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Managing Multimorbidity in Internal Medicine: A Framework for Saudi Healthcare System Efficiency

ZIAUR RAHMAN
ORCID: 0009000213731497

Abstract- ***Multimorbidity is now a central test of internal medicine performance because patients rarely arrive with a single, guideline-contained disease. In Saudi Arabia, longer life expectancy, diabetes, cardiovascular disease, obesity, respiratory disease, cancer survivorship and mental health need are converging with Vision 2030 reforms that emphasise prevention, digital transformation and accountable value. This review develops a practical framework for managing multimorbidity in internal medicine to improve Saudi healthcare system efficiency. A narrative review methodology was used, prioritising peer-reviewed literature and policy evidence published from 2020 to 2025 on multimorbidity, integrated care, chronic disease management, Saudi health transformation, primary care redesign, digital health, medication optimisation and value-based healthcare. The paper proposes a five-part framework: population risk stratification, shared goal-oriented care planning, internal medicine coordination hubs, digital continuity, and outcomes-based governance. The model is intended to reduce fragmentation, duplicate testing, preventable admission, adverse drug events and delayed escalation while preserving person-centred decision-making. The review argues that Saudi internal medicine departments can become coordination engines between primary care, subspecialties, emergency departments and community services. Efficiency should therefore be measured not only by throughput, but by continuity, avoidable utilisation, patient-reported outcomes, medication safety, equity and clinician workload. Implementation requires interoperable records, clinical pharmacy, nurse coordination, mental health integration, telemedicine, home monitoring, and cluster-level dashboards aligned with the Health Sector Transformation Program. The framework offers an adaptable roadmap for hospitals and health clusters seeking Scopus-level evidence translation into operational improvement.***

Keywords: ***Multimorbidity, Internal Medicine, Saudi Arabia, Vision 2030, Chronic Diseases, Integrated Care, Health System Efficiency, Digital Health.***

I. INTRODUCTION

Internal medicine has traditionally been organised around diagnostic refinement, acute stabilisation and specialist referral. That orientation remains essential, but it is insufficient for patients who live with diabetes, hypertension, chronic kidney disease, heart failure, chronic respiratory disease, obesity, depression, pain, frailty and social vulnerability at the same time. Multimorbidity, commonly defined as the coexistence of two or more chronic conditions, changes the work of physicians because clinical decisions are no longer linear. A treatment that improves one disease may worsen another, a single symptom may have multiple causes, and the patient may experience the healthcare system as a series of disconnected appointments rather than as a coherent pathway (Skou et al., 2022; Xu et al., 2023). The attached Springer model paper is useful because it shows how multimorbidity should not be treated as background noise; comorbidity burden, mental health and long-term outcomes interact in ways that demand active care management rather than passive documentation.

The Saudi healthcare system is undergoing one of the most ambitious transformations in the region. Vision 2030 and the Health Sector Transformation Program emphasise prevention, access, digital health, private-sector participation, accountable care and improved life expectancy (Chowdhury et al., 2021; Alasiri and Mohammed, 2022; Health Sector Transformation Program, 2023). These priorities directly affect multimorbidity because fragmented chronic disease management consumes specialist capacity, increases emergency demand, duplicates laboratory and imaging work, and exposes patients to medication harm. Noncommunicable diseases dominate Saudi morbidity and mortality, and policy reviews identify diabetes, cardiovascular disease, obesity and chronic

respiratory illness as persistent drivers of burden (Hazazi et al., 2022; Alqadasi et al., 2024; Suleiman et al., 2025). In this context, managing multimorbidity is not a narrow clinical issue; it is a system-efficiency strategy.

Saudi Arabia also has structural advantages that can support a new internal medicine framework. Health clusters can link hospitals, primary care centres and community services across defined populations. Digital platforms, electronic health records and national data initiatives can create longitudinal visibility. The population health agenda allows risk stratification before crisis occurs. Yet implementation remains challenging when guidelines, payment models, clinical training and performance indicators continue to reward single-disease activity. Internal medicine departments therefore need an operational model that reconciles subspecialist expertise with whole-person complexity. This review proposes such a model and positions internal medicine as the integrator of complex adult care within Saudi health transformation.

II. AIM AND OBJECTIVES

The aim of this review is to develop an evidence-informed framework for managing multimorbidity in internal medicine services to improve efficiency, quality and continuity in the Saudi healthcare system. The focus is not on one disease cluster alone, but on the practical redesign of care pathways for adults with multiple chronic conditions who frequently move between primary care, emergency departments, inpatient wards and subspecialty clinics.

The objectives are fivefold. First, the review examines the current clinical and system challenges created by multimorbidity in internal medicine. Second, it synthesises recent evidence from 2020 to 2025 on integrated care, chronic disease pathways, medication optimisation, digital health and value-based delivery. Third, it translates Saudi Vision 2030 and Health Sector Transformation priorities into pathway design principles for complex adult care. Fourth, it proposes a framework that internal medicine departments and health clusters can adapt for service redesign. Fifth, it identifies implementation indicators that can be used to evaluate efficiency without reducing quality to cost containment alone.

The guiding review question is: how can Saudi internal medicine services organise multimorbidity care so that patients receive coordinated, goal-oriented and efficient management across the continuum of care? A secondary question is: which governance, workforce and digital enablers are most important for embedding this framework in hospitals and health clusters?

III. REVIEW METHODOLOGY

A structured narrative review methodology was selected because the paper aims to build an operational framework rather than estimate a pooled treatment effect. Narrative review is appropriate when evidence comes from heterogeneous sources, including clinical studies, system transformation reports, policy documents, implementation studies and conceptual models (Greenhalgh et al., 2020; Sutton et al., 2020). The review was conducted in four stages. The first stage defined the scope around adult multimorbidity in internal medicine, Saudi healthcare transformation and system efficiency. The second stage identified literature from 2020 to 2025 using keyword combinations related to multimorbidity, integrated care, internal medicine, chronic disease management, Saudi Arabia, Vision 2030, model of care, primary care, digital health, polypharmacy, mental health, value-based healthcare and population health. The third stage screened sources for relevance to care coordination, chronic disease pathway redesign, implementation feasibility and measurable outcomes. The fourth stage synthesised themes into a framework suitable for Saudi health clusters.

Inclusion criteria prioritised English-language peer-reviewed articles, systematic reviews, scoping reviews, health policy papers and official Saudi health transformation documents published between 2020 and 2025. Earlier classic definitions were avoided in the main citation set to meet the contemporary evidence requirement, although established concepts such as multimorbidity,

continuity and medication safety informed interpretation. Exclusion criteria were single-case reports, disease-only guidelines without pathway relevance, editorials without implementation content, and studies focused exclusively on paediatric or highly specialised rare disease populations. The synthesis used thematic mapping rather than meta-analysis because interventions vary by population, setting, professional roles, digital maturity and financing model. Themes were compared against the Saudi context to ensure that the final framework was not simply imported from other systems.

The methodological limitation is that a narrative review cannot eliminate selection bias in the same way as a registered systematic review. To reduce this risk, the review triangulated evidence across clinical, organisational and policy sources and focused on convergent principles rather than isolated findings. The framework is therefore best viewed as an implementation model for evaluation, not as a claim that one pathway configuration will suit every hospital or region.

IV. MULTIMORBIDITY AS AN EFFICIENCY CHALLENGE IN SAUDI INTERNAL MEDICINE

Multimorbidity reduces efficiency because complexity accumulates faster than appointments, records and guidelines can absorb. A patient with diabetes, coronary disease, chronic kidney disease and depression may have separate visits, separate medication changes and separate laboratory requests, even when the problems are clinically connected. The result is not only inconvenience; it is a production problem for the health system. Fragmented care creates avoidable emergency visits, repeat testing, conflicting advice, delayed recognition of deterioration, and poor adherence caused by unrealistic treatment burden (Tran et al., 2020; Salisbury et al., 2021; Xu et al., 2023). Internal medicine clinicians see the downstream consequences when patients are admitted with decompensation that could have been prevented through earlier integrated review.

In Saudi Arabia, the chronic disease profile makes this issue particularly important. National and regional analyses describe increasing pressure from noncommunicable diseases and metabolic risk factors, while Saudi health transformation literature highlights the need to shift from episodic treatment to prevention and population health (Hazazi et al., 2022; Alqadasi et al., 2024; Alnuwaysir et al., 2025). Diabetes and obesity interact with cardiovascular, renal, musculoskeletal and mental health problems, creating high utilisation patterns across outpatient and inpatient settings. Multimorbidity also affects younger working-age adults, not only older populations, which means that inefficient care has productivity consequences beyond hospital budgets.

The efficiency problem is often misdiagnosed as patient noncompliance or appointment pressure. In reality, many patients are compliant with a system that gives them too many disconnected tasks. When each subspecialty optimises its own target, the patient may receive polypharmacy, duplicate monitoring and messages that conflict with personal priorities. Medication burden becomes a pathway issue. Depression, anxiety and cognitive impairment further reduce the ability to navigate complex regimens. Recent evidence emphasises that integrated care for multimorbidity must include mental health, self-management support and medication review rather than focusing only on biomedical indicators (Muth et al., 2021; Skou et al., 2022; Seakamela et al., 2025).
For internal medicine, the strategic opportunity is to become the clinical home for complexity. This does not mean replacing primary care or subspecialists. It means providing structured coordination for patients whose needs exceed single-disease workflows. The internal medicine service should identify high-risk patients, reconcile care plans, coordinate escalation, reduce duplication, and return stable patients to primary care with clear triggers for re-referral. Such a model supports Saudi efficiency goals because it uses specialist time where it adds value and strengthens continuity outside the hospital.

V. EVIDENCE THEMES FROM 2020-2025

The contemporary literature converges around several themes. The first is population segmentation.

Multimorbidity cannot be managed effectively if all patients are treated as equal users of appointments. Risk stratification using disease burden, frailty, mental health, medication count, recent admissions and social vulnerability allow services to distinguish stable chronic disease from unstable complexity (Academy of Medical Sciences, 2020; Ho et al., 2022). Saudi clusters are well placed to apply segmentation because they serve defined populations and can combine primary care, hospital and digital information.

The second theme is goal-oriented care. Multimorbidity guidelines increasingly recommend shifting from disease targets alone to patient goals, function, treatment burden and shared priorities (Salisbury et al., 2021; Muth et al., 2021). This is especially important in internal medicine where aggressive disease-specific targets may be inappropriate for frail patients, patients with renal impairment, or patients with limited ability to manage multiple regimens. A shared care plan should record the patient's goals, priority conditions, medication rationale, monitoring schedule, warning signs and escalation route.

The third theme is integrated team-based delivery. Reviews of integrated care and chronic disease management show that outcomes improve when primary care, specialists, nurses, pharmacists, mental health professionals and social support services operate through shared plans rather than parallel activity (Zhang et al., 2025; Seakamela et al., 2025). Clinical pharmacy is particularly important because polypharmacy is one of the most modifiable causes of harm in multimorbidity. Nurse coordinators can monitor symptoms, arrange follow-up and support adherence. Mental health professionals can address depression and anxiety that reduce self-management capacity.

The fourth theme is digital continuity. Telemedicine, remote monitoring, patient portals and decision support became more prominent after COVID-19 and now form part of routine chronic disease management in many systems (Haleem et al., 2021; Alharbi et al., 2025). However, digital tools improve efficiency only when they reduce fragmentation. A remote blood pressure reading that is not integrated into the care plan becomes another data point without action. Digital health should therefore be linked to clear protocols: who reviews alerts, when treatment changes occur, and how information returns to the patient.

The fifth theme is value-based measurement. Efficiency should not be equated with shorter visits or fewer referrals. In multimorbidity care, a longer comprehensive review may prevent multiple future encounters. Appropriate indicators include avoidable admissions, emergency revisits, duplicate testing, medication-related harm, time to post-discharge follow-up, patient-reported treatment burden, functional status, continuity and clinician workload (Porter et al., 2021; OECD, 2023). These measures align with Vision 2030 because they connect access, prevention, quality and sustainability.

Table 1. Multimorbidity pathway challenges and efficiency responses

Challenge in internal medicine	Efficiency risk	Framework response	Suggested indicator
Multiple disease-specific appointments	Duplicate reviews and fragmented advice	Shared care plan and hub triage	Number of duplicate specialist visits avoided
Polypharmacy and high-risk medicines	Adverse events, readmissions and poor adherence	Mandatory pharmacist-led medication optimisation	Medication discrepancies and deprescribing actions
Depression or anxiety with chronic disease	Reduced self-management and higher symptom burden	Embedded screening and collaborative mental health referral	Screening completion and referral uptake
Unclear post-discharge accountability	Emergency revisits and delayed escalation	Seven to fourteen day follow-up for high-risk patients	Follow-up completion and 30-day revisit rate
Poor data visibility across services	Repeated tests and missed deterioration	Digital continuity layer and cluster dashboard	Duplicate laboratory/imaging rate and alert closure

Note. The table translates common multimorbidity failures into measurable redesign actions for Saudi internal medicine services.

VI. PROPOSED FRAMEWORK FOR SAUDI INTERNAL MEDICINE

The proposed framework has five components. The first component is population risk stratification. Each cluster or hospital should identify adults with multiple chronic conditions using electronic records, admission history, medication count, frailty indicators, mental health diagnoses and laboratory risk markers such as renal function. Patients can then be grouped into low complexity, complex stable, complex unstable and high-utilisation segments. This segmentation prevents specialist clinics from being overwhelmed by stable cases while ensuring that patients with escalating risk receive timely internal medicine review.

The second component is a single shared care plan. The plan should be concise enough to be used in busy practice but complete enough to prevent fragmentation. It should include priority diagnoses, patient goals, medication rationale, deprescribing opportunities, monitoring intervals, red flags, responsible clinician, and escalation pathway. The plan should be visible to primary care, emergency departments, inpatient teams and subspecialists. It should also be written in patient-friendly language, because efficiency improves when patients understand which symptoms require urgent care and which can be managed through planned follow-up.

The third component is the integrated internal medicine hub. The hub is not necessarily a new building; it is a service function. It can include rapid access clinics, virtual multidisciplinary meetings, post-discharge reviews, medication safety sessions and complex case conferences. Its core role is to coordinate patients who repeatedly cross boundaries between primary care, emergency care and subspecialty services. A weekly case conference may include an internist, family physician, clinical pharmacist, nurse coordinator, dietitian, mental health professional and relevant subspecialist. The output should be a decision, not merely discussion.

The fourth component is a digital continuity layer. Saudi Arabia's digital transformation agenda can support multimorbidity care through interoperable records, clinical dashboards, patient portals, teleconsultations, remote monitoring and decision support (Chowdhury et al., 2021; Alharbi et al., 2025). The digital layer should show care gaps, recent admissions, pending tests, high-risk medications and patient-reported symptoms. It should also reduce duplication by making previous investigations visible and by prompting clinicians to review whether a repeated test will change management.

The fifth component is outcomes-based governance. Health clusters should evaluate multimorbidity pathways using balanced scorecards that include quality, access, cost, safety, experience and equity. Governance should not punish clinicians for seeing complex patients; rather, performance should be risk-adjusted. A service that accepts high-risk multimorbidity may appear less efficient under crude volume metrics but more efficient when preventable admissions, emergency revisits and patient treatment burden are considered. Figure 1 summarises the framework and Figure 2 translates it into a service segmentation dashboard.

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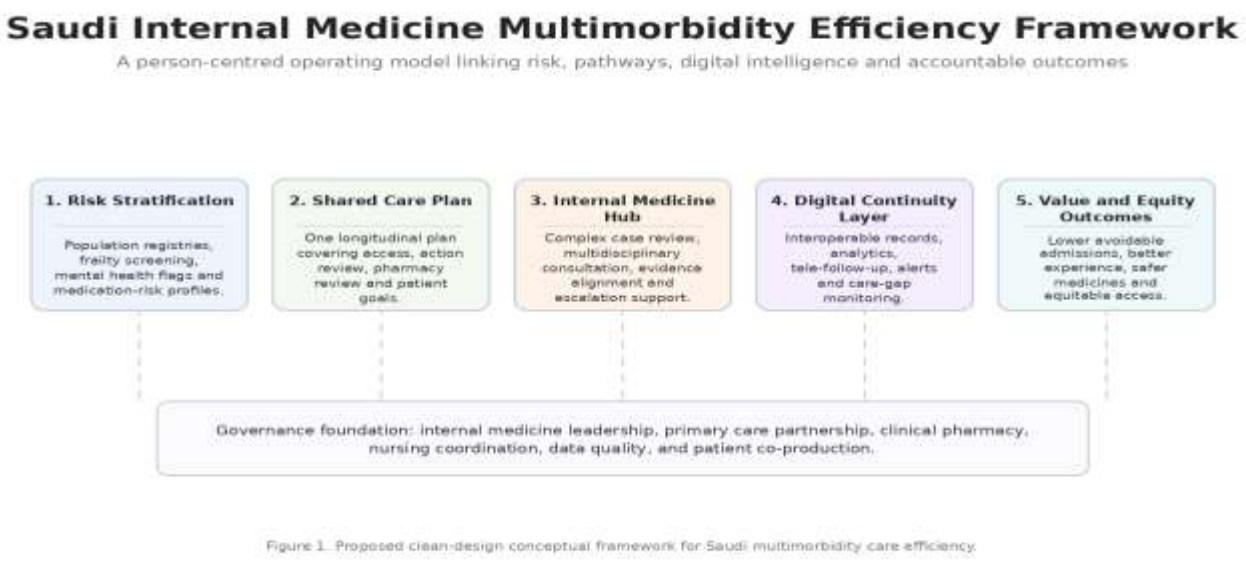

Figure 1. Proposed conceptual framework for Saudi multimorbidity care efficiency.

VII. PATHWAY DESIGN AND CLINICAL OPERATIONS

A Saudi multimorbidity pathway should begin before hospital admission. Primary care centres can identify patients with multiple conditions and rising utilisation, then refer them to internal medicine hubs using agreed criteria. Referral should not depend only on disease count. Triggers may include two or more emergency visits in six months, three or more high-risk medicines, repeated uncontrolled symptoms despite guideline therapy, recent functional decline, depression affecting adherence, or conflicting subspecialty recommendations. This approach supports prevention before treatment, a central principle of Saudi health transformation (Health Sector Transformation Program, 2023; Suleiman et al., 2025).

At the first internal medicine hub visit, the team should conduct a structured complexity assessment. This assessment includes diagnosis verification, medication reconciliation, functional status, mental health screening, social support, health literacy, recent investigations and patient priorities. The clinician should ask what outcome matters most to the patient, because the efficient plan is not always the most intensive plan. For example, reducing dizziness and falls may be more valuable than intensifying blood pressure targets. Reducing pill burden may improve adherence more than adding another disease-specific medication.

Medication optimisation should be mandatory. Polypharmacy is common in multimorbidity and creates avoidable harm through drug interactions, renal dosing errors, hypoglycaemia, hypotension, anticholinergic burden and duplication. Clinical pharmacists can review medicines against current renal function, age, disease priorities and patient capacity. Deprescribing should be framed as active treatment, not withdrawal of care. The pathway should also include periodic review because a medicine appropriate after hospital discharge may become unnecessary or unsafe later (Rankin et al., 2021; Khezrian et al., 2020).

Mental health integration is essential. Depression and anxiety increase symptom burden, reduce self-management and may worsen outcomes in chronic disease. Recent integrated care literature supports embedding mental health assessment into chronic disease management rather than treating it as a separate referral after biomedical work is complete (Muth et al., 2021; Skou et al., 2022). For Saudi internal medicine, this can be operationalised through

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brief screening, referral pathways, collaborative care with psychiatry or psychology, and culturally appropriate counselling support.

Post-discharge continuity is another high-yield point. Many patients with multimorbidity deteriorate after discharge because medication changes, pending results and follow-up plans are unclear. The pathway should require a post-discharge internal medicine or primary care review within seven to fourteen days for high-risk patients, with pharmacist reconciliation and explicit escalation instructions. Digital messaging can remind patients of appointments and warning symptoms, but human coordination remains necessary for complex cases.

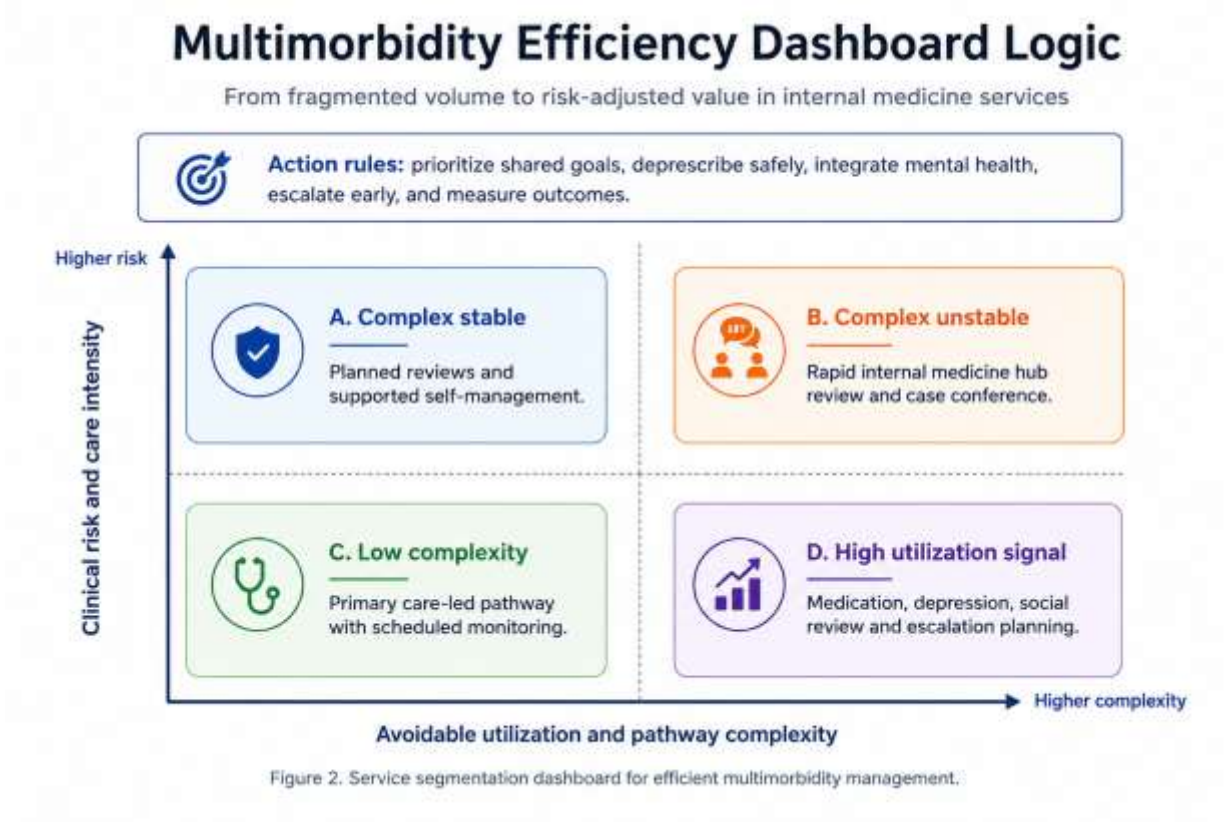

Figure 2. Service segmentation dashboard for complex adult care.

Table 2. Implementation roadmap for Saudi health clusters

Phase	Core activity	Lead roles	Digital requirement	Expected efficiency gain
1. Preparation	Define eligibility, governance and indicators	Internal medicine, family medicine, quality office	Baseline utilisation dashboard	Clear ownership and measurable baseline
2. Pilot	Launch hub for high-risk patients in one hospital or cluster sector	Internist, nurse coordinator, pharmacist	Shared care plan template	Reduced duplication and safer transitions
3. Integration	Connect primary care, emergency and subspecialty escalation rules	Cluster clinical governance group	Interoperable record and alert rules	Faster escalation and fewer preventable admissions
4. Evaluation	Assess outcomes,	Quality, data analytics,	Risk-adjusted balanced	Evidence for scale-up

	experience, cost and workload	patient representatives	scorecard	decisions
5. Scale	Expand across cluster and embed training	Cluster leadership and workforce development	Population health registry	Sustained value-based multimorbidity management

Note. Phased implementation allows adaptation across regions with different digital maturity, workforce capacity and patient complexity.

VIII. GOVERNANCE, WORKFORCE AND DIGITAL ENABLERS

Governance begins with ownership. A multimorbidity framework will fail if it is described as everyone's responsibility but owned by no one. Each health cluster should identify a clinical lead for complex adult care, supported by representatives from internal medicine, family medicine, emergency medicine, pharmacy, nursing, informatics and quality improvement. The governance group should define inclusion criteria, service standards, escalation rules, data definitions and outcome indicators. It should also review cases where patients experienced avoidable admission or repeated emergency use.

Workforce redesign is equally important. Internists require time and recognition for coordination work, not only procedural or disease-specific activity. Nurse coordinators can maintain contact with high-risk patients, monitor care plan completion and support transitions. Clinical pharmacists should be embedded in the pathway rather than consulted only after adverse events occur. Dietitians, physiotherapists and health educators are needed because multimorbidity is shaped by lifestyle, function and self-management. Mental health professionals should be linked through collaborative workflows. Training should include shared decision-making, deprescribing, frailty, digital tools, cultural communication and quality improvement.

Digital enablers must be designed around workflow. The electronic record should display multimorbidity status, risk segment, active care plan, high-risk medications, pending tests and recent utilisation. Decision support can prompt renal dosing, duplication checks and overdue monitoring. Dashboards can show cluster-level trends in avoidable admissions, emergency revisits, duplicate tests and follow-up completion. Patient portals can provide medication lists, care plans and appointment reminders. Remote monitoring can be used for selected patients with heart failure, hypertension, diabetes or respiratory disease, but alert thresholds must be realistic to avoid clinician overload (Haleem et al., 2021; Alharbi et al., 2025).

Financing and incentives should support coordination. If payment rewards isolated visits and investigations, fragmented care will persist. Value-based approaches can reward continuity, prevention, medication safety and reduced avoidable utilisation. Saudi reforms toward accountable and clustered care create an opportunity to align incentives with complex patient outcomes (Alasiri and Mohammed, 2022; Porter et al., 2021). Implementation should start with pilots in hospitals or clusters that have digital maturity and leadership commitment, then scale after evaluation.

IX. DISCUSSION

This review positions multimorbidity management as a practical route to Saudi healthcare efficiency. The proposed framework is deliberately operational. It does not ask clinicians to abandon disease expertise; it asks the system to coordinate expertise around patients whose conditions interact. Internal medicine is well suited to this role because it sits between primary care, emergency medicine and subspecialties. However, internal medicine must evolve from consultation-based problem solving to pathway-based complexity management.

The model aligns closely with Vision 2030. Prevention is advanced through risk stratification and early escalation. Access is improved when high-risk patients have rapid internal medicine review rather than repeated emergency attendance. Quality is improved through shared care plans, medication review and mental health integration. Digital transformation is used to connect decisions rather

than simply record activity. Efficiency is improved by reducing duplication, preventable deterioration and treatment burden. These benefits are consistent with Saudi transformation literature that calls for stronger primary care, population health and value-based delivery (Chowdhury et al., 2021; Hazazi et al., 2022; Suleiman et al., 2025).

The framework also addresses a common weakness in chronic disease programmes: overreliance on single-disease guidelines. Guidelines remain valuable, but they can conflict when applied simultaneously. A patient with multimorbidity needs prioritisation. The shared care plan becomes the mechanism for translating disease evidence into a realistic personal strategy. This is especially relevant for older adults, patients with renal impairment, patients with frailty and working-age adults with high treatment burden. The goal is not less care; it is better sequenced care.

Several risks must be managed. First, risk stratification can miss patients if data quality is poor. Second, digital dashboards can create surveillance without action if roles are unclear. Third, specialist resistance may emerge if coordination is perceived as reducing autonomy. Fourth, patients may distrust deprescribing unless it is communicated as safety-focused. Fifth, crude efficiency targets may pressure teams to reduce utilisation without distinguishing avoidable from necessary care. These risks can be reduced through clinical governance, patient involvement, transparent indicators and iterative improvement.

Future research in Saudi Arabia should evaluate the framework through cluster-level pilots. Possible designs include pragmatic trials, stepped-wedge implementation studies or mixed-method evaluations comparing usual care with multimorbidity hub pathways. Outcomes should include emergency visits, admissions, length of stay, duplicate testing, medication harm, patient-reported treatment burden, quality of life, clinician workload and cost per risk-adjusted patient. Qualitative work should explore patient and clinician experience, especially cultural expectations around family involvement and specialist access. Such research would contribute to international multimorbidity evidence while generating locally relevant implementation knowledge.

X. CONCLUSION

Managing multimorbidity is one of the most important efficiency challenges for Saudi internal medicine. The same patients who need the most coordinated care often experience the greatest fragmentation. Under Vision 2030, Saudi Arabia has the policy direction, cluster structure and digital ambition needed to redesign this experience. The proposed framework combines population risk stratification, shared care planning, integrated internal medicine hubs, digital continuity and outcomes-based governance. It shifts internal medicine from episodic consultation toward coordinated complexity management.

Efficiency in multimorbidity should be understood as the ability to deliver the right care, at the right time, with the least avoidable burden for patients and the system. This requires more than faster appointments. It requires fewer duplicated decisions, safer medicines, earlier recognition of deterioration, integrated mental health support, stronger post-discharge continuity and metrics that reward value rather than volume. If implemented carefully, Saudi internal medicine services can become a central mechanism for achieving health system sustainability, patient-centred care and chronic disease control under Vision 2030.

Implementation should also respect regional variation inside the Kingdom. Large tertiary hospitals in Riyadh, Jeddah and Dammam may begin with advanced analytics and multidisciplinary clinics, while smaller hospitals can start with simpler registries, pharmacist reconciliation and scheduled virtual case conferences. The same framework can therefore operate at different levels of maturity. What matters is not the sophistication of the technology, but whether the patient has a visible plan, a responsible team, and a clear route for escalation. Rural and peripheral areas may benefit from tele-internal medicine support, mobile diagnostics and stronger links between primary care physicians and

cluster specialists. This can reduce unnecessary travel, protect specialist capacity and improve equity for patients who otherwise reach tertiary services only after deterioration. Patient and family engagement should be treated as a core efficiency tool. In Saudi culture, family members often participate in appointment attendance, medication routines and decisions about admission or discharge. A multimorbidity pathway that ignores this reality may produce plans that are clinically correct but practically weak. Care plans should therefore include family education where appropriate, simple medication schedules, warning signs, lifestyle priorities and contact routes. Arabic-language patient materials, culturally sensitive dietary counselling and realistic exercise advice can improve adherence. Patient-reported measures should include treatment burden, confidence in self-management, understanding of the plan and experience of coordination. These outcomes show whether the pathway is reducing complexity from the patient's perspective. Research and evaluation should proceed alongside implementation. Saudi health clusters can generate valuable evidence by testing the framework through pragmatic pilots with matched comparison sites or stepped-wedge designs. Quantitative evaluation should measure emergency visits, inpatient admissions, length of stay, readmissions, outpatient duplication, medication discrepancies, testing duplication, patient-reported treatment burden and total cost per risk-adjusted patient. Qualitative evaluation should explore clinician workload, patient trust, family involvement and barriers to digital adoption. Economic evaluation is also important because a pathway may require more time during the first comprehensive visit while saving resources later through fewer crises. Publishing these findings would strengthen Saudi Arabia's contribution to international multimorbidity science and demonstrate how Vision 2030 reform can be translated into measurable clinical value. The framework should finally be connected to medical education and professional development. Internal medicine residency and continuing professional development should include multimorbidity reasoning, deprescribing, shared decision-making, quality improvement, digital dashboard use and communication across organisational boundaries. Clinicians need training to negotiate competing disease targets, explain uncertainty and balance evidence with patient goals. Managers need training to interpret risk-adjusted metrics rather than crude activity counts. Without these capabilities, dashboards and pathways may become administrative exercises. With them, the framework can become a practical mechanism for transforming everyday care. Equity must remain visible throughout scale-up. Multimorbidity is not distributed evenly; it can be intensified by age, income, health literacy, disability, rural residence and access to transport. A cluster dashboard should therefore compare outcomes across regions, gender, age groups and service settings. If a pathway reduces admissions overall but leaves vulnerable groups behind, it has not achieved true system efficiency. Equity-sensitive indicators can help leaders identify where outreach, translation, home-based support or transport coordination is needed. This approach is consistent with the broader transformation aim of improving access and quality for the whole population, not only for patients who already navigate services well. A practical national learning network could accelerate this process by allowing clusters to share protocols, dashboard definitions, patient materials and implementation lessons. Such peer learning would prevent each hospital from redesigning the same tools independently and would support consistent standards while preserving local flexibility and measurable accountability across services. Leadership should also protect clinician time for coordination, because complex reviews cannot be safely compressed into ordinary follow-up slots. Scheduling templates may reserve longer visits for high-risk patients and shorter virtual reviews for stable monitoring. When time is matched to complexity, clinicians can reconcile medicines, discuss goals, close information gaps and prevent avoidable escalation. This protects morale, improves decision quality and makes efficiency a product of thoughtful design rather than rushed care across clinics, wards and transitions of care safely.

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