

The Role Of Multidisciplinary Teams In Early Detection And Management Of Dementia: A Model Linking Psychiatry, Family Medicine, Nursing, Laboratory Biomarkers, And Hospital Administrators

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Abstract

Dementia is a progressive neurocognitive disorder characterized by deterioration in memory, thinking, behavior, and the ability to perform everyday activities. It represents one of the leading global health challenges of the 21st century, with prevalence rising rapidly due to increased life expectancy and population aging. By 2050, it is estimated that over 150 million people worldwide will be affected, with a particularly sharp rise in low- and middle-income countries, including Saudi Arabia and other Gulf states, where demographic transitions are accelerating. Despite advances in our understanding of the biological mechanisms of dementia, delays in diagnosis remain a major obstacle, often resulting in missed opportunities for early intervention and supportive care. Traditional approaches that rely on fragmented care pathways and specialty-specific interventions have proven insufficient to address the complexity of dementia.

This review explores the pivotal role of multidisciplinary teams in early detection and management of dementia, emphasizing the integration of psychiatry, family medicine, nursing, laboratory biomarkers, and hospital administration into a unified model of care. Psychiatrists play a critical role in differentiating dementia from psychiatric conditions such as depression or late-life anxiety disorders and in managing the behavioral and psychological symptoms of dementia. Family physicians serve as the first point of contact for most patients and are uniquely positioned to implement screening tools, manage comorbidities, and provide continuity of care. Nurses act as frontline observers of functional decline, educators of families, and advocates for holistic care, while laboratory biomarkers, both traditional and novel, increasingly support the accurate diagnosis and monitoring of disease progression. Hospital

administrators ensure the sustainability of dementia services by allocating resources, developing interprofessional training programs, and embedding dementia care within national health strategies such as Saudi Arabia's Vision 2030.

Through detailed analysis of each specialty's contribution, this review highlights the urgent need for integrated dementia care pathways. A proposed model demonstrates how psychiatry, family medicine, nursing, laboratory medicine, and hospital administration can work in concert to improve early detection, streamline management, and reduce the societal and economic burden of dementia. The paper underscores that only through cohesive multidisciplinary collaboration can healthcare systems effectively address the growing challenge of dementia in both global and regional contexts.

Introduction

Dementia has emerged as a global health priority due to its profound impact on patients, families, and healthcare systems. It is not a single disease but a clinical syndrome encompassing various etiologies, with Alzheimer's disease being the most common, followed by vascular dementia, Lewy body dementia, and frontotemporal dementia. According to the World Health Organization, dementia currently affects more than 55 million people worldwide, and nearly 10 million new cases are reported annually (WHO, 2021). The burden of dementia is amplified by its progressive nature, its association with significant disability, and the absence of a definitive cure. Beyond the direct medical implications, dementia imposes substantial psychosocial and economic strain, particularly in societies where caregiving often falls on family members (Prince et al., 2016).

In the Middle East and Saudi Arabia, the prevalence of dementia is expected to increase dramatically in the coming decades. Population-based studies in Saudi Arabia have reported a prevalence of dementia ranging from 5% to 13% among individuals aged 65 years and above, with underdiagnosis remaining a critical challenge (Alkhunizan et al., 2018). Several barriers contribute to delayed diagnosis, including cultural stigma surrounding mental illness, insufficient awareness of early warning signs, and limited access to specialized memory clinics. These factors frequently result in patients being diagnosed at moderate or advanced stages of disease, when interventions are less effective and caregiver burden is significantly higher (Al-Shahri, 2002). The lack of structured dementia care pathways further complicates timely diagnosis and coordinated management.

The need for a multidisciplinary approach arises from the multifactorial nature of dementia. Early detection requires vigilance at the primary care level, expertise in psychiatric and cognitive evaluation, support from laboratory and imaging biomarkers, sustained nursing engagement, and institutional backing from hospital administrators. Psychiatry contributes by addressing diagnostic complexity and managing neuropsychiatric symptoms, while family medicine ensures accessibility and continuity of care. Nurses are essential for monitoring functional decline, implementing care plans, and guiding families in day-to-day management. Laboratory biomarkers provide objective data to differentiate dementia from reversible causes of cognitive impairment and to track disease progression (Blennow & Zetterberg, 2018). Hospital administrators oversee resource allocation, staff training, and integration of dementia strategies within broader healthcare frameworks, ensuring long-term sustainability of services (Iliffe et al., 2014).

Despite recognition of these roles, integration across specialties often remains fragmented. In many health systems, patients may encounter multiple providers who do not communicate effectively, resulting in redundant investigations, inconsistent treatment plans, and gaps in support for caregivers. This review aims to bridge these gaps by proposing a structured model of multidisciplinary collaboration tailored to dementia care. By highlighting the complementary contributions of psychiatry, family medicine, nursing, laboratory

biomarkers, and hospital administration, it emphasizes how shared responsibility and interprofessional communication can optimize outcomes. Importantly, this model aligns with global dementia strategies, such as the WHO Global Action Plan on the Public Health Response to Dementia 2017–2025, and regional frameworks such as Saudi Arabia’s Vision 2030 healthcare transformation goals (Kingdom of Saudi Arabia Vision 2030, 2018).

Psychiatry’s Role

Psychiatry is central to the early detection and management of dementia because many of the initial presentations overlap with psychiatric disorders, particularly depression, anxiety, or late-onset psychosis. Differentiating between primary psychiatric illness and early dementia can be challenging, as both may present with cognitive complaints such as forgetfulness, loss of concentration, or impaired executive function. For example, depressive pseudodementia, characterized by memory impairment secondary to mood disturbance, often mimics early Alzheimer’s disease but requires a completely different treatment pathway. Psychiatrists, therefore, play a pivotal role in conducting comprehensive mental status examinations, deploying structured cognitive assessments such as the Mini-Mental State Examination (MMSE) or Montreal Cognitive Assessment (MoCA), and applying diagnostic frameworks such as DSM-5 criteria to ensure diagnostic accuracy (American Psychiatric Association, 2013). Early psychiatric involvement helps to distinguish reversible psychiatric syndromes from neurodegenerative conditions, preventing both misdiagnosis and unnecessary stigma.

In addition to diagnostic clarification, psychiatrists are uniquely positioned to manage the **behavioral and psychological symptoms of dementia (BPSD)**, which include agitation, aggression, wandering, sleep disturbances, delusions, and hallucinations. These symptoms affect up to 90% of patients during the course of dementia and are a major source of caregiver stress and institutionalization (Kales et al., 2015). While pharmacological interventions such as antipsychotics or antidepressants may be used selectively, evidence-based guidelines recommend prioritizing non-pharmacological strategies, including behavioral therapy, structured daily routines, and caregiver training, before resorting to medications due to the risks of sedation, falls, and cerebrovascular events in older adults (Livingston et al., 2017). Psychiatrists play a key role in training teams to apply these approaches, monitoring side effects of psychotropic medications, and providing continuity of care for complex behavioral presentations.

Another critical contribution of psychiatry lies in addressing the high prevalence of **psychiatric comorbidities** among dementia patients. Studies suggest that up to 40% of individuals with dementia suffer from depression, while anxiety disorders and sleep disorders are also common (Lyketsos et al., 2011). These comorbidities not only exacerbate cognitive decline but also significantly impair quality of life and increase caregiver burden. Through early recognition and treatment of these conditions, psychiatrists can enhance patients’ functional abilities, slow institutionalization, and support caregivers in maintaining resilience. Moreover, psychiatric follow-up can reduce the misuse of sedatives and antipsychotics, which are often inappropriately prescribed in nursing homes or unstructured care settings, especially in regions where dementia-specific training for healthcare staff is limited, such as in parts of the Middle East (Alzubaidi et al., 2020).

From a systems perspective, psychiatrists also contribute to **capacity assessments, legal decision-making, and ethical considerations** in dementia care. As the disease progresses, questions arise regarding patients’ ability to consent to treatment, manage finances, or participate in advance care planning. Psychiatrists are frequently called upon to perform structured capacity evaluations, ensuring that patient autonomy is respected while also safeguarding against exploitation or neglect. This role is particularly relevant in Saudi Arabia, where cultural expectations emphasize family decision-making, and psychiatrists often serve as

mediators between medical teams and families (Al-Shahri, 2002). Thus, psychiatry provides not only clinical expertise but also ethical and cultural sensitivity in dementia care.

Finally, psychiatrists are essential members of **multidisciplinary memory clinics**, where they collaborate with neurologists, geriatricians, nurses, and laboratory teams to provide comprehensive assessments. In such settings, psychiatrists' ability to integrate cognitive, behavioral, and psychosocial dimensions of dementia complements the biomedical focus of other specialists, thereby creating a holistic patient profile. Evidence from European memory clinics demonstrates that multidisciplinary involvement led by psychiatry reduces time to diagnosis, improves caregiver satisfaction, and promotes adherence to individualized care plans (Banerjee et al., 2011). Similar models are being piloted in tertiary hospitals across Saudi Arabia, though broader implementation is required to meet the growing demand associated with population aging.

Family Medicine's Role

Family physicians are often the **first point of contact** for individuals with early symptoms of dementia, making them a cornerstone of timely detection and coordinated care. In primary care, patients may initially present with vague complaints such as forgetfulness, difficulties with daily tasks, or mood changes, which can easily be attributed to normal aging or comorbid medical conditions. Studies indicate that primary care physicians diagnose fewer than 50% of dementia cases at an early stage, largely due to under-recognition of subtle signs and competing clinical priorities (Boustani et al., 2003). This gap underscores the need for family physicians to adopt proactive screening practices, particularly for at-risk populations such as older adults with cardiovascular risk factors, diabetes, or a family history of dementia. Standardized screening tools like the **Mini-Mental State Examination (MMSE)**, **Montreal Cognitive Assessment (MoCA)**, and **General Practitioner Assessment of Cognition (GPCOG)** are practical and validated options for use in primary care settings, enabling early identification of cognitive impairment before functional decline becomes severe (Nasreddine et al., 2005).

The role of family physicians extends beyond detection to **continuity of care** across the trajectory of dementia. Unlike specialist-based models, which may focus narrowly on diagnostic confirmation, family physicians are uniquely positioned to integrate dementia management with care for comorbidities such as hypertension, diabetes, and cardiovascular disease — conditions that are highly prevalent in older adults and can accelerate cognitive decline if poorly controlled (Whitmer et al., 2005). For example, effective blood pressure and glucose management has been shown to reduce dementia risk, and family physicians play a critical role in implementing these preventive strategies during routine visits (Ngandu et al., 2015). Additionally, primary care physicians can provide longitudinal monitoring, recognizing early transitions in disease stage and adjusting care plans accordingly. This continuity not only supports patient stability but also alleviates caregiver anxiety by offering a consistent point of reference in the healthcare system.

In the Saudi context, **family medicine is particularly important** due to the growing burden of noncommunicable diseases and the limited number of specialized geriatric or memory clinics. A study conducted in Riyadh reported that many older adults with cognitive complaints presented first to primary care centers rather than to specialists, emphasizing the need for family physicians to be equipped with dementia knowledge and tools for early recognition (Alkhunizan et al., 2018). However, barriers such as limited consultation time, lack of dementia-specific training, and cultural reluctance to discuss cognitive decline hinder effective screening. To address this, the Saudi Ministry of Health has begun integrating dementia awareness into **Vision 2030 healthcare transformation initiatives**, which aim to strengthen primary care and reduce dependence on tertiary hospitals (Kingdom of Saudi Arabia Vision 2030, 2018). Family physicians are therefore expected to take on a growing share of dementia-related care, bridging gaps between patients, specialists, and community resources.

Another key responsibility of family physicians is **care coordination**. Dementia care involves multiple specialties, including psychiatry, neurology, nursing, and laboratory medicine, and family physicians often serve as central coordinators who ensure communication across these domains. This role is particularly critical for patients in rural or underserved areas, where specialist services may be unavailable or difficult to access. Evidence from integrated care models in Europe and North America demonstrates that when family physicians lead multidisciplinary teams, patient outcomes improve in terms of earlier diagnosis, reduced hospitalizations, and better caregiver satisfaction (Iliffe et al., 2014). By maintaining comprehensive medical records, providing structured referrals, and ensuring follow-up, family physicians create continuity that is often lacking in fragmented systems.

Finally, family physicians contribute significantly to **patient and caregiver education**. In many cultures, including Saudi Arabia, stigma and misconceptions about dementia persist, with families often interpreting symptoms as part of “normal aging” or attributing them to spiritual causes. Family physicians, who typically have long-standing relationships with their patients, are ideally placed to provide culturally sensitive counseling that reframes dementia as a medical condition requiring structured management. This education not only empowers families to seek timely care but also reduces stigma and facilitates community support networks. By addressing both medical and social dimensions of dementia, family physicians fulfill a uniquely holistic role that complements the specialized contributions of psychiatrists, nurses, laboratory experts, and administrators.

Nursing’s Role

Nursing professionals are the **frontline observers** of dementia, often being the first to notice subtle changes in patients’ behavior, cognition, and functional ability. In both primary and secondary care settings, nurses interact with patients more frequently and for longer durations than physicians, giving them a unique vantage point for recognizing early warning signs of dementia such as forgetfulness, confusion, mood fluctuations, or difficulties with daily activities (Brodaty et al., 2012). These early observations can trigger timely referrals for formal assessment, which is crucial since delays in diagnosis significantly limit opportunities for early intervention. Moreover, nurses are trained to use structured screening tools, such as the **Abbreviated Mental Test Score (AMTS)** and the **Clock Drawing Test**, during routine encounters, enhancing detection rates in busy clinics and hospital wards (Galvin et al., 2007). Their active involvement in initial recognition is therefore a vital component of a multidisciplinary dementia strategy.

Beyond detection, nurses play a pivotal role in **ongoing management and patient-centered care**. Dementia care is not solely about pharmacological interventions but also about ensuring safety, maintaining dignity, and preserving quality of life. Nurses design and implement individualized care plans that address nutrition, mobility, hygiene, fall prevention, and sleep hygiene — domains that significantly influence patients’ daily functioning (Livingston et al., 2017). In addition, they monitor adherence to medication regimens and observe side effects, particularly from psychotropic medications, which are frequently used in dementia management but associated with risks of falls, sedation, and cardiovascular complications. By closely monitoring these outcomes, nurses provide critical feedback to physicians, enabling rapid adjustments to treatment plans and preventing avoidable complications (Gitlin et al., 2016).

Equally important is the **educational and advocacy role** of nurses. Families often experience confusion, fear, and stigma when confronted with a dementia diagnosis. In Saudi Arabia and other Middle Eastern societies, caregiving traditionally falls to family members, often women, who may lack formal training in managing dementia-related behavioral challenges. Nurses act as **educators and advocates**, providing families with practical skills such as communication strategies, safe environment modifications, and methods for managing aggression or wandering (Alzheimer’s Disease International, 2019). Research indicates that caregiver education delivered by nurses reduces stress, delays institutionalization, and

improves patient outcomes (Brodaty & Donkin, 2009). In the Saudi context, where institutional care remains limited and culturally less acceptable, empowering families through nursing-led education is particularly critical.

Furthermore, nurses contribute significantly to **multidisciplinary collaboration** by serving as the central link between patients, families, physicians, laboratory staff, and administrators. For example, in memory clinics, nurses often coordinate appointments, administer cognitive assessments, and facilitate communication between psychiatrists and laboratory teams analyzing biomarkers. This coordination ensures smoother care pathways and prevents patients from becoming lost within fragmented healthcare systems. Studies from the United Kingdom's National Dementia Strategy demonstrate that nurse-led case management reduces hospital admissions and improves patient satisfaction, reinforcing the importance of integrating nursing leadership into dementia care models (Ilfiffe et al., 2014).

Finally, nursing in dementia care extends to **policy and research contributions**. Dementia-specialist nurses, sometimes referred to as “dementia champions,” are increasingly involved in shaping institutional guidelines, designing training curricula for general staff, and conducting practice-based research to improve dementia care standards. In Saudi Arabia, initiatives such as the **Saudi Alzheimer's Disease Association** have highlighted the role of nursing in awareness campaigns and caregiver training, aligning with national health goals under **Vision 2030** to expand community-based care and reduce reliance on tertiary hospitals (Alkhunizan et al., 2018). Thus, nurses are not only frontline caregivers but also system-level contributors to the evolution of dementia care in both clinical and community settings.

Laboratory Biomarkers' Role

Laboratory medicine is increasingly central to the early detection and differential diagnosis of dementia, complementing clinical and psychiatric assessments. Traditionally, the laboratory's role focused on ruling out **reversible causes of cognitive decline**, such as hypothyroidism, vitamin B12 deficiency, electrolyte imbalances, or syphilis, all of which can mimic dementia but are potentially treatable (Knopman et al., 2001). Standard laboratory panels in patients with suspected dementia often include complete blood count, thyroid-stimulating hormone (TSH), serum B12 and folate, and basic metabolic panels. For instance, hypothyroidism has long been recognized as a cause of reversible dementia, and identifying it early can restore cognitive function, underscoring the indispensable role of laboratory investigations in the diagnostic workup (McKhann et al., 2011). In Saudi Arabia, where nutritional deficiencies such as vitamin B12 deficiency are prevalent in certain populations, laboratory evaluation becomes even more critical for distinguishing neurodegenerative dementia from secondary cognitive disorders (Al-Mekhlafi et al., 2008).

In recent years, there has been a paradigm shift toward the use of **novel biomarkers** for Alzheimer's disease and related dementias, which enhance diagnostic accuracy and enable earlier intervention. Cerebrospinal fluid (CSF) biomarkers, such as reduced **amyloid-beta 42 (A β 42)** and elevated **total tau (t-tau)** or **phosphorylated tau (p-tau)**, have emerged as robust indicators of Alzheimer's pathology, even at the mild cognitive impairment (MCI) stage (Blennow & Zetterberg, 2018). In addition, plasma-based biomarkers such as **neurofilament light chain (NfL)**, **plasma p-tau181**, and **A β 42/40 ratios** are gaining traction as less invasive and more scalable alternatives to CSF analysis (Karikari et al., 2020). These biomarkers not only improve diagnostic precision but also allow for risk stratification and monitoring of disease progression. Incorporating these tests into clinical practice requires laboratory infrastructure, quality control protocols, and interdisciplinary collaboration to interpret results meaningfully alongside clinical findings.

The laboratory's role also extends to **supporting research and clinical trials** aimed at developing disease-modifying therapies. Biomarkers serve as critical endpoints in clinical trials, helping researchers assess

treatment efficacy by monitoring amyloid clearance or tau stabilization (Cummings et al., 2019). For example, in trials of monoclonal antibodies such as aducanumab and lecanemab, laboratory biomarkers were used to validate reductions in amyloid burden and to predict clinical response (van Dyck et al., 2023). Without laboratory input, the evaluation of novel therapeutics would be incomplete, making the discipline essential not only for diagnosis but also for advancing therapeutic innovation. In the Saudi context, expanding biomarker testing capacity is a priority to align with **Vision 2030 healthcare goals**, which emphasize modernization of diagnostic services and investment in cutting-edge laboratory technologies (Kingdom of Saudi Arabia Vision 2030, 2018).

From a systems perspective, **hospital laboratories play a key role in standardizing diagnostic protocols** and ensuring quality assurance. The interpretation of biomarkers requires strict adherence to international standards such as those proposed by the **National Institute on Aging–Alzheimer’s Association (NIA-AA)** research framework, which defines dementia diagnosis based on amyloid, tau, and neurodegeneration (Jack et al., 2018). Laboratories must ensure proper pre-analytical handling, assay calibration, and inter-laboratory harmonization to avoid variability that can lead to misdiagnosis. Furthermore, collaboration between laboratory specialists, psychiatrists, and family physicians ensures that biomarker data are contextualized within the patient’s clinical history, neuroimaging findings, and functional assessments. Such integration is essential to avoid over-reliance on biomarkers alone, especially since cultural, genetic, and environmental factors may influence biomarker expression differently across populations (Shaw et al., 2018).

Finally, the future of laboratory involvement in dementia care lies in **precision medicine and population-level screening**. With advances in high-throughput assays and point-of-care devices, there is potential for large-scale screening of at-risk populations using minimally invasive plasma biomarkers. This could be particularly impactful in countries like Saudi Arabia, where dementia prevalence is expected to rise steeply and where early detection could substantially reduce long-term healthcare costs. Laboratory experts will thus not only contribute to individual diagnoses but also shape public health strategies by enabling predictive modeling and epidemiological surveillance of dementia trends (Hampel et al., 2021). By aligning diagnostic innovation with national healthcare planning, laboratory medicine ensures that dementia care evolves from reactive treatment to proactive, prevention-oriented management.

Hospital Administrators’ Role

Hospital administrators are critical enablers of effective dementia care, as they provide the organizational leadership, resource allocation, and policy frameworks required to implement multidisciplinary models. Unlike physicians or nurses who operate at the clinical interface, administrators shape the structural environment within which dementia care is delivered. Their influence begins with **resource distribution**, ensuring that hospitals and primary care networks have the staffing, training, and diagnostic capacity to identify dementia early. For example, administrators play a pivotal role in establishing **memory clinics** or geriatric psychiatry services within tertiary hospitals, which require dedicated budgets for neuropsychological testing, laboratory biomarkers, and multidisciplinary staff. Evidence from Europe and North America shows that health systems with administrator-supported dementia pathways achieve earlier diagnosis and better continuity of care compared with systems lacking structured support (Banerjee et al., 2011). In Saudi Arabia, where dementia prevalence is expected to rise sharply, administrators must prioritize the expansion of geriatric and memory care services to meet population needs (Alkhunizan et al., 2018).

A second major role of hospital administrators is to **foster interprofessional collaboration**. Multidisciplinary dementia care requires coordination between psychiatry, family medicine, nursing, laboratory medicine, and allied health professionals. However, such collaboration does not occur spontaneously — it depends on administrators designing policies, workflows, and communication systems

that enable teamwork. For instance, administrators can implement integrated electronic health records (EHRs) that allow psychiatrists to share cognitive assessments with family physicians, nurses to document daily observations, and laboratories to upload biomarker results in a unified platform. Studies from the United Kingdom’s National Health Service have shown that EHR integration reduces duplication of investigations and facilitates timely decision-making in dementia care (Iliffe et al., 2014). In Saudi hospitals, where EHR adoption has expanded under Vision 2030, administrators are uniquely positioned to harness digital health tools to streamline dementia pathways and improve coordination across specialties (Kingdom of Saudi Arabia Vision 2030, 2018).

Hospital administrators also play a critical role in **training and workforce development**. Dementia care requires specialized knowledge, yet many healthcare workers lack formal training in recognizing early symptoms or managing behavioral complications. Administrators can address this gap by organizing regular continuing professional development (CPD) programs, simulation-based training for staff, and certification tracks for “dementia champions” among nurses and allied health professionals. Research has shown that workforce education improves diagnostic rates and reduces inappropriate prescribing of antipsychotics for behavioral symptoms (Livingston et al., 2017). In Saudi Arabia, where nursing and primary care staff often face competing demands, administrator-led initiatives in staff education are essential for ensuring dementia patients receive evidence-based care. Furthermore, administrators can partner with universities and professional organizations to incorporate dementia-specific modules into medical and nursing curricula, thereby building long-term workforce capacity.

From a systems and policy perspective, administrators are responsible for aligning dementia services with **national health priorities**. The World Health Organization’s Global Action Plan on Dementia (2017–2025) emphasizes the importance of national strategies, and hospital leaders must adapt these frameworks to local contexts (WHO, 2021). In Saudi Arabia, the Vision 2030 health transformation program explicitly highlights the need for improved chronic disease management, community-based care, and integration of mental health into primary care — all of which intersect with dementia care. Administrators act as the link between frontline clinical needs and strategic national objectives, advocating for dementia programs within hospital boards and government health councils. For example, they may lobby for inclusion of dementia care in insurance coverage, allocate funds for caregiver support services, or initiate public awareness campaigns in collaboration with the Saudi Alzheimer’s Disease Association. By situating dementia within broader health policy frameworks, administrators ensure that resources flow to where they are most needed.

Finally, hospital administrators contribute to **quality improvement and evaluation**. Effective dementia care requires continuous monitoring of outcomes such as time to diagnosis, hospitalization rates, medication adherence, caregiver burden, and patient quality of life. Administrators establish audit systems, patient registries, and quality indicators to track these metrics and adjust programs accordingly. For example, introducing a dementia registry within a hospital network enables data-driven insights into patient demographics, disease progression, and resource utilization, which in turn inform policy and research priorities (Prince et al., 2016). In Saudi Arabia, where epidemiological data on dementia remain limited, administrator-driven registries could fill a critical gap and provide the evidence base for scaling national dementia programs. By embedding quality improvement into the hospital culture, administrators transform dementia care from reactive management into a **learning health system** that evolves continuously in response to patient and community needs.

Multidisciplinary Model Proposal

The complexity of dementia care requires a **coordinated, multidisciplinary model** that integrates the expertise of psychiatry, family medicine, nursing, laboratory medicine, and hospital administration into a seamless pathway. Evidence has consistently shown that fragmented care — where patients shuttle between

specialties without communication — leads to delayed diagnoses, inconsistent treatment, caregiver burnout, and increased healthcare costs (Prince et al., 2016). By contrast, integrated multidisciplinary approaches improve early recognition, optimize resource utilization, and enhance patient and caregiver satisfaction (Banerjee et al., 2011). Therefore, a proposed model for dementia care must establish structured communication channels, defined roles for each specialty, and administrator-supported systems that ensure sustainability.

At the **entry point of care**, family physicians function as the gatekeepers. During routine consultations with older adults, they perform initial screening using tools such as the Montreal Cognitive Assessment (MoCA) or General Practitioner Assessment of Cognition (GPCOG) (Nasreddine et al., 2005). When subtle deficits are detected, the family physician initiates a structured referral pathway to psychiatry and laboratory services while remaining responsible for managing comorbidities such as hypertension and diabetes, which contribute to cognitive decline (Whitmer et al., 2005). This ensures that early red flags are acted upon rather than dismissed as “normal aging.”

Once referred, **psychiatrists** contribute by conducting comprehensive mental status evaluations, differentiating dementia from depression, anxiety, or other psychiatric disorders, and addressing behavioral and psychological symptoms of dementia (BPSD), which affect up to 90% of patients (Kales et al., 2015). Psychiatrists also collaborate with family physicians to design individualized treatment plans that balance pharmacological and non-pharmacological interventions, ensuring safe use of psychotropics and prioritizing caregiver education (Livingston et al., 2017). In this model, psychiatry’s role is diagnostic clarity, behavioral management, and psychosocial support.

Parallel to psychiatric assessment, **laboratory medicine** provides essential diagnostic input by ruling out reversible causes of cognitive impairment (e.g., hypothyroidism, B12 deficiency) and confirming Alzheimer’s pathology or other neurodegenerative processes through biomarkers such as CSF A β 42, tau, and plasma neurofilament light chain (Blennow & Zetterberg, 2018; Karikari et al., 2020). Laboratory results are shared through integrated electronic health records, enabling real-time interdisciplinary decision-making. By embedding biomarker analysis into the care pathway, the model enhances diagnostic accuracy and ensures that patients are stratified for appropriate interventions, including eligibility for disease-modifying therapies under clinical trials (Cummings et al., 2019).

Nursing professionals serve as the connective tissue of the model. They coordinate between physicians, laboratories, and families, ensuring that diagnostic recommendations are translated into day-to-day care plans. Nurses provide education to caregivers on managing aggression, wandering, and nutritional needs, while also monitoring medication adherence and reporting changes in behavior or function (Brodaty & Donkin, 2009). In this model, nurses are not only bedside caregivers but also case managers who ensure continuity of care across settings — from hospital to community to home. Their presence is particularly critical in Saudi Arabia, where family caregiving is culturally normative and institutional long-term care is less common (Alkhunizan et al., 2018).

Finally, **hospital administrators** anchor the model by creating the organizational framework that makes multidisciplinary collaboration feasible. They allocate resources to establish memory clinics, ensure laboratory biomarker testing capacity, and support continuous staff training. Administrators implement integrated electronic health record systems to facilitate information sharing and develop quality improvement programs to monitor outcomes such as time to diagnosis, caregiver burden, and patient quality of life (Ilfie et al., 2014). At the policy level, administrators align hospital dementia services with broader national strategies, such as the WHO Global Dementia Action Plan (2017–2025) and Saudi Arabia’s Vision 2030 health transformation agenda (WHO, 2021; Kingdom of Saudi Arabia Vision 2030, 2018).

A practical example of this model could be a **Saudi tertiary hospital memory clinic**: older adults are screened in family medicine clinics, referred for psychiatric evaluation, undergo laboratory biomarker testing, and then transition into nurse-led case management supported by administrative oversight. This closed-loop system ensures that patients are not lost between services and that caregivers receive structured support. Importantly, such a model could be scaled to regional healthcare centers, with telemedicine links enabling remote collaboration in rural areas where specialist access is limited.

In summary, the proposed model demonstrates that dementia care cannot be siloed within individual specialties. Instead, it requires a **team-based approach** in which psychiatry, family medicine, nursing, laboratory medicine, and administrators operate within a shared framework. This model is not only clinically effective but also culturally adaptable to Saudi Arabia, where family involvement, system-level reform, and integration with Vision 2030 priorities are central to sustainable dementia care.

Challenges & Future Directions

While the benefits of multidisciplinary dementia care are well established, numerous **barriers** continue to hinder its effective implementation globally and within Saudi Arabia. A primary challenge is the **shortage of trained professionals** across psychiatry, family medicine, nursing, and laboratory medicine. Dementia care requires specialized knowledge, yet most general practitioners and nurses receive minimal training on cognitive disorders during their education (Iliffe et al., 2014). In Saudi Arabia, geriatric psychiatry is still an emerging subspecialty, and the limited number of practitioners creates bottlenecks in referral pathways (Alkhunizan et al., 2018). This shortage is compounded by high workloads in primary care, where physicians often prioritize acute conditions over subtle cognitive decline, leading to missed opportunities for early detection. Expanding workforce training, incorporating dementia modules into medical and nursing curricula, and incentivizing specialization in geriatrics are therefore critical future steps.

Another significant barrier is the **cost and accessibility of advanced diagnostic biomarkers**. Although cerebrospinal fluid (CSF) and plasma-based biomarkers have revolutionized early diagnosis, their availability remains restricted to tertiary centers with advanced laboratory facilities (Blennow & Zetterberg, 2018). In Saudi Arabia, only a handful of academic hospitals currently offer biomarker testing, limiting access for patients in rural or underserved regions. Additionally, the costs associated with biomarker assays, neuroimaging, and multidisciplinary memory clinics pose challenges for widespread implementation, particularly in health systems transitioning toward value-based care. Without subsidies or integration into national insurance schemes, many patients may be excluded from state-of-the-art diagnostics, perpetuating inequities in dementia care. Future directions must include investment in decentralized laboratory infrastructure, adoption of cost-effective plasma biomarker assays, and incorporation of dementia diagnostics into **Vision 2030's healthcare financing reforms** (Kingdom of Saudi Arabia Vision 2030, 2018).

Stigma and cultural perceptions also pose formidable challenges. In many societies, including Saudi Arabia, dementia is often perceived as a normal part of aging or attributed to spiritual causes, leading families to delay seeking medical attention (Al-Shahri, 2002). Such misconceptions not only postpone diagnosis but also place undue emotional and physical strain on caregivers, who may be reluctant to seek institutional support due to cultural norms of filial responsibility. Public awareness campaigns led by administrators and supported by nurses and family physicians are crucial to reframe dementia as a medical condition requiring structured care. International experiences demonstrate that national dementia strategies incorporating awareness programs significantly reduce stigma and increase help-seeking behavior (WHO, 2021). Saudi Arabia can benefit from adapting these approaches to local cultural contexts, leveraging religious and community leaders to promote accurate understanding of dementia.

A further challenge is **fragmentation of care pathways**. Even when patients are diagnosed, lack of communication between specialties can result in inconsistent treatment and poor continuity of care. For example, psychiatrists may prescribe psychotropics without coordination with family physicians managing cardiovascular comorbidities, or laboratory findings may not be integrated into the patient's clinical record, leading to repeated or missed investigations. Such fragmentation not only wastes resources but also reduces caregiver confidence in the health system. Future directions should focus on implementing **integrated electronic health records (EHRs)** that allow real-time data sharing across specialties. Studies from the UK and Scandinavian countries demonstrate that integrated dementia pathways supported by EHRs improve diagnostic timelines, reduce hospital admissions, and enhance caregiver satisfaction (Iliffe et al., 2014; Prince et al., 2016). Saudi Arabia, under Vision 2030's digital health strategy, is already expanding EHR adoption, providing an opportunity to embed dementia-specific modules into national health information systems.

Finally, the **lack of population-level data and research** presents a critical gap. Despite projections of rising dementia prevalence, Saudi Arabia lacks comprehensive registries that capture incidence, subtypes, and outcomes. Without robust data, policymakers and administrators face difficulties in planning workforce needs, allocating resources, or evaluating interventions. Establishing national dementia registries, supported by hospital administrators and laboratories, could generate invaluable insights for epidemiological surveillance, clinical research, and healthcare planning. Such registries would also facilitate participation in multinational research collaborations, ensuring that Middle Eastern populations are represented in global dementia studies (Prince et al., 2016).

Looking to the future, the **integration of precision medicine, digital health, and community-based care** will redefine dementia management. Advances in plasma biomarkers and artificial intelligence-driven predictive models may allow family physicians to identify high-risk individuals years before symptoms manifest (Hampel et al., 2021). Telemedicine and mobile health platforms can connect psychiatrists, nurses, and caregivers in rural areas, providing continuous support outside hospital settings. Furthermore, Saudi Arabia's **Vision 2030 agenda** emphasizes preventive and community-based care, creating opportunities to embed dementia screening and management into primary care workflows. By investing in multidisciplinary training, biomarker accessibility, digital infrastructure, and stigma reduction, Saudi Arabia and other nations can transform dementia care from a fragmented, reactive system into a proactive, integrated model that reduces the burden of disease for patients, families, and society.

Conclusion

Dementia is a complex and multifaceted condition that demands an integrated approach to ensure timely detection, effective management, and sustainable healthcare responses. Psychiatry contributes essential expertise in differentiating dementia from psychiatric illnesses and addressing behavioral and psychological symptoms, while family medicine serves as the gateway for early recognition, continuity of care, and management of comorbidities. Nursing provides the backbone of patient-centered care through vigilant observation, caregiver education, and case management, ensuring that daily needs and cultural sensitivities are met. Laboratory medicine enhances diagnostic accuracy by identifying reversible causes and confirming neurodegenerative changes with advanced biomarkers, paving the way for precision medicine. Hospital administrators, meanwhile, create the structural and policy frameworks that enable collaboration across specialties, align services with national health strategies, and support workforce training and resource allocation. Although significant challenges remain — including workforce shortages, limited biomarker access, fragmented care, and persistent stigma — a multidisciplinary, team-based model offers the most promising pathway to improve outcomes for patients and families. By uniting clinical expertise, frontline caregiving, diagnostic innovation, and system-level leadership, healthcare systems can transform dementia care from fragmented and reactive to proactive, holistic, and patient-centered.

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