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Integrated Geriatric Care Management in Hospitals: Systemic Clinical Problems in Older Adults, Assessment Approaches, and Management Strategies

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Abstract: Indonesia entered population ageing in 2021, with residents aged 60 years and older exceeding 10% of the total population and projected to reach nearly 20% by 2045. Older adults present distinct clinical characteristics, namely multimorbidity, atypical disease presentation, and homeostenosis, that render single-organ approaches inadequate for hospital care. This review argues that geriatric syndromes are a major, modifiable driver of adverse outcomes in hospitalised older adults, and that their management should be embedded into existing hospital governance instruments rather than treated as a standalone clinical concern. A structured narrative review was conducted using PubMed (MEDLINE) with free-text and MeSH terms for geriatric syndromes, frailty, comprehensive geriatric assessment, polypharmacy, deprescribing, delirium, and falls; of 48 records identified, 30 studies met inclusion criteria after title/abstract and full-text screening. Findings indicate that geriatric syndromes, including immobility, instability, incontinence, delirium, malnutrition, sarcopenia, and polypharmacy-related iatrogenesis, are associated with poorer hospital outcomes; that multidisciplinary Comprehensive Geriatric Assessment increases the likelihood of patients remaining alive and at home after discharge; and that Beers- and STOPP/START-guided deprescribing, combined with multicomponent non-pharmacological bundles, reduces polypharmacy burden and helps prevent delirium and falls. These findings support integrating geriatric-specific indicators into hospital accreditation and National Quality Indicators, and establishing multidisciplinary geriatric teams as a governance priority.

Keywords: Geriatric Syndromes, Frailty, Comprehensive Geriatric Assessment, Polypharmacy, Hospital Governance.

Indonesian Abstract: Indonesia memasuki era penduduk menua pada tahun 2021, dengan proporsi penduduk berusia 60 tahun ke atas melampaui 10% dari total populasi dan diproyeksikan mendekati 20% pada tahun 2045. Lansia memiliki karakteristik klinis khas berupa multipatologi, presentasi atipikal, dan homeostenosis, sehingga pendekatan organ tunggal tidak memadai untuk perawatan di rumah sakit. Tinjauan ini berpendapat bahwa sindrom geriatri merupakan determinan utama yang dapat dimodifikasi terhadap luaran klinis

buruk pada lansia yang dirawat, dan tata laksananya perlu diintegrasikan ke dalam instrumen tata kelola rumah sakit. Tinjauan pustaka naratif terstruktur dilakukan melalui PubMed (MEDLINE) menggunakan istilah bebas dan MeSH terkait sindrom geriatri, frailty, comprehensive geriatric assessment, polifarmasi, deprescribing, delirium, dan jatuh; dari 48 rekod awal, 30 studi memenuhi kriteria inklusi setelah penyaringan. Hasil sintesis menunjukkan bahwa sindrom geriatri, meliputi imobilitas, instabilitas, inkontinensia, delirium, malnutrisi, sarkopenia, dan iatrogenesis akibat polifarmasi, berkaitan dengan luaran rawat inap yang lebih buruk; bahwa Comprehensive Geriatric Assessment multidisiplin meningkatkan kemungkinan pasien tetap hidup dan kembali ke rumah pascaperawatan; serta bahwa deprescribing berbasis Beers dan STOPP/START, bersama bundel nonfarmakologis multikomponen, menurunkan beban polifarmasi dan mencegah delirium dan jatuh. Temuan ini mendukung integrasi indikator spesifik geriatri ke dalam akreditasi rumah sakit dan Indikator Nasional Mutu, serta pembentukan tim multidisiplin geriatri sebagai prioritas tata kelola.

Kata Kunci : *Sindrom Geriatri, Frailty, Comprehensive Geriatric Assessment, Polifarmasi, Tata Kelola Rumah Sakit.*

INTRODUCTION

Indonesia entered the era of population ageing in 2021, when the proportion of residents aged 60 years and older surpassed 10% of the total population. Current national data estimate the number of older adults in Indonesia in 2024 at approximately 29 million people, equivalent to 12% of the total population, with an average life expectancy of 72.4 years; this proportion is projected to increase to approximately 20% by 2045. This rapid demographic transition carries direct consequences for the healthcare service burden, as older adults are epidemiologically more vulnerable to multimorbidity and complex healthcare needs than other age groups. The experience of other Asian countries that have undergone similar demographic transitions earlier, particularly China, demonstrates that population ageing occurring over a relatively short period requires multisectoral health system reform, encompassing the strengthening of long-term care services, healthcare financing reform for older adults, and investment in geriatric-trained health workers; all three are directly relevant to Indonesia given a comparable pace of demographic change but substantially less developed geriatric infrastructure (Chen et al., 2022).

Clinically, older adults possess characteristics that differ fundamentally from those of typical adult patients: multimorbidity, atypical disease presentation that obscures severity, and homeostenosis, defined as progressive cross-system physiological reserve decline in which systems mutually influence one another. As a result, the single-organ approaches commonly applied to younger adult patients are inadequate for older adults, making comprehensive systemic assessment and multidisciplinary team management necessary so that the clinical problems of older patients, commonly referred to as geriatric syndromes, can be identified and managed in a timely manner.

At the policy level, this urgency has been addressed through Ministerial Decree of the Minister of Health of the Republic of Indonesia No. 1128 of 2022 on Hospital Accreditation Standards, which positions geriatric care as one of the national programmes assessed during the accreditation process (Ministry of Health Republic of Indonesia, 2022). However, to our knowledge, the extensive international clinical literature on geriatric syndromes has not been broadly synthesised to explicitly bridge that evidence with the hospital quality governance instruments applicable in Indonesia, such as the National Quality Indicators. This gap constitutes the primary argument of the present review: that successful implementation of geriatric care policy depends not only on clinical knowledge but also on organisational governance, resource allocation, and integration into the overall hospital quality system.

Based on this argument, this structured narrative review aims to summarise current scientific evidence on the systemic clinical characteristics of older adults and geriatric syndromes that determine clinical outcomes in hospitals, to synthesise relevant evidence-based assessment approaches and management strategies, and to formulate managerial implications for integrating comprehensive geriatric care into hospital accreditation standards and National Quality Indicators in Indonesia.

METHODS

This review constitutes a structured narrative review rather than a systematic review requiring independent double screening and pre-registration; this approach was selected because the review objective is to synthesise evidence across several interrelated sub-themes for the practical needs of hospital service governance, not to answer a single highly specific clinical question. Literature searches were conducted through the PubMed (MEDLINE) database in June 2026, using combinations of free-text and MeSH terms including 'geriatric syndromes', 'frailty', 'comprehensive geriatric assessment', 'polypharmacy', 'deprescribing', 'delirium', 'falls', 'sarcopenia', 'malnutrition', 'hospital-at-home', and 'population ageing'.

Inclusion criteria comprised English-language PubMed-indexed articles consisting of randomised clinical trials, systematic reviews or meta-analyses, guidelines or consensus statements from leading professional organisations (including the American Geriatrics Society, ESPEN, Cochrane, and ICFSR), or comprehensive narrative reviews directly relevant to systemic clinical problems of older adults or their management in hospital settings; landmark references from earlier periods were retained where their historical and methodological significance remains foundational, such as the original Confusion Assessment Method study published in 1990 (Inouye et al., 1990).

Exclusion criteria included articles outside the scope of systemic clinical geriatrics and articles whose topics were more comprehensively covered by more recent sources. Of 48 initial candidates, 30 final sources were obtained across nine themes addressed in the Results and Discussion section (Figure 1), supplemented by one national regulatory document. As a limitation disclosed transparently, the screening process was performed non-independently by the authors; this review is therefore more appropriately categorised as a reproducible structured narrative review rather than a formal systematic review.

Table 1. Literature Selection Flow Diagram (PRISMA Adaptation)

Selection Stage	Number
Identification: PubMed (MEDLINE) database search, June 2026	48 records
Title and abstract screening; excluded for falling outside the scope of systemic clinical geriatrics or topic overlap with other sources (n = 10)	38 records
Full-text review; excluded for indirect relevance to hospital-based management (n = 8)	30 records
Included in final review	30 sources + 1 regulation

RESULTS AND DISCUSSION

Demographic Burden and Urgency of Healthcare Transformation

The demographic burden of older adults in Indonesia demands a fundamental transformation in how healthcare services are organised. With the proportion of older adults projected to increase from approximately 12% in 2024 to nearly 20% by 2045, while the number of hospitals with integrated national geriatric referral status remains limited to approximately 14 institutions, the gap between need and service capacity risks widening considerably if not addressed proactively. The experience of China as a country undergoing an exceptionally rapid demographic transition demonstrates that effective responses to population ageing require

multisectoral reform, encompassing the strengthening of long-term care services, healthcare financing reform for older adults, and investment in early detection at the primary care level; all three are relevant for adaptation by Indonesia given the comparable pace of demographic change but with substantially underdeveloped geriatric infrastructure (Chen et al., 2022).

This capacity gap is not solely a question of bed numbers or workforce size, but also one of geographic distribution: the majority of integrated geriatric referral hospitals are concentrated in large cities, while most older adults reside in areas with more limited access to specialist services. The implication is that transformation strategies cannot rely solely on adding geriatric units to tertiary referral hospitals, but must be accompanied by strengthening basic geriatric competencies in class C and D hospitals, so that the systemic clinical problems of older adults described in the sections that follow can be recognised from the first point of care contact.

Clinical Characteristics of Older Adults: Multimorbidity, Atypical Presentation, and Homeostenosis

The clinical characteristics of older adults differ fundamentally from those of younger adult patients, marked by multimorbidity, atypical presentation, and homeostenosis, defined as progressive narrowing of physiological reserve across multiple organ systems that reduces compensatory capacity even under relatively mild stressors (Santulli et al., 2025). Atypical presentation poses a genuine diagnostic challenge: community-acquired pneumonia due to *Streptococcus pneumoniae* in older adults often develops without pronounced fever or leukocytosis, manifesting instead as delirium or sudden functional decline with no clear respiratory complaints (Elias et al., 2024); a comparable pattern is seen with acute abdominal pain, which in older adults is frequently less intense or well-localised than in younger patients, increasing the risk of delayed diagnosis of acute surgical conditions (Durazzo et al., 2017). Consequently, clinical vigilance toward sudden changes in functional or cognitive status, rather than reliance solely on classical disease symptoms, becomes an important early signal for both clinicians and nursing staff in inpatient settings.

These characteristics necessitate a shift in diagnostic thinking within the hospital setting. History-taking and physical examination in older adults should not be limited to the chief complaint, but should routinely explore concurrent functional, cognitive, and nutritional changes. Without this vigilance, atypical presentations can easily be misidentified as a normal part of ageing, potentially delaying treatment of an underlying acute illness. Training in recognition of atypical presentation for non-geriatric health workers in emergency units and general inpatient wards represents one of the most cost-effective yet broadly impactful intervention points for the safety of older hospital patients.

Cross-System Physiological Changes as Basis for Systemic Approach

Physiological ageing affects almost all organ systems simultaneously, and it is precisely this inter-system interaction that renders the clinical problems of older adults inherently systemic. In the cardiovascular system, reduced cardiac reserve makes older adults vulnerable to myocardial ischaemia without classic chest pain and more susceptible to haemodynamic decompensation from relatively mild stressors (Santulli et al., 2025). In the respiratory system, a diminished cough reflex and immunosenescence increase the risk of silent aspiration and mask classical signs of infection such as fever (Elias et al., 2024); in the gastrointestinal system, reduced motility and changes in gut microbiota contribute to chronic constipation and gastrointestinal bleeding that often manifests atypically (Durazzo et al., 2017). In the renal system, the decline in glomerular filtration rate accompanying ageing, even when serum creatinine appears normal due to reduced muscle mass (see Section 4), carries direct implications for drug dose adjustment and constitutes one of the root causes of the polypharmacy burden discussed in Section 7.

Because of these inter-system relationships, clinicians managing older adults must resist the tendency to seek a single diagnosis for a single symptom. Functional decline in one organ system frequently triggers compensatory responses in other systems that are themselves weakening, creating chains of cause and effect more readily understood through a systemic lens than through an organ-by-organ approach. This understanding provides the conceptual foundation for the geriatric syndrome framework described in Section 4 and constitutes the rationale for why single-organ assessment is insufficient for older hospital patients.

Geriatric Syndromes: The "14-i" Framework and Key Clinical Manifestations

The concept of geriatric syndromes, commonly summarised in Indonesian geriatric curricula as the '14-i' framework, refers to clinical conditions that are frequent in older adults, multifactorial in origin, and not explicable by any single diagnosis; the framework encompasses immobility, instability, incontinence, intellectual impairment, infection, visual and hearing impairment, isolation, inanition (malnutrition), iatrogenesis, and insomnia, among others. Three manifestations with the greatest relevance to hospital service governance are described below.

Sarcopenia, defined as the progressive age-related decline in skeletal muscle mass and strength, contributes directly to fall risk, frailty, and functional disability. The Asian Working Group for Sarcopenia consensus defines it based on a combination of low muscle strength followed by reduced muscle mass and/or physical performance, criteria more appropriate for Asian populations than those developed primarily for Western populations (Chen et al., 2014); simple screening through handgrip strength can serve as an entry point for nutritional and exercise interventions from the early phase of hospital care (Walston, 2012). Malnutrition is frequently undetected because its clinical picture is obscured by the acute illness that constitutes the primary reason for hospitalisation; systematic screening with validated instruments such as the Malnutrition Screening Tool or Mini Nutritional Assessment has been shown to improve early detection of at-risk patients who, without intervention, may experience prolonged length of stay (Dent et al., 2019; Ferguson et al., 1999), while ESPEN guidelines emphasise meeting individual energy and protein requirements and attending to hydration status, which is routinely overlooked in older adults (Volkert et al., 2022). Chronic wounds, particularly pressure ulcers resulting from prolonged immobilisation, require a comprehensive approach extending beyond local wound care, specifically nutritional optimisation, early mobilisation, and management of co-morbidities such as diabetes mellitus (Alam et al., 2021). Table 2 summarises the key screening instruments for these syndromes alongside other geriatric syndromes discussed in subsequent sections.

The five manifestations in Table 2, namely delirium, sarcopenia, malnutrition, frailty, and polypharmacy or inappropriate prescribing, rarely occur in isolation in any single patient. An older adult hospitalised for an acute infection, for example, faces risk of sarcopenia from immobilisation during care, malnutrition from reduced appetite, and delirium from the combination of infection and newly prescribed medications; all three may compound each other if not anticipated from admission. Early recognition of the '14-i' framework at initial assessment enables the hospital team to formulate a multicomponent prevention plan from the first day of admission, rather than reacting only once complications arise.

Table 2. Key Screening Instruments and Diagnostic Criteria for Selected Geriatric Syndromes

Geriatric Syndrome	Instrument/Criteria	Reference Population	Key Elements	Reference
Delirium	Confusion Assessment Method (CAM)	Hospitalised older adults (developed 1990)	Acute onset with fluctuating course + inattention, plus disorganised thinking OR altered level of consciousness	(Inouye et al., 1990)

Sarcopenia	Asian Working Group for Sarcopenia (AWGS) Criteria	Asian populations	Low grip strength followed by reduced muscle mass and/or physical performance	(Chen et al., 2014)
Malnutrition	Malnutrition Screening Tool (MST) / Mini Nutritional Assessment (MNA)	Adult inpatients	Unintentional weight loss + reduced oral intake	(Dent et al., 2019; Ferguson et al., 1999)
Frailty	Frailty phenotype / ICFSR consensus	Community and clinical older adults	Reduced multisystem reserve; multicomponent exercise as core intervention	(Izquierdo et al., 2025)
Polypharmacy/inappropriate prescribing	AGS Beers Criteria 2023; STOPP/START version 3	Older adults ≥ 65 years	High-risk medication list (Beers); bidirectional stop/start criteria (STOPP/START)	(American Geriatrics Society, 2023; O'Mahony et al., 2023)

Frailty as a Reversible Multisystem Clinical Syndrome

Frailty is characterised by reduced multisystem physiological reserve and heightened vulnerability to stressors, such that older adults with frailty face substantially higher risk of adverse outcomes than non-frail peers under stressors of equal magnitude; pathophysiologically, frailty is associated with low-grade chronic inflammation and neuroendocrine dysfunction that forms a progressive 'frailty cycle' if left unaddressed (Santulli et al., 2025). Sleep quality and duration also contribute: a recent systematic review demonstrates a consistent relationship between sleep disturbance and increased frailty risk (de Souza et al., 2025).

Critically, frailty appears modifiable at certain stages rather than being an exclusively progressive condition: evidence from randomised clinical trials shows that structured educational programmes combined with physical exercise can improve functional capacity in community-dwelling older adults with the frailty phenotype (Gonzalez-Mariscal et al., 2024), and the global ICFSR consensus recommends multicomponent exercise, combining resistance, aerobic, and balance training, as the core intervention for slowing or reversing frailty trajectories (Izquierdo et al., 2025).

The practical implication of this reversibility is significant for hospitals: frailty assessment should not be used solely as a passive prognostic label but as a trigger for active intervention from the acute phase of care. Older adults with mild to moderate frailty admitted for acute conditions remain candidates for benefit from early mobilisation and adequate protein intake during hospitalisation, not only through post-discharge rehabilitation programmes. This perspective is consistent with the philosophy of Comprehensive Geriatric Assessment described in Section 6, which treats frailty as an intervention target rather than merely an outcome predictor.

Comprehensive Geriatric Assessment as Foundation of Clinical Evaluation

Comprehensive Geriatric Assessment (CGA) is a multidimensional diagnostic process explicitly designed to identify medical, functional, cognitive-psychological, and social problems that escape conventional chief-complaint-based clinical assessment; CGA therefore constitutes a direct response to the multimorbidity and atypical presentation characteristics described in Section 2. A Cochrane systematic review demonstrates that CGA for hospitalised

older adults increases the likelihood of patients remaining alive and living in their own home at follow-up, compared with conventional care without CGA (Ellis et al., 2017); for high-risk community and frail populations, the evidence regarding hospital admission rates is more variable, indicating that CGA's effectiveness depends substantially on the implementation context (Briggs et al., 2022).

A scoping review of CGA-based multidisciplinary team intervention models identified the key elements of successful implementation: team composition involving physicians, nurses, clinical pharmacists, clinical dietitians, physiotherapists, and medical social workers; regular team meetings; and family involvement in discharge planning (Choi et al., 2022); these elements form the basis for the governance recommendations in Section 10.

The consistent application of CGA in Indonesian hospitals continues to face practical challenges, particularly healthcare worker workload and consultation time constraints, such that multidimensional assessment is frequently reduced to chief-complaint-based evaluation. One viable middle ground is the adoption of staged CGA, beginning with rapid screening using simple instruments described in Sections 4 and 5, followed by comprehensive assessment for patients identified as high-risk. This staged approach allows resource-limited hospitals to implement CGA principles without requiring a full multidisciplinary team to be available from the outset.

Polypharmacy and Evidence-Based Deprescribing Strategies

Polypharmacy, commonly defined as the concurrent use of five or more medications, is extremely prevalent among older adults given the high prevalence of multimorbidity. Polypharmacy is not inherently inappropriate, but the risk of drug interactions and medication burden increases substantially with the number of medications prescribed, particularly through 'prescribing cascades' where a drug's side effects are misidentified as a new medical condition (Pazan & Wehling, 2021). A systematic review of reviews demonstrates a consistent association between polypharmacy and adverse outcomes including falls, hospitalisation, and mortality, although direct causality is difficult to disentangle from the severity of the underlying comorbidities (Davies et al., 2020).

Deprescribing, defined as the systematic process of identifying and discontinuing or reducing the dose of medications whose risks outweigh their benefits, has emerged as a primary clinical strategy (Hung et al., 2024); a recent randomised clinical trial shows that relaxing glycaemic targets and deprescribing antidiabetic therapy in frail older adults with type 2 diabetes can be undertaken without increasing the risk of acute complications while also reducing the risk of hypoglycaemia (Grant et al., 2025).

Clinical decision-making is supported by the AGS Beers Criteria, which identifies high-risk medications in older adults (American Geriatrics Society, 2023), and the STOPP/START version 3 criteria, which provide bidirectional guidance on medications to discontinue (STOPP) and therapies that should have been initiated but were omitted (START) (O'Mahony et al., 2023). A review of the uptake of these instruments reveals that implementation in everyday practice continues to face barriers including clinician time constraints, electronic health record integration, and resistance to established prescribing patterns (McGettigan et al., 2023); these challenges are addressed further in Section 10.

For hospitals, systematic deprescribing should not be left to individual physician initiative, but should be supported by institutional processes: routine medication list review at each ward round, clinical pharmacist involvement in medication reconciliation at admission and discharge, and the provision of clinical decision support tools based on Beers and STOPP/START criteria integrated into electronic medical records. Without this structural support, clinical awareness of polypharmacy risks alone is insufficient to sustainably change prescribing practice.

Delirium and Fall Risk: Multicomponent Non-Pharmacological Prevention

Delirium is an acute neuropsychiatric syndrome characterised by fluctuating disturbances in attention and consciousness, commonly triggered by acute medical conditions, medication effects, or an unfamiliar care environment. The Confusion Assessment Method, developed in 1990, remains the gold-standard diagnostic instrument given its high sensitivity and specificity and ease of application by non-specialist health workers after brief training (Inouye et al., 1990). Recent epidemiological data show that the incidence and prevalence of delirium in older adults on non-intensive wards remains high, influenced by predisposing factors including dementia, polypharmacy, and acute illness severity (Wu et al., 2024); unrecognised delirium can prolong length of stay, increase the risk of institutionalisation, and raise mortality (Rieck et al., 2020).

Prevention through multicomponent non-pharmacological interventions, comprising routine reorientation, early mobilisation, optimisation of vision and hearing, sleep hygiene, and dehydration prevention, has been shown to substantially reduce delirium incidence and forms the basis of the Hospital Elder Life Program now widely adopted internationally (Inouye et al., 1999). Fall risk is closely linked to immobility, cognitive impairment, and polypharmacy; effective prevention is multifactorial, encompassing standardised risk screening, environmental modification, patient education, and review of high-risk medications, because single-component interventions have consistently been shown to be less effective (LeLaurin & Shorr, 2019), as confirmed by meta-analysis in emergency department settings (Morello et al., 2019).

Because delirium and falls share many of the same risk factors, including polypharmacy, cognitive impairment, and immobility, these two prevention programmes are ideally not managed as separate hospital initiatives. Integrating them into a single daily patient safety bundle, for instance through a checklist administered at each nursing shift, has the potential to be more efficient than running two parallel protocols with overlapping targets. This integrated approach is also more readily monitored by the hospital quality committee, as described further in Section 10.

Integrated Care Models: From Geriatric Wards to Hospital-at-Home

Models of care for older adults have evolved beyond conventional geriatric wards to include mobile geriatric consultation teams activatable in non-geriatric wards and hospital-at-home arrangements for selected older patients who are clinically stable but require monitoring equivalent to inpatient care. Early experience with hospital-at-home integrated with geriatric services in Italy demonstrates promising results in maintaining the quality of acute care while reducing the risk of hospitalisation-related complications, including delirium, functional deconditioning, and healthcare-associated infections (Rivasi et al., 2024).

The success of these models is consistently dependent on the availability of a trained and coordinated multidisciplinary team (Choi et al., 2022), consistent with the demonstrated benefits of CGA on long-term functional outcomes (Ellis et al., 2017). For Indonesian hospitals with limited integrated geriatric referral facilities, these principles can be adapted incrementally, for example by beginning with a mobile geriatric consultation team as an interim step before developing a more complete integrated geriatric service unit.

The choice of care model should be adapted to each hospital's case profile and available resources rather than applied uniformly. Hospitals with high volumes of older adult patients but limited bed capacity may prioritise mobile consultation teams to reach patients in non-geriatric wards, while hospitals with a stable older adult population and adequate home-care networks may begin piloting hospital-at-home for carefully selected cases. This implementation flexibility is essential to ensure that the principles of integrated geriatric care can be adopted even as hospital infrastructure across Indonesia remains highly varied.

Integration into Hospital Governance: Accreditation, National Quality Indicators, and Multidisciplinary Teams

The primary contribution of this review lies in bridging the clinical evidence from Sections 2 through 9 with the hospital governance instruments applicable in Indonesia. The Ministerial Decree of the Minister of Health No. 1128 of 2022 on Hospital Accreditation Standards positions geriatric care as one of the national programmes assessed during the accreditation process (Ministry of Health Republic of Indonesia, 2022), giving the evidence above direct relevance to the formulation of National Quality Indicators (NQI).

Three NQIs that can be directly mapped are adherence to fall prevention measures (Section 8), adherence to evidence-based clinical pathways (Sections 6 and 7), and timeliness of attending physician rounds (Section 6); Table 3 presents this mapping in greater detail. This mapping provides hospitals with a concrete, auditable basis for translating scientific evidence into operational performance targets, so that improvements in geriatric care quality extend beyond the conceptual level.

Table 3. Mapping of Scientific Evidence to Hospital National Quality Indicators (NQI)

National Quality Indicator (NQI)	Evidence Base	Related Section
Adherence to fall prevention measures	Multifactorial fall prevention reduces recurrent fall events in older adults (LeLaurin & Shorr, 2019; Morello et al., 2019)	Section 8
Adherence to evidence-based clinical pathways	CGA and Beers/STOPP-START-based polypharmacy management improve clinical outcomes (Ellis et al., 2017; American Geriatrics Society, 2023; O'Mahony et al., 2023)	Sections 6-7
Timeliness of attending physician rounds	Periodic assessment and reassessment are central to effective CGA (Ellis et al., 2017; Choi et al., 2022)	Section 6

The organisation of a multidisciplinary team is an operational prerequisite for implementing CGA and integrated care models, with a minimum composition involving a geriatric-competent physician, gerontological nurse, clinical pharmacist, clinical dietitian, physiotherapist, and medical social worker meeting regularly to align the management plan (Choi et al., 2022). The primary challenge for Indonesian hospitals is the limited supply of geriatric-competent health workers, given that only approximately 14 hospitals hold integrated national geriatric referral status; hospitals outside this network can develop a staged model, beginning with a minimal-member mobile geriatric consultation team supported by referral networks and telemedicine to referral hospitals for complex cases. Drug governance for older adults must be integrated into the patient safety system in a structured manner: through clinical decision support modules based on Beers and STOPP/START criteria embedded in electronic medical records, and through clinical pharmacist involvement in medication reconciliation at admission and discharge. Delirium and fall prevention programmes should be institutionalised as patient safety indicators monitored periodically by the quality committee, rather than remaining ad hoc ward-level initiatives.

The structural challenges accompanying all of these recommendations include the limited and unevenly distributed geriatric workforce, package-based financing structures (INA-CBGs) that do not yet explicitly accommodate the need for multidisciplinary staffing and longer assessment time, and low awareness that geriatric syndromes are clinically actionable entities rather than a normal and unmodifiable part of ageing. Addressing these challenges requires hospital management commitment in the medium term, not merely administrative adjustments ahead of accreditation surveys; investment in workforce training, provision of standard screening tools in every inpatient unit, and revision of clinical performance indicators must be

planned as part of a hospital quality roadmap, not as short-term projects that cease once accreditation status is obtained.

CONCLUSIONS AND RECOMMENDATIONS

Conclusion

This review concludes that geriatric syndromes, encompassing immobility, instability and falls, incontinence, delirium, malnutrition, sarcopenia, and polypharmacy-related iatrogenesis, are major, modifiable determinants of clinical outcomes in hospitalised older adults. Comprehensive Geriatric Assessment by a multidisciplinary team, polypharmacy governance based on Beers and STOPP/START criteria, and multicomponent delirium and fall prevention bundles represent evidence-based assessment and management approaches that can, and should, be integrated directly into National Quality Indicators and hospital accreditation structures in Indonesia, as outlined in Section 10.

Limitations

Several limitations warrant transparent disclosure. Methodologically, this review constitutes a structured narrative rather than a formal systematic review following PRISMA standards requiring double-independent screening, and therefore carries potential for author selection bias. Regarding generalisability, the majority of sources derive from non-Indonesian study populations, predominantly from North America, Europe, and parts of East Asia, such that the application of diagnostic thresholds and intervention effectiveness to the Indonesian context requires caution and ideally validation through local research.

In terms of coverage, the 30 sources used are sufficiently representative to provide an overview across the nine themes addressed, but are not intended to be exhaustive on any individual theme, as each topic such as frailty or polypharmacy could form the subject of its own systematic review. The level of evidence certainty also varies: recommendations regarding CGA and delirium and fall prevention are supported by Cochrane systematic reviews and randomised clinical trials, whereas the mapping to National Quality Indicators in Section 10 represents the authors' logical inference, not yet empirically tested in Indonesian hospital settings, and requires further validation.

Recommendations

As next steps from this research programme, local validation studies are needed for the screening instruments and diagnostic criteria whose evidence base is largely derived from non-Indonesian populations; implementation studies are needed on integrated geriatric care models appropriate to the resource context of Indonesian hospitals; and health economic evaluations are needed comparing investment in integrated geriatric service units against conventional models, to strengthen the evidence base for advocacy on older adult healthcare financing policy in Indonesia.

Author Contributions

Conceptualization, literature search, and original draft preparation: Mohammad Aulia Molid Ogest Putra Calisanie; Methodology and writing (review and editing): Zahratul Riadho; Supervision and writing (review and editing): Lili Indrawati; Data curation and writing (review and editing): Asyifa Robiatul Adawiyah. All authors have read and agreed to the published version of the manuscript

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