and discharge plans. Their participation in transitional-care pathways, along with coordination with primary-care or community rehabilitation services, facilitates safe reintegration and sustained functional independence. Positioning anesthesiologists as perioperative leaders enhances patient safety, preserves independence, and advances patient-centered outcomes. Their active involvement throughout the perioperative timeline supports a proactive model of care—one urgently needed as Thailand enters an aged society with rising demand for integrated, frailty-informed surgical services.

System-Level Implications for Thailand

To embed anesthesiologists as perioperative geriatric leaders, Thailand must pair workforce up-skilling with structural redesign of surgical services. Training curricula for anesthesiology residents and continuing professional education should be updated to include core competencies in geriatrics, frailty assessment, prehabilitation planning, and postoperative recovery management. Institutions such as Siriraj Hospital and other academic medical centers can pilot collaborative perioperative care for frail patients, generate local data, and provide interprofessional training that bridges anesthesiology with geriatric principles. National adoption of this integrated framework would improve outcomes for older adults and redefine the role of anesthesiologists as clinical leaders in perioperative geriatric care, aligning surgery with broader aging and surgical-safety initiatives. Embedding anesthesiology within broader geriatric and surgical-safety initiatives would shift the system toward proactive, efficient, patient-centered care.

Proposed 4-phase continuum of perioperative care for frailty

Their expertise in risk stratification, intraoperative management, and postoperative recovery positions anesthesiologists to coordinate multidisciplinary efforts tailored to frail older adults. We propose a 4-phase, 24-week continuum—12 weeks preoperative and 12 weeks postoperative—that builds physiologic reserve, forestalls complications, and restores cognitive and physical function. This approach aligns with evidence-based practices that emphasize early identification of frailty and targeted interventions. Roles for anesthesiologists within each phase are depicted in Fig 1.[14-16]

Phase 1 — Preoperative optimization

Anesthesiologists lead comprehensive risk stratification for older surgical candidates, incorporating frailty screening, multimorbidity profiling, polypharmacy review, and

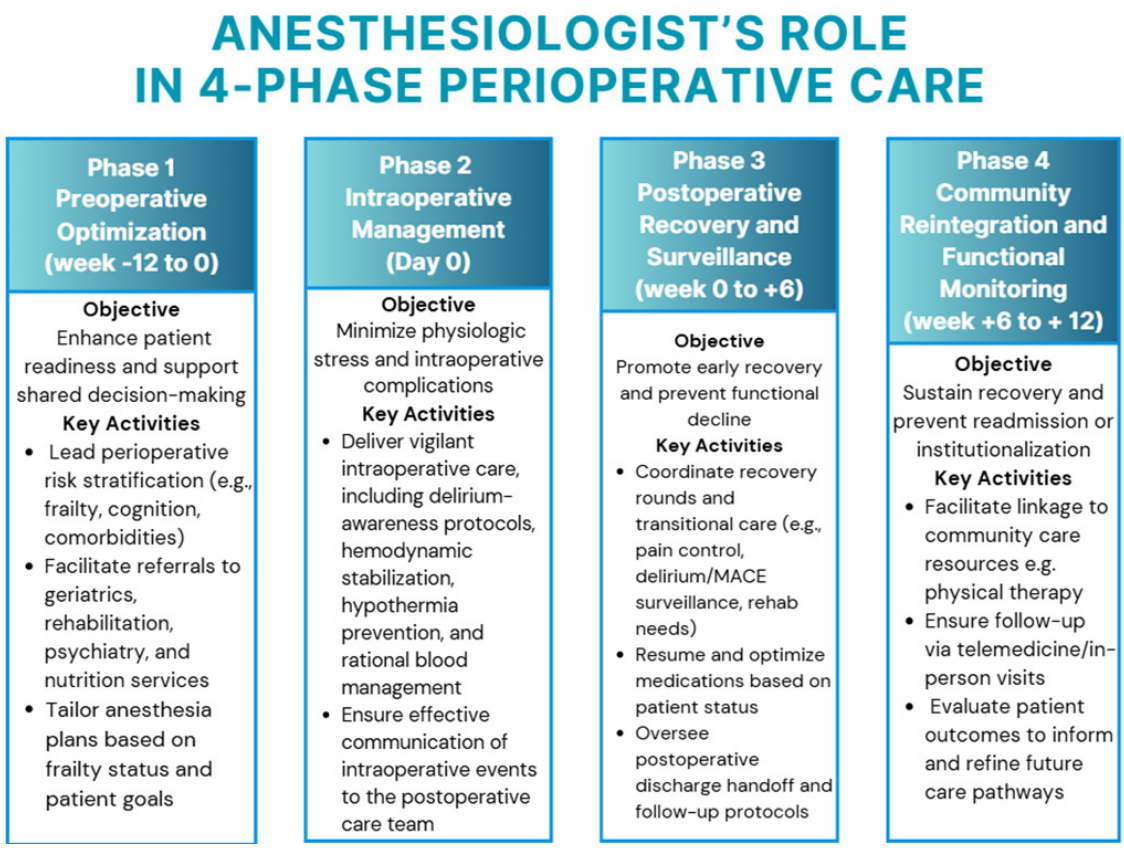

Fig 1. The proposed 4-phases of the anesthesiologist-led model of integrated perioperative care.
Abbreviation: MACE, major adverse cardiac event

functional–cognitive appraisal to craft patient-specific perioperative plans. Early referral to a comprehensive prehabilitation clinic is pivotal; nutrition screening and supplementation, tailored exercise programs, and physiotherapy strengthen functional reserve and reduce postoperative complications. Optimization also requires identification and management of anemia, because both anemia and perioperative transfusion are associated with increased morbidity and mortality. For procedures expected to lose > 500 mL of blood, patients must undergo preoperative hemoglobin evaluation; iron-deficiency cases should receive prompt replacement therapy. In older orthopedic populations, maintaining preoperative hemoglobin > 12.0 g/dL reduces transfusion requirements and improves outcomes. This integrated, anesthesiologist-driven approach advances perioperative safety and recovery for frail older adults.[17,18]

Phase 2 — Intraoperative management for frailty[19,20]

In frail older adults, intraoperative care must attenuate physiologic stress and forestall complications. First, apply delirium-mitigation protocols: avoid benzodiazepines, correct anemia or electrolyte derangements, maintain normotension and normoxia, and use processed electroencephalography monitoring, which lowers postoperative delirium rates and shortens length of stay. Second, sustain hemodynamic stability to preserve organ perfusion and minimize the risk of organ dysfunction in patients with limited physiologic reserve. Third, apply continuous active warming throughout the perioperative period because impaired thermoregulation increases vulnerability to cold-related complications. Together, these targeted interventions safeguard cognition and protect end-organ function.

Phase 3 — Recovery and surveillance

During the immediate postoperative period, anesthesiologists contribute significantly to recovery and surveillance, particularly for frail older adults at elevated risk for complications. They monitor for geriatric syndromes—such as postoperative delirium, pain-related agitation, and functional decline—to guide individualized care. Collaboration with surgeons, nurses, and geriatricians enables anesthesiologists to deliver multimodal, opioid-sparing analgesia that minimizes adverse effects and supports early mobilization. By tracking clinical trajectories and adjusting goals of care, they identify patients who may benefit from step-down geriatric co-management or

extended rehabilitation in intermediate-care settings. Early detection of deterioration permits timely interventions that support safe recovery.

Phase 4 — Community reintegration and functional monitoring

Following hospital discharge, anesthesiologists trained in perioperative medicine can extend their role into the post-acute phase by supporting coordinated transitions and ongoing functional recovery. Their responsibilities include reviewing postoperative progress, identifying residual impairments, and facilitating connections to community rehabilitation, home-based services, and primary care providers. Functional reassessment—conducted through structured in-person visits or telemedicine—enables anesthesiologists to monitor key recovery milestones and support sustained mobility, cognitive health, and independence. In collaboration with multidisciplinary teams, they contribute to individualized recovery plans that bridge the transition from hospital to home. Implementing this phase requires substantial resources, infrastructure, and coordinated networks—elements still developing in Thailand's health system—but it remains critical to lowering readmissions and promoting long-term functional outcomes for frail older adults.

When should anesthesiologists involve other specialists in geriatric surgical care?

Timely, coordinated specialist involvement is essential to mitigate perioperative risk and optimize recovery in frail older adults. Table 2 outlines key scenarios in which anesthesiologists should involve multidisciplinary partners to deliver personalized, evidence-informed care for older adults undergoing surgery, based on vulnerabilities identified during preoperative assessment.

Referral should ideally be placed 4–12 weeks before surgery, allowing sufficient time for nutrition-centered and exercise-based prehabilitation. A positive

TABLE 2. Multidisciplinary partner consultations: triggers and expected roles.

Specialists	Timing of Involvement	Key Triggers / Indications	Primary Role in Perioperative Care
Geriatrician	≥4 weeks preop (immediately after frailty is identified)	Frailty, cognitive impairment, multimorbidity, polypharmacy	Conduct CGA, optimize comorbidities, lead shared decision-making, support goal-of-care alignment
Cardiologist	Preop clinic (if cardiac risk is high or unstable)	Heart failure, valvular disease, ischemic heart disease, arrhythmias, poor functional capacity	Stratify cardiac risk, adjust medications, guide perioperative monitoring
Nutritionist/ Dietitian	≥2–4 weeks preop	Malnutrition (e.g., low BMI, weight loss), sarcopenia, hypoalbuminemia	Nutritional screening, oral supplementation, dietary planning for recovery
Rehabilitation Specialists	≥4 weeks preop	Poor mobility, slow gait speed, falls, ADL/IADL dependence, oromotor problems	Prescribe exercise and mobility plan, enhance endurance and strength, prevent functional decline, swallowing intervention
Pharmacist	During CGA or preop medication review	Polypharmacy (>5 meds), potentially inappropriate medications (e.g., benzodiazepines, anticholinergics)	Reconcile medications, deprescribe as needed, optimize drug regimens for changes in age-related physiology
Mental Health Provider / Psychologist	Preop if concern arises	Depression, anxiety, fear of surgery, baseline cognition,	Supportive counselling, optimize mental health, assist in delirium risk reduction

Abbreviations: ADL, activities of daily living; CGA, comprehensive geriatric assessment; IADL, instrumental activities of daily living; OT, occupational therapy; PT, physical therapy

frailty screen serves as an automatic trigger for prompt consultation with geriatrics, rehabilitation, nutrition, and allied-health teams. Finally, anesthesiologists must align intraoperative strategies with each patient's functional capacity, comorbidity profile, care goals, and discharge plan to ensure seamless, goal-concordant management.

System-level strategy and support for Thailand

Embedding a geriatric-sensitive perioperative model in Thailand demands synchronized system reform and targeted workforce development. Academic flagships—for example, Siriraj Hospital—should pioneer dedicated perioperative geriatric-anesthesia tracks that teach frailty-based decision making, interdisciplinary collaboration, and transition-of-care design. Integrating these competencies into residency curricula and buttressing them with purpose-built multidisciplinary teams will create the infrastructure for durable change.

Thai health systems should prioritize 4 actions:

- Provide foundational geriatric training for anesthesiologists through short courses, workshops, certificate programs, or formal diploma, master's, or PhD pathways covering frailty syndromes, cognitive vulnerability, pharmacologic sensitivity, and collaborative care models.
- Embed cross-disciplinary expertise in preoperative optimization and postoperative recovery by routinely involving geriatricians, rehabilitation specialists, psychiatrists, dietitians, pharmacists, psychologists, and case managers.
- Elevate anesthesiologists to co-lead development of postoperative pathways centered on delirium prevention, early mobilization, and age-appropriate analgesia.
- Forge formal partnerships with transitional-care services to synchronize discharge planning and link surgical wards to intermediate-care facilities and community or primary-care networks.

At the policy level, the Ministry of Public Health should promulgate national guidelines and reimbursement levers for systematic frailty screening, comprehensive geriatric assessment (CGA), and structured prehabilitation. In parallel, tertiary academic centers such as Siriraj Hospital can act as national demonstration sites to pilot and scale these innovations, enabling Thailand to deliver high-quality, function-preserving surgical care to its aging population.

Strategic policy recommendations

Thailand's entry into an aged society necessitates urgent reform of perioperative care systems, especially for frail older adults. Existing procedure-centric models are fragmented and ill equipped to handle the intertwined biologic, cognitive, and social vulnerabilities of frailty. Using the Business Model Canvas and comparative analysis of international models—such as Start-to-Finish in Singapore, POPS in the United Kingdom, and POSH in the United States—this review identified the absence of structured prehabilitation, limited multidisciplinary coordination, and insufficient continuity of care.

Anesthesiologists are strategically positioned to drive this transformation. Their role across the perioperative continuum—from preoperative risk stratification to intraoperative management and postoperative planning—places them at the intersection of clinical decision-making and system redesign. With geriatric up-skilling and expanded leadership, they can institute frailty screening, steer shared decision making, and coordinate the 24-week, 4-phase pathway proposed herein. The proposed 4-phase integrated model provides a clear roadmap for redesigning surgical services around function preservation, patient-centered goals, and seamless care transitions.

A Step-by-step approach to strategic deployment

- *Develop National Guidelines for Perioperative Frailty Care*

Standardize validated screening instruments—Clinical Frailty Scale, FRAIL Scale, Frailty Index—and make frailty assessment mandatory for every surgical candidate ≥ 65 years during preoperative evaluation.[21,22]

- *Establish Prehabilitation and Postoperative Recovery Clinics*

Create multidisciplinary prehabilitation units in tertiary centers to optimize functional status preoperatively, then integrate preoperative optimization with postoperative rehabilitation and home-reintegration pathways.[23,24]

- *Create a Perioperative Medicine Track Within Anesthesiology*

Embed geriatrics, comprehensive geriatric assessment (CGA), and transition-of-care design in residency and continuing-education curricula; define anesthesiologist-led pathways tailored to frail surgical populations.

- *Incentivize Multidisciplinary, Longitudinal Care*

Implement reimbursement mechanisms for CGA, multidisciplinary-team conferences, and structured post-discharge follow-up; fund pilot programs linking surgical wards to intermediate-care and community-based services.

• *Invest in Digital Infrastructure and Outcome Tracking*

Build electronic-health-record–integrated frailty registries and real-time surgical risk dashboards that track postoperative mobility, cognition, independence, and 30-day readmissions.

To evaluate this model in practice, pilot testing in tertiary hospitals is recommended. Key outcomes could include rates of complications (such as delirium), hospital length of stay, 30-day readmissions, and patients' functional recovery. Process measures—like how often frailty screening or CGA are completed—can help monitor how well the model is applied. To test whether the model is reliable and appropriate for wider use, methods such as expert reviews, small-scale feasibility studies, and real-world feedback from healthcare teams can be used.

CONCLUSION

A Vision Forward

Transforming perioperative care for frail older adults requires sustained system redesign, not a single intervention. With anesthesiologist leadership aligned to Thailand's aging-health agenda, the nation can become a regional exemplar of safe, function-preserving, and person-centered surgery. The evidence is compelling, the models are validated, and the imperative is immediate.

Data Availability Statement

No new data were generated or analyzed in this study.

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Conflict of Interest

The authors declare no conflict of interest.

Author Contributions

Conceptualization and methodology: J.N., A.S., and O.P.; Visualization and writing – original draft: J.N., A.S.; Writing – review and editing: J.N., A.S., P.N., O.P., W.M., T.P., P.D., and V.S.; Supervision: O.P., A.S. All authors have read and agreed to the final version of the manuscript.

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