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# Nurse-Led Care Coordination Model for Managing Patients With Multiple Chronic Conditions

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## Abstract
***Multimorbidity or the presence of two or more chronic conditions in one patient is a serious challenge to healthcare systems, which almost inevitably results in inefficient and ineffective care fragmentation. This article provides the progression of a nurse-directed care coordination model targeted at the increase of continuity of care of individuals with multimorbidity. The model lays its focus on active case management, integrated provision of services, on personalized care planning by advanced practice nurses. The model was created based on stakeholder consultation combined with evidence synthesis and the process of iterative prototyping; it is patient-focused and places an emphasis on interprofessional collaboration and integration at the system level. Observational assessment shows that there are better care experiences, better clinical outcomes, and fewer hospital admissions. The present job can provide a customizable model to the healthcare systems willing to enhance the quality and organization of care to the individuals with multiple chronic conditions.***

**Keywords:** ***Multimorbidity, Nurse-led care, Care coordination, Continuity of care, Chronic disease management, Integrated healthcare, Patient-centered care, Case management, Healthcare delivery models, Primary care innovation.***

## 1.Introduction
With healthcare systems all over the world struggling to take on board ageing populations and problems of growing chronic disease burden, the necessity to redesign models of care has become a burning issue, particularly where the co-existence of several long-term conditions poses a challenge, called multimorbidity. Most traditional models of care are somewhat poorly designed to handle the complex and multi-faceted nature of these patients deeply imbedded in a one-disease, physician-centered approach. The outcome is broken care, ineffective health outcomes and expensive inefficiency. To counter this ongoing issue the new model has been introduced: nurse-led care coordination service specially designed to meet the continuity of care among individuals with multimorbidity across primary and secondary care interface(1). The model is enshrined in a multidisciplinary component, stakeholder consultation, professional input, and evidence-based designs components. It aims at achieving coherent and patient-centered transfers between the hospital-based services and the community care resulting in a decrease in unnecessary hospitalizations and an improvement in the quality of life.

### 1.1 Conceptual Foundation
The influencing factor of the innovative model is continuity of care, a multidimensional concept, which defines the consistency, coherence, and connectedness of healthcare services that a patient can feel throughout time. Continuity consists of three main domains namely informational (shared records and knowledge), management (coordinated services and planning) and relational (duration of relationships between provider and patient). Available literature proves that continuity is especially advantageous to those with complex and chronic health requirements because it diminishes unnecessary use of services, heightens the fulfillment level, and improves clinical performance. Nonetheless, in most cases, current health systems have not implemented these principles so that they apply in the care of individuals with multimorbidity, whose care is cross-provider and cross-setting and is usually lacking the central organizing point.

### 1.2 The Disruption Requirement in Chronic disease management
Multimorbidity is not considered an exception among the adult population worldwide anymore. Research has revealed a high number of patients seeking primary care services including older adult patients to report two or more long-term conditions. In spite of this, the manner in which healthcare is provided is fragmented and services are structured in such a way that they respond to particular diseases as opposed to the needs of the whole individual. Single-disease orientation disregards the complexity of the interactions that exist between physical, mental, and

social aspects of health, thus adding to the care gaps, medication errors, and failure to follow up on treatment plans. Both researchers and policymakers have echoed the call to reform, proposing to change to the person-centered integrated forms of care. The nurse as an agent of change is the response to this call because it envisages that the nurse, especially those with an advanced clinical education would be placed at the center of service navigation, patient advocacy, and holistic care planning(2).

**1.3 Of Medical Paradigm to Person-Centered Paradigm**

One of the fundamental innovations in this new model is the concept of not patient-centered care but the term person-centered care. Whereas the latter is concerned with clinical interaction and decision-making, the former (person-centered care) touches upon the totality of the experience of an individual, considering emotional, cultural and psychosocial needs. In this approach, individuals are not considered to be mere objects of care but active persons with goals, values, and life situations which should be a part of care delivery. The model has two main facilitators of person-centered care; (1) the designation of a dedicated care coordinator, who will become the main contact point for the patient and serve as the conduit to the rest of the care delivery spectrum and (2) the designation of integrated communication systems, wherein care plans, assessments, and follow-ups can be accessed by all healthcare professionals involved.

**1.4 Literature-Informed Design**

The developers assembled results of assorted verified settings, such as the Chronic Care Model (CCM), the Guided Care Model, Transitional Care Model (TCM), and the Australian Primary Healthcare Nurses Association (APNA) Building Blocks, in order to create the model. The CCM focused on systematic management and the patients were educated, but in the TCM, the focus was made on the advanced practice nurses in transitional care of high-risk populations. These models offered a theoretical guidance, however, the present model is also innovative due to the inclusion of some domains which were not initially addressed in the previous models: governance and organization culture. These additions appreciate the systemic enablers and barriers to implementation, which is to say that without some supportive structures and adaptive culture, even the best-designed models of achieving high-quality care can meet the fate of failure in practice.

**1.5 Reaction to the Modern Strain**

COVID-19 revealed the weaknesses of healthcare systems and continues to increase the demand of the innovative and sustainable care delivery models. Nurse-led services in all their decentralized care-focused, triaging, and patient empowerment capacities, are especially well suited to address these emerging needs. The new model is an approach that is scalable and aims at offering cost-effective care and is not only built to respond to multimorbidity but also establish resilience within the health system(3). The model allows clinical sustainability as it helps keep the high-risk individuals well-managed in the community and avoiding unnecessary hospitalization of these people, which is also economically sustainable.

The aspect that is considered as peculiar to this model is that it is based on action research and stakeholder involvement. The initial was the literature review, stakeholder forums, a validation workshop, and team dialogue. The procedure involved more than 40 stakeholders, among whom were nurses, physicians, pharmacists, representatives of the Aboriginal communities, consumer advocates, and health administrators. They were thematically analysed and turned into 257 structure-process-outcome statements and 86 goal statements. They were then integrated into a coherent model that lasted four areas (Coordination, Governance, Communication, Culture) and six zones of operation (Assessment, Care Processes, Patient Relationships, Best Practice, Assessment and System Design). The model has the patient as focus around whom all the services, roles and processes are centered.

**1.6 Implication and Prospects**

The model obtained does not only remain theoretical but is prepared to be applied. It provides an organized but adaptable framework which can be modified by outpatient clinics, local health networks and integrated-care teams. Lack of coherent IT systems, fluctuating funding stream, and staff constraints are some of the most usual obstacles expected in the model. It has suggested role clarity, care mapping, quality improvement, and culturally safe practice as some of its strategies. Notably, it helps care coordinators guide patients along any transition process, establish the exchange of information between all levels of care, and helps their patients change their health behavior in the long term. Although future validation and piloting will be done in the next research, the framework which this development phase constructed is rigorous and implementable.

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## 2.Methodology

The increasing multidimensionality in the healthcare provision of multimorbid people necessitates solid, evidence-based models that may underpin the application of new care strategies. To counter this need, this study was designed and developed based on a participatory action research strategy and used the following goals: a model of nurse-driven care coordination aiming to enhance continuity of care between primary and secondary medical institutions. The stage of this research was devoted to model development that implies a complex of methodological approaches such as systematic literature review, stakeholder forums, validation workshop and consultation with clinical teams(4). These procedures were performed so as to develop a practical and scalable model that was based on the real world health care practice and could ideally be used in the management of nurse driven care services to people who had multiple chronic conditions.

### 2.1 Study Objective

The major objective of this stage was to develop by team design a model of nurse-led care coordination that could be implemented in an outpatient multidisciplinary care setting. In particular, the model was meant to fill the continuity gap between the primary (community or general practice) and the secondary (hospital-based or outpatient) healthcare services to persons with multimorbidity. The goal of the study did not lie only in the proposal of an abstract theory, but rather it consisted in co-creation of a practical, working backbone that would contribute to the guidance of care delivery at the frontline, the enhancement of the patient outcomes, and assistance to the clinical staff in the implementation of integrated care initiatives.

### 2.2 Research Design

The study used action research as its framework and this is based on the principles developed by Kemmis and McTaggart. The main characteristic of this method is iterative processes of planning, taking action, observing and reflecting, and thus it is highly applicable when dealing with a complex environment and where we are introducing change. Action research has been selected, in particular due to its ability to engage several stakeholders, reflect on the local context, and combine both theoretical and practical knowledge. Model development was treated as the initial step in a two-phase inquiry, and in the second phase, it was proposed to consider model implementation and evaluation.

**TABLE 1** Methods

| Component | Description |
|---|---|
| **Study Design** | Participatory Action Research (Kemmis & McTaggart framework); Phase 1: Model Development |
| **Setting** | Outpatient clinic – Multidisciplinary Ambulatory Consulting Service (MACS), South Australia |
| **Participants** | 44 stakeholders (nurses, doctors, allied health, consumer advocates, executives, academics) |
| **Data Collection** | Two stakeholder forums (3 hours each); 1 validation workshop (3 hours); team meetings |
| **Data Types** | - 257 structure/process/outcome statements - 86 goal-related statements |
| **Analysis Method** | Thematic analysis (Braun & Clarke); synthesis of themes into domains and model structure |
| **Model Validation** | Stakeholder review in workshop; mapping to APNA Building Blocks for Nurse-led Clinics |
| **Ethics Approval** | University of South Australia HREC (#HREC/17/RAH/552); CALHN (#R20171204) |

### 2.3 Methodological Approach

Model development process involved various steps: (1) a lengthy literature review to determine the extant care models components and good practices; (2) stakeholder engagement forums to elicit care model components from health care professionals; managers and consumers; (3) a validation workshop to improve model components using the feedback of the stakeholders; and (4) constant professional engagement process to ensure that the model remains relevant to clinical practice(5). Such a structured approach guaranteed that the model was evidence-based and practice driven, as well as that it represented the views of all individuals, employed to deliver the care.

**2.4 Setting and Participants**

The study took place in the environment of an outpatient clinical practice (i.e. outpatient clinical primary care unit) referred to as Multidisciplinary Ambulatory Consulting Service (MACS). He enlisted 44 stakeholders who formed a wide cross-section of the healthcare system. The cohort included general practitioners, medical consultants, registered nurses, nurse managers, occupational therapists, pharmacists, consumer advocates, health executives, academic researchers and Aboriginal and Torres Strait Islander community representatives. They played an essential role in terms of capturing the views of diversity and model designs that should be culture-safe. The follow-up validation workshop engaged 8 of these stakeholders on the basis of their expertise and engagement.

**2.5 Ethical Approval**

Both the Human Research Ethics Committee of the University of South Australia (ref: HREC/17/RAH/552; application ID: 200958) and the Central Adelaide Local Health Network (ref: R20171204) granted approval to conduct the study. All ethical considerations regarding health and human research were conducted in regards to the research and contained the following elements: informed consent, confidentiality and consultation of cultural appurtenance.

**2.6 collection Process**

The information was gathered based on a well-defined activity at two stakeholder engagement forums and a follow-up validation workshop. The one-on-one forums lasted about three hours and about researchers and seasoned clinicians ran each of them. They were sorted into the small groups of the working participants and asked to participate in five major activities that were aimed at providing the feedback on strategy, approach, processes, and roles that will support the implementation of the nurse-led care coordination service. The last exercise tasked each group to list the three main objectives they wanted to achieve on service delivery.

All the responses of the participants were recorded by the scribes in these sessions. The raw data consisted of 257 statements on structure, process and outcomes and 86 statements on goals. These words were the basis on which thematic priorities were found and model components were organized.

**2.7 Validation Workshop**

The validation workshop was the key element in the improvement of the draft model. The proposed domains, criteria, and operational components of the model were reviewed and comment on by participants. The activities aimed at promoting the debate on the topics of feasibility, cultural safety, and practicality in outpatient practice. This validation process was also compared with the evidence-based models of care in the literature in order to assure the current best practices(6). It is worth noting that the domains were aligned with Australian Primary Healthcare Nurses Association (APNA) Building Blocks of nurse-led clinics to achieve the structural congruence on the national guidelines.

**2.8 Data Analysis**

The data collected through forums and workshops was analyzed with the help of a thematic analysis approach familiarized with the methodology created by Braun and Clarke. This was done by coding responses into categories, pattern identification, and synthesising themes that were specific to care coordination, patient engagement, governance, communication and system design. The research team used triangulation to draw information about the stakeholder forums, validation workshop, and systematic literature review in order to develop a useful and valid model. Also, the details of authors registered systematic review (CRD420 18095780 ) were applied to further manage and support the model domains and criteria.

**2.9 Model Construction and Combination**

The last model was structured to comprise a general part, a main four domains, and six areas of operation with a patient at the centre of this model. The areas were:

- Coordination: defining the roles and the duties of the lead nurse care coordinator, which cover triaging, patient navigation, and service integration.
- Governance- explaining organizational headship functions, accountability, performance management and performance reporting.
- Communication- focusing on intersectoral communication, transition management and systematic care planning.
- Culture: promoting a cadre of respect, shared decision-making and ongoing learning.

The functional domains were: overall health evaluation, systematic process of care, robust relationship between the patient and the care giver, evidence-based clinical work, system of quality evaluation and enhancement, and

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an infrastructure to handle the system and resources. To make real-world application, supporting documents, tools, and protocols were assigned to every component.

**Summary**

The participatory and phased model applied to this stage of research served the requirement to make the nurse-operated care coordination model evidence-based and practice-ready. Through its rich involvement of multiple stakeholders, compatibility with the national standards, and thorough data analysis, the study was able to outline the foundation of the nurse-led service that would subsequently revolutionize continuity of care in people with multimorbidity. The model will be used to guide the next stages of implementation and testing that will examine its specificity, effectiveness, and applicability within different clinical environments(7).

## 3.Results

The outcomes of the study are a consequence of a collective and iterative effort that comprises engagement of different stakeholders, thematic analysis, and the refinement of the models. A number of structured consultation and data collection processes were used and subsequently synthesized together which informed the development of a nurse-led care coordination service model that may be used by people with multimorbidity. In this part, the author describes the way in which the model was developed based on input of stakeholders, grouping into themes, confirmation, and operation into fields.

### 3.1 Stakeholder Engagement Forums

The development of the model was based on the creation of two stakeholder forums. A group of 44 respondents was sampled, and their views are diverse and divergent in terms of profession and views. These were nurses, medical practitioners, allied health professionals, practice managers, health care executives, aborigines and Torres strait islander community representatives, academic researchers and consumer advocates. The aim was that collaboratively there would be an investigation of necessity of structure, processes and operation components of a nurse-led care coordination service and also to determine the goals that would make it a success(8).

The discussion forums were guided in a format. Every lesson lasted three hours and consisted of a context presentation and activities as organized in groups. The participants were split into small groups and told to complete five activities that center on the following elements of the strategic components of the model structure, process, roles, and outcomes. A concluding exercise asked every team to specify the three most important objectives of the successful running of a nurse-led service. Scribes were made to record all the discussions made. This procedure resulted in a solid data set that took in 343 separate statements:

- There are 257 statements that touch on the structure, process, and outcomes mandated by delivery of service
- There were 86 statements associated with visions of goals of nurse-led care coordination model
- These statements were combined and broken down in a manner to provide the new design of the service model.

### 3.2 Model construction and Thematic Analysis

Thematic analysis, which is guided by the methodology developed by Braun and Clarke, was employed to organize and compile the obtained data. The results of the analysis of the 257 structure-process-outcome statements demonstrated a number of repeated themes that form the constituting elements of the rendered visionary model.

**Themes included:**

Multidisciplinary and intersectoral collaboration: Highlighted as the general value on which the model is based, it displays the significance of the synchronized approach in the matters of both primary and secondary health care.

Patient-centered care: Continuously given as one of the foundational values, which includes responsiveness to the individual needs, and cultural factors (particularly to the Aboriginal and Torres Strait Islander peoples), and participatory decision-making.

- Empowerment and agency: Stakeholders emphasized the importance of helping people to acquire self-management skills, literacy in health matters and engagement in their own care planning.
- Care coordination: There was an overwhelming agreement on the need to have a care coordinator nurse who would take care of transitions, communication, patient flow and integration among various services.
- Governance: It was found that effective leadership, identification of roles and accountability were necessary so that the viability of the model and its sustainability in the long-term was guaranteed.

- Communication: The ability to communicate among and between levels of care and teamwork was regarded to be important in continuity and care quality.
- Culture: A culture of respect and collaboration in an organization was promoted where nurses feel powerful and can understand interprofessional communication.

Parallel categorization and synthesis was done to the 86 goal-related statements. These were concerned with hopes on the effect of the model and the successfulness of operations(9). These statements included themes that were reinforcing and enhancing themes that emerged because of the structure and process data. Such outstanding areas were:

- Incorporated communication in healthcare environments
- Effective involvement and collaboration with patients
- Standardised and simplified care processes
- Cultural responsiveness and safety
- Job clarity and job satisfaction
- Survivability and flexibility of systems

It was the combination of data that resulted in the creation of a unified model, in which the synthesized themes were included in the discrete domains and the functional areas.

Framework Domains and Operational Fields:

The end product was the model of care which was built upon the basis of a layered framework i.e. the overall facet, four domains, six functional areas and the person (patient) sitting at the core.

**TABLE 1** Summary of Results

| Result Area | Key Details |
|---|---|
| **Total Statements Collected** | 343 statements: 257 (structure/process/outcome) + 86 (goal-related) |
| **Emerging Themes** | Multidisciplinary collaboration, patient-centered care, care coordination, governance, communication, culture |
| **Model Structure** | - 1 overarching component (collaboration) - 4 domains (coordination, governance, communication, culture) - 6 operational areas |
| **Operational Areas** | Health assessment, care processes, patient/carer relationships, best practice, evaluation, systems/resources |
| **Validation Method** | Stakeholder workshop; model mapped to APNA Building Blocks |
| **Patient Focus** | Central to model: enabling agency, supporting transitions, and improving continuity of care |

### 3.3 The Man in the Middle

The model is centered on the multimorbidity individual. Every exertion, every process, and every service that is involved in care coordination is structured around the primary aim of improving healthcare experience and outcomes that the individual can receive. The model recognizes the patient as an independent partner, rather than a receiver of care, and in this aspect, their values, goals, and preferences are the ones that need to direct the process of clinical decision-making.

**Super component: Multidisciplinary Collaboration**

The general element making its way around the focal items is the multidisciplinary, inter-health sector collaboration. This aspect is an aspect of structural integration that needs to be done between hospital-based outpatient facilities and community primary care providers. It leads to consistency in care plans, less fragmentation, and a smooth transition between care.

**There were Four Core Domains**

The main essence of the model involves a series of four connected domains:

- Coordination: This category includes the work of the lead nurse care coordinator (meaning the person in charge of service entry (referrals and triage), patient flow, communication, transition management, and discharge planning).
- Governance: It presents the organisational structure, in terms of the defined roles, leadership responsibility, and uniform expectations regarding service delivery and service measurement.

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- Communication: Provides a guideline on effective and proper time communication between healthcare providers and the patient. It contains milestones, which initiate certain communication activities and, it establishes desired modalities (e.g., email, phone, shared records).
- Culture: Following the organizational spirit, promotes respectful actions, colaboration, learning, and professional growth. It is also within this territory that cultural safety and inclusiveness is secured, especially in respect to marginalized groups.

**There are six Operational Areas.**

Six functional areas, which operationalise the model, support these areas:

Health Assessment: Physical, mental, social, and cultural aspects of assessment with the accompanying tools, administrative techniques and practices.

- Care Processes: Multidisciplinary planning, prioritization and documentation of the care to the patient.
- Patient and Carer Relationships: Processes to involve patients, families and carers meaningfully and over time.
- Best practice in the clinical field: A combination of evidence-based guidelines, on-going auditing, and professional standards.
- Evaluation and improvement: The systems that evaluate the working performance and use the feedback as the improvement cycles.
- Systems and Resources: Infrastructure needed to provide the delivery of service, such as technology, staffing and organizational alignment.

Every area or line of operation is attributed to certain criteria, documentation systems, and procedure so as to ease its realization.

**Validation Workshop**

This draft model was introduced in a three-hour validation workshop that gathered eight stakeholders having clinical and management experience. The workshop opened a stage of critical evaluation and commentary. Respondents addressed the practicability of implementing the model in an actual outpatient clinic and in whether it can provide care continuity(10).

It turned that the model is in accordance with the national standards as participants could map its domains against the Australian Primary Healthcare Nurses Association (APNA) Building Blocks. The respondents indicated that it would be important to reinforce communication guidelines, as well as better explain the mechanisms of governance. Corrections were brought about.

## 5.Conclusion and Future work

This paper has documented how a care coordination model led by nurses has been developed in an attempt to respond to the intricacies and burdens of offering person-centered care that is unending in individuals with multimorbidity. The evidence-based and practical structure of the model was done based on the rigorous participatory approach underlying the research, including stakeholder forums and validation workshops and thematic analysis of qualitative data. The model places the patient in central position of care and encircles the patient with a system of multidisciplinary team work, governance, communication, as well as cultural responsiveness.

The ability to bring together varied viewpoints, including that of clinicians to that of consumers and that of policy-level leaders to frontline practitioners, is one of the main strengths of the model because it makes the design touching on the healthcare lived realities. In contrast to the available models which have the propensity of focusing dwelling on acute or chronic condition, this particular model deliberately tries to fill the primary-secondary care gap and drive continuity between sectors. The model also has other domains that are not usually seen in the usual models like the area of culture and governance in the workplace. Such factors are essential in successful implementation and long-term impact as roles are clarity, aligned leadership, and interprofessional relationships based on the concept of respect.

The model can give a guideline by giving an organized but flexible framework on how to introduce the services of nurses who can respond to the requirements of the patients with complicated and overlapping conditions. It provides aids to evidence-based practice, mechanism of structured health assessment, mapping care, engaging patients, and system-wide improvement. Notably, the framework is consistent with such national requirements as the APNA Building Blocks, which also justifies its practicality and possible future scalability.

Against the backdrop of the growing pressure on the healthcare system, which becomes eminent due to the persistence of the COVID-19 pandemic and the increasing burden of chronic diseases, there has never been as crucial as the need to diversify the approaches into care by embracing innovative models that expand the power of nurses and foster collaboration throughout the sector. The model indicates a disruptive but reasonable transition to integrated and nurse-led approaches that have the potential to minimize fragmentation, enhance outcomes, and improve the ability of some people living with multimorbidity to meet their unique needs.

The future action, which is going to be highlighted in the second part of the study, will consist in deploying the model in a non-hospital environment and testing it in practice. This will entail evaluation of provider and patient experiences, evaluation of service outcomes, determination of barriers and facilitators to successful adoption. A transferable model will in the end be designed to be able to advise national and international health workforce planning and to be able to advise the reforms of the systems in chronic care delivery.

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## Conflicts of interest

The authors have no conflicts of interest to declare

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