

Nurse-Led Remote Transitional Care for Chronic Internal Medicine Conditions: A Narrative Review of Models, Outcomes, and Implementation Priorities

Yumei Liu

Ningqiang County Hospital of Traditional Chinese Medicine, Hanzhong 724400, Shaanxi, China

Abstract: *Chronic internal medicine conditions, including diabetes mellitus, chronic heart failure, hypertension, and chronic obstructive pulmonary disease, require sustained self-management after hospital discharge and between clinic visits. Conventional hospital-centered nursing models are often insufficient for long-term symptom monitoring, medication adherence, lifestyle modification, and timely escalation of care. Nurse-led remote transitional care combines telehealth, telenursing, mobile health, remote patient monitoring, structured education, and behavioral coaching to extend nursing support into home and community settings. Recent systematic reviews and meta-analyses suggest that nurse-led digital interventions can improve self-management capacity, glycemic control, blood pressure, health-related quality of life, symptom burden, and selected health-service outcomes. However, the field remains heterogeneous in intervention content, intensity, theoretical basis, technology platform, and outcome measurement. This narrative review summarizes current evidence on nurse-led remote transitional care for major chronic internal medicine conditions, analyzes core mechanisms and implementation barriers, and proposes future directions for precision, equity-oriented, and data-enabled chronic disease nursing.*

Keywords: Telenursing, Chronic disease, Transitional care, Mobile health, Self-management, Nurse-led care, Telehealth, Remote patient monitoring.

1. Introduction

The burden of chronic internal medicine conditions continues to challenge healthcare systems worldwide because these conditions require continuous self-management rather than episodic treatment alone. Patients with diabetes, heart failure, hypertension, and chronic obstructive pulmonary disease frequently move across hospital, outpatient, community, and home settings. During these transitions, gaps in education, medication reconciliation, symptom surveillance, and follow-up communication may lead to preventable deterioration, emergency visits, and readmissions [1]. Nursing practice is therefore shifting from a predominantly inpatient model to a longitudinal model that supports patients across the whole disease trajectory.

Remote transitional care is an umbrella concept that includes telephone follow-up, video consultation, mobile applications, text-message coaching, web-based education, wearable devices, home vital-sign monitoring, and electronic care coordination [2]. In contrast to purely technology-driven services, nurse-led remote care emphasizes clinical judgment, patient education, empowerment, motivational communication, and individualized adjustment of self-management plans [3]. This makes nursing central to translating digital data into meaningful behavioral and clinical action.

The COVID-19 pandemic accelerated telehealth adoption, but the continued relevance of remote nursing is not limited to emergency conditions. For patients with chronic disease, remote nursing may reduce geographical barriers, improve continuity after discharge, provide earlier detection of warning signs, and deliver repeated education at a lower cost than frequent hospital visits [4]. Nevertheless,

implementation requires careful attention to digital literacy, workflow integration, privacy, reimbursement, and the risk of widening inequities among older or underserved patients [5].

2. Major Models of Nurse-Led Remote Transitional Care

Four broad models can be identified in the current literature [6]. The first is telephone-based follow-up, usually delivered after discharge or at fixed intervals. It is low-cost, requires minimal technology, and remains appropriate for older adults or patients with limited internet access. The second is app- or web-based self-management support, in which patients record symptoms, physiological indicators, medication use, diet, physical activity, or daily goals. Nurses review these records and provide feedback through asynchronous or synchronous communication. The third is remote patient monitoring, which uses blood pressure cuffs, glucometers, weighing scales, pulse oximeters, or wearable devices to transmit objective data to a care team. The fourth is blended care, combining face-to-face assessment with remote education, triage, coaching, and community referral.

A defining feature of effective nurse-led remote care is not the technology itself but the closed loop between assessment and action. Data collection without timely interpretation may increase workload without improving outcomes. In contrast, structured protocols that specify when nurses should respond, when physicians should be notified, and how patients should adjust self-care behaviors are more likely to produce clinical benefit. The best-designed interventions also incorporate behavior-change techniques such as goal setting, action planning, feedback, problem solving, reinforcement, and motivational interviewing [7].

3. Disease-Specific Evidence

3.1 Diabetes Mellitus

Diabetes management is highly dependent on daily self-care behaviors, including glucose monitoring, medication adherence, diet, exercise, foot care, and recognition of hypoglycemia or hyperglycemia. Nurse-led digital diabetes programs have reported improvements in self-care behavior, HbA1c, and quality of life when patients receive structured education, regular feedback, and individualized coaching [8]. Telephone-based nursing can also improve HbA1c when follow-up is sufficiently frequent and includes diet, medication, exercise, and glucose-monitoring content [9]. Web-based and app-supported interventions further allow patients to upload glucose data, receive reminders, and obtain individualized nursing feedback [10].

The main strength of telenursing in diabetes is repeated reinforcement. A single educational session at discharge or clinic visit often fails to change long-term behavior. Remote nursing allows nurses to respond to actual home data, identify patterns, correct misunderstandings, and help patients translate abstract advice into daily routines. However, heterogeneity remains substantial. Interventions vary from simple telephone counseling to complex platforms with nurse dashboards, automated reminders, and integrated glucose uploads. Future diabetes nursing studies should report intervention dose, theoretical framework, digital platform function, patient engagement metrics, and long-term sustainability [11].

3.2 Chronic Heart Failure

Heart failure is one of the most suitable conditions for remote transitional care because clinical deterioration may be preceded by changes in weight, edema, dyspnea, fatigue, blood pressure, or medication adherence. Nurse-led electronic health interventions for heart failure can improve self-care, quality of life, depression and anxiety symptoms, satisfaction, functional capacity, and may reduce rehospitalization or care costs [12]. Nurse-led heart failure clinics and transitional care programs also show benefits for medication titration, readmission reduction, mortality, and symptom management [13].

In heart failure care, remote nursing should prioritize early warning signs, medication reconciliation, diuretic adherence, dietary sodium restriction, fluid management, daily weighing, and timely escalation [14]. The teach-back method is particularly valuable because patients may overestimate their understanding of complex regimens [15]. Remote systems can also identify patients who repeatedly fail to upload data or respond to education, which may itself indicate vulnerability. Therefore, engagement monitoring should be treated as a clinical signal, not merely a technical statistic.

3.3 Hypertension and Cardiometabolic Risk

Hypertension is common, often asymptomatic, and strongly influenced by adherence and lifestyle. Nurse-led telehealth interventions can reduce blood pressure by supporting home monitoring, medication-taking behavior, salt reduction,

physical activity, weight control, and risk communication [16]. Mobile health programs may be particularly relevant in underserved communities when they reduce travel burden and connect patients with culturally appropriate education [17].

The major challenge in hypertension telehealth is distinguishing data availability from effective clinical management. Home blood pressure values must be measured correctly, transmitted reliably, interpreted within context, and linked to treatment adjustment or lifestyle counseling. Nurses are well positioned to ensure measurement accuracy, identify barriers to medication use, and coordinate care with prescribers [18].

3.4 Chronic Obstructive Pulmonary Disease

Patients with chronic obstructive pulmonary disease experience dyspnea, activity limitation, anxiety, exacerbations, and frequent healthcare utilization. Telenursing interventions based on empowerment models or distance coaching may improve self-efficacy, symptom control, empowerment, and health status [19]. Remote nursing can support inhaler technique, medication adherence, breathing exercises, recognition of exacerbation symptoms, smoking cessation, pulmonary rehabilitation, and action-plan use [20].

COPD remote care should avoid overreliance on oxygen saturation alone. Patient-reported symptoms, sputum changes, respiratory effort, activity tolerance, and confidence in self-management are equally important [21]. Nurses can help patients interpret symptom changes, avoid delayed care seeking, and maintain safe physical activity. However, long-term adherence to remote pulmonary rehabilitation remains an unresolved problem.

4. Mechanisms of Effectiveness

The effectiveness of nurse-led remote transitional care can be explained through several mechanisms. First, it increases continuity by extending nursing contact beyond discharge. Second, it improves health literacy through repeated, individualized education. Third, it enhances self-efficacy by providing feedback and achievable goals. Fourth, it enables early detection of deterioration through symptom and physiological monitoring. Fifth, it strengthens care coordination by connecting patients with nurses, physicians, pharmacists, rehabilitation services, and community resources.

These mechanisms are mutually reinforcing. For example, a patient with heart failure who understands daily weight monitoring may upload data more consistently; the nurse can identify a trend, provide early advice, and prevent readmission. A patient with diabetes who receives feedback on glucose patterns may become more confident in dietary self-regulation. Therefore, future research should move beyond asking whether remote nursing works and instead identify which components work, for whom, under what conditions, and through which mechanisms [22].

5. Implementation Challenges

Despite encouraging evidence, implementation challenges remain significant [23]. First, intervention heterogeneity limits direct comparison across studies. Second, digital inequity may exclude older adults, low-income populations, rural communities, or patients with limited language proficiency. Third, remote nursing can increase workload if data streams are not triaged or integrated into electronic records. Fourth, clinical responsibility may be unclear when abnormal values are transmitted outside working hours. Fifth, privacy and cybersecurity concerns must be addressed through secure platforms and transparent consent processes.

Another challenge is the sustainability of patient engagement. Many digital health interventions show high initial use but declining participation over time [24]. For chronic disease nursing, sustained engagement is essential. Strategies such as simplified interfaces, family involvement, personalized feedback, culturally tailored education, and integration with routine appointments may improve adherence. Economic evaluation is also needed because effective programs must be financially sustainable for healthcare systems [25].

6. Future Perspectives

Future nurse-led remote transitional care should develop toward precision nursing [26]. Instead of providing the same frequency and content to all patients, programs should classify patients by disease severity, comorbidity burden, health literacy, digital literacy, social support, psychological distress, and prior utilization. High-risk patients may require intensive monitoring and proactive outreach, whereas stable patients may benefit from lower-intensity self-management support.

Artificial intelligence and predictive analytics may support risk stratification, but they should not replace nursing judgment. A nurse-in-the-loop model is more appropriate because nurses can contextualize data, address emotional and social barriers, and make patient-centered decisions [27]. Future trials should include implementation outcomes such as acceptability, feasibility, equity, workload, cost-effectiveness, and integration into routine nursing practice [28].

7. Conclusion

Nurse-led remote transitional care is a promising strategy for chronic internal medicine nursing. Evidence supports its potential to improve self-management, clinical indicators, symptoms, quality of life, and selected health-service outcomes across diabetes, heart failure, hypertension, and COPD [29]. The next stage of research should focus on standardizing core intervention components, identifying patient groups most likely to benefit, improving digital equity, and embedding remote nursing into routine care pathways. Technology can extend the reach of nursing, but the therapeutic value lies in timely assessment, education, behavioral support, and coordinated clinical action.

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