Rural Nurse Practitioner Role to improve outcomes for Thames-Coromandel community

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Abstract

The Nurse Practitioner (NP) role is essential in the future evolution of health care delivery in New Zealand. This role has the potential to achieve more equitable outcomes for rural populations who experience lower access to health care than those living in urban areas. Unmet health needs and suboptimal quality of care lead to older adults in New Zealand experiencing high readmission rates. The transition between hospital and community represents a vulnerable time. Older adults face challenges with physical and cognitive decline and often experience comorbidities and polypharmacy. Nurse practitioners have an advanced scope of practice and provide high quality, personalised care suggesting their potential to improve outcomes for older adults in their transition in the rural setting. By using a realist synthesis approach to review published literature, this research examines how the NP role works in reducing readmissions. The findings formulate insight and recommendations for improving outcomes in the Thames-Coromandel rural community.

Realist evaluation principles inform realist synthesis, and these are grounded in the ontological position of realism. Realist synthesis is concerned with developing a programme or systems theory based on context, mechanism, and outcome patterns. In this realist synthesis, the relationship between context, mechanism and outcome provides a theory of generative causation for the NP role in reducing readmissions. The literature search strategy returned 29 articles that met the inclusion criteria and were analysed using Braun and Clarke's thematic analysis method.

Three themes developed from the thematic analysis: self-efficacy in the home, holistic needs met through coordinated interdisciplinary care, and [care] grounded in nursing philosophy. These themes come together to form a theory of generative causation that shows NP led interdisciplinary care provides several effective interventions improving resources and opportunities available to older adults enabling improvement in self-efficacy. This increase in self-efficacy results in older adults being able to effect positive health changes, seek care and escalate concerns early resulting in health being maintained during and after transition from hospital, thereby reducing readmissions. Care provided in the home and care grounded in nursing philosophy trigger the mechanism of self-efficacy. The social cognitive theory of Bandura supports that self-efficacy is required for patients to translate knowledge into improved health outcomes.

Understanding this mechanism of self-efficacy is a significant finding in developing strategies for reducing readmissions in older adults and highlights the suitability of NP led models.

Connecting, communicating, and coordinating were crucial features of the NP role and in the rural setting innovative measures, such as virtualisation, are needed to enable these. The nursing philosophy of care that is inherent in the NP role supports care delivery to be patient-centred, holistic, and delivered through effective therapeutic relationships. Introducing the NP role in rural communities to improve the transition of older adults between care settings has the potential to decrease readmissions and improve the health and self-efficacy of older adults.

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Attestation of Authorship

I hereby declare that this submission is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person (except where explicitly defined in the acknowledgements), nor material which to a substantial extent has been submitted for the award of any other degree or diploma of a university or other institution of higher learning.

Alicia Margaret Innes Gubb

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Chapter one: Introduction

Background

The Nurse Practitioner (NP) role has the potential to disrupt current fragmented health service delivery and support the achievement of better health care for New Zealanders. In 2001 the NP role was introduced in New Zealand, and 19 years on this role is still overcoming challenges that have limited the opportunities of the NP role in addressing population needs. The Minister of Health (2002) recognised "the nurse practitioner role offers the potential for more nurses to contribute to health gains, offering a responsive, innovative, effective, efficient and collaborative health care service" (p. iii). After eight years, 50 NPs were registered, a relatively low number, which has only steadily increased over 20 years to 300 today. Again the Ministry of Health recognised that "NPs have a crucial role to play in helping New Zealand meet the challenges facing its health system" (Ministry of Health, Nursing Council of New Zealand, DHBNZ, & NPAC-NZ., 2009). Despite the vision that NPs would overcome healthcare challenges, the implementation of the NP role has been slow and contained. The acceptance, support and uptake of this role remain limited, even though there is increasing evidence that NPs can improve care and meet health outcomes. A New Zealand mixed-methods evaluation on the establishment of an NP role in aged care found a reduction in acute care presentations and hospitalisations (Peri, Boyd, Foster, & Stillwell, 2013). They also found through qualitative data that the NP role improved accessibility, appropriateness and effectiveness of care alongside improving collaborative partnerships and workforce competence (Peri et al., 2013). The NP role has the potential to shift the paradigm of healthcare delivery by overcoming fragmented care between settings for vulnerable populations such as older adults.

Nurse Practitioner roles have historically faced challenges with acceptance by both health professionals and the general public. A New Zealand study found that NPs were generally well accepted by patients and healthcare teams, but acceptance from nursing colleagues and management is restrained (Harvey, Papps, & Roberts, 2013). In New Zealand, NPs have a legally recognised advanced scope of practice and need to demonstrate advanced education, clinical training and competence (Nursing Council of New Zealand, 2019). The NP scope was first introduced in New Zealand in 2001 and has continued to evolve. Initially, the NP role was restricted to designated prescriber

within a specialist and legislated scope of practice. However, this restricted the practice of NPs who worked in more generalist roles such as primary and rural health care. In 2017 the Nursing Council changed the multiple specialist NP scopes of practice, to just one generalist scope of practice for NPs. Under this scope, NPs are authorised prescribers with independent authority for medicine prescription (Nursing Council of New Zealand, 2019). Nurse Practitioners have an essential role in achieving healthcare goals, particularly in the rural setting where they provide skilled care and integrate services so people can remain well and out of hospitals.

To become an NP in New Zealand nurses need to undertake a clinical Master's degree programme, have at least four years' experience in an area of practice and pass a Nursing Council assessment of their NP competencies (Nursing Council of New Zealand, 2019). The NP competencies are defined by the Nursing Council of New Zealand (2019, p. 4) in the following five themes:

1. Provides safe and accountable advanced practice
2. Assesses, diagnoses, plans, implements, and evaluates care
3. Works in partnership with health consumers
4. Works collaboratively with healthcare teams
5. Works to improve the quality and outcomes of healthcare

There is no formal pathway for rural nurses transitioning to become an NP, and rural nurses have faced difficulties when trying to meet the Nursing Council requirements due to the broad scope of their generalist role (Carryer & Adams, 2017).

Nurse Practitioners have an important niche in rural communities that have historically experienced a lack of access to health services due to geographical isolation, economic challenges, socioeconomic deprivation and reduced local services (Fearnley, Kerse, & Nixon, 2016; Howie, 2008; Panelli, Gallagher, & Kearns, 2006). Rural NP roles across New Zealand are commonly seen in General Practice and take on a similar role to their General Practitioner (GP) counterparts. However, there needs to be more focus on NP role creation that utilises the unique skillset of NPs rather than replacing medical counterparts. Reducing readmissions is a quality measure that the NP role could improve due to the need to collaborate across health sectors and provide skilled care to patients in their unique journey through the complex health system.

Readmissions reflect substandard quality healthcare, and in New Zealand, readmission rates are a system-level measure to monitor the performance of District Health Boards (DHBs). This system-level measure is required to be reported quarterly by DHBs and reducing unplanned acute admissions can indicate improved service quality (Ministry of Health, 2018). According to Hesselink et al. (2014), the reasons for hospital readmission are multivariate with behaviours of both healthcare professionals and patients contributing to the quality of care and unplanned readmissions. Bundle of care packages with multiple components that target improving the relationships between providers can improve readmission rates (Hesselink et al., 2014; S. Robinson, Howie-Esquivel, & Vlahov, 2012). A literature review by S. Robinson et al. (2012) looked specifically at readmission risk factors in older adults and found medication factors to be a significant determinant. For example, medication classes found to be associated with highest readmissions were anticoagulants then antiplatelet, antidiabetic and narrow therapeutic index agents (S. Robinson et al., 2012). Other medication determinants included polypharmacy, inadequate information given, medication discrepancies and failure to monitor drug effect (S. Robinson et al., 2012). Initiatives to reduce readmissions must involve a skilled health worker who can manage medications for older adults. In New Zealand, the Ministry of Health (2018) have suggested initiatives that contribute to reducing readmissions include long term condition management, redesigning patient pathways, improving hospital discharge process, and improved integration for continuity of care.

These initiatives are within the NP scope of practice and suggest that an NP led intervention to reduce readmissions could be successful within the rural hospital setting in New Zealand. Long term conditions are an increasing health burden for rural populations and literature recommends a model different from the traditional biomedical disease-specific approach (Carryer & Adams, 2017). This model requires a fit for purpose workforce to deliver transformative care and challenge the status quo of a General Practitioner (GP) equivalent service (Carryer & Adams, 2017). The NP role that delivers holistic care from within the nursing paradigm acknowledging human complexity and family can redefine conventional primary care (Kooienga & Carryer, 2015). This research will explore current literature regarding NP interventions in reducing readmissions to investigate how rural hospitals can improve their quality of service.

The rural NP role has been slow to establish in New Zealand, and there is limited research regarding NP interventions within rural New Zealand and international rural setting. Carryer and Yarwood (2015) suggest that the policy and organisational constraints that have remained in place have failed to enable the 2001 Primary Healthcare Strategy aspirations to become a reality. In order to achieve the aspirations of the now outdated Primary Healthcare Strategy or the more recent 2016-2026 New Zealand Health Strategy goal of 'Care closer to home' care needs to be coordinated, continual, seamless and attentive to social contexts (Carryer & Yarwood, 2015; Ministry of Health, 2016). Considering the establishment of the NP role and contextual drivers is vital as the current GP model of care does not meet the mark for effective chronic condition care. In the international setting, a systematic review by Allen, Hutchinson, Brown, and Livingston (2014) found that transitional care interventions delivered by GP and practice nurse models did not reduce re-hospitalisations. However, those delivered by advanced practice nurses or NPs did (Allen et al., 2014).

Most of the New Zealand literature on the NP role is related to the role being situated in primary care delivering a service comparable to the GP scope or based in intensive care or ED setting within hospitals. From observations in my role, it seems that an NP situated across rural hospital setting and primary care delivering comprehensive and connected primary healthcare has the potential to ensure better management of patients post-discharge. Within my role as nurse coordinator at Thames Hospital in the rural Thames-Coromandel region, I have observed the myriad of challenges that rural patients are faced with, particularly older adults. The lack of coordinated care and communication between health services often leaves patients confused about when they need to seek care leading to poorer outcomes, particularly for those with co-morbidities. To meet the aspirations of the 2016-2026 New Zealand Health Strategy, older adults need to have access to health professionals who can deliver comprehensive care, undertake medication management and coordinate care (Ministry of Health, 2016). Older adults need to be empowered with health knowledge to make decisions to seek care and navigating health services. My passion has always been to improve health systems and ensure services meet the needs of patients, rather than patients fitting into the system. I anticipate that this research will add to how NPs can support older adults to stay well within their community and reduce the need for them to return to the hospital setting.

Research Significance

This research aims to understand how the NP role can contribute to reducing readmissions in a rural setting by undertaking a realist synthesis underpinned by Realist Evaluation (RE) methodology. Realist synthesis is an approach for research that considers the relationship between context, mechanism and outcome and attempts to develop programme theory about why programmes work (Wong, Greenhalgh, Westhorp, Buckingham, & Pawson, 2013). As there is no literature found within the New Zealand context regarding the NP role in reducing readmissions in rural settings, using the realist synthesis approach which considers contextual influencers will enable a rural lens to be applied. Older adults are at higher risk of readmissions, and older adults make up a large proportion of the Thames-Coromandel community. According to Statistics New Zealand (2013), the median age of the population in Thames-Coromandel area is 51 years old compared to the New Zealand median age of 38, highlighting the aging population in this area. Older adults are a high-risk group for readmissions, and national data has shown that risk factors for readmission include increasing age, increasing deprivation and male gender (T. Robinson & Kerse, 2012). The local Thames-Coromandel rural community has a higher number of older adults that are vulnerable to readmissions, and this research will focus on understanding the contribution of NP role in decreasing readmissions for the older population.

The rural healthcare service within New Zealand is unique and under-researched, and it appears there are inequities in services and accessibility for these communities. Since I moved from working in a metropolitan area to a rural setting, it has been very evident in practice, the disadvantages rural populations face. I have seen the challenges rural patients have in accessing specialists. When an urgent appointment is required, patients often travel up to five hours to the metropolitan hospital. Alongside these challenges of reduced services, rural patients often find it difficult to attend appointments due to their employment; many are self-employed in the agriculture or small business industry and lose earnings when they take time off. Often retired older adults lack family support as their family live in larger cities, making it difficult for them to rehabilitate at home. This study will provide insight for DHB planning and funding and other interested parties on how an NP role could potentially improve rural services and quality of care and reduce expenditure on readmissions. It is vital to explore how introducing an NP role might improve rural services within the New Zealand setting because of the inequities that

rural populations face. Due to the confinement of this 45-point dissertation, the research will not include applying the findings from reviewing the literature. However, the findings from this study may recommend this as future research.

The complex mechanisms relating to NP interventions will be examined using RE methodology and realist synthesis framework within a realism paradigm. Examining the context in which these interventions take place will enable a better understanding of how NP interventions can (or cannot) support reducing readmissions. A vital feature of the realism paradigm is its attention to the understanding and explanation of why such outcomes are successful (Pawson & Tilley, 1997). Rather than knowing that NP interventions can (or cannot) support reducing readmissions, this realist synthesis sets out to understand what it is about these interventions that reduce readmissions and why they might work in our local context. The contextual factors are an important aspect of the research as it makes it applicable locally and could help shape a unique NP role that works for our community.

Research Question:

How do Nurse Practitioner interventions work to decrease readmissions to hospital in older adults?

Dissertation Structure

This dissertation is presented in five chapters, as follows:

Chapter one provides an overview of the research, setting the scene and introducing the background of the NP role, drivers for readmission, the development of the rural NP role and the international term ‘transitional care’. It introduces the importance of carrying out this research and what this dissertation aims to offer.

Chapter two provides a review of the literature to explore what is currently known about this topic and what the gaps are. The following key concepts are discussed in subsections: hospital readmission drivers, rural health and local context, rural NP role, and international transitional care models.

Chapter three provides the description and rationale for the realist synthesis research design and RE methodology and how this will be applied in this study. Details of the literature search strategy and data analysis are included.

Chapter four is the presentation of findings from this study, including the context, mechanism and outcome configurations. The document table of the included literature detailing the study methods, results and appraisal of rigour is attached in Appendix 1. The document flow diagram of included articles is presented.

Chapter five includes the discussion, theoretical framework, recommendations and limitations and strength of the study design. This chapter makes sense of what this realist synthesis has uncovered and articulates the answer to the research question making valid recommendations to be shared with policymakers and service planners in our local context.

Definitions

For the purposes of this research, the following concepts will be defined.

Nurse Practitioner

Nurse practitioners have an advanced scope of practice that allows them to provide a wide range of assessment and treatment interventions, including ordering and interpreting of diagnostic tests, prescribing medications and admitting/discharging patients from hospital (Nursing Council of New Zealand, 2019). In New Zealand, to register as an NP, the nurse must have at least four years' experience in the clinical area, completion of clinical Master's degree, pass panel assessment and have a minimum of 300 clinical hours practice (Nursing Council of New Zealand, 2019).

Primary Health Care

Primary Health Care is a model of care that was first outlined in the Alma-Ata declaration in 1978. It encompasses the need for health services to be people-centred and delivered in communities, including diagnosis and treatment, health education, counselling, disease prevention and screening (Ministry of Health, 2020).

Transitional Care

Transitional care is the use of services and environments designed to promote safe and timely transition of patients between levels of care and across care settings (Naylor & Keating, 2008). A New Zealand paper has defined transition interventions as those that aim to improve care and reduce hospital readmissions addressing discharge care, follow-up and support (T. E. Robinson et al., 2015).

Readmission

The definition of readmission varies, but for this study, the New Zealand definition by Rumball-Smith and Hider (2009) is "the number of patients who experienced unintended, acute readmission or death within 30-days of discharge from the index admission, divided by the total number of patients discharged alive within the reference period" (p. 68). The general use of the term readmission in this study refers to patients hospitalised after initial admission.

Telehealth

Using information and communication technologies to deliver healthcare when the patient and health professional are not in the same physical location (Ministry of Health, 2019a).

Whānau Ora

Is about the transformation of whānau driven by a focus on outcomes and for whānau to set their direction. The aim of whānau ora is for whānau to be self-managing, living healthy lifestyles, contributing to society, participating in te ao Māori, economically secure and be able to drive wealth creation (Durie, Cooper, Grennell, Snively, & Tuaine, 2010). For nursing, whānau ora is about working collaboratively with whānau to build reciprocal relationships enabling empowerment, including the use of Māori health models and treating the whānau as a whole (Winiata, 2012).

Rural

Defining 'rural' is challenging and varies across local and international literature, but for this research, we will use statistics New Zealand definition. They define rural areas as those not classified as urban and categorised into high urban influence, moderate urban influence, low urban influence and highly remote (Statistics New Zealand, 2004). This definition of rural changed in 2003 from areas with less than 1000 people to include four rural categories using a typologies classification system dependent on the influence of urban areas (Fearnley, Lawrenson, & Nixon, 2016; Statistics New Zealand,

2004). This definition supports a better interpretation of health service access as people living in rural areas classified as ‘high urban influence’ have better access to health services within the urban centre than those living in ‘low urban influence’ who are more isolated.

Chapter two: Literature Review

Older people are vulnerable to hospital readmissions due to the lack of coordinated and connected care when they transition between hospital and other settings to receive primary health care. Older adults face challenges in receiving timely care and navigating complex health systems, and often whānau are required to care for older adults during this vulnerable time. Inequities in readmissions are seen in the rural, older adult and Māori populations and signify a lack of accessible and coordinated care post-discharge (T. Robinson & Kerse, 2012). Readmissions to the hospital are a substantial burden to DHBs in healthcare cost, bed capacity, whānau burden and can be indicative of poor quality of care. This initial review of literature seeks to explore further into this challenge for older adults in the rural setting and understand whether the NP role has the potential to meet this gap in health care. This review is divided into the following sections: a) Hospital readmission drivers, b) Thames-Coromandel and rural health context, c) NP role and interventions and d) International Transitional care programmes.

Hospital Readmission Drivers

Readmission rates are an indicator of health service quality. In New Zealand, they are a performance indicator that is required to be reported by DHBs to the Ministry of Health (Ministry of Health, 2018). It is therefore vital to find solutions to decreasing readmissions and whether there is alignment between the advanced scope of the NP role to address drivers for readmission. Nurse practitioners can undertake an advanced assessment, manage medication, lead and coordinate healthcare teams, undertake a multidisciplinary approach and integrate with other services which may make them suited to supporting reduced hospital readmissions. To understand how NP interventions might be able to support reducing readmissions, an understanding of causes and contributing factors to hospital readmissions, particularly in the rural setting and for older adults, must be examined.

Causes for readmissions are complex; not all are considered preventable and reported readmission rates vary in the published literature. A study by Auerbach et al. (2016) using a case review method of 1000 patients found that 26.9% of readmitted patients had potentially preventable readmissions. There is extensive literature on the multiple drivers and causes for readmission, mainly out of the United States as readmissions are

financially penalised in their Medicare scheme. The primary drivers for readmissions are healthcare factors, patient factors and disease factors. The driver diagram in Figure 1 is a schematic representation of influencing factors developed from reviewing literature regarding readmission causes (Auerbach et al., 2016; Brewster et al., 2016; Coleman & Boult, 2003; DeCoster, Ehlman, & Conners, 2013; Donzé, Lipsitz, Bates, & Schnipper, 2013; Hesselink et al., 2014; Kansagara et al., 2011; Linertová, García-Pérez, Vázquez-Díaz, Lorenzo-Riera, & Sarría-Santamera, 2011; Rubin, Donnell-Jackson, Jhingan, Golden, & Paranjape, 2014; Rumball-Smith, Sarfati, Hider, & Blakely, 2013).

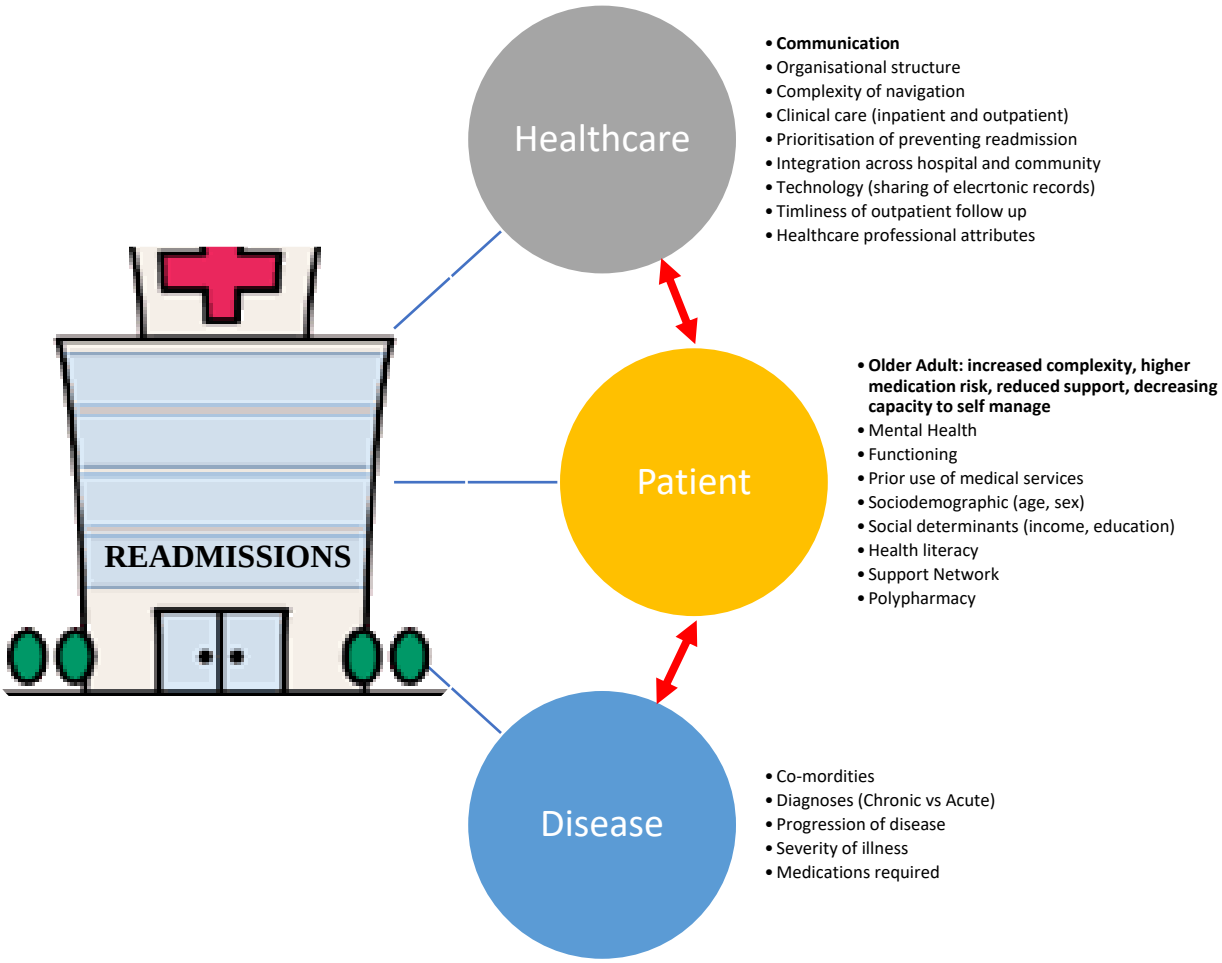


Figure 1. Drivers for hospital readmission

The impact of the healthcare domain, including the environment, system, services, and professionals, has several secondary drivers that influence the probability of readmission. Readmission rates are considered a reflection of the quality of healthcare service and earlier epidemiological studies have supported this association (Ashton, Del Junco, Souchek, Wray, & Mansyur, 1997; Rumball-Smith et al., 2013). Quality in health is a measure of desired health outcomes and includes accessibility of services and

processes required, and secondly, whether the care received is effective (Rumball-Smith et al., 2013). This relationship between readmissions and quality of care suggests that readmissions can be attributed to patients not being able to access services or receiving suboptimal care. Healthcare delivery is the primary driver that healthcare organisations have the most influence over and incudes secondary drivers (as shown in Figure 1). The secondary drivers include communication (between professionals and services), health service integration, discharge planning, assessment and evaluation, health professional attitudes and knowledge, guidelines available, and timeliness of outpatient follow up.

A common thread throughout the literature that disrupts the quality of care for patients causing readmission is communication, in many forms. Hesselink et al. (2014) found that inadequate information exchange and lack of coordinated care in handovers between hospitals and primary care contributed to readmissions. Underlying causes include health care professionals' lack of insight into the consequences of discharge planning, lack of knowledge and skills to improve the discharge process, poor collaborative attitude, and lack of patient-centred attitude (Hesselink et al., 2014). Data from a qualitative study to identify factors contributing to hospital readmissions found that team communication was rated highly by health professionals (DeCoster et al., 2013). Suggested improvements to communication included the sharing of information between hospital and other agencies and improving pre/post-discharge medication coordination (DeCoster et al., 2013). In this same research, the patient-caregiver survey and professional focus groups both highlighted the patient-provider and provider-provider communication process as a common factor to readmissions (DeCoster et al., 2013). Qualitative research by Brewster et al. (2016) examined hospitals with improving readmission rates compared to low performing hospitals and found that high performing hospitals made a substantial effort in ensuring multidisciplinary rounds were effective. Even environmental factors were addressed by top-performing hospitals to improve communication, such as improving the physical layout of wards to optimise continuous interaction (Brewster et al., 2016). An observational study examining preventable readmissions and associated factors found that failure to relay important information to outpatient providers and lack of discussion about care goals by healthcare providers were strongly associated with potentially preventable readmissions (Auerbach et al., 2016). The literature identifies that a significant cause of readmissions is poor communication, and healthcare providers can address this.

An underlying cause of communication challenges within health care providers is the attitudes and attributes of health care professionals and their organisations. Brewster et al. (2016) found in their research that organisations which emphasised the importance of readmissions as an adverse outcome for the patient, had better readmission rates. Professionals not aware of the consequences of poor discharge, lack of knowledge, skills and reflection to improve the discharge process, and relying too much on routine, were identified as underlying determinants for health care behaviour contributing to poor communication (Hesselink et al., 2014). Organisations contribute to this by not having appropriate guidelines and standards and not addressing factors such as workload (Hesselink et al., 2014).

Figure 1 outlines the patient factors contributing to readmissions. They are increasingly important in the older population as older adults experience an added layer of complexity due to medical, social and psychiatric challenges (Linertová et al., 2011). The literature identifies polypharmacy and medication factors as readmission drivers that add increasing complexity for older patients. Readmissions related primarily to disease factors are unlikely to be avoidable but is an important consideration, particularly in identifying patients that are at risk of readmissions. Research by Kansagara et al. (2011) that reviewed risk prediction tools for readmissions found that most included co-morbidities as a risk factor. Some tools included disease-specific markers such as creatinine on discharge for heart failure patients (Kansagara et al., 2011). Risk prediction models placed considerable importance on medical factors such as diagnoses, mental health, and prior use of medical services. In contrast, social and environmental factors were not widely used, and no models included the quality of care received or hospital factors (Kansagara et al., 2011). It is evident that readmissions causes are multivariant and not well understood. The literature does highlight that some readmissions are avoidable; this is an important area that requires further research.

Rural Health and Local Context

Thames-Coromandel area is a rural and geographically isolated community within the Waikato District Health Board catchment with areas from highly remote to moderate urban influence and three independent urban areas (National Health Committee, 2010). There is also places of high socioeconomic deprivation, particularly in the more remote areas (National Health Committee, 2010). Local data shows from July 2017 – June

2018, the General Medical Department at Thames hospital had an overall emergency readmit rate of 8%, that is the percentage of episodes followed within 28 days by emergency readmission to the hospital (Health Roundtable, 2018). This readmission rate is consistent with the national unplanned 28-day readmission rate in New Zealand DHBs of 7.6% - 11.5% (T. Robinson & Kerse, 2012). However, the readmission rate for patients in Thames-Coromandel region diagnosed with heart failure, chronic obstructive pulmonary disease, pneumonia, sepsis, or acute myocardial infarction is higher than the national benchmark ranging from 10 – 18% (Health Roundtable, 2018). This discrepancy in readmission rates highlights the need to seek improvement to readmissions for these conditions that are common within older adults.

People living in rural areas are late seekers of healthcare due to economic barriers and longer travelling distance to services (Fearnley, Kerse, et al., 2016; Howie, 2008; Panelli et al., 2006). Rural communities are unique in their socio-cultural constructs and this, alongside the geographical challenges, impacts on their ability to access health services contributing to rural health inequities. Traditional health models do not work well for these populations, and as late seekers of healthcare, patients can end up admitted or readmitted to the hospital. Rural communities are traditionally centred on agriculture, and their attributes include self-reliance, independence and hardiness (Bales, Winters, & Lee, 2006). Economic barriers are likely to contribute to readmissions observed at Thames Hospital, adding to increased health costs and increased burden to whānau having a family member in the hospital. A limited study by Fearnley, Kerse, et al. (2016) looked to quantify costs of rural patients attending outpatient appointments in the Dunedin setting and concluded the average travel and lost time cost was $182 per visit. This cost can pose significant barriers to patients accessing free health services and is a potential reason for rural populations being late seekers of healthcare and more reliant on self-care (Howie, 2008). J. Grant, Lines, Darbyshire, and Parry (2017) found in their scoping review of literature a significant benefit for communities was NPs providing increased access to care for people who otherwise have challenges due to affordability, distance and waiting times.

The challenges faced by rural populations in accessing services is significant for older adults who have increasingly complex needs, both social and medical. Older adults are more likely to have multiple chronic conditions and require social services, adding to the challenge of organising and coordinating care in the rural setting (Breton et al.,

2017). The New Zealand Healthy Ageing Strategy set outs goals specific to meet the needs of older adults and was updated in 2019 to add priority actions for ageing well. One of the goals identified for older people with high and complex needs is "experience equitable access to services and equitable outcomes regardless of ethnicity or rural location" (Associate Minister of Health, 2016, p. 40). This goal supports the need to seek solutions for older adults accessing health services in rural areas. Preventing hospitalisation and inappropriate admissions is a priority action under acute and restorative care in the updated healthy ageing strategy (Minister of Health, 2019). Therefore, as older adults are a high-risk group within the rural setting, they face even more significant challenges in accessing quality health services, and this is an area that remains under-researched.

Rural Nurse Practitioner Role

The introduction of a Rural NP role within the rural community of Thames-Coromandel may be able to provide a solution to some of the challenges faced by rural populations. The Ministry of Health (2006) report there is an inequitable distribution of skilled healthcare workers, particularly specialists, in rural areas, and I have observed this in my work setting. Attracting and retaining both GPs and rural hospital specialists is difficult and opens the opportunity to develop a rural NP pathway and role within the Thames Coromandel community. Organisations are working in silos with the common goal of improving rural health outcomes, and this creates fragmentation between services. Attempts to meet the New Zealand government vision of accessible and timely care has resulted in the devolution of hospital services totalling $45.5 million to primary health care (National Health Committee, 2010). There is a vast disconnect between PHO, primary care and rural hospital services due to this devolution contributing to fragmented care for rural communities. In my experience, extra services are added to meet rural health needs and contribute to fragmented services rather than streamlining current services. Creating a rural NP role across sectors would be an innovative approach to pilot such collaboration. It could support integration across primary care, iwi providers, community services and DHB rural hospital services.

Interventions identified to reduce readmissions include improved clinical communication, patient education, involving community-based providers, prompt

follow up, discharge planning and medication reconciliation (Alper, O'Malley, Greenwald, Aronson, & Park, 2017). Internationally, there is evidence that NP led interventions and transitional care programmes can improve outcomes for patients and decrease readmissions (Enguidanos, Gibbs, & Jamison, 2012; Mora, Dorrejo, Carreon, & Butt, 2017; Ornstein, Smith, Foer, Lopez-Cantor, & Soriano, 2011). Coordinated care, home visits and communication between the hospital and primary care are among nursing interventions that have shown a statistically significant reduction in hospital readmission rates (Verhaegh et al., 2014).

Nurse practitioners work within an advanced scope, can prescribe and manage medications and have advanced assessment and diagnostic skills, enabling them to deliver comprehensive autonomous care required for transitional care interventions. Findings from a systematic review by Laurant et al. (2018) suggests that trained nurses, including NPs, provide equal or better quality primary care than that of doctors and provide more health advice. A New Zealand study examining the NP role in aged care found that the NP intervention group decreased acute presentation and admissions (Peri et al., 2013). The NP interventions provided in this study included assessments, follow up visits, diagnostic investigations, management plans, prescribing, medication reviews, multidisciplinary meetings, and consultations with other specialists (Peri et al., 2013).

Alongside face-to-face care, in patients' homes and the community, an NP role would need to be equipped to use advances in technology to deliver health care such as telehealth, due to vast geographical area and travel time in the Thames-Coromandel area. The National Health Committee (2010) recommends improving the use of health service technologies to improve accessibility to health services for rural populations. Enguidanos et al. (2012) explored an NP intervention incorporating telehealth alongside home visits where an NP phoned patients immediately post-discharge to undertake medication review, coordination of care, assessment, and coaching and made one to three home visits based on need. This intervention increased patient satisfaction and improved self-efficacy, resulting in fewer primary care visits (Enguidanos et al., 2012)

Another factor to consider in the design of interventions to reduce readmission is the inequalities that exist for rural Māori. Māori experience inequality in health outcomes compared to non-Māori, and this is exacerbated for rural Māori as their health status remains significantly lower than urban Māori (Ministry of Health, 2006). Nurse

Practitioners work within communities and can apply a whānau ora approach addressing the holistic needs of patients and their whānau. Rather than a medical model, disease-focused approach, NPs understand Māori models of health and the importance of addressing whānau health needs. This approach can support minimising the rural Māori health disparity that is evident. In their case review study, Walker, Clendon, and Nelson (2015) found the NP scope enabled holistic, timely, and coordinated care, including prescribing, and there was improved communication with other services such as social work, housing, justice and education. In the case study initially, the NP role was assumed to substitute the GP by undertaking patient management and prescribing. However, over time it became clear the NP role met other outcomes such as mentoring, health promotion and self-care (Walker et al., 2015). These findings give some insight into how the NP role can offer more than advanced assessment and diagnosis skills and can connect with whānau to identify and meet other needs. General attributes of nurses such as the ability to work in teams, patient-centred care and culturally appropriate approaches, make nurse-led interventions most effective for reducing ethnic and racial inequalities (Jansen, Bacal, & Crengle, 2008).

A significant driver for reducing readmissions is the economic cost to DHBs and government, so the cost-effectiveness of NPs is worth considering. However, there is limited research on cost comparisons in the New Zealand setting. A New Zealand report compiled from surveys found that NPs believed they contributed to financial efficiencies (Harvey et al., 2013). Another New Zealand review of audit data suggests NPs indirectly impact costs in their contribution to reducing hospital utilisation, and increase revenue through increased enrolments in primary care (Gagan, Boyd, Wysocki, & Williams, 2014). Internationally it has been shown that NPs can be cost-effective due to lower salaries than medical counterparts and reducing the cost of health burdens such as length of hospital stays (Bauer, 2010). The difference in wages may be economical but also highlights pay inequity issues. Bauer (2010) found evidence that NP led team-based approaches to care delivery reduced health care spending and concluded the financial implications of NP transitional care programmes were reassuring (Bauer, 2010). However, it is difficult to compare this to the New Zealand setting due to their vast difference in health system billing and Medicare. A systematic review of randomised controlled trials found that NPs in primary care roles have equivalent or better outcomes and are potentially cost-savings (Martin-Misener et al., 2015). Martin-Misener et al. (2015) report that the literature regarding NP cost-effectiveness lacks in

quantity and quality. Although the literature cannot definitively confirm the cost-effectiveness of the NP role, it does show likely benefits of the role.

Advanced nursing practice in rural New Zealand has been promoted in recent years to overcome challenges with the increasing burden of chronic illnesses, health disparities and economic benefits (Carryer & Adams, 2017). The NP role has been slow to become an established pathway for nurses, especially those working in rural health despite the international evidence that NPs are safe and effective (Swan, Ferguson, Chang, Larson, & Smaldone, 2015). Restrictions placed on the NP scope to one specific area of practice may have contributed to the lack of rural nurses trained in the NP role. In 2017 the Nursing Council removed this limitation that now allows NPs to have a broadened scope regardless of the area of expertise (Nursing Council of New Zealand, 2019). This expanded scope aligns to the need of rural populations for a generalist practitioner that is accessible and able to respond to a broad range of health needs. The NP role may be able to overcome the current fragmented health services in rural areas utilising a health team approach as they can provide a breadth of expertise and mediate with specialist input when required. The Nursing Council of New Zealand (2019) recognises the NP can be the lead provider and work both autonomously and in collaboration with other health professionals. This research sets out to understand more about how the NP role could assist in overcoming the challenges of fragmented services in rural health and decrease readmissions.

International Transitional Care Models

Transitional care between hospitals to primary care providers is a significant contributor to improving readmissions. International literature regarding the NP role in reducing readmission is predominantly from the United States, which they describe under the term transitional care programmes. Transitional care is defined by Allen et al. (2014) as "care interventions that promote safe and timely transfer of patients between levels of care across care settings" (p. 2). This definition highlights the significance of transitional care in a rural hospital as often patients are required to transfer to the metropolitan hospital for specialist care and are then moved back to the rural hospital and then back to their home under primary care. Transitional care is comparable to the concept of discharge planning. However, it has no defined beginning or endpoint and encompasses integrated care across care episodes. A limitation of the concept of

discharge planning as opposed to transitional care is it only occurs within the acute inpatient setting, and there is no follow-up or support in the home. Often this does not meet the needs of older adults with co-morbidities and functional difficulty (Allen et al., 2014). Transitional care programmes involve a package of interventions usually including inpatient visits, follow-up phone calls, at-home visits (as required) and medication review (Condon, Lycan, Duncan, & Bushnell, 2016). Literature has shown these programmes to be successful in international settings, and this research hopes to add how such interventions delivered by NPs might work for the Thames-Coromandel community.

Summary of Literature Review

The current literature shows that readmissions can indicate suboptimal quality of care, and multiple drivers including patient, disease and healthcare factors contribute to readmissions. Older adults have increasingly complex needs, such as polypharmacy, and post-hospital care must be well-coordinated and comprehensive to meet these. Rural populations also experience further challenges such as difficulties accessing services, and this can further complicate problems for older adults living in rural areas. The NP advanced scope includes the ability to deliver comprehensive care such as medication management and is suited to providing care within rural communities. Despite the evidence that NPs can provide high quality care there is limited research on how a rural NP role can work to reduce readmissions. This research aims to meet this gap by examining NP models for reducing readmissions and understand what works for whom and under what conditions. By understanding what it is about NP interventions that work to decrease readmissions, this could have translatability for the older adult population in the rural NZ context of Thames Coromandel.

Chapter three: Research design

This chapter will outline the methodological approach to this research and describe the methods used. The guiding philosophical principles that underpin the approach used for investigating the research question will be outlined as will the rationale for the choice of research design.

Methodology

This study has applied a realist evaluation (or realistic evaluation – these terms are synonymous) methodology to undertake a realist synthesis, including both quantitative and qualitative literature, to understand how NP interventions work to reduce readmissions in older adults. The methodology describes the research approach of the study design and its relationship to theoretical assumptions and principles (B. Grant & Giddings, 2002). Realist evaluation was first developed by Pawson and Tilley (1997) and is grounded in the ontological position of realism that affirms reality exists, even in the complex real-world of interventions. It is a theory-based evaluation approach with a distinct philosophical view that seeks to understand causation and attribution of programme activities (Westhorp, 2014). The philosophical basis of RE methodology is that outcomes are the result of the interaction between context and mechanism, as opposed to the positivist view that assumes the interventions themselves create the outcome (Greenhalgh et al., 2015). Realist evaluation emphasises understanding causation and attempts to uncover how programmes generate outcomes through human decision-making (Wong et al., 2013).

Realist Evaluation

Ontology

Ontology encompasses the fundamental belief system of the nature of reality, and this informs the epistemological stance of research (B. Grant & Giddings, 2002). Realist evaluation adopts the ontology of critical realism for their approach to causality. Pawson (2002) explains that realism has a ‘generative’ approach to causation, emphasising it is the subject’s interpretation of the intervention, a process described as ‘mechanisms’, that is most important. Critical realism ontology sits between positivist and relativism paradigms, as it holds the view that knowledge is real and reality exists,

however, understanding is from experience and interpretation of the individual (Swift, Langevin, & Clark, 2017). Relativism ontology holds the view that reality is a human experience and nothing exists outside our thoughts whereas positivism emphasises that truth and reality exist independent of experience and there are unchanging rules of causation (Aliyu, Bello, Kasim, & Martin, 2014; Levers, 2013). Like positivism, RE affirms that a single reality does exist with rules of causation. However, it is the human experience of change that predicts causality placing its ontological position between relativism and positivism. Another ontological assumption of realist ontology is that the world is made of systems that connect through from micro to macro level (Westhorp et al., 2011). Pawson and Tilley (1997) highlight that the ontology of realist evaluation requires the researcher to look beyond observable inputs and outputs and attempt to understand the operation of underlying generative forces. The ontology of RE affirms individual choice-making behaviour is altered when change is introduced, and this causes programme outcomes (Pawson & Tilley, 1997).

Epistemology

Epistemology is the next layer of belief beyond ontology and refers to the relationship between the enquirer and known. It attempts to answer on what basis can knowledge be claimed (B. Grant & Giddings, 2002). The epistemological stance of realism that is adopted by RE is that there is no final truth, but improvement in knowledge is possible (Westhorp et al., 2011). The epistemological development of RE from realism ontology sets it aside from traditional theory-based evaluation, that are not overtly connected to ontological and epistemological assumptions (Astbury, 2013). Realist evaluation goes beyond the 'what works' evaluative question of realism and looks at what is it about the intervention that works for whom under what conditions (Pawson, Greenhalgh, Harvey, & Walshe, 2005). Realist evaluation does not claim to make hard and fast truths about a theory or creating standardisation, instead, it attempts to deliver illumination and contextual fine-tuning in order to apply in real-world settings (Pawson et al., 2005).

Programme Theory

Programme theories are the focus of analysis in RE, and the intention is to understand whether, how and why programmes work (Astbury, 2013; Westhorp, 2014). Pawson and Tilley (1997) emphasise that social programmes are social systems comprising relationships between individual and institutions and micro and macro social processes.

Programme outcomes are a result of influencing change in participants' reasoning that produces new choice-making behaviour (Greenhalgh et al., 2015)

Generative Causation

A significant feature that sets RE apart from other theory-based evaluations is it does not seek to understand if a programme works. Instead, it attempts to understand the process of how participants respond to the intervention (Pawson, 2002). The belief is, it is not programmes that work, it is the resources made available to subjects to make them work that is key (Pawson, 2002). This causal relationship is the Context-Mechanism-Outcome (CMO) configuration; definitions provided below. For an outcome to occur between two events, the underlying mechanism that connects them and the required context in which the relationship occurs, need to be understood (Pawson et al., 2005).

Context: interacts with programme mechanism in order to determine the outcome (whether a mechanism 'fires' or not) and may be related to participants, organisation, staffing, culture and beliefs (Westhorp, 2014; Westhorp et al., 2011)

Mechanism: relates to 'how' programmes work. What resources does the programme offer and how do participants respond to make it successful (Westhorp et al., 2011)? To understand the mechanism of a programme, the researcher must unpack who responds in what ways and why (Westhorp, 2014).

Outcome: the resulting change that occurs from the interaction between context and mechanism.

Middle-range Programme Theories

The use of CMO configurations to develop 'middle-range' programme theories is a key output for RE. Theories that are 'middle range' are described by Wong et al. (2013) as being specific enough to enable the theory to be tested on certain aspects of the programme but also abstract enough to apply to other programmes. Programme theories are not simple linear relationships between variables, and the complexity can be overwhelming for researchers however only those CMO configurations that will be useful for the evaluation need to be tested (Westhorp, 2014; Wong et al., 2013).

Complex Systems

In the healthcare system complex interventions are required in order to meet the needs of the patients, maintain patient safety and improve quality all within a limited budget. This complexity requires interventions with multifaceted components that meet the contextual needs of the particular health care setting where it is delivered (Greenhalgh et al., 2015). Such interventions involve human decisions and interactions, adding to the complexity of understanding how such programmes work. Realist evaluation methodology provides an approach to understanding these complex interventions and attempting to understand how these interventions work, for whom, in what context and to what extent.

Realist Synthesis

Realist synthesis is an approach to appraising literature to evaluate a programme or intervention, underpinned by RE methodology. Realist synthesis is not a method but is a logic of enquiry that is inherently adaptable and creative and can include different methods to address the research question (Pawson, Greenhalgh, Harvey, & Walshe, 2004). Realist synthesis is a strategy for synthesising research that takes a critical approach to unpack mechanisms on how interventions work (Pawson et al., 2005). It is a relatively new approach to reviewing literature that was developed out of the RE methodology and was first described by Ray Pawson in 2002, and more recently in 2013, the publication standards for realist synthesis were released (Pawson, 2002; Wong et al., 2013). The methods used in this research include a systematic literature search strategy and thematic analysis. A research method describes the practical process and tools used for data collection and analysis (B. Grant & Giddings, 2002). The realist synthesis approach has no preference for qualitative or quantitative methods; instead, it emphasises the marrying of the two so that interventions can be investigated accurately (Pawson et al., 2004). This research applies this principle by including a review of both qualitative and quantitative literature to inform the thematic analysis of how NP interventions work to decrease hospital readmissions in older adults.

Pawson developed the approach of realist synthesis out of the need for a fresh approach to developing evidence-based policy (Pawson, 2002). Pawson (2002) argued that there was a gap in the approaches to creating evidenced-based policy at the time. There were meta-analyses that assumed a successionist approach (causal powers to outcomes), and narrative reviews assumed a configurative relationship (attributes aligns to create

outcomes) (Pawson, 2002). Pawson developed the realist synthesis approach out of the need to have an ontological position of generative causation in creating outcomes and developing theory that is tailored and transferable (Pawson, 2002).

The realist synthesis stages are identified by Pawson et al. (2005, p. 24), and I have applied these to this research as outlined in **Error! Reference source not found.**. This research has also used the Realist And Meta-narrative Evidence Syntheses: Evolving Standards (RAMSES) publication standards for realist synthesis as outlined by Wong et al. (2013) to guide the reporting and allow the readers to assess the quality and credibility of this research. The RAMSES standards were developed out of the need to guide researchers on this relatively new method around what constitutes a high-quality realist synthesis (Wong et al., 2013). The realist synthesis stages, and RAMSES reporting are adapted in this design to ensure the scope remains contained within this 45-point dissertation. The two areas contained in the methods and some could argue impact on the quality standard, are the iterative searching and implementation stages. The literature searching phase adjustments are explained in the search strategy discussion. The implementation and involvement of policymakers are not included in the scope of this realist synthesis. However, this will occur in the real-world context as I propose to present my findings to our Service Manager and Nursing Director and work with them to gain traction to trial a rural NP role in our service.

Realist synthesis steps as outlined by Pawson et. al (2005)	Application of Realist Review Steps in this study
Step One	**Clarify Scope**
A. Identify review question	Aim of the realist synthesis was initiated as outlined in the background. The purpose of the review was refined based on the exploratory literature search. Scope identified as understanding how NP interventions that aim to decrease readmission to hospital in older (>65) adults.
B. Refine purpose of review	
C. Articulate key theories to be explored.	Programme theories were extracted from the search strategy and tabled as CMO theories in Appendix 1. Refer to evidence searching below.
Step Two	**Search for evidence**
A. Exploratory background search	Exploratory background search occurred in the literature review stage where a feel for the literature suggested that NP role can contribute to decreasing readmissions for variety of reasons relating to readmission drivers. The progressive focus to theories occurred in the data extraction and thematic analysis of the realist synthesis.
B. Progressive focus to theories and refining inclusion criteria	
C. Purposive sampling to test emerging hypothesis	After the programme theories emerged, as presented in the findings, a comparison of literature was undertaken to further substantiate CMO configurations, presented in discussion chapter. During the discussion of findings the results drawn from the realist synthesis were compared to literature for critical review and application to local setting.
D. Final search near review completion	
Step Three	**Appraise primary studies and extract data**
A. Supplement formal critical appraisal including: -Relevance -Rigour	Critical appraisal of included literature was undertaken using the MMAT tool to evaluate the rigour of studies, as detailed in Appendix 1. The relevance of literature was ensured by the comprehensive inclusion criteria and review of full text articles by researcher and checked by academic researcher.
B. Develop customised set of data extraction forms/processes	Document table (appendix 1) used to support extraction of relevant data and included details of: study design, characteristics of NP intervention, results and conclusions and CMO configurations. Figure 5 shows the formation of themes to highlight progress through analysis.
C. Extract data and populate evaluative framework	Programme theories were extracted from the initial database literature searching and categorised into espoused theories and theories in action. Refer to evidence searching below.
Step Four	**Synthesize evidence and draw conclusions**
A. Synthesize data and refinement of programme theories	Synthesis of data using thematic analysis approach applied to extract context, mechanism, outcome components of literature. Progressed to tabulated CMO configurations for both espoused and theories in action. Patterns of CMO configuration and theories across literature identified. Comparison of emerged theories with literature (as described in step two).
B. Purpose of review to drive synthesis	
C. Use contradictory evidence to generate insights about context	Comparisons between CMO theories and further literature searching supported generation of insights about context as presented in discussion chapter.
D. Present conclusions as contextualised decision points.	Framework presented of the generative causation used and conclusions presented as what works for whom in what conditions.
Step Five	**Disseminate, implement and evaluate**
A. Draft recommendations for policy-makers	Recommendations for local setting outlined in discussion section.
B. Work with practitioners and policy-makers to implement	Not within the scope of this dissertation but intention is to apply this in real world setting by working with stakeholders to develop NP role in Thames-Coromandel community to meet the needs of local population.
C. Evaluate adjustment of programmes based on revealed CMO theories	

Figure 2. Application of realist synthesis stages to this dissertation project

Realist Evaluation sets out to understand what works for whom in what circumstances specific to the context of the research. Pawson et al. (2005) highlights the critical difference in the realist synthesis compared to traditional Cochrane reviews is the added substages that are required to deconstruct complex interventions into programme components. Figure 3 is a diagram created for this dissertation, by applying the Pawson et al. (2005) realist synthesis stages to his original RE cycle (Pawson & Tilley, 1997). The five stages of the realist synthesis are added in the italic font aligned with the model for RE methodology. A vital feature of the RE cycle is the end-stage that aims to give specification rather than generalisation.

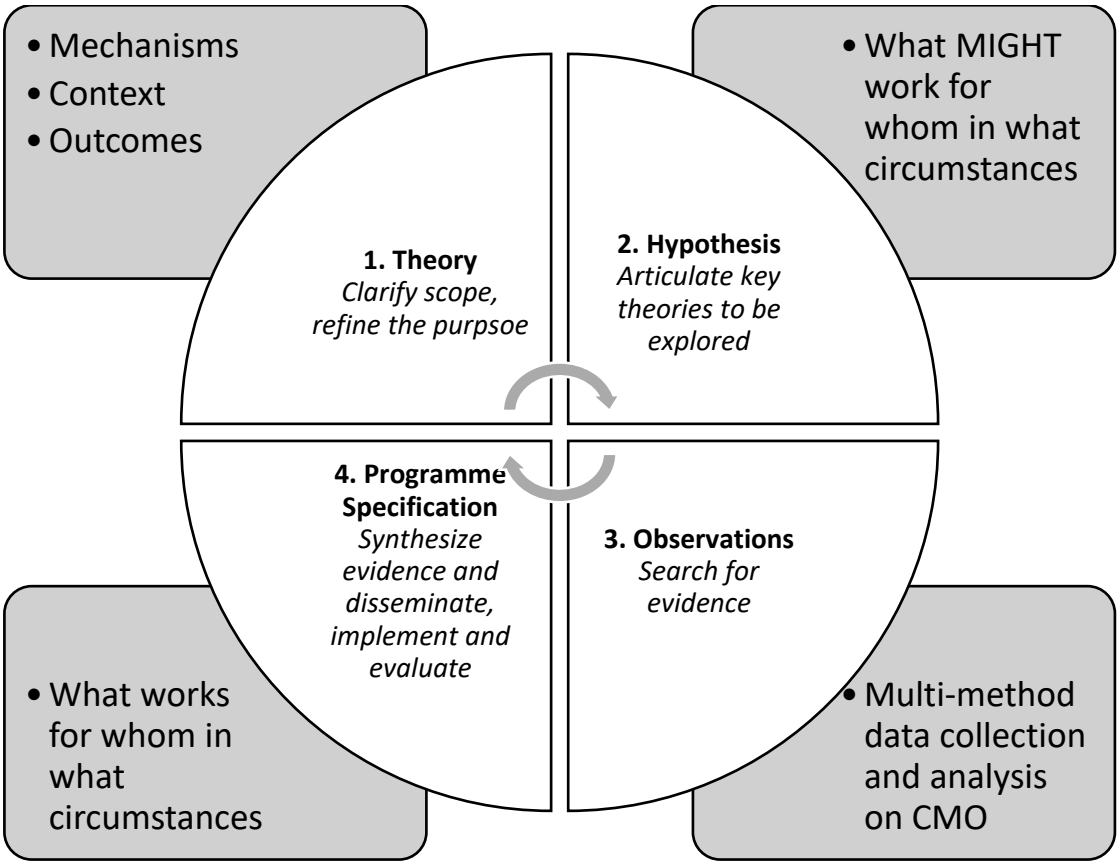


Figure 3. The realist evaluation and synthesis cycle

Research design rationale

Interventions within the health care setting are complex, multi-factorial and influenced by several drivers, hence the need for a research design that acknowledges such complexities and context influencers to interventions and their success. This research set out to understand what it is about NP interventions that work to decrease readmissions in the older adult population. The context in which interventions work is critical in

being able to apply the findings to a New Zealand rural hospital setting. Realist synthesis emphasises context in the formation of programme theory. The NP role and effectiveness of interventions is an under-researched area and therefore, a research design that incorporates context and mechanism to understand rationale is critical to enable recommendations for local policymakers. The initial review of literature outlined in chapter one indicated there is evidence that the NP role might be useful in reducing readmissions however there was no substantial evidence on what components of the NP interventions were critical to the success. The realist synthesis aligns to the intent of this research to achieve an explanatory outcome as opposed to an evaluative result.

Search Strategy

The literature search included a systematic database search to identify literature to inform the development of programme theories and a more specific literature search in the discussion to validate further or reject initially identified theories. A feature that sets realist synthesis apart from traditional literature reviews is the literature search strategy that does not assume there is a finite set of relevant papers that can be searched and found (Pawson et al., 2005). Instead, a multiple search strategy, including purposeful sampling, is more useful (Pawson et al., 2005). Literature saturation, where the researcher asks if further literature adds anything new to the understanding of the intervention, is applied (Pawson et al., 2005). Pawson et al. (2005) acknowledge that search strategies are likely to evolve as the understanding of theories develop, and new search terms added. Literature searching progresses from an initial exploratory search of the literature in the beginning phase, to a purposeful sampling approach to prove or disprove identified programme theories, as the realist synthesis progresses.

A search of the literature using recognised databases continued until literature saturation occurred; database searches were not providing any new or relevant literature. Programme theories are substantiated in the discussion chapter by comparing the findings to literature and other known theories. The initial literature search was conducted of five academic databases of significance to nursing: Scopus, CINAHL, PubMed, Cochrane, and Web of Science. Search terms included: readmission/transitional care/post discharge; older adult/geriatric/elderly/aged/senior; nurse practitioner. A ‘snowball’ approach was applied by locating articles of relevance by author searching and reference list checking. The date limitations for literature were

set from 2005 to present. 2005 was four years after the NP role was introduced in New Zealand and at this time the NP role was well established in United States of America that has a large source of literature. Inclusion criteria were both interventional and descriptive studies, from peer-reviewed journals that analyse the NP (or alternate title) role or interventions that aim to reduce readmissions for older adults (above 65 years old). The exclusion criteria were articles that were not in the English language and those not applicable to local Thames-Coromandel rural health setting, for example, intensive care and inpatient psychiatric based research. The document flow diagram in **Error! Reference source not found.** shows the selection and inclusion of articles.

Once initial programme theories (findings) developed, a further review of the literature occurred to compare the findings, clarify specific information, and refine theory development. This second phase of iterative purposeful literature searching informed the discussion chapter and was used to support the initial findings of programme theory and support refinement. In realist synthesis, search strategies and terms are likely to develop as the findings emerge, and a search for evidence to support, refute or refine evolving findings may be required (Pawson et al., 2005; Wong et al., 2013). The second phase of literature searching was purposeful and used the same databases in addition to google scholar to locate further evidence specific to the CMO configurations. The emerged themes determined the key terms and included combinations of the following: "Nurse Practitioner", "self-management, self-efficacy, reassurance", "home care, home setting, home visit", "older adult, holistic needs", "patient-centred care, nursing philosophy", "virtual health, rural health, health technology", and "interdisciplinary, collaborative care". A snowball approach was applied by checking article reference lists and identified theories to guide the researcher to the most relevant literature to support or contrast programme theories and add further refinement.

Appraisal of documents

Relevance and rigour are two critical elements to realist synthesis that ensure the literature found is fit-for-purpose for the review, and this determined the selection of articles. The inclusion criteria applied ensured the articles included were of relevance to this realist synthesis. Relevance for document selection is essential to ensure the literature can contribute to theory building or refinement (Pawson et al., 2005; Wong et al., 2013). As this is a dissertation, the research process needs to be the student's work;

therefore, the research supervisor was used to review decision-making to add credibility to document selection. Cross-checking of excluded articles and the reason for exclusion were noted to support transparency of the decision-making process for document selection.

The appraisal of the documents' rigour was assessed using the Mixed Method Appraisal Tool (MMAT) developed by Hong et al. (2018). Rigour for realist synthesis approach ensures the contribution of pieces of data from documents are of quality and that flawed articles are rejected (Pawson et al., 2005). Instead of a hierarchical approach to evidence that considers randomised control trials (RCTs) to be the top standard, realist synthesis emphasises the usefulness of multiple method studies to provide richer understanding (Pawson et al., 2005). The MMAT was chosen as a quality check for documents due to its applicability across five research designs focusing on core methodological criteria for the appraisal (Hong et al., 2018). The MMAT has undergone usefulness testing, a Delphi study with 73 methodological experts and two interrater reliability studies and a new version published in 2018 (Hong et al., 2018).

In comparison to other tools, a strength of the MMAT is its focus on methodological quality as opposed to reporting standards. This feature aligns with Pawson et al. (2005) definition of rigour as to whether the inference from the study can make a methodologically credible contribution to theory development, highlighting the importance of methodological quality. **Error! Reference source not found.** includes the detail of how the articles met the MMAT criteria, which moved beyond the usual yes/no checklist application to further support the rigour and credibility The MMAT was adapted to assess the rigour of included non-empirical studies. Realist synthesis talks about the significance of relevance and rigour and it was important to include these two non-empirical articles based on their relevance. The MMAT was adapted by using the mixed-methods study design checklist but omitting the qualitative questions. The visibility of this can be assessed in the document table (**Error! Reference source not found.**).

Data Analysis

Data analysis is the process of organising collected data into meaningful information in order to draw findings. Data analysis for this realist synthesis followed the thematic

analysis process outlined by Braun and Clarke (2012) with a focus on identifying the context, mechanism and outcome components throughout coding. Through the thematic analysis process from coding to identifying themes, I attempted to identify the patterns of context and outcomes and understand the causal link between these. Wong et al. (2013) identify in the RAMSES standards that critical to the analytical process is the iterative testing and refining of theories from data sources achieved by drawing on any appropriate analytical technique. Braun and Clarke (2012) explain that thematic analysis "is a method for systematically identifying, organising and offering insight into patterns of meaning (themes) across a data set" (p. 57). Thematic analysis is an appropriate analysis method as it attempts to make sense of patterns in data and this correlates to the approach of realist synthesis, to gain insight into the generative causation mechanism (the relationship between context and mechanism). The systematic and detailed style of Braun and Clarke (2012) thematic analysis was useful to guide me as a novice researcher. In order to ensure credibility to both the realist synthesis approach and the thematic analysis method I kept revisiting and referring to both the RAMSES standards of Wong et al. (2013) and the six phases of Braun and Clarke (2012). Below I have detailed the process I undertook using this method guided by the steps of Braun and Clarke (2012).

Thematic Analysis Method

Phase One: Familiarising data

I read through each of the full-text articles and annotated throughout to highlight relevant or interesting details. I then re-read exerts of interest and critically thought about the data concerning my question and whether it related to context, mechanism or outcome relationship.

Phase Two: Generating initial codes

For this stage of the analysis, I coded the data with the labels of context, mechanism or outcome. I added words to describe the code, for example, 'context – co-morbidity increasing burden'. Some codes were descriptive (often the context) and others went beyond this with interpretation, particularly the mechanism codes which try to explain why a change occurs. Categorising the codes under CMO headings helped ensure the codes were relevant to the research question. Immersing myself in the data was important at this point, I read and re-read articles to ensure I was satisfied with my

coding. With the codes extracted, I structured these into CMO configurations for each piece of research. I did this under both espoused theory which represented the theoretical framework, and the CMO in action, or what the findings of the research reflected. The CMO in action are tabulated in **Error! Reference source not found.**.

Phase Three: Searching for themes

I tabulated the CMO configurations that were built from the coding stage and began to construct subthemes. I re-read through the coding and began to group patterns and clusters of the context, mechanism, outcome codes until I derived 14 subthemes – a mix of contextual factors and mechanisms. Exploration of how these subthemes interrelated and clustered formed the next step until I was satisfied and could make sense of the overall themes that emerged. Four themes emerged from this process:

1. Nurse Practitioners as a contact point in a fragmented landscape between hospital and home that reassures older adults reduces caregiver burden and provide a path for escalation
2. NP uses nursing philosophy and uniform approach to meet holistic needs further complemented by an interprofessional approach
3. Tailoring care approach to the patient, including caregivers and using the home visit to leverage this
4. Focus on education and empowering patients to self-manage

Phase Four: Reviewing potential themes

In this stage, I took the four themes and went back in a table and compared this to the initial extracted data and CMO configurations to ensure the theme did reflect the extracted codes. In this phase, the themes were further refined to ensure the breadth of the theme was truly captured. The second theme was redefined in this stage and broken into two themes, with the nursing philosophy component combining with theme three, ‘patient-tailored care’. I combined the first and fourth theme under the umbrella of self-efficacy in the home. This new theme captured more broadly what the data was expressing.

Phase Five: Defining and naming themes

This phase was challenging as a novice researcher, and in the beginning, the names of my themes were not succinct. I found once I started Phase Six, the reporting of the themes, the naming became more apparent, and I was able to refine the names of the themes succinctly capturing the essence of what had emerged. During this defining of themes, I was mindful of the identification of context, mechanism and outcomes and how to capture the building of programme theory in the themes.

Phase Six: Producing the report

At times it was difficult to tie the context, mechanisms and outcomes together with the emerged themes. It made sense to report the 'Self-efficacy in the home' theme first as this appeared to be one of the key specific context-mechanism relationships. The second theme reported was the broader context-mechanism relationship of 'Holistic needs met through coordinated interdisciplinary care'. The final theme reported 'Grounded in nursing philosophy', a context interacting with all other contexts and mechanisms.

Summary of Methodology

Underpinning the methodology for this study is a realist ontology and RE paradigm, that emphasises understanding generative causation to outcomes. The framework for this study is informed from the realist synthesis framework by Pawson et al. (2005) and the RAMSES publication standards by Wong et al. (2013). The approach of realist synthesis has been chosen due to its applicability to health care intervention research as it attempts to make sense of complex interactions to inform policy and service development. The real world of nursing practice requires an understanding of the mechanics of successful interventions in order to develop roles and services within a setting to meet population need. The development of programme theory from CMO configuration allows consideration of essential factors and context that enable successful outcomes. The search strategy included five databases using key search terms and a set of inclusion and exclusion criteria. The rigour of included articles were assessed using the MMAT developed by Hong et al. (2018). Thematic analysis was chosen as the method for data analysis due to its applicability in understanding patterns between data that is required for constructing CMO configurations. The thematic analysis method of Braun and Clarke (2012) was applied with adaptation to include CMO formation, and this ended with three themes aligned with generative causation theory.

Chapter four: Findings

This chapter presents the key findings derived from the thematic analysis of the included articles. This realist synthesis study included 29 articles, 21 of which were quantitative studies, two qualitative, two mixed-methods and four non-empirical. Most of the literature was out of the United States; however, there was one study from Australia and one from Switzerland. Two interventions were targeted to the Veteran population in the United States. Often the interventions included home visiting in their model of care, and this was delivered alongside an interdisciplinary team (IDT). The document characteristics, including research design, aim, results, CMO configurations, and MMAT appraisal information, for the included articles, can be found in **Error! Reference source not found.**. Three themes representing generative causation to decreasing readmissions emerged from the web of patterns between context and mechanisms. Combining the context and mechanism components identified in Figure 5, the development of the three themes become evident. The CMO configurations for each theme are visually depicted in a table before the theme is described. Each theme is described in detail with support from data extracts from the included studies.

The three themes identified are:

1. Self-efficacy in the home
2. Holistic needs met through coordinated interdisciplinary care
3. Grounded in nursing philosophy

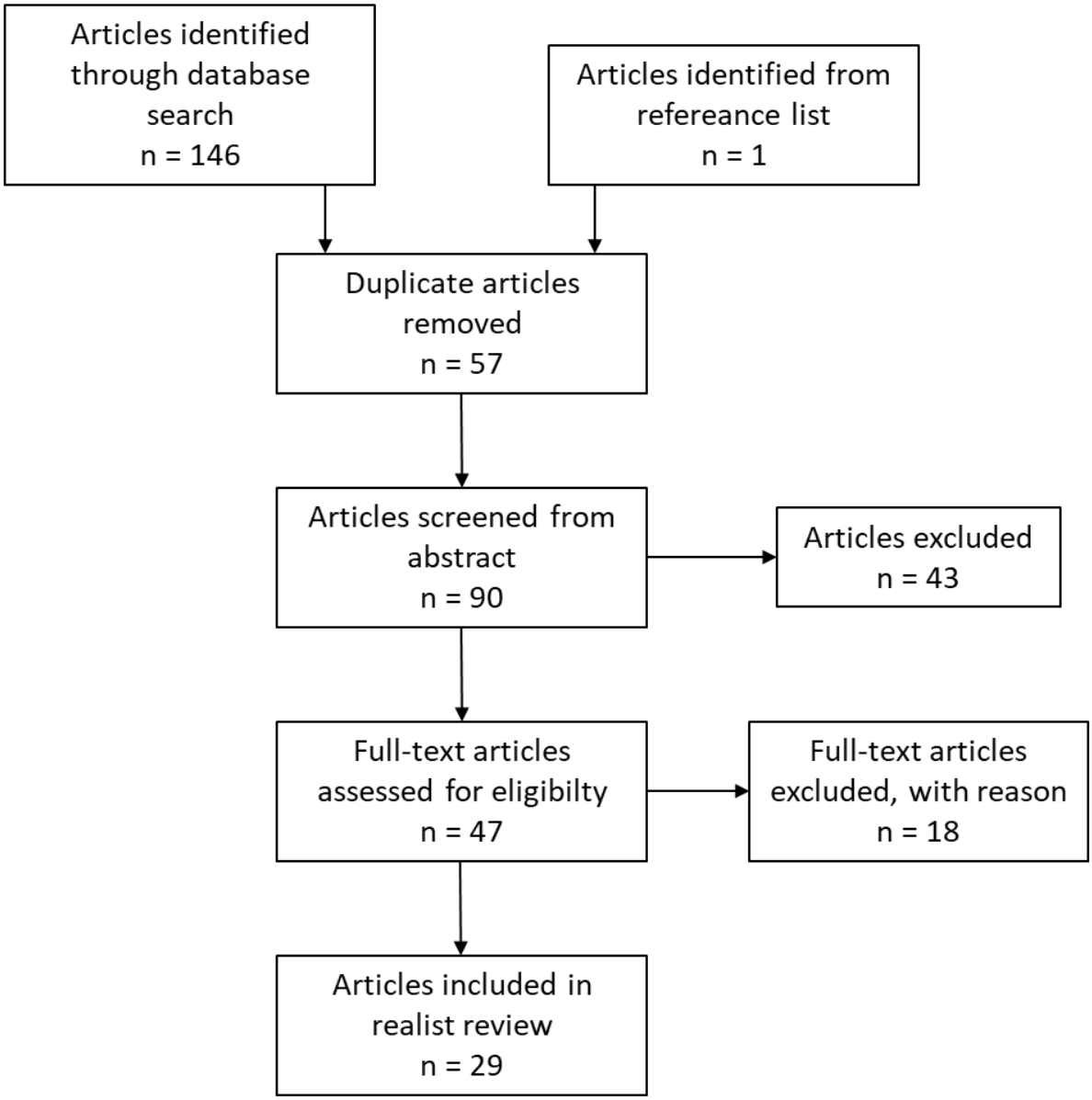


Figure 4. Document flow diagram

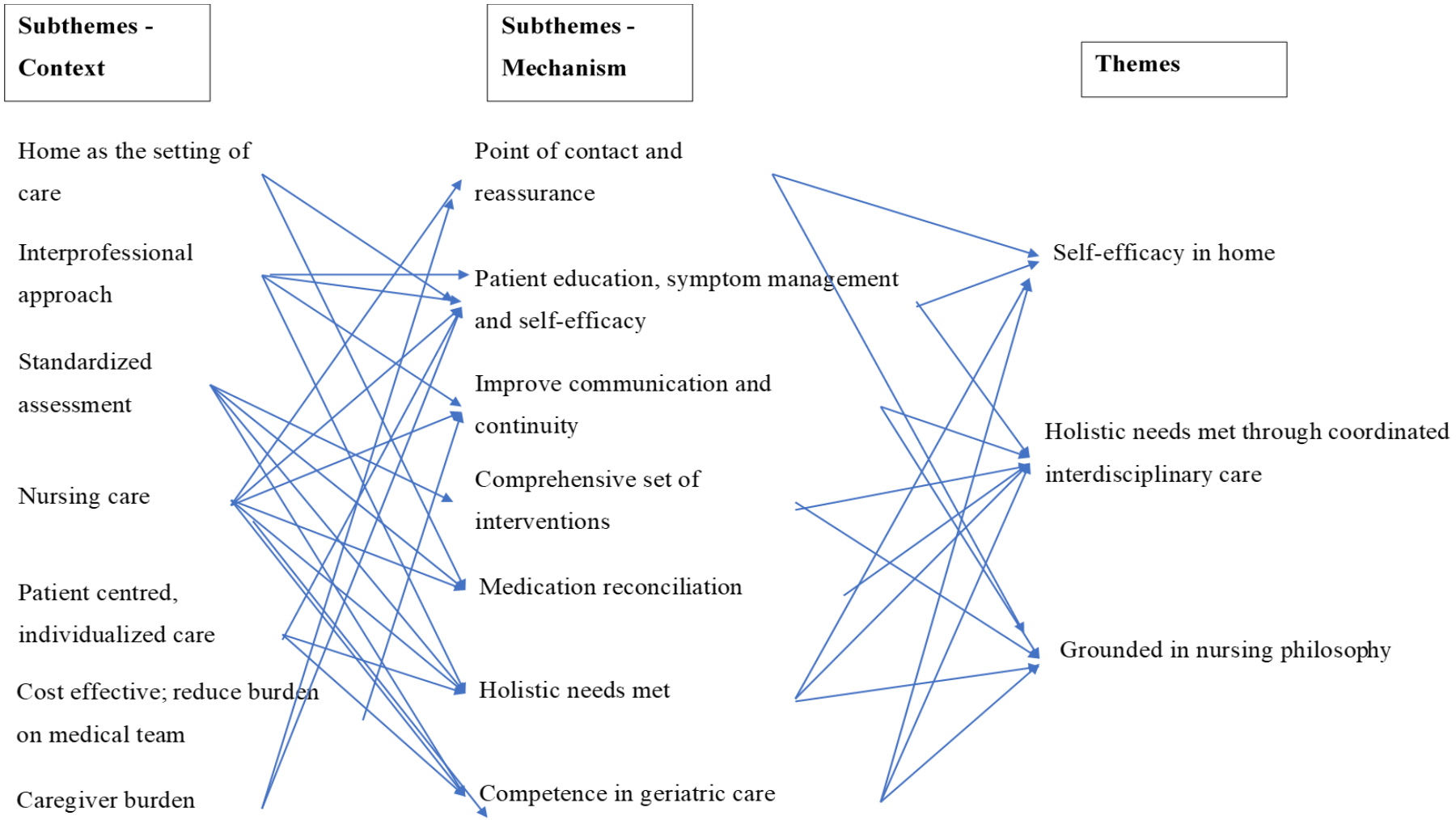


Figure 5. Formation of themes from context and mechanism interactions

Self-efficacy in the Home

Table 3. Context-mechanism-outcome for self-efficacy in the home

Context	Mechanism	Outcome
• Older adults • Home setting • Timeliness of initial follow up and ongoing alleviation of concerns • Multiskilled nurse practitioner and effective educator • Involvement of caregiver	• Improved self efficacy • Enable patients to manage at home through education and support • Reassurance promotes self management	• Reduced readmission to hospital

Nurse Practitioners are an accessible and timely contact point in a fragmented landscape between hospital and home that reassures older adults, reduces caregiver burden, enhances self-management, and enables patient self-efficacy. The theme of self-efficacy for patients relates to the NP being an available resource, providing reassurance, timely follow-up, and meeting health literacy needs. These cumulatively result in patients changing their behaviour by managing their health better at home, and escalating and addressing concerns with the NP, rather than presenting to hospital. The home setting in the NP model was an influential contextual factor contributing to the success of patients improving self-efficacy, resulting in reduced presentations to hospital. The theory built from this theme is that older patients who receive NP led care in the home are provided with education, reassurance, escalations paths, and improved communication. NP led care reduces caregiver burden by enabling patients to manage better in their home, resulting in improved self-efficacy and reduced presentation to hospital. Wong et al. (2013) highlight that a programme outcome is the result of a mechanism triggered within a context; termed generative explanation in realist synthesis. In this theme, the provision of NP interventions improves patient self-efficacy, triggered by the care provided in the home setting, and results in reduced readmission.

Self-efficacy is the mechanism for achieving reduced readmission, which is influenced by patients feeling reassured while at home. Patients have a sense of relief through having the easily accessible resource of the NP when returning from hospital, and this supports them to stay well at home. The promptness of follow up was a contributing factor to patients feeling reassured. Jones, Ornstein, Skovran, Soriano, and DeCherrie (2017) reported that patient phone calls were returned more promptly, and urgent issues addressed faster in co-management models with NP and Primary Care Provider (PCP) than PCP alone. The NP acted as a coordinator of care and supported the navigation of healthcare after discharge (Jones, Ornstein, et al., 2017). Deniger, Troller, and Kennelty (2015) identified that transitional care NPs help patients with navigating a large and confusing health care system. Qualitative feedback from patients, caregivers and providers also highlight the importance of the home setting for reassurance. Takahashi et al. (2018) report patients feel relaxed in their home environment and feel the freedom to discuss things on their terms due to the comfort of their home. For example, "Patients and caregivers valued the home visit with feeling more comfortable conversing about their needs in their own environment" (Takahashi et al., 2018, p. 19). The patients describe the home visit as crucial to the care they receive that they would not get in a clinic visit and the benefit of this; "I think that I'm more relaxed in my own home, and I can think better" (Takahashi et al., 2018, p. 20). The home environment provides a context which contributes to the patient feeling safe, comfortable, and reassured, enabling the patient's self-efficacy.

The provision of an escalation pathway for patients was a subtheme found across the literature that supported patients to achieve self-efficacy in the home. In their successful transitional NP model Smith, Pan, and Novelli (2016) found a relative risk reduction of 54% in acute care returns to the hospital in their case-control study when compared to the standard discharge protocol. The transitional model for NP home visits studied by Smith et al. (2016) included educating patients and their caregivers to recognise and respond early to changes in clinical condition. Targeting high risk older adults and the use of highly intensive and structured home visits contributed to the success of their programme. The findings of Hendrix et al. (2013) highlights the relationship between having an NP available to elevate concerns to and reassurance, "Patients and caregivers found it reassuring to have ready access to someone to help when issues or problems arise" (p. 412). Patient and caregiver qualitative feedback also highlights the theme of home setting in providing an escalation point and reducing the burden for caregivers,

“You [NP] are a really good connection from home to the physician” (Hendrix et al., 2013, p. 412). Patients and caregivers found it reassuring to have ready access to support which is highlighted in the following quote “You don’t know how much it means to have someone calling you to check on you and letting me know what is going on” (Hendrix et al., 2013, p. 412). This quote alludes to the link between ready access and feeling reassured that enables patients to feel more confident in managing their health at home.

Takahashi et al. (2018) found the scope and characteristics of the NP role were critical in providing this escalation and connection patients needed post-discharge. Patients commented on the importance of an NP being at the centre of the transitions team, and this link was important in comfort, knowledge and communication (Takahashi et al., 2018). The NPs extended scope of practice ensures patients receive reassurance at the time of their concerns. This finding is highlighted in the research by Robles et al. (2011); “The major decrease in ER visits is likely in part to the availability of an NP to speak to patients after their discharge” (p. 715). Patients suffering medication side effects can have their concerns met by the NP immediately who can adjust the dose accordingly rather than having to liaise with physicians or referring elsewhere. The NP scope supports prompt intervention as highlighted in this quote “if the patient reported concerning but not urgent symptoms (those responsible for the majority of ‘‘unnecessary’’ ER visits), she [NP] was able to order appropriate laboratory examinations and tests and have the patient see the surgeon” (Robles et al., 2011, p. 715). A review of the literature comparing RN to NP led transitional care models for heart failure also support the NP scope. Care is better coordinated in NP led models and the research found “APNs [NPs] were able to change medication and dosages, order outpatient testing, and were better educated in the pathophysiology of heart failure” (Delgado-Passler & McCaffrey, 2006, p. 159). These findings support that the scope of the NP role is critical in providing escalation pathways that will decrease unnecessary hospital readmissions.

The qualitative findings of Takahashi et al. (2018) are compelling in highlighting the relationship between the home environment and provision and success of patient education. “NPs provided patients with education or information that the patients felt they did not get while in the hospital or were too confused or overwhelmed to absorb” (Takahashi et al., 2018, p. 20). Identifying and meeting health literacy needs was a

common theme throughout the literature and supported the patient to be able to manage their care at home. Lovelace et al. (2016) included educational deficits in the inclusion criteria of their NP transitional care programme highlighting the contribution of health education in reducing readmission risk. The RN case manager completed home visits and met the educational needs of patients and collaborated with the NP to address urgent concerns (Lovelace et al., 2016). This model showed improved self-management at 90 days using a retrospective review of medical records (Lovelace et al., 2016). It is unclear how self-management was measured and whether a tool was used or reported by the patient or health provider. They do identify in their limitations that measurement to include functional status is lacking (Lovelace et al., 2016). The findings of Lovelace et al. (2016) highlight the link between meeting the educational needs of patients in transitional care and enabling patients to self-manage.

Education aimed at improving self-efficacy includes self-management, symptom exacerbation, medication, and lifestyle improvements. NP interventions within transitional care models include creating patient care plans in partnership with the patient to identify education goals. A strategy that Kutzleb (2015) used in their transitional care NP model was regular telephone consults to evaluate patients' ability to self-manage, understand their condition, and identify changes and escalate these. A successful component to patients self-managing their chronic diseases was due to NP advocacy for self-care (Kutzleb, 2015). Participants in this model described the most positive changes in overall wellbeing as their ability to self-manage medications and diet which stemmed from education and follow up and led to their ability to maintain independence (Kutzleb, 2015). In the transitional model of care researched by Smith et al. (2016), the NP assesses the patient and caregiver's level of understanding and formulates responses including teach-back techniques to assist patients in capturing their disease-specific data. The high intensity and highly structured home visits contributed to the statistically lower readmission rates (Smith et al., 2016). A study by Condon et al. (2016) that looked at a transitional care model for patients post-stroke found that the cumulative effect of their NP interventions, including education, ultimately helped patients self-manage their stroke recovery and prevent readmission. The NP delivered these activities via phone calls and one post-discharge visit to a transitional stroke clinic. Their results showed the model decreased readmissions at 30-days but was not effective at 90-day readmissions (Condon et al., 2016). In the RCT by Enguidanos et al. (2012) of a brief NP intervention post-discharge, the researchers

found that "…while both the intervention and usual care groups showed increased self-efficacy at follow up, significant improvement was noted for the intervention group" (p. 48). The timely training, coaching and empowerment of patients to seek the care and services they require resulted in improved patient self-efficacy in managing chronic conditions and reduced ED visits (Enguidanos et al., 2012).

The intensity and focus on patient education varied across the models described in the literature, and some were delivered in an interprofessional approach making it difficult to attribute the education to the NP role itself. The care transition model implemented by Warren, Lemieux, and Bittner (2019) described a unique approach to medication management and education where the pharmacist would make home visits when required. Pillbox assistance and medication education were the most common reason for these home visits (Warren et al., 2019). Their quantitative cohort study found a statistically significant reduction in readmissions when the pharmacist outreached to a patient. This finding could indicate the success of this approach to medication education, although it should be interpreted with caution as the detail on statistical analysis is not included (Warren et al., 2019). The NP role was to identify and refer the patients requiring pharmacist input, thereby addressing their medication educational need(s) through an interprofessional approach.

In some models, there was little detail on the education component or whether this contributed to improved self-efficacy, making it difficult to ascertain the value of the education component. A pilot study by Coppa, Winchester, and Roberts (2018) regarding NP delivery of home-based primary care detailed the activities the NP undertook to include: vital signs, height, weight, physical examination, medication reconciliation, final assessment and creating a primary care plan. The description of the programme does not detail any education component. However, the researchers identify in their discussion, that the statistics do not capture the depth of care NPs delivered and that descriptions of the clinical encounters provide rich qualitative information but unfortunately these were not included in the findings (Coppa et al., 2018). This finding highlights a challenge in quantifying what it is about the NP role that works in reducing readmissions as often the depth and complexity of what the NP provides in home visits cannot be described in a set of activities, nor extracted in quantitative data.

Involvement of the caregiver and reducing caregiver burden was a subtheme across the literature that supported patients to self-manage in their home environment. In their research Echeverry, Lamb, and Miller (2015) included families in the education of self-care and monitoring, and they found patients were satisfied receiving care in their home and were glad not to burden their family with travelling to appointments. They concluded that patients had a feeling of control over their conditions, and this contributed to improved health outcomes (Echeverry et al., 2015). The Geriatric Floating Interdisciplinary Transition Team (Geri-FITT) model that incorporated a geriatric NP, emphasised caregiver involvement, including them in discharge preparation, follow ups, symptom reviews and education (Arbaje et al., 2010). A strength of the model is the NP engagement of providers and caregivers in the transition process, and this is associated with slightly higher quality transitions and greater patient satisfaction (not statistically significant) (Arbaje et al., 2010). In Takahashi et al. (2018) qualitative findings, caregivers spoke about reduced stress and anxiety with the NP visiting in the home, and this enabled the caregivers to engage and be able to ask questions. The NP co-management model trialled by Jones, DeCherrie, et al. (2017) included caregivers in care-related conversations in home visits to improve patients' compliance with medication and care, to decrease caregiver stress. They found the percentage of patients with any 30-day readmission decreased from 17.2% to 5.8% (Jones, DeCherrie, et al., 2017). The literature supports that the home visit in NP models improves the involvement of family or caregivers. As caregivers and families are the lead support, this helps the patients self-manage and enhances self-efficacy.

Although it is hard to quantify each component of what the NP does, it is evident across the literature that the cumulative effect of what the NP provides supports patients to improve their self-efficacy, so they can manage at home reducing hospital readmissions. Leppin et al. (2014) hypothesised that intervention features aimed at reducing treatment burden and improving patient capacity to enact post-discharge care, would explain the varying effects of programmes to reduce readmissions. Their framework of cumulative complexity attempts to show the relationship between workload (or treatment burden) and patient capacity (influenced by resource availability) on the overall outcome (Leppin et al., 2014). This framework shows that patients post-discharge are highly vulnerable due to their restricted capacity to enact self-care (Leppin et al., 2014). Their systematic review of 46 trials found the most common intervention activities were case management, home visits and self-management support (Leppin et al., 2014). The

intervention characteristics that impacted on programme effectiveness included those aimed at improving patient capacity to self-care, having five unique component activities and at least two individuals involved in the delivery (Leppin et al., 2014). The incremental effect of comprehensive support and addressing factors relating to context and capacity for self-care was associated with a lower risk of readmission (Leppin et al., 2014). Although these studies were not specifically, NP led, it does support the findings across other literature that NP interventions can improve self-efficacy resulting in fewer patients re-presenting to hospital.

Holistic Needs met through Coordinated Interdisciplinary Care

Table 4. Context-Mechanism-Outcome for holistic needs met through coordinated interdisciplinary care

Context	Mechanism	Outcome
• Older adults with chronic medical needs • Home setting • Effective communication enhanced through use of electronic health records • Interprofessional, collaborative approach • Involvement of caregiver • Comprehensive standardised approach	• Holistic needs met • Care is facilitated, coordinated and connected	• Reduced readmission to hospital

Nurse Practitioner interventions that identify the holistic needs of patients through thorough and standardised assessment, and meet these needs within a coordinated interprofessional approach, support reduced readmission for older adults. This theme stemmed from five subthemes: identification of psychosocial needs, care coordination, medication reconciliation, interprofessional collaboration and comprehensive standardised assessment. These subthemes create a framework that shows NPs as lead professionals in care, can identify broad patient needs and address these by providing care in a collaborative approach. In the RE 'what works, for whom and in what circumstance' framework the literature has shown that NP led interventions that identify and address holistic needs through a collaborative approach can reduce readmissions for older adults in the home setting. The generative causation is the provision of an NP coordinated, collaborative approach that can ensure (or trigger) patients' holistic needs are met and result in patients no longer requiring to present to hospital with unmet need.

The function of the NP as a care coordinator supports effective models of transitional care to decrease readmissions. The Geriatric Transitional Care programme implemented by Deniger et al. (2015) showed a reduction of readmissions through "monitoring disease progression, medication compliance and intolerance, and ensuring communication and care coordination between providers" (p. 251). This statement highlights the holistic approach of the NP in being able to meet and coordinate such a broad range of needs and reflects the CMO configuration identified. An integrative review of eight studies of transitional care models by Mora et al. (2017) found that NP coordinated care which included home visit within three days and facilitated communication between primary care and the hospital was effective in reducing readmissions. Their review found there were inconsistencies in approaches to providing NP led transitional care and having more standardised procedures, and documented protocols could help establish the efficacy of this approach (Mora et al., 2017). Due to the variation in models, it was challenging to differentiate what interventions were effective but common to successful models was the coordinator role of the NP, including communicating and connecting between the inpatient setting and primary care (Mora et al., 2017).

Focus group feedback in the research by Ornstein et al. (2011) highlights the care coordination role of the NP stating "NPs function as an important communication link that benefits the provider and ultimately the patient" (p. 548). The Acute Care for Elderly model implemented in a dedicated geriatric ED described the NP role to provide focused geriatric assessment and undertake coordination required for the complex transition of the older adult from ED (Sanon, Hwang, Abraham, Goldhirsch, & Richardson, 2019). The interdisciplinary approach and seamless coordination of care and discharge planning were critical elements to this programme that demonstrated a feasible model for implementing acute care for elderly into an ED setting (Sanon et al., 2019). A review of literature of five studies using RN or NP tele-management outpatient programmes concluded that the NP was a more effective coordinator improving patient outcomes and attributed this to the scope of the NP (Delgado-Passler & McCaffrey, 2006). They found, "Outcomes that improved when APN [NP] care coordination was used include reduced rehospitalisation rates, reduced outpatient costs, and decreased mortality." (Delgado-Passler & McCaffrey, 2006, p. 159). The studies in this review date before 2005 so should be interpreted with caution as there has been a progression of RN scope since this time.

Some models of NP led care included a separate ‘coordinator’ role that enabled the NP to undertake more clinical management. In the model implemented by Bellon et al. (2019), they included a Masters prepared case manager RN who was the key coordinating point for gathering data, facilitating meetings, communicating and resolving issues. The NP provided symptom monitoring and management, advanced care planning and coordination with the primary care physician for high-risk patients (Bellon et al., 2019). They found their “study suggests that stratifying people into readmission risk groups and applying rigorous inclusion and exclusion criteria can help health systems target efforts for hospital readmission reduction.” (Bellon et al., 2019, p. 161).The study by Dizon and Reinking (2017) had a transition team that included an RN project manager for coordination, an RN outpatient case manager, pharmacist for medication reconciliation and NP for phone follow up of vulnerable patients discharged to skilled nurse facilities. The RN project manager role included monitoring outcomes and facilitating the transition team, and the RN case manager provided continuity for patients and took on a coaching role for patients. Lovelace et al. (2016) also included an RN case-manager as a single access point for patients and caregivers that helped achieve an interdisciplinary approach and continuity of care. It appears the benefit of the RN case-manager or coordinator lies within the clinical administration function and organising the professionals as opposed to the clinical coordination of care. It is essential to differentiate the two coordination roles and recognise that having an RN coordinator may alleviate the workload for the NP to focus on clinical care.

Using risk assessment tools can support resource utilisation in transitional care models that include both RN and NP. Dizon and Reinking (2017) who applied a transition team approach conclude addressing readmission “requires identification of patients who are at highest risk so that resources are allocated properly… Programs need to provide interdisciplinary, evidence-based, and person-centred care.” (Dizon & Reinking, 2017, p. 437). Their research did show reduced readmission and indicate that using an interprofessional approach and stratifying patients by risk can be successful and likely to improve resource utilisation. The transitional care model by Deniger et al. (2015) also used a readmission risk assessment tool, and the RN was assigned with follow up of moderate-risk patients, and the NP completed home visits for high-risk patients. They found adding the NP provided “an added layer of support to their geriatric patients as they transition home after an acute illness in the hospital.” (p. 251). Prioritising the skills of the NP to high-risk patients who require more complex care and utilising the

RN role within their scope to improve self-management, is shown to be an effective interprofessional approach. This approach may provide a more useful model for resource utilisation and cost-effectiveness.

The ‘stratified’ approach to identifying patients based on readmission risk assessment and utilising different professionals is an example of the interdisciplinary approach used in models aimed at reducing readmissions. A critical element to successful NP models is the interprofessional collaboration that meets the diverse needs of patients. An NP led post-hospital follow-up clinic model was developed to overcome the challenge of providers and professionals working in silos and highlights the success of an interprofessional approach to transitional care (Baldwin, Zook, & Sanford, 2018). The interprofessional team included a family certified NP, clinical pharmacist, nurse case manager and social worker (Baldwin et al., 2018). The delivery model was a clinic visit within 3 – 5 days where the interprofessional team met before the patient arrived to discuss the recent hospitalisation to develop an individual care plan for the visit (Baldwin et al., 2018). The NP would then perform a thorough review including physical assessment, lab results and treatment plan and ordering other therapy or equipment as required. The patient would see a case manager for coordination of appointments/services and pharmacist for medication reconciliation and education (Baldwin et al., 2018). The social worker performed a psychosocial assessment and depression screening and provided a range of supports and connection to resources (Baldwin et al., 2018). They concluded, “The outcomes of this project support the review of literature findings that posthospital clinics staffed by interprofessional teams may play a significant role in improving transitions of care.” (p. 269). This model highlights the different roles and how they contribute to meeting the holistic needs of patients, effectively resulting in patients not needing to present back to the hospital. A limitation to this model is that homebound patients were excluded and are likely to pose higher readmission risk and are perhaps where the most potential of such a model lies. The clinic model was successful in reducing readmissions and could suggest the interprofessional approach does provide benefit not possible with home visiting.

A limitation of a clinic model for providing transitional care is the lack of coordination with primary care and the home setting. The Geri-FITT model highlights the benefits of an interprofessional approach that includes geriatric NPs across inpatient and outpatient setting, providing outpatient follow up with phone calls and communicating care plans

to primary care (Arbaje et al., 2010). The Geri-FITT model has a geriatrician and NP who co-manage geriatric syndromes with inpatient doctors and nurses and support other health professionals developing and delivering transitional care plans (Arbaje et al., 2010). By having the team 'floating' to where patients are within the hospital, the model can "engage diverse healthcare professionals around patient-specific needs, and build a common purpose for providing optimal geriatric and transitional care" (p. 368). Lovelace et al. (2016) concluded from their study that using an interdisciplinary approach in developing patient-centred transition plans of care, using intensive case management interventions, improves resource utilisation with substantial financial savings." (p. 283). Their care transition team comprised of an RN case-manager, clinical social worker, pharmacist, and an inpatient NP and an outpatient NP. The key features of their programme included collaboration between inpatient and outpatient team members and with primary care (Lovelace et al., 2016). Models that included a coherent, multiskilled team of professionals across settings to support older adults were advantageous and met the broader needs of patients.

The findings of Finn et al. (2011) support the importance of including care beyond the hospital episode and incorporating the community setting for reducing readmission. In their model, the NP role was a discharge facilitator within a medical ward, and they did not find any improvement in readmission rates or ED utilisation (Finn et al., 2011). Reported improvements were made in other aspects of discharge planning such as timeliness of discharge summaries, prompt follow up, and improved patient understanding and satisfaction (Finn et al., 2011). A limitation of this model is that the NP only works within the inpatient setting. Although the NP role included collaborating with the resident doctor, the collaborative approach with outpatient setting and primary care was minimal other than to call "PCPs' offices with discharge information and faxed discharge summaries" (Finn et al., 2011, p. 495). In their discussion regarding the failure of their model to decrease hospital utilisation, Finn et al. (2011) state that "Perhaps readmission rates are too complex a measure to use to assess discharge process improvement" (p. 499). The NP role needs to extend beyond improving discharge planning to improving care between settings with effective coordinated interdisciplinary approaches.

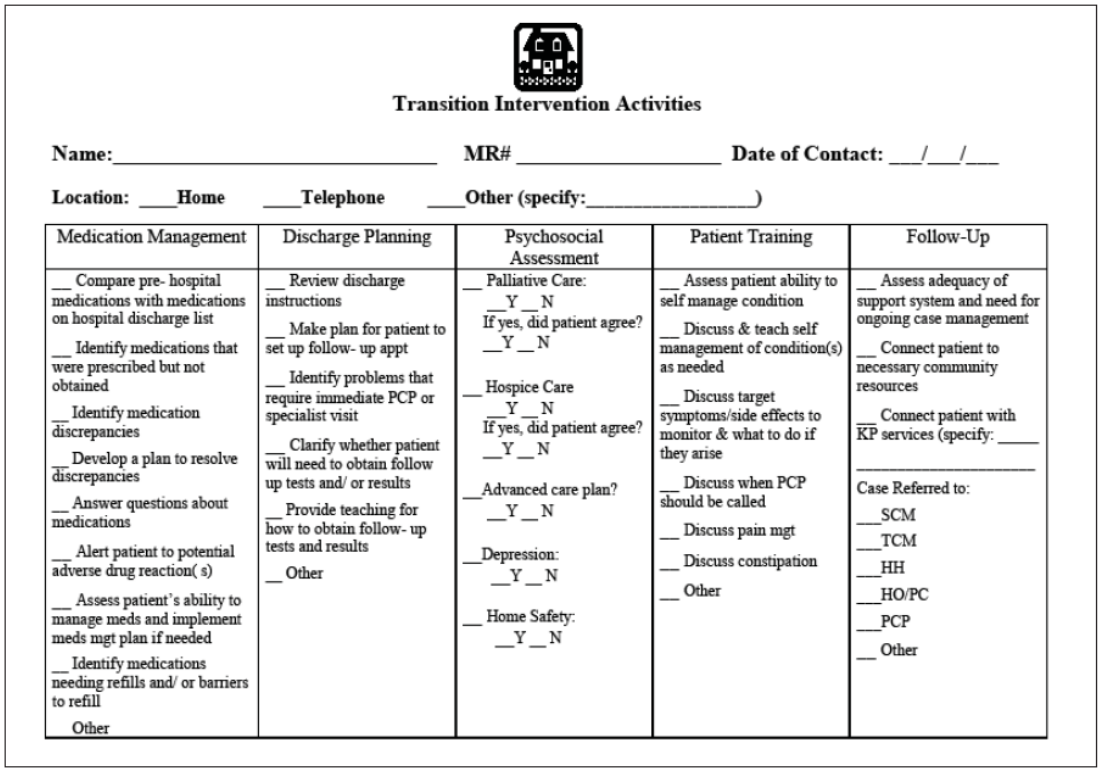
The development of NPs who can effectively work within, and lead, effective IDTs is an important consideration. Weil et al. (2018) reported on the development of an Adult-Gerontology Acute Care NP programme utilising an interdisciplinary approach focused on rural settings. They concluded that "committed interdisciplinary team efforts, from a broad range of disciplines and external partners, are a great benefit to the rural and frontier older adult populations that graduates of the programme will serve" (p. 239). They advocate for interdisciplinary approaches to begin in academic programmes that will develop multi-skilled NPs who will retain this approach out in the field. These findings emphasise that improving readmissions for older adults, particularly in rural settings, needs to go beyond enhancing current discharge processes and build interdisciplinary approaches across care settings.

Communication tools, particularly the use of Electronic Health Records (EHR), support the function of the NP as the coordinator and improves interdisciplinary approach. In the Ornstein et al. (2011) model, two standardised communication tools were created for the NP to use. One was a standardised written note in the inpatient setting and the other an electronic message in the EHR from NP to PCP (Ornstein et al., 2011). In the acute care for elderly model trialled by Sanon et al. (2019), they used enhanced EHR with discipline-specific templates to capture comprehensive geriatric assessments made by the different interprofessional team members. This integration of geriatric assessments into ED clinical workflow supported by EHR, guided better clinical decision making for older adults (Sanon et al., 2019). Another use of EHR across the programmes was in identifying patients with risk factors for readmission and enabling interventions to be targeted. A transitional care programme developed by Hendrix et al. (2013) for veterans in the United States leveraged their identification of high-risk patients by using the veteran affairs sophisticated EHR to systematically identify patients and develop an EHR template for clinical documentation. Electronic health records incorporated in a pilot quality improvement project by Echeverry et al. (2015) enabled patients to be followed when they were hospitalised. Smith et al. (2016) noted that the effectiveness of their programme was limited as it relied on care settings having access to the same data, highlighting the importance of having shared EHRs to promote model effectiveness. Coleman, Smith, Raha, and Min (2005) in their study of medication discrepancies highlight that while EHRs are essential in the continuity of care across settings, these must be shared across a multitude of settings such as nursing facilities and home health hubs. Jones, DeCherrie, et al. (2017) used EHRs for referrals

to their co-management programme by primary care physicians. Accessing relevant information such as patient's pre-hospital medication demonstrates how EHRs support the NP to improve patient care across settings (Coleman et al., 2005). Bellon et al. (2019) found in their care transition model, using shared EHR to enhance communication either in person or virtually, was a critical element to success. It is difficult to ascertain the exact contribution of EHR in the NP role in reducing readmissions, but it does appear to be an important contextual factor.

The communication link the NP provided between the interprofessional team, particularly between the inpatient and primary care setting, was highlighted across the literature as contributing to a reduction in hospital utilisation. "The geriatric NP conveys key information to the PCP directly, ensuring that important information is not missed (e.g., pending test results, medication changes, geriatric syndromes)" (Arbaje et al., 2010, p. 369). This quote highlights the function of the NP as the connector and communicator in the Geri FITT model and without this information patient care between settings is compromised. Communication improvement with primary care enables post-discharge care to be individualised to the patient and family needs (Smith et al., 2016). Health provider feedback about NPs providing home-based primary care to homebound patients included that NPs were a vital communication link benefiting the provider and ultimately, the patient (Ornstein et al., 2011). This finding was highlighted in a quote from an inpatient physician, "when we're really busy I have to admit I'm not as good as I should be about contacting the primary [physician], but it's good to know that even when I'm not, [the NPs] are, . . . it's OK because they [NPs] still have an update about what's going on" (Ornstein et al., 2011, p. 548). Sanon et al. (2019) identifies that the "TCN [transitional care nurse] helps to improve communication and facilitate care coordination across practice sites, ensure appropriate outpatient services to reduce unnecessary utilisation, and assist with safe discharge and transition planning" (p. 6). Having appropriate outpatient services and follow up is enabled by the NP communicating with outpatient services, such as specialty clinics and primary care providers, and coordinating this with the patient and their family. Results from Condon et al. (2016) support this theory as they found that the phone call follow-up alone did not influence the readmission rate, however, "the patients who received the follow-up phone call were more likely to show for the TSC" (p. 1602). The TSC visit was independently associated with a 48% reduction in 30-day readmission (Condon et al., 2016).

The enhanced communication between care settings also improved medication reconciliation. This finding is a subtheme across the literature as an explanation of how NPs reduce readmissions. The impact of medication management was highlighted in Coleman et al. (2005) study that used a geriatric NP to perform comprehensive medication assessment. They found "14.3% of the patients who experienced medication discrepancies were re-hospitalised at 30 days compared with 6.1% of the patients who did not experience a discrepancy (P=.04)" (Coleman et al., 2005, p. 1842). The most common factors for medication discrepancies were non-intentional adherence, incomplete, inaccurate or illegible discharge instructions, conflicting information and duplication (Coleman et al., 2005). "In the absence of a designated clinician who is accountable for medication reconciliation, these patients are often left to sort out this challenge without adequate oversight and support" (Coleman et al., 2005, p. 1846). This quote highlights the need for the NP role in transition settings and this is supported by other literature. An RCT by Enguidanos et al. (2012) included a structured assessment of medications and those in the intervention group had "significantly fewer physician office visits…and approximately half as many emergency department visits" (p. 47), although the ED visit data was not statistically significant. Figure 6 highlights the focus of the NP role in medication management and the structured NP assessment in this model. They identified coordination, support and medication reconciliation as critical elements of the intervention and required the scope of the NP (Enguidanos et al., 2012). A reason why the ED utilisation findings were not significant could be due to the RCT design as the NP had no contact with the patient in the hospital before discharge.



Transition Intervention Activities

Name:_____ **MR#** _____ **Date of Contact:** ___/___/___

Location: ____**Home** ____**Telephone** ____**Other (specify:**_____**)**

Medication Management	Discharge Planning	Psychosocial Assessment	Patient Training	Follow-Up
__ Compare pre- hospital medications with medications on hospital discharge list __ Identify medications that were prescribed but not obtained __ Identify medication discrepancies __ Develop a plan to resolve discrepancies __ Answer questions about medications __ Alert patient to potential adverse drug reaction(s) __ Assess patient's ability to manage meds and implement meds mgt plan if needed __ Identify medications needing refills and/ or barriers to refill __ Other	__ Review discharge instructions __ Make plan for patient to set up follow- up appt __ Identify problems that require immediate PCP or specialist visit __ Clarify whether patient will need to obtain follow up tests and/ or results __ Provide teaching for how to obtain follow- up tests and results __ Other	__ Palliative Care: __Y __N If yes, did patient agree? __Y __N __ Hospice Care __Y __N If yes, did patient agree? __Y __N __Advanced care plan? __Y __N __Depression: __Y __N __ Home Safety: __Y __N	__ Assess patient ability to self manage condition __ Discuss & teach self management of condition(s) as needed __ Discuss target symptoms/side effects to monitor & what to do if they arise __ Discuss when PCP should be called __ Discuss pain mgt __ Discuss constipation __ Other	__ Assess adequacy of support system and need for ongoing case management __ Connect patient to necessary community resources __ Connect patient with KP services (specify: _____ Case Referred to: ___SCM ___TCM ___HH ___HO/PC ___PCP __ Other

Figure. Intervention activities checklist.
Note. MR = medical record; PCP = primary care physician; KP = the managed care medical center; SCM = senior care management; TCM = telephone care management; HH = home health care; HO/PC = hospice/palliative care.

Figure 6. Intervention activities checklist.
Reprinted from: From hospital to home: a brief nurse practitioner intervention for vulnerable older adults. *Journal of gerontological nursing, 38(3),* 40-50 by S. Enguidanos et al., 2012. Reprinted with permission.

In Robles et al. (2011) study they added an NP to a busy surgical inpatient service to improve patient care after discharge and reported a 52% decrease in unnecessary ED presentations in a pre and post-study design. They stated the NP "would call in prescriptions or recommend over the counter medications for symptoms like constipation or gastroesophageal reflux…also able to address needs for pain medication refills without physician involvement" (p. 715). This activity contributed to decreased ED visits as without the NP, patients had no clear contact and would often present for minor ailments such as constipation (Robles et al., 2011). The scope of the NP enables them to prescribe and alter medications that can reduce hospital utilisation. The Regular Early Assessment Post-discharge (REAP) model, including specialist geriatrician and NP working in partnership to visit nursing home patients, included a focus on medication management (Cordato et al., 2018). Out of 97 treatment recommendations made by the REAP team to primary care physicians, 58 of those were for medication alterations (Cordato et al., 2018). These included initiation, increase and cessation, and it was identified "alteration of medication prescription is likely to have been a key

contributory factor to REAP's efficacy" (Cordato et al., 2018, p. 276). In alignment with the importance of polypharmacy in the context of older adults, the majority of prescription changes were for reduction or cessation (Cordato et al., 2018). This finding is a crucial context-mechanism relationship between older adults and medication reconciliation due to the polypharmacy that older adults are more likely to experience. This provider quote from Takahashi et al. (2018) research also highlights the context of the home visit and medication management:

> They [NP] can go in their house and pull all their pill bottles and say, "These don't match". Or the patient may say, "Well I'm taking my husband's." Or, "I can only afford ___ and I'm only taking it every other day." Things that you wouldn't pick up on. (p. 20).

Having medication needs met as a part of a holistic assessment approach by the NP is associated with reduced hospital utilisation and is important in the context of polypharmacy for older adults and influenced by the home setting.

Nurse Practitioner led interventions that identify and address patients' psychosocial needs lead to decreased hospital readmissions. Deniger et al. (2015) concluded in their implications for practice that their transitional care programme "addresses not only the medical illness, but provides comprehensive management for patients and family members in the home setting, addressing geriatric syndromes and the psychosocial issues of aging" (p. 251). This quote is powerful in identifying the interaction between the two contextual factors of older adults and the home visit in enabling psychosocial issues to be addressed. In their study, out of the 26 readmissions eight were due to patients refusing higher levels of care or because of health literacy deficits, such as not accepting skilled nursing facility or in-home services, again identifying the critical role of addressing such needs (Deniger et al., 2015). In Takahashi et al. (2018) qualitative research the NP and providers reported the invaluable importance of seeing the patient in their own home to identify environmental and social needs. These needs were not necessarily related to the recent admission but were essential to their recovery.

Many studies highlight the complexity of social needs that older adults face, mainly due to declining physical and cognitive function and limited access to supports and financial challenges. To meet these needs of older adults, some of the models incorporated dedicated social support in partnership with the NP and were successful in meeting their needs. The transitional care programme developed by Lovelace et al. (2016) for

veterans changed their model after implementation to include a licensed clinical social worker after identifying the unmet psychosocial needs that were present for this high-risk population. The social worker connected patients to social services and addressed unexpected needs. The home transitions model by Bellon et al. (2019) used a multidisciplinary approach with an NP and social worker in a multimodal service. The role of the social worker was to identify "social needs and incorporate them into the care plan…assist with nutrition, activities of daily living (ADLs), and financial problems" (Bellon et al., 2019, p. 159). They found this model to be effective in reducing 30 and 90-day readmission rates for patients at medium risk of readmission. For those at high risk, there was only a reduction in 90-day readmission which may indicate the long term demands of chronic illness for this group outweighs the benefit of meeting psychosocial needs (Bellon et al., 2019). Therefore these patients may require a higher intensity model. Hendrix et al. (2013) model included both a social worker and occupational therapist who home visit the patient when identified by the NP. However, there was no mention of the specific role of the social worker and what needs they met. Although the literature often included social needs and having social workers in their model, there was little discussion to identify the mechanism and contribution of this in decreasing readmissions. It did seem to be an element of the holistic approach and of importance to older patients due to their social isolation and need of other services to remain independent at home.

Grounded in Nursing Philosophy

Table 5. Context-mechanism-outcome for grounded in nursing philosophy

Context	Mechanism	Outcome
• Interventions delivered with nursing philosophy of care	• Comprehensive set of interventions tailored to meet patient needs	• Reduced readmission to hospital

Nurse Practitioners utilise their nursing knowledge and philosophy of care when delivering programmes that emphasise individualised patient care, tailoring of interventions, partnership, relationship building, and seeing beyond the physical person. This theme is not immediately visible in the results of studies but is synthesised from conclusions and underpins the contribution of the models being NP led, rather than physician led. The subthemes which helped to construct this theme included patient-centred and individualised care, competence in geriatric care, the setting of the home, nursing philosophy and comprehensive interventions. This theme is about the context required for the mechanisms to achieve reduced readmissions; it is the ingredient needed to trigger the success of NP interventions. This theme is often referred to as the 'art' of nursing as opposed to science and supports the importance of NPs in the role of reducing hospital readmissions for older adults.

Individualising and tailoring approaches is an example of how NPs utilise their inherent nursing capabilities to help achieve successful models of transitional care. Smith et al. (2016) conclude that before their model "there was a one-size-fits-all approach, where all patients were discharged with a multitude of externally contracted services (physical/occupational therapy, home nursing), which may provide fragmented or unnecessary care" (p. 315). They go on to explain that the NP can adjust the plan of care in the home and collaborate with primary care to achieve tailored patient and caregiver goals (Smith et al., 2016). The NP home visits include focused clinical examination, clinical progress, medication reconciliation, disease management and education, follow

up labs, teaching appropriate use of devices and addressing concerns (Smith et al., 2016). This description begins to articulate the multi-skilled, patient-centred profession required to undertake such a variety of roles in one home visit. Sanon et al. (2019) description of the NP role in their geriatric ED model also highlights the broad multivariate role of NP that requires a flexible, responsive professional to be able to respond to a variety of patient clinical, educational, social and spiritual needs:

> Comprehensive Geriatric Assessments: cognitive, functional, behavioral, nutritional, incontinence, medication management, pain management, vision and hearing, healthcare access, discharge planning, advanced care planning, social support to identify high-risk patients and provide support for social and functional needs. Care Transition Discharge follow up phone call: reviewed clinical status and discharge instructions, medications, knowledge of red flags, coordinated follow up appointments to ensure safe care transitions (p. 24).

Although this may appear as a list of duties, it helps to construct the skills and approach the NP requires to be able to achieve this. The completion of such tasks would not be possible without exceptional relationship building, understanding of a person and their preferences and involvement of the family. This finding supports the notion that the foundation of holistic patient-tailored nursing care is critical to such a role.

The need for developing an academic programme for the rural NP bringing together disciplines of gerontology, nursing, community health and public health is identified by Weil et al. (2018). This need is due to rural older adults being at risk of poor health outcomes due to a lack of professionals trained in geriatrics, and the difficulty older adults face when accessing appropriate health care (Weil et al., 2018). A graduate NP from the programme talked about her experience of diagnosing a rural older adult with heart disease "I spent 30 minutes asking him what was important to him and finding out what activities, he knew he could be successful in… Learning about a different way of approaching patients and understanding what their motivations are has helped me" (p. 239). This quote from an NP highlights the approach NPs undertake with patients using empathetic listening, motivational coaching, and tailoring the approach based on patient needs. This study highlights the successful strategy of an NP-specific programme to develop an NP with competence in geriatric care in a rural setting. Arbaje et al. (2010) also emphasise the importance of expertise in geriatric care required for older adults, and in their model the geriatric NP "also provided ongoing nursing staff education focused on identification and management of geriatric syndromes" (p. 365). They

suggest that “models that incorporate hospital staff education about geriatric syndromes provide another potential mechanism for leveraging limited geriatric medicine expertise, thereby enhancing the geriatric competence of the workforce” (p. 369). Having nursing staff competent in geriatric care will improve outcomes and the NP role in upskilling others is important in this.

It is difficult to describe in a list what it is beyond the clinical tasks the NP undertakes that supports the tailoring of interventions. Still, it is implied in conclusions and qualitative feedback. Robles et al. (2011), in their study, added an NP to a surgical service for discharge planning and outpatient visits and found that there was an increase in discharge services arranged post-operatively. These services included nursing, physical therapy and occupational therapy and “may have been responsible partially for the decrease in ER visits” (Robles et al., 2011, p. 715). This finding highlights the underlying skills of the NP in being able to identify broader needs that will support patients to manage at home. Jones, DeCherrie, et al. (2017) found in their study of home-based primary care patients a statistically significant reduction in hospitalisations and reported: “eight of 13 physicians reported feeling “much” or “somewhat” less burned out by their work as a direct result of co-management” (p. 254). The NP role focused on “symptom management, medication management, quality of life improvement, and care coordination and transitions and…primary point of contact for the patient for all clinical care” (Jones, DeCherrie, et al., 2017, p. 251). This quote highlights the multifaceted role of the NP and the burden this relieves off the medical physician. As well as improving the rate of readmissions, it indicates what the NP can achieve using their nursing actions. Another study that highlights the different elements of care the NP can provide to patients is Cordato et al. (2018) who trialled a Regular Early Post Discharge (REAP) protocol for nursing homes delivered by geriatricians and geriatric NPs. There were seven REAP recommendations made for adjustment of nursing procedures or environmental factors, including falls prevention strategies which highlight the input of the NP in post-discharge care (Cordato et al., 2018). Only three of these were implemented by their usual primary care physician or nursing home and may reflect the lack of importance medical physicians place on nursing interventions (Cordato et al., 2018).

Cordato et al. (2018) also found advanced care directives implemented in twice as many REAP patients as control. This finding may reflect the approach the NP brought as these

discussions require the building of a relationship, trust, involvement of family and consideration of the whole patient, including their spiritual needs. Another explanation is the time commitment required for these conversations which is challenging for PCPs and not remunerated as such (Cordato et al., 2018). In the multidisciplinary team transition programme by Bellon et al. (2019), the NP was assigned to advanced care planning alongside determining goals of care and administering the individualised patient plan. This role of the NP often resulted "in referrals to palliative and supportive services at the end of the home health episode." (Bellon et al., 2019, p. 159). This finding supports the theory that NPs are efficient in leading advanced care discussions with older adults, likely due to their grounding in nursing philosophy.

The characteristics of NPs being kind, patient and knowledgeable was identified in Takahashi et al. (2018) qualitative study as a theme and indicated the underlying nursing qualities of NPs that contribute to the effectiveness of their role in transitional care. This description of the NP characteristics theme supports the philosophy of nursing, which drives NP care; "Whole person – talk of how the NP addresses issues other than the cause of the hospitalisation. What the NP does that affects other areas of the patient's care." (p. 20). Identification and addressing of wider needs, beyond the patient's physical ailments, reflects the nursing philosophy used in NP roles. Takahashi et al. (2018) identified in their findings, "They [patients'] described this care as going beyond the post-hospital recovery and addressing other needs, both medical and nonmedical." (p. 21). It is the cumulative effect of such statements from patients that help to paint a theme beyond just providing a set of interventions to help patients manage at home, but illuminates that the NP uses their relationship skills to support patients beyond their clinical need. Coppa et al. (2018) also allude to the 'going beyond' approach of the NP in the discussion of their transitional care model; "Not evident by reading statistics was the depth of care that the NPs were able to deliver in patients' homes" (p. 342).

A scoping review by Chavez, Dwyer, and Ramelet (2018) of NP care in geriatric settings found that "NPs have consistently produced equivalent or better outcomes compared to physician care alone/usual care across the five identified settings [primary care, home care, long-term care, acute care and transitional care]" (p. 61). The quote from the discussion of their findings highlights what it is that sets the NP apart from physician care and helps to explain why NPs are effective in transitional care models:

> A notable finding was the proportion of studies reporting enhanced health indices by NP care, including functional status, symptom screening, medication review, advanced directives, and other specific clinical outcomes. This is perhaps not surprising as these draw on nursing's foundation of preventive care, health promotion and patient advocacy (Chavez et al., 2018, p. 72).

This finding is further supported by Buerhaus et al. (2018) who examined the difference in the quality of care between NP, physician, and a combination of these in the primary care setting. They found that patients with disability, those dually eligible for Medicare and Medicaid (indicator of low income and complex needs) and those in rural areas were more likely to receive care from primary care NPs as opposed to primary care physicians (Buerhaus et al., 2018). These patients have lower rates of hospital utilisation, including preventable admissions or inappropriate ED visits. Buerhaus et al. (2018, p. 487) suggest "These findings may reflect differences in practice styles and philosophies of care relative to PCMDs [primary care medical doctors], and to differences in patient characteristics and preferences for provider type". This quote alludes to the care provided by NPs being based on nursing foundations of caring for the whole person and their broader needs, as opposed to meeting the needs of disease-specific ailments. Interestingly, Buerhaus et al. (2018) found patients attributed to physicians were more likely to have received disease specific interventions for diabetes, coronary artery disease and chronic obstructive pulmonary disease care and cancer screening. This finding again may reflect that physicians are more likely to focus on disease-specific care rather than the whole person, which is not suited to older adults who are likely to have co-morbidities and broader health needs.

Summary of Findings

NP interventions can decrease readmissions in older adults by increasing patients' capacity to self-manage through education, reassurance, escalation pathways and caregiver involvement supported by the provision of these in the home setting. The evidence from literature confirms that the NP can contribute to reducing hospital readmissions, particularly in the transitional care setting, through their approach to supporting patients to manage at home and ultimately improve self-efficacy. Self-efficacy is important for older adults as it indicates increased resilience and can contribute to better overall health. The findings from this research show that NPs support older adults to manage their health by including education, often about

symptom management and exacerbation, and using an approach that provides for family and caregivers.

It is evident across the literature that the context of the follow-up home visits provides a vital opportunity to support patients to manage at home. The home visit enables greater insight into what the patient and their family/caregiver needs are by observation, something that is not possible with a clinic visit. The building of rapport, trust and therapeutic relationship between NP and the patient in the home is evident as a supporting factor that enhanced NP interventions, such as adequate education and functional/cognitive assessment. The home visit also enables the NP to assess medication issues better and provide effective medication education. NPs can better support patients with their medications by being able to view their pillboxes, address patient concerns, identify errors in prescriptions, and understand adverse effects. The home setting is an important 'context' factor in the CMO configuration and supports patients to manage their medications better. Patients described feeling more comfortable in the home setting, and this enabled them to absorb the education provided by the NP better than in the hospital setting (Takahashi et al., 2018). Reassurance, accessibility, education, and caregiver involvement were enhanced in the home visits and vital to the success of interventions in decreasing readmissions.

This research has uncovered that there is not a defined set of interventions that NPs undertake in their role to decrease readmissions. Still, more importantly, it is about the multifaceted approach and the context of programme delivery. There is not one subset of NP activities that are effective; instead, it seems the breadth and depth of care the NP provides to meet the varying needs of older adults is more important. The description of activities of the NP in the transitional care models highlights the multi-skilled professional required to be competent in this scope of practice. Effective models have NPs as the coordinator of care, and importantly they are situated within a collaborative IDT of professions from hospital to community. The NP identifies the needs of patients and either meet the needs themselves or calls upon others, such as social workers, pharmacists, and primary care physicians, to support a team approach for the older adult. The skills of the NP in embracing a holistic approach when working with patients and whānau is a crucial finding of this realist synthesis.

The foundation of nursing philosophy, or the art of nursing, appears critical across the literature as to why NPs are effective in decreasing readmissions. This theme developed from a set of subthemes that explained the nursing contributions of the NP role in successfully reducing readmissions in the different models across the literature. These contributions include the patient-centred approach, the NP as the coordinator and communicator, and the nursing qualities of kindness, compassion, and empathy. The depth of this theme is often identified in qualitative literature or the conclusions or discussions of the researcher, or by making sense of quantitative findings. This is an important finding as it defines the critical element that the nursing background brings to the role of the NP and its effectiveness. In the RE framework, the mechanism of patient needs being met through a patient-tailored approach is triggered by the context of nursing philosophy in the delivery. Westhorp et al. (2011) explain that "context refers to features of participants, organisation, staffing, history, culture, beliefs, etc. that are required to 'fire' the mechanism (or which prevent intended mechanisms from firing)." (p. 9). The context can refer to the client group which the intervention works for, in this research the older adult, or it may refer to attributes of workers, the nursing philosophy (Westhorp et al., 2011). The theme of nursing philosophy in the delivery of NP transitional care is identified across the literature as important in 'firing' the mechanism of patients having their needs met and improving their self-efficacy.

Chapter five: Discussion

This realist synthesis set out to understand how NP interventions work to decrease readmissions in older adults and in what contexts they work successfully. A structured search strategy of five reputable databases was used in the method and resulted in 29 included articles. Rigour and relevance of the articles were considered using the MMAT appraisal tool, and this is detailed in Appendix 1. Relevant data extracted from these articles underwent thematic analysis guided by Braun and Clarke (2012). The findings and programme theory have uncovered exciting results around the dynamic relationships between contexts, mechanisms, and achievement of outcomes. The application of the RE methodology enables the complexities of real-world interventions to be deconstructed and has uncovered the underlying mechanisms and contributing factors to successful outcomes. This choice of methodology allows the researcher to make valid and useful recommendations to policymakers and planners, included in this discussion.

The findings show that comprehensive NP interventions meet the holistic needs of older adults through care delivered in the home setting, an interdisciplinary collaborative approach, and nursing philosophy. These collectively contribute to reducing readmission in older adults. The first theme detailed in the findings chapter highlights the importance of the NP role in addressing self-efficacy for the patient leveraged by the home setting. The findings suggest the NP improves patient self-efficacy by providing reassurance, resolving patient concerns, addressing symptom exacerbation, educating, and communicating. The setting of the home and the involvement of caregivers and family were critical contextual factors to this theme. This finding will be further interpreted in the discussion to understand what the causal link is between NP led interventions improving self-efficacy and how this results in reduced readmissions. Importantly, the differentiation between self-care, self-management and self-efficacy will be explored and further refined using literature and comparing to known theories.

The second theme of this research identified that the NP supported reducing readmissions by meeting the holistic needs of patients through coordinated interdisciplinary care. Older adults are highly vulnerable to readmission due to declining functional and cognitive ability, polypharmacy, co-morbidities and frailty, and research suggests they receive sub-optimal care during hospitalisation and transition

between settings (Arbaje et al., 2010; Deniger et al., 2015). The role of the NP as the coordinator of care is essential alongside the NP addressing holistic needs through thorough assessments, older adult competence, communication tools, medication management, and collaborative professional relationships. The role of the IDT in supporting NP led interventions will be further explored in the discussion chapter to provide insight into a rural NP model of care. Acknowledging the challenges of rural healthcare is essential in studying the NP positioned within an IDT to provide care to the older adult.

A contextual finding underpinning all the themes is the NP delivering care grounded in the philosophy of nursing. This theme includes the attributes NPs bring to the model of care such as being empathetic, patient-centred, comprehensive, and going beyond expectations. This finding in this realist synthesis study supports the role of NP in transitional care settings to reduce readmissions. Understanding the development of the nurse to NP and how the theoretical basis of nursing is maintained is vital in this theme and will be evaluated further in the discussion. The discussion will analyse the thematic findings and delve into the meaning, importance and relevance of these themes. The discussion includes a summary of the theoretical framework, critique and comparison of findings, limitations and strengths of this research, and recommendations.

Theoretical framework

By combining the findings and CMO configurations, this realist synthesis has uncovered the middle range programme theory displayed in Figure 7. This framework is a visual representation of the findings and illustrates the causal links between the three themes answering the research question. The following section will further unravel and give meaning to the relationships shown in this theoretical framework.

What works: NP led transitional care within a collaborative model.

For whom: Older patients with readmission risk factors and chronic medical conditions.

In what context: Delivered in the home setting within an interdisciplinary approach supported by electronic communication tools.

And why: NP's deliver comprehensive care using their nursing foundation that meets the holistic needs of patients improving their self-efficacy and leading to improved health behaviour and capability to manage their dynamic health needs at home.

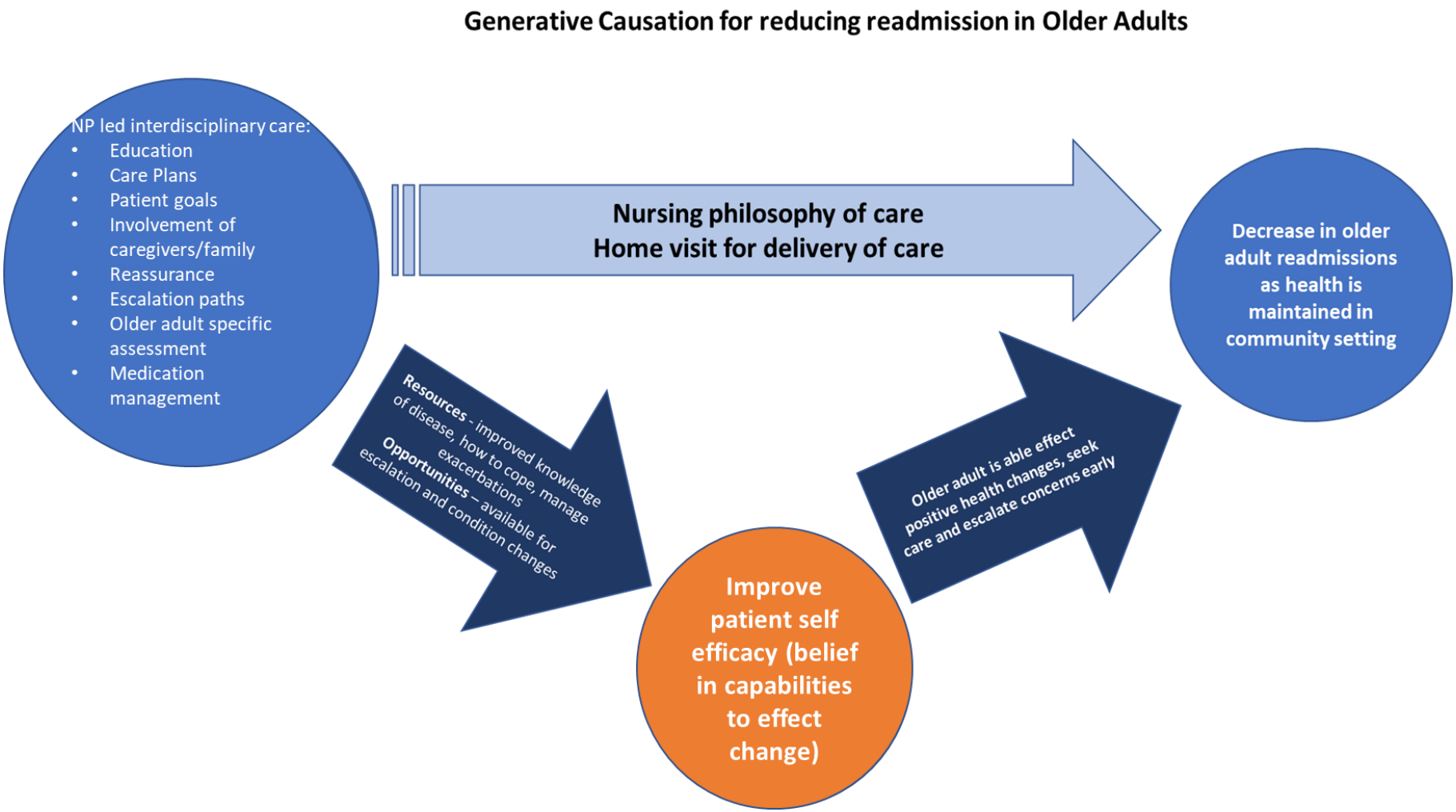


Figure 7. Generative causation for reducing readmissions in older adults

Discussion of the Theoretical Framework

The mechanism that is central to the theoretical framework (Figure 7) is the NP role in improving patient self-efficacy. The findings identified the aspects of the NP role that helps patients achieve this (listed under NP led interdisciplinary care in Figure 7) and the resulting behaviour of patients that lead to reduced readmission. This discussion will further explore the underlying relationships between the NP inputs and achieving reduced readmissions, focusing on the contextual considerations and applying this to the rural setting.

A critical relationship to distinguish in the findings is between self-care, self-management, and self-efficacy. The findings included a variety of terms such as participation in care, patient care goals, care planning, care models, and self-coaching, that fit within these three concepts (Arbaje et al., 2010; Chavez et al., 2018; Coleman & Boult, 2003; Condon et al., 2016; Coppa et al., 2018; Deniger et al., 2015; Dizon & Reinking, 2017; Echeverry et al., 2015; Enguidanos et al., 2012; Kutzleb, 2015; Leppin et al., 2014; Lovelace et al., 2016; Mora et al., 2017). A vital consideration for the older population is their physical and cognitive ability to be able to perform self-care tasks. Vidán et al. (2019), in their research, found that most hospitalised older adults could not perform essential self-care tasks for heart failure. These self-care tasks included taking their weight and identifying diuretic medication, and low self-care ability was associated with increased mortality (Vidán et al., 2019). Although Vidán et al. (2019) found that low self-care was associated with increased mortality, their findings did not support an association between observed self-care ability and readmission risk. This finding is an important consideration when this realist synthesis suggests that improved self-efficacy does reduce readmissions. The authors state that the lack of correlation with readmission risk could be due to the complexity of factors that impact on readmissions, not just self-care alone (Vidán et al., 2019). What is critical here in comparing the findings of Vidán et al. (2019) and the findings of this realist synthesis is that self-care differs from self-efficacy. Self-care was tested in this study by evaluating the patient's ability to complete self-care task such as weighing themselves, identifying medications, identifying low salt foods, and assessing oedema (Vidán et al., 2019). Self-efficacy is a much broader concept and relates to an individuals' belief in their capacity to perform a task and achieve the desired result (Bandura, 2004). The difference between these concepts is that self-care is being able to complete a task, whereas self-

efficacy is more related to cognitive and psychological processes. For example, if a patient can correctly identify low salt foods, this does not correlate to a person's motivation to choose to eat low salt foods. If a person has confidence in their ability to eat a low salt diet, this is more likely to influence their behaviour according to Bandura's theory of self-efficacy outlined below. The findings of Vidán et al. (2019) do support the educative and coaching role of the NP in transitional care to support the older adult to successfully perform self-care tasks and address the other complex drivers of readmission.

Another important concept related to self-care and self-efficacy that contributes to the NP role in reducing readmissions is self-management. A literature review by Toback and Clark (2017) identified the factors influencing self-management in heart failure patients and supports the relationship between self-efficacy and self-management. Toback and Clark (2017) describe self-efficacy as an internal contributing factor to self-management that refers to a patients' perception of their ability to change situations to achieve desired outcomes. By improving self-efficacy, patients can make lifestyle improvements, engage better in care and improve overall outcomes (Toback & Clark, 2017). Motivation and intent are internal factors that need to be engaged to enable health behaviour change for patients (Toback & Clark, 2017). This link identifies the relationship of self-efficacy and achieving self-management through behaviour change; for patient's behaviour change to be triggered, they must be motivated and believe in their ability to make a change. These findings support the theory identified in this realist synthesis, that NP interventions improve patients' self-efficacy through the provision of supports such as education, symptom management, and reassurance. The identification of escalation points can enable patients to make health behaviour changes which ultimately decreases unnecessary readmissions.

The central mechanism of improved self-efficacy in the older adult and how this results in changed behaviour to reduce readmissions will be explored with the 'Social cognitive theory' framework by Bandura (2004). This theoretical framework helps to understand the relationship between what the NP offers and how this causes a reduction in readmissions, termed generative causation. The range of interventions the NP provides to older patients improves self-efficacy and adherence to self-management, ultimately improving health outcomes post-discharge. Referring to the seminal paper of Bandura (2004) where he applies his framework of social cognitive theory specifically to health

promotion and health outcomes, it appears that this framework supports the CMO programme theory found in this realist synthesis. Social cognitive theory is "a core set of determinants, the mechanism through which they work, and the optimal ways of translating this knowledge into effective health practices." (Bandura, 2004, p. 144). The core determinants include knowledge, perceived self-efficacy, outcome expectations, health goals, perceived facilitators, and impediments to change (Bandura, 2004). Interestingly, these align with the NP interventions identified in this realist synthesis that contribute to reducing readmissions. For example, the role of the NP as the educator, supporting symptom management, providing reassurance, improving self-efficacy, supporting patients to set goals, and reducing the burden of their caregivers. These all fit into the core determinants outlined by Bandura (2004) as required for enabling patients to translate knowledge into improved health outcomes.

Self-efficacy is required so that people believe they can use their actions to achieve the desired effect, or they will lack incentive or perseverance (Bandura, 2004). Bandura (2004) explains three levels within self-efficacy that indicate participants' readiness to change:

1. People have a high sense of self-efficacy and can accomplish changes with minimal guidance.
2. People have self-doubts and may give up quickly in the face of challenges and require guidance and support often through regular phone consult or tailored instructions.
3. In this group, people believe their habits are beyond their control, and they require structured intensive programmes to build their self-belief.

This framework could provide better guidance for the different intensity models of NP led transitional care to help resource allocation. This realist synthesis found readmission risk factors, and sometimes computerised risk scores were used in tailoring the intensity of the programme to older patients. Perhaps the use of the above criteria in identifying a patient's level of self-efficacy would be a better indicator of tailoring the NP model. In the realist synthesis findings, it was the setting of care at home that helped older patients achieve self-efficacy. These three self-efficacy levels of Bandura (2004) could be applied to identify patients to receive home-visits (level 3) and those in level two only require regular phone consult with NP.

Self-management is also identified by Bandura (2004) as a critical element to improving health outcomes as patients need to monitor their health behaviour and set goals as motivation. Self-management fits into the theoretical framework (Figure 7) of this realist synthesis between self-efficacy and reducing readmissions; 'Older adults can enact positive health changes, seek care and escalate concerns early'. Self-management that is tailored to individualised needs and provides personalised guidance can help patients exercise control over their change (Bandura, 2004). This relationship supports the findings in this realist synthesis that the home setting enables the NP to individualise the care. By being able to see the patient in their home environment, the NP can better determine what the patient needs to support their health goals. In the qualitative feedback of Takahashi et al. (2018) research, NPs spoke about the invaluable experience of being able to see the patients in their own home and identify social, environmental and medical factors that were important to their recovery. The theme of care based on nursing philosophy also supports this relationship identified by Bandura (2004) of personalised guidance to encourage patients to self-manage. The findings from this realist synthesis show that NPs delivered care differently to their physician colleagues, and it was more personalised, intensive, and holistic.

The NP role in supporting patients to enact self-care outlined in the theoretical framework (Figure 7) includes the care activities in the left circle that help the older adult to improve disease knowledge, coping skills and manage exacerbations. The cumulative complexity model of Leppin et al. (2014) further supports the relationship of patient capacity to enact self-care and their outcomes post-discharge. Figure 8 outlines the framework hypothesised by Leppin et al. (2014) that depicts the relationship between patient workload and capacity for enacting self-care. For example, heart failure patients have a high treatment burden with medication and weight/diet requirements and a low capacity for self-care following hospitalisation due to psychological and physiological vulnerability. Leppin et al. (2014) tested this framework by looking at transitional care interventions and how the activities impacted workload and capacity. Their results showed that interventions that increased patient capacity to self-care were associated with effective models and all, but one model, included home visits (Leppin et al., 2014). However, they were unable to unequivocally support the relationship between interventions aimed at decreasing workload (Leppin et al., 2014). The finding of self-efficacy in this realist synthesis is a possible explanation for this; that older adults must believe in their ability to effect changes to achieve their health goals.

Reducing the burden of patient workload will not be effective unless a patient's self-efficacy is improved. Our findings show that having the NP provide personalised support in a home visit model, including education, medication management, goal setting, and reassurance, supports older adults to achieve self-efficacy increasing their capacity to self-care.

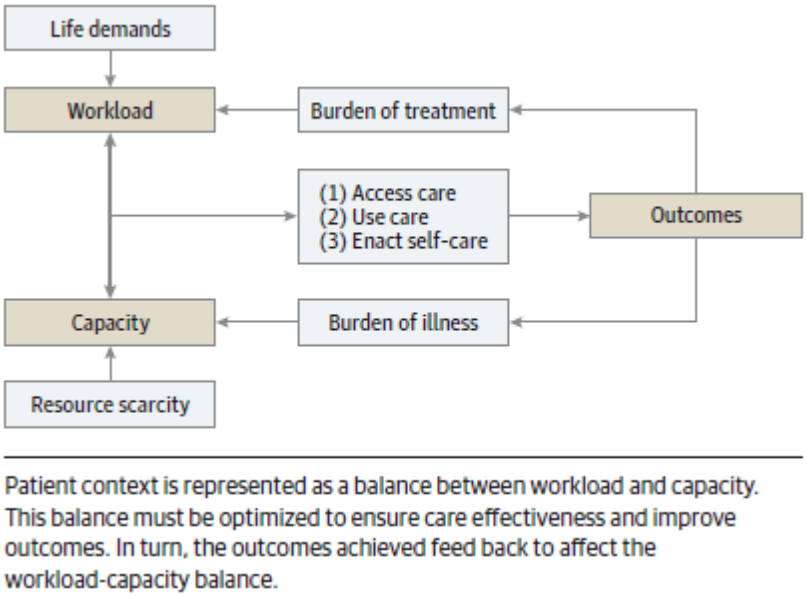


Figure 8. The cumulative complexity model
Reprinted from: Preventing 30-day hospital readmissions: a systematic review and meta-analysis of randomized trials. *JAMA internal medicine,* 174(7), 1095-1107 by A. Leppin et al., 2014. Reprinted with permission.

Orem's nursing theory of self-care deficit developed between 1959 and 2001 highlights the relationship between self-care and the provision of nursing interventions (Hartweg, 2015). Orem's theory aligns to the framework of Leppin who relates patient outcomes to their ability to enact self-care but goes beyond this, describing how nurses meet self-care deficit. Orem's nursing theory helps to support the relationship identified in the first theme between NP interventions provided in the home and achieving self-efficacy to reduce readmissions. This theory attempts to explain why people need nurses related to requirements of knowing, deciding and producing care to self (Hartweg, 2015). The 'knowing' aspect refers to patients having values and capabilities to learn, thus directly corresponding back to the findings of self-efficacy as patient's require self-efficacy to be able to have the readiness to learn. The 'producing' of care is about regulating and managing care. The theoretical basis is that nursing care is required when there is an inequity between patient's self-care capabilities and care demands producing a self-care

deficit (Hartweg, 2015). Included in this theory is the concept of dependent caregiver deficit, which aligns to findings of this realist synthesis as 'caregiver demand', an important consideration for older adults (Hartweg, 2015). 'Nursing systems' are used to describe a set of actions performed with an intent (Hartweg, 2015). The RE framework would label these as the resources provided for the mechanism to be achieved; in this research, the NP interventions. There are three types of subsystems described in Orem's theory: interpersonal (effective therapeutic relationships), social/contractual (agreement with patient and others to determine self-care demand) and professional-technological (actions and operations) (Hartweg, 2015).

Orem's interpersonal subsystem identifies the nurse entering and maintaining effective relationships with the patient and family/caregiver as a necessary component for care (Hartweg, 2015). This theory supports the causal link found in this realist synthesis between the home setting and effective care to achieve reduced readmission. The theoretical framework (Figure 7) of this realist synthesis highlights the context of care in the home with an arrow across the top highlighting that it underpins the model of care and mechanism of patient self-efficacy. Our findings show that the home setting as the environment of care, supports the building of effective therapeutic relationships as patients feel more relaxed, comfortable and have freedom to talk about things on their terms. A study by Zrínyi and Zékányné (2007) supports the relationship between the home setting and self-care. Their research into whether nursing care increases patient self-care agency between hospital admission and discharge found no difference and the authors refers to the acute care not being the appropriate setting for improving self-care agency (Zrínyi & Zékányné, 2007). This finding supports that the home setting where patients can better engage in therapeutic relationships is better suited for nurses to help patients to improve self-care agency.

A Swedish qualitative study that examined patients' experience of home-care nursing found three themes: to be a person, to maintain self-esteem and to have trust (Holmberg, Valmari, & Lundgren, 2012). 'Participating in fellowship' was identified as a subtheme and patients described wanting to be involved in nursing tasks and appreciated having their care explained to them (Holmberg et al., 2012). By receiving care at home, therapeutic relationships are developed that support patient's involvement in care, ultimately improving self-efficacy. Interestingly, the patients denied the relationship between nurse and patient as guest and host and instead saw the nurse as attending to

fulfil a duty (Holmberg et al., 2012). The patients stressed the need for continuity of nurses coming into the home and preferred home-care nursing as they could maintain their dignity and self-determination (Holmberg et al., 2012). Self-determination directly relates to self-efficacy as it describes a persons' motivation to achieve goals, required for self-efficacy. These findings of Holmberg et al. (2012) give further insight into how the setting of care in the home differs to acute care setting from a patient perspective.

The professional-technological sub-system described in Orem's theory of self-care deficit directly relates to the second theme identified in this realist synthesis that the NP supports the reduction of readmissions by meeting patient needs. This finding is highlighted in the theoretical framework (Figure 7) between the resources and opportunities the NP led care provides to the older adult. This subsystem is considered the 'process of nursing' collecting data about self-care requisites and meeting these in either a wholly compensatory, partly compensatory or supportive-educative approach (Hartweg, 2015). A limitation of Orem's theory is that it does not consider the place of the nurse in the IDT in meeting self-care requisites. The findings of this realist synthesis identified that NP led care that was delivered within an IDT approach supported reducing readmissions by meeting the varying needs of older adults. Perhaps the IDT meets other needs outside of self-care deficit that is the focus of Orem's theory. The NP interventions provided to reduce readmission would be classified under the supportive-educative nursing system in Orem's theory as they help patients to develop self-care agency. Tribble et al. (2008) term these activities as 'empowerment interventions' that enhance patients' potential to learn to make sound decisions and increase control over their life. The limitation of Orem's self-care deficit theory is the lack of importance on the relationship between self-care and self-management. It seems that self-care would fit in a continuum before self-management as it is the concept of patients being able to enact care required to cope with their condition. Self-management, however, relates to a patient's ability to set and maintain health, often associated with long term conditions. These descriptions suggest that the NP role has the most influence on the patient's self-care agency, whereas the patient has the most control over their self-management. The use of empowerment interventions, as outlined by Tribble et al. (2008), by the NP can support enablement of self-management and self-efficacy as they focus on the patient's strengths, capabilities and see the patient as a possessor of knowledge rather than a receiver. Empowering intervention aligns to the theme of delivery interventions

underpinned by nursing philosophy and leveraging this off the home setting to minimise the power imbalance of nurse and patient.

Much of the literature regarding self-care, self-management and self-efficacy is on heart failure patients because the care requirements for patients with heart failure are resource-intensive and dynamic. Findings of a literature review by Toukhsati, Jaarsma, Babu, Driscoll, and Hare (2019) were not able to effectively show the link between specific change agents to self-care outcomes suggesting the multifactorial mechanism in achieving self-care outcomes. They found all self-care interventions included disease-specific information and importance of self-care behaviours, and most included action planning and overcoming challenges (Toukhsati et al., 2019). This finding aligns to the effective NP interventions in this realist synthesis which included education, compliance, goal setting and monitoring symptoms. Results of a quasi-experimental study of a nurse-led educational programme for inpatient heart failure patients also support the theory that mechanisms in achieving self-care are multifactorial beyond just education. Although their study found a statistically significant increase in self-care confidence from their educational programme, there was no change in readmission rate (Awoke, Baptiste, Davidson, Roberts, & Dennison-Himmelfarb, 2019). This study had limitations in the sample size and design as it was a non-randomised sample. However, it does highlight the importance of education in self-care and that reducing readmissions requires more than knowledge.

The theoretical framework (Figure 7) of this realist synthesis includes reassurance, and this supports patients to achieve self-efficacy through the availability of the NP and escalation pathway. The mixed methods research of Xu et al. (2018) explores the relationship between self-care, rehospitalisation and delay in seeking medical assistance and supports this relationship of reassurance and self-efficacy. They explain that help-seeking is a form of self-care behaviour and can prevent readmission if the decision is made early (Xu et al., 2018). Xu et al. (2018) found that there was a significant association between patients with depressive symptoms (as measured by the Center for Epidemiologic Studies-10) and delayed decision making in seeking help. Patients with depressive symptoms felt their condition was beyond their control; “if I’m gonna feel like this every day of my life like I’m hungover, I’ve got the flu, and I’m dying, you know nobody can fix me what’s the sense of being here…my body is screaming in agony.” (Xu et al., 2018, p. 35). Patients who had high self-care scores and not

readmitted within 30 days had " a clear pattern of behavior characterised by being proactive in seeking outpatient medical attention from healthcare providers with whom they had established relationships" (Xu et al., 2018, p. 36). This finding aligns to this realist synthesis that identified reassurance as a mechanism for reducing readmissions and supports the importance of the therapeutic relationship between the NP and patient. This quote also alludes to the necessity of the NP as opposed to RN scope as they have the knowledge, skills and ability to meet the advanced level of health care the patients seek. The care might be adjusting medications or ordering diagnostic testing to diagnose new symptoms. The patient feels further reassurance when they can have their needs met efficiently, rather than having to wait for a nurse to contact a doctor or having to make an appointment and wait for a primary care physician.

Another important finding of Xu et al. (2018) is that they identify the benefit from care that address emotional needs and coping requirements, such as palliative care, because of patients' feelings of hopelessness and inability to prevent disease progression. The findings of this realist synthesis highlighted the role NPs play in palliative care needs for patients in their transition period. The NP role in end-of-life care planning requires the development of therapeutic relationships with the older adult and drawing on the inherent nursing attributes. Palliative Care Nurses New Zealand (2014) stress the contribution nurses make to palliative care that requires skills to meet the physical, psychosocial, emotional, and spiritual needs of patients developed from their undergraduate nursing study. Nurse practitioners, through their practice and development from an RN to NP scope, further refine and develop their skills in meeting the spiritual and emotional needs of patients that are vital in advanced care planning.

The second theme of this realist synthesis emphasises the importance of the NP situated within an IDT that enables a collaborative approach for meeting the patient needs. A quality improvement study by Zozaya-Monohon and Corona (2019) that redesigned their model of care to introduce a nurse-led IDT in the primary care setting illustrates the successful approach of an NP led IDT. They found with the NP led IDT, the median readmission rate went from 28% to 13% (Zozaya-Monohon & Corona, 2019). The aspects they attributed to the success of their model of care included coordination amongst team members to execute the shared care plan, streamlining communication and shared problem-solving that valued the importance of all professionals and their contribution (Zozaya-Monohon & Corona, 2019). This realist synthesis found that the

NP role can support reducing readmission due to their coordination and communication function and removing the fragmentation of care between inpatient and outpatient settings. Research by Chang et al. (2018) into intensive primary care models for veterans to support reducing hospital utilisation also emphasise the interdisciplinary approach, including NP, in achieving these outcomes. The intensive primary care model included interdisciplinary care teams, home visits, comprehensive patient assessment, care coordination, case management and video conferencing (Chang et al., 2018). After 18 months of implementation, staff were surveyed on key features (Chang et al., 2018). The most highly rated features were the convening of IDT at least weekly to discuss care goals and treatment plans, conducting home visits and conducting physical, psychological, and social assessments. The following quote highlights the value of the IDT. "Primary care providers felt that they could manage most medical problems in the patient-centred medical home model, but they struggled with unresolved psychosocial and mental health barriers that prevent patients from engaging in their healthcare." (Chang et al., 2018, p. 235). Social workers feature in many of the NP led IDTs in transitional care and the benefit of them in meeting the broader needs of the patient that impacts on their ability to maintain health, are vital. The findings of Chang et al. (2018) support the results of this realist synthesis that the IDT approach helps reduce readmissions, reduces fragmentation and allows patients to achieve their goals and have their holistic needs met.

The role of a collaborative approach in NP led transitional care must be considered in the context of rural health setting as this poses challenges in the distance between services and professional isolation. In our local Thames-Coromandel setting, we deliver some outpatient clinics via telehealth services, one of which is an Infectious Disease clinic. This clinic is delivered via an IDT with the patient and physician at the rural outpatient clinic and specialist infectious disease physician, pharmacist, and nurse specialist in the tertiary hospital clinic. This mode of delivery would be recommended to support the interdisciplinary model of NP care and could be either a virtual patient consult or a virtual interdisciplinary patient discussion. A study by Moore et al. (2017) used a video link to connect rural providers with specialists at the academic medical centre to improve transitional care delivery and found these patients had a lower 30-day rehospitalisation rate than those without video IDT care. Patient reviews were conducted between rural doctors, nurses, occupational therapists, pharmacist, social workers, hospital facilitator and at times inpatient medical team and primary care

physician, and a note was saved in patients file for other providers involved in care (Moore et al., 2017). This model proved to be feasible and would be appropriate in our Thames-Coromandel rural setting to enable an NP led collaborative model of care.

The qualities and attributes that NPs bring from their nursing background are highlighted in the theoretical framework (Figure 7) in the top arrow signifying its importance across the mechanism of achieving reduced readmissions in older adults. Qualitative research by Dick and Frazier (2006) into the NP's perception of their care activities and outcomes, helps to highlight what it is about the nursing domain that enables patient needs to be met and promote self-efficacy. The NPs in this study described that they had a focus on the psychosocial and functional issues that impact on the patient, alongside their medical complaints (Dick & Frazier, 2006). "One of the biggest things that a nurse practitioner does versus a physician is you can look at the whole picture, not just what is their medical problem" (Dick & Frazier, 2006, p. 328). Another theme identified by the NPs was 'comprehensiveness'; that the whole person is taken into account in their home setting (Dick & Frazier, 2006). For example, an NP respondent explains their patient stated they were tired and the NP knew something was off and during her review realised the patient was missing her diuretic and on auscultation had crackles so restarted the diuretic immediately (Dick & Frazier, 2006). The qualitative feedback from NPs identifies the nursing qualities in their care including therapeutic relationship building, seeing the whole person, and being comprehensive, collaborating and coordinating (Dick & Frazier, 2006). These qualities connect to the positive outcomes NPs have for homebound patients

Local literature also confirms this relationship between nursing philosophy, NP role and improving outcomes. Carryer, Gardner, Dunn, and Gardner (2007) undertook an integrative review to understand the core role of the NP in Australia and New Zealand and reported three distinct components: dynamic practice, professional efficacy, and clinical leadership. The dynamic practice relates to clinical skills and knowledge but also working in both conventional and unconventional ways, determined by social and clinical context (Carryer et al., 2007). Within professional efficacy, NPs identified the centrality of nursing practice in their narratives and "described their role as characterised by the combination of an increased range of technical skills delivered within a nursing framework" (Carryer et al., 2007, p. 1822). This finding supports that

the nursing framework and qualities are integral to the NP scope and the way they carry out their role.

Also applicable to the local New Zealand setting is the qualities of Māori health models that NPs bring to the role from their nursing background. Māori health and models are included in undergraduate education and reinforced in nursing practice through the New Zealand Nursing Council competencies; competency 1.2 “Demonstrates the ability to apply the principles of Te Tiriti o Waitangi to nursing practice.” (Nursing Council of New Zealand, 2016, p. 10). A New Zealand study led by Midcentral DHB and THINK Hauora into the experience of long-term conditions identifies that Māori experience more self-care challenges than non-Māori and this is an essential consideration in the NP role in improving patient self-efficacy (Taylor & Budge, 2020). The four most common self-care challenges for Māori were pain, sleeping, being overweight and lack of money, signifying the holistic model of care required to support Māori and improve current inequities (Taylor & Budge, 2020). A report for the Ministry of Health by Cram (2014) found that more positions for Māori NP are needed within the workforce to improve Māori access to health care. The report acknowledges that establishing culturally responsive relationships between health workers and Māori facilitates Māori-centred clinical care and is the foundation of enhancing access (Cram, 2014). The innate strength of the nursing profession in developing therapeutic relationships to deliver personalised care to patients, whānau and caregivers delivered in the home setting, makes the NP role ideal for improving outcomes for Māori older adults.

Significant to consider in this research, that aims to understand how the NP role can deliver better outcomes for older adults in the rural setting, is the development of the rural NP role. Rural nurses have faced challenges in recognition of their practice and development pathways, and only recently in 2018, the NP scope included ‘generalist’ scope aligning to rural nurses. The challenges of rural nursing identified by Ross (2017) are:

1. Socio-economic deprivation
2. Geographical barriers and reduced transportation
3. Personal and professional isolation
4. Limited ongoing education
5. Lack of anonymity
6. Conflicting professional boundaries and role conflict

Often the role and scope of rural nurses are determined out of rural population need, and they do not specialise in a specific disease or discipline. In the research by Condon et al. (2016), that aimed to reduce readmissions with an NP led transitional stroke clinic for stroke or trans ischemic attack patients, they found the reduction in readmission rates was no longer effective at 90 days. The decrease in effectiveness was attributed to co-morbidity factors as these were found to be statistically associated with 90-day readmission (Condon et al., 2016). The reason for the NP model not being effective for those patients with co-morbidities could be that the model had a disease focus, resulting in care focused on stroke prevention disregarding their other chronic conditions. Also, the use of a lower intensity model with no home visits could have contributed to the reduced association at 90 days. These findings highlight that the rural NP role for older adults needs to be a generalist scope to address the needs of patients with co-morbidities, changing disease processes, and the varied population within rural settings.

Limitations and Strengths

The realist synthesis approach applied in this study to answer the research question is both a feature of the strength of this research and a limitation. The use of this approach has enabled the examination of complex interactions to make valid recommendations specifically about 'what works and why'. By applying this realist synthesis, we can understand the importance of contextual drivers, such as care within the home and the mechanism of why this works to decrease readmissions. A strength of this approach is being able to understand that the NP interventions influence older adults' self-efficacy directly impacting on their decisions and behaviour to maintain health. Other methods would not have enabled the construction of this level of detail about how the interventions interact with the person to effect change. This research has led to specific recommendations about the NP role creation, including the activities within the scope, how the role should be delivered, and in what context the NP role can be successful and why.

Although realist synthesis has been a strength in producing comprehensive findings, there have been challenges with applying this relatively modern approach within the constraint of a dissertation scope and modifications may have impacted on credibility. The realist synthesis approach has a multi-phased literature search and presented challenges in how to keep this contained within the dissertation as snowball sampling

can produce a large amount of literature to examine. To overcome this, I undertook an initial systematic search strategy with keywords and databases to come up with a finite set of articles and used a snowball method to find other relevant material from reference or author searches. This initial search may conflict with the approach of realist synthesis as Wong et al. (2013) highlights that a single pre-defined search is likely not sufficient in realist synthesis and could suggest an insufficient reflection on findings. I overcame this challenge by undertaking further literature searching in my discussion to add insight into the initial CMO findings to refine the theory and enable testing. In realist synthesis as theories emerge, more literature is sought to provide further insight (Wong et al., 2013). Much of the included literature in this study was non-randomised quantitative data and provided insight into feasible models and what works but often the 'why' it worked was not explicitly examined. Although the mixed method and qualitative literature were minimal, it was instrumental in analysis to relate to the causation of quantitative findings. The inclusion of further data and comparison to other theoretical models in the discussion enabled new insight into why NP interventions worked in decreasing readmissions. Without the restriction of a dissertation scope, a more iterative literature searching process would have been included in the data analysis stage to add to the robustness of findings.

Another limitation of this study is the challenge of identifying and differentiating between context and mechanism impacted by my skill as a novice researcher. In the initial stages of data analysis, I categorised most of my findings as a mechanism and through the construction of themes began to doubt this, for example, the home visit. The evidence from the literature highlighted the home visit as critical to the model of care and my initial novice understanding was this is a mechanism for achieving reduced readmissions. As I progressed through the data analysis, it became evident the mechanism is the decision of older adults to maintain their health, and the home visit was a contextual driver of this. To ensure I was applying the realist synthesis approach, I kept revisiting the literature by Pawson and Wong and compared the identified context and mechanism to definitions provided by these authors to support verification. The explanation and diagram of generative causation found in Westhorp (2014, p. 5), supported me to identify the relationship between NP interventions provided, and the underlying mechanism driving the outcome of reduced readmissions. The use of thematic analysis was also adapted to include the context, mechanism, and outcome concepts of realist synthesis and as a novice researcher, navigating this challenge was

complex. By using the thematic analysis steps of Braun and Clarke (2012), I was able to apply these within the CMO configuration framework. I ensured my findings were presented in this way to honour both the methods of thematic analysis and realist synthesis.

Recommendations

This realist synthesis sought to understand how the NP role could help reduce hospital readmissions in older adults to support the development of a position within the rural community of Thames-Coromandel. In my current role as nurse coordinator of the rural outpatient clinics in Thames-Coromandel community, the challenges that older adults face when maintaining their health post-discharge is evident. The rural setting is of importance to the recommendations, but the literature was scarce in the initial scoping for this realist synthesis. The research question was broadened as only three research articles returned when including the keyword 'rural' or 'remote' or 'isolated'. The advantage of using the realist synthesis approach is its inclusion of examining contextual factors, and this can support the application of findings to specific settings.

This realist synthesis identified the context of delivering NP led transitional care in a collaborative style with interdisciplinary support. However, this can be challenging in the rural setting due to professional isolation. There is an uneven distribution of rural health practitioners and allied health professionals, who are less likely to practice in rural areas (Ross, 2017). This challenge makes it difficult for the NP in rural areas to work within an interdisciplinary model. Alternative innovative models are required for rural health services and particularly the use of technology with modern-day advances. The findings of this realist synthesis highlight the importance and success of using shared electronic health records to improve communication between professionals in different settings. There was minimal literature on the use of virtual technologies to connect professionals beyond documentation. In the discussion, presented evidence supports the relationship between using video link for rural providers and decreasing readmissions (Moore et al., 2017). One of the nine themes identified in the 'NZ Vision for Health Technology' document is collaborative care; "Health services, social and support services, whānau, communities and technology operate as a team in a high-trust system that works together with the person at the centre of care." (Ministry of Health, 2019b, p. 9). The role of the NP is autonomous, including diagnosis, medication

management and treatment; however, this realist synthesis has identified the benefit of an interdisciplinary approach. Exploring the use of virtual technology for achieving this within the rural setting is recommended.

Health services must acknowledge the importance of the New Zealand Health Strategy vision of delivering care closer to the home and incorporate this into models of care for older adults. This realist synthesis highlights the context of care being provided in the home to support improved outcomes for older adults between care settings. Inherent with including home visiting in rural models is the challenge of travelling distances and terrain, particularly challenging in our local Thames-Coromandel community. Looking at efficiencies for NP time, this might be cost-intensive. However, the home visit is a vital part of the theoretical framework developed from this realist synthesis that supports decreasing readmissions. Some models use readmission risk tools to stratify their models, so those most at risk receive home visits, and those with the lowest risk receive phone call follow up. As previously identified in the discussion section, a patient's level of self-efficacy could be used to identify patients that could benefit most from a home visit. A challenge to this would be defining how to measure self-efficacy effectively. Measures such as the self-reporting of self-efficacy may not be reliable. Further research on using self-efficacy scores to identify patients for home visits would be useful to evidence this approach. For patients with moderate self-efficacy, telehealth video consultation could link the NP to patients and their caregivers in a way that that would maximise resource use.

Although cost analysis was not included in the scope for this realist synthesis, the literature did support the use of risk stratification to guide resource utilisation (Deniger et al., 2015; Lovelace et al., 2016; Smith et al., 2016). This approach could address the issue of home visiting all patients in a geographically challenging setting. Planning and funding teams must consider the vulnerable population of rural older adults and set to make changes to health models now as the burden on current services continues to grow with an ageing population. Population needs and the Ministry of Health are calling for innovative measures to continue to address the health of older adults, and this realist synthesis suggests creating a rural NP, incorporating virtual technologies, is a tangible solution (Ministry of Health, 2016, 2019b, 2019c).

The final recommendation is the necessity of the scope of the NP, including the advanced knowledge and skillset and the nursing philosophy. The nursing background of the NP supports the holistic, patient-centred approach that is shown in the findings of this research to reduce readmissions by improving patient self-efficacy. Although it might be argued that other disciplines could provide the activities required for effective transitional care, the evidence is strong in suggesting NPs are effective coordinators and communicators and use their nursing skills effectively in the role. The scope of the NP role as opposed to RN scope is advantageous, particularly in the rural setting, as NPs can function autonomously in diagnoses, ordering diagnostic testing, reviewing and altering medication and management of conditions. The NP not only supports patients to have their needs met promptly but also helps patients to feel reassured when escalating their concerns. Older adults are vulnerable to changes in their condition quickly, and this is often further impacted by co-morbidities and polypharmacy; hence they require support from practitioners that can respond promptly to prevent further deterioration. The literature from this realist synthesis found medication education and reconciliation to be a contributing factor to meeting the needs of older adults and supports the requirement of NP scope (Delgado-Passler & McCaffrey, 2006; Kutzleb, 2015; Lovelace et al., 2016; Warren et al., 2019). The extended scope of the NP in meeting the dynamic needs of patients is supported by literature from Australia and New Zealand that found "NPs showed that they extend the scope and depth of patient assessment and readily determine when collaboration or referral is needed" (Carryer et al., 2007, p. 1821).

Despite the government acknowledging that providing comprehensive and quality services for rural populations is a priority, the National Centre for Rural Health that provided ongoing research in this space closed in 2002 (Ministry of Health, 2019c). The most recent national publication on rural health was by the National Health Committee (2010) who recommended the development of rural NP roles acknowledging rural design often does not meet the realities for rural people accessing services. However, ten years on, DHBs have not made any significant redesign in services for rural populations. They continue to fail to emphasise NP roles outside of the primary health care setting. Rural communities need practitioners that can respond to the complexity of health care requirements and enable people to stay well within their home, avoiding returning to the hospital for care. This realist synthesis supports NPs can fulfil this role. Contributing to lack of NP development is the barriers faced within the profession.

Adams and Carryer (2019) found the barriers to becoming a registered NP in New Zealand include lack of nursing leadership within DHB and reluctance to see NP role as an alternative to physician workforce. Tensions between DHBs and PHOs are an ongoing challenge, and Adams and Carryer (2019) describe NPs being denied opportunities, despite there being GP shortages and need to address Māori health inequities. Due to the encouraging results of this realist synthesis, a recommendation is to develop an implementation research project in the local Thames-Coromandel setting to test the theoretical framework of an NP led model of care to reduce readmissions.

Conclusions

This realist synthesis has identified that NPs play an essential role in decreasing readmissions, and this is vital in the rural setting where the transition between care settings poses an increased risk for older adults. The theoretical framework shown in Figure 7 developed from this realist synthesis shows the important generative causation pattern between context and mechanisms that result in reduced readmissions for older adults. As identified in the initial literature review, patients residing in rural areas have challenges around accessing services, further impacted by fewer services delivered rurally. Although the New Zealand health strategy identifies the goal of care closer to where people live, this is not evident in rural areas, and the usual barrier is the cost of disseminating services from tertiary health centres. The unique challenges of rural nurses and rural patients need to be considered by policymakers, and the results of this realist synthesis offer significant insight into an innovative approach to meeting health need within the Thames-Coromandel community.

Currently, there is no model for a lead health care professional when older adults transition between inpatient and community settings in our rural Thames-Coromandel setting. This transition is a vulnerable time for older adults and accessing health services for rural older adults is challenging. This results in older adults often presenting back to the hospital or having longer lengths of stay, before discharged back to their rural home environment, impacting hugely on hospital costs and patient and family impact. T. Robinson and Kerse (2012) in their descriptive analysis conclude “medical readmissions in older people in New Zealand are common and, if predicted and effectively prevented, represent an opportunity to improve people’s outcomes, reduce disparities and reduce health service costs.” (p. 32). One in four New Zealanders live in

rural areas and small towns, with a higher percentage of older adults, and the Ministry of Health recognise this as a priority area is to improve care by ensuring comprehensive and quality services (Ministry of Health, 2019c). This realist synthesis has shown that NPs, within their advanced scope, provide a range of tools for older adults that enable them to improve self-efficacy and enact positive health behaviour. The setting of care in the home is evident in the success of the NP role in reducing readmissions. The NP can apply their nursing lens, alongside their advanced nursing knowledge and skills, to meet the holistic needs of older adults. Innovative measures to achieve better health outcomes for older adults in rural New Zealand are needed, and the evidence from this realist synthesis supports the creation of an NP role to reduce readmissions for older adults in the rural setting.

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Appendix

Table 6. Document characteristics table

Author/ Date	Research design and aim	NP intervention and results	CMO - Theory in action	MMAT rigour assessment
Arbaje et al. (2010)	Quantitative randomised control trial: Pilot cohort study Assess the effect of the Geri-Floating Interdisciplinary Transitional Team (FITT) model on quality of transition care for patients and their satisfaction with quality of care.	Led by Geriatric NP and group of clinical-educator geriatricians. On admission geriatric assessment by NP and care plan discussed with Geriatrician, documented. Day 1-2 post dc phone call to patient/caregiver for medicine reconciliation and medical concerns. Geri-FITT not significantly associated with higher CTM-3 scores (transition care quality) or satisfaction (study not enough power). Although research unable to prove contribution of model to improve quality care transition does provide insight into feasible model. Strengths include geriatric NP provides care information to primary care directly ensuring follow up not missed. Incorporates staff education.	Geriatric team 'floating' to where older patient located > provide care consistent with patient identified goals & engaging important providers = common purpose built to optimize geriatric and transitional care Post discharge primary care setting for older adults + NP geriatric expertise communicates important info = improve transition inpatient to primary care team Multidisciplinary team general medical wards + Geri FITT model > enhancing geriatric competence of workforce = improving quality of care older patient receives	Used randomization for selection of wards (not patient level randomization). Wards are comparable at baseline and outcome data complete and detailed including diagram. Not stated whether investigators blinded to intervention. Participants adhered to intervention.
Baldwin et al. (2018)	Quantitative nonrandomised: Prospective cohort design Primary aim to examine the effects interprofessional posthospital appt on 30-day hospital wide readmissions.	Interprofessional team comprised of certified family NP, clinical pharmacist, nurse case manager, and social worker. Patient seen in clinic up to 14 days. Interprofessional huddle prior to appt to discuss hospitalization and individualised plan. NP gains consent and undertakes review with patient including diagnostics and physical examination. Orders equipment and referrals/therapy. Nurse case manager meets and coordinates any appointments. Pharmacist provides education. Social worker performs psychosocial assessment/depression screening and links patient to resources. NP and pharmacist provide after visit summary including medications. Readmissions compared to national benchmark. National benchmark readmissions across payers 13.9%. Discharge clinic	Primary care setting clinic appointment post discharge + interprofessional team care led by NP > individualized care plan and holistic needs met = improved approach to transition to home and reduced readmission to 2 out of 75	Participants reflective of target population (those that received the discharge clinic care). Readmission and cost analysis measurements appropriate. Agency for healthcare research and quality tool used for cost analysis. Outcome data complete. Confounders not accounted for and this is discussed in limitations. Intervention administered as intended.

		participants achieved readmission rate 2.7% (2/75). Cost analysis estimated savings to be $335,199.84 based on reducing all cause readmissions by 9.63% and cost program 354 000. Outcomes of project support the literature that TOC can be improved with interprofessional post discharge clinic.		
Bellon et al. (2019)	Quantitative nonrandomised: retrospective cohort design Aim to describe practical implementation and outcomes of non-research evidence-based care transition program that uses predictive data to target intervention. Effectiveness outcomes include reducing hospital admissions and ED presentations.	Weekly teleconferences with interdisciplinary team. NP and SW present cases and plans/actions decided upon. Master prepared RN coordination person, gathers data, coordinates, communicates and solves problems. Geriatrician medical director clinical support. Personalized care plan developed. NP administers plan and determines goals of care. NP monitor and manage symptom changes, changes care plan in collaboration with physician. Multivariate model showed those in intervention who interacted with NP or SW within 30days had significantly lowers odds of 30-day (69%) and 90-day (53%) readmissions. They also had greater odds of observation or ED visits (90%). High risk patients in intervention that had NP visit within 30days had significantly lower risk 30-day readmissions (53%). The increase in ED visits might indicate need for more 'on call' and emergency response plan. Important finding is that effect of NP and SW in decreasing readmissions as this was factor required for program to show statistical difference	High risk patients systematically identified + NP visit within 30 days > personalized plan care management symptoms social supports self-management education = significantly lower risk of 30-day readmission	Participants were those in transition intervention and therefore representative of target population. Measurements were used to determine the effect of intervention on odds of readmission or ED return. Complete outcome data. Confounders accounted for using multivariate logistic regression and controlling for participant characteristics and home health process measures. It appears the intervention was administered as intended.
Buerhaus et al. (2018)	Quantitative nonrandomised: Retrospective cohort design To examine difference in quality of care provided in primary care setting by NP, physicians, or a combination.	4 domains of primary care included: chronic disease management, preventable hospitalisations, adverse outcomes, and cancer screening. Definition of quality across categories was the appropriate screening taken as recommended for conditions (e.g. HbA1c for diabetes). Beneficiaries attributed to PCNPs were significantly more likely to be younger, rural, and dually eligible (poverty indicator). Patients attributed to physicians more likely to have received diabetes, CAD and COPD care and cancer screening. Those attributed to NPs had fewer preventable hospital admissions, ED visits and readmissions compared to physicians or mix care. Supports NP led transitional care	Aged, disabled, and dual eligible beneficiaries (poor health and lower income/poverty indicator) in primary care setting + physician care = more likely to have CAD and COPD care and cancer screening Aged, disabled, and dual eligible beneficiaries (poor health and lower income/poverty indicator) in primary care setting + NP care* = fewer preventable hospital admissions, readmissions, and ED visits *Assumption of generative causation: NP care is holistic,	Target population were sample of continuously enrolled aged, disabled, and dual eligible beneficiaries therefore representative. A range of measures collected for each of the primary care domains and appropriate for the outcome of assessing quality of care. Complete data set available and analysed. Confounding factors considered and regression models used, including demographics as variable. Not an interventional study and design has taken into care the settings of care of NP and physician, so exposure occurred as it was intended.

		might be superior to physician led. Reflect holistic approach of nurse meeting variety needs to reduce readmissions. 'might reflect difference in practicing styles and philosophies of care'.	patient centred and not from biomedical disease-based model.	
Chavez et al. (2018)	Non-empirical: scoping review Identify literature and summarize common clinical settings, interventions and outcomes of NP care for older people (>65).	NP can fit into 2 broad categories: -Supplemental. Extends care of doctor. -Substitutive. Function autonomously proving same care as physician. Examined model of NP in following settings: geriatric primary care, geriatric home care, geriatric long-term care (nursing home), geriatric acute care (hospital-based), and geriatric transitional care. Majority studies found NP better in LOS, cost, quality life and satisfaction. Cost benefit inconclusive (systematic reviews). Results suggest NP trained in foundation nursing science and advanced clinical practice can function in both substitutive and supplemental roles effectively across older care settings. In substitutive NP roles effectiveness evaluated by non-inferiority whereas supplemental demonstrated by superiority. NP competencies can be classed: A: improve ACCESS to care by care coordination and timely care. B: BUILDING self-management with patient coaching with family/caregiver. C: COST containment by rapidly identifying patient needs and changes, timely diagnosis and initiation treatment to avoid hospitalization.	Transitional care model (caring for patients between inpatient setting and community) + NP delivered > nursing foundation of preventative care, health promotion and patient advocacy = enhanced health indices including functional status, symptom screening, med review, advanced directives and other clinical outcomes ABC framework Geriatric patients + NP led care > improved interprofessional care coordination = ensures timely and appropriate access to health care Geriatric patients + NP led care > improve patient coaching/education = improves patient self-management and patient/family engagement Geriatric patients + NP led care > rapid identification changes health/mental status, timely diagnosis and initiation of treatment = avoid unplanned hospital visits and hospitalization (cost containment)	Scoping review following PRISMA and five stage Arksey and O'Malley framework for scoping reviews. Two-tiered literature search strategy, 2 independent reviewers. Articles included were randomized controlled or quasi-experimental deign. Data extracted using 3 categories: elements NP intervention, outcome measures used, data evaluating effectiveness. For each care setting structural elements as well as outcome of intervention and trend effectiveness included. Limitations: many articles rejected as not RCT or quasi-experimental. As a scoping review, it only broadly summarises not report effectiveness.
Coleman et al. (2005)	Quantitative descriptive: Prevalence study Aim was to examine prevalence and contributing factors between prehospital, posthospital medications and identify potential risk factors to experiencing discrepancies.	Geriatric NP performed comprehensive medication assessment within 24-72hr discharge, medication discrepancy tool (MDT) applied. Patients recruited for intervention arm of transition research, but assessment provided before transition intervention. NP had access to pre-hospital medications, discharge instructions and medications available in the patient home, including both prescribed and over the counter. For each medication discrepancy an MDT completed. **Prevalence:** 53 (14.1%) experienced 1 or more discrepancies. 5% experienced 4 or more.	Older patients + geriatric NP medication assessment within 72hours discharge home visit > prevented potential patient harm = reduced readmission to hospital	Sampling strategy appropriate (convenience) and sample representative of target population as it includes older patients post discharge (prior to transitional care). Measurements appropriate and included prevalence, factors, medication classes, risk profiles and readmissions. Complete data on prevalence available. Statistical analysis detailed and appropriate.

		Those with discrepancy averaged significantly more medications than those who did not. **Factors:** Patient factor contributed to 50.8%. Highest frequency was non-intentional nonadherence, then did not fill script and intentional nonadherence. Highest system associated factors: incomplete discharge instructions, then conflicting information from different sources then duplication. **Rehospitalization:** significantly higher in patients with discrepancy (14.3%) compared to 6.1%.		
Condon et al. (2016)	Quantitative nonrandomised: prospective cohort design Whether standardised transitional stroke clinic led by NP could reduce 30- and 90-day readmission for stroke or TIA patients.	Phase 1: NP conduct structured follow up phone call of high risk within 7 days discharge, could include caregiver if required. Phase 2: Structured follow up phone call all patients within 2 days. NP structured TSC visits within 7 – 14 days. Process metrics: more patients received follow up calls in phase 2, days from discharge to TSC visit decreased from 19 -17. Patients who received f/up phone call more likely to show to TSC visit. Patients readmitted within 30 days had lower TSC visit. Multivariate models showed TSC visit was independently associated with a 48% reduction in 30-day readmission. Reduction not significant at 90 days. Data showed that other co morbid factors impacted on 90-day readmissions	Patients admitted with stroke (multifactorial and complex needs) + NP transitional stroke clinic visit attended > standardized and comprehensive stroke assessments performed by trained NPs = 48% reduced 30-day admission (not significant at 90 day therefore lower shorter-term risk of readmission) Patients admitted with stroke (multifactorial and complex needs) + NP led patient education, coordinating care with community services, social needs and primary care handover > help patients gain ability to self-manage stroke recovery and secondary prevention	Participants representative of target population (had identified readmission risk factors and included based on criteria). Measurements included process metrics and readmission rates and appropriate for aim of study. Outcome data set complete. Co-morbidity variable considered as confounder and regression model used to account for this. In the two phases intervention administered as intended.
Coppa et al. (2018)	Quantitative nonrandomised: Quasi-experimental design Describe impact of NPs delivering home-based primary care services to clinically complex patients in decreasing ED visits and rehospitalizations.	Analysis of 1-year pre homecare data showed significant 23.68% reduction in ED visits. Rehospitalizations decreased by 34.88% although not significant. 6-month pre homecare analysis showed ED visits significantly reduced by 35.56%, significant reduction in rehospitalizations of 59.42%. 2/3 of patients in study reported difficulty accessing primary care hence the effectiveness of delivering care in home. Able to observe their ability to carry out tasks, need for equipment and other referrals. Researchers note that not included in study but evident in descriptions was the depth of care NPs delivered and provided understanding of acuity and potential effectiveness of model.	Patients with chronic illness and difficulty accessing clinics receiving care via HV + care by NP providing in-depth assessment and patient centred care = care tailored to patients need and therefore reduced need to visit hospital for unmet need.	Patients met inclusion criteria and reflective of target population. Appropriate measures used and variables defined well. 82 out of 95 patient data obtained – 86% complete data set. Cofounders well accounted for and variables standardized. Intervention administered as intended and two different time periods analysed.

Cordato et al. (2018)	Quantitative randomised control trial Evaluate the impact and cost-effectiveness of the Regular Early Assessment Post-Discharge (REAP) protocol of coordinated specialist geriatrician and NP visits on rates of rehospitalization, hospital length of stay, and ED presentations for Nursing Home (NH) residents recently discharged from hospital.	Coordinated care between specialist geriatrician and NP to evaluate and manage NH residents recently discharged. Primary care physician retains overall care provider. Regular scheduled and frequent visits to participants following acute hospitalization. REAP intervention group two thirds less readmission (stat significant) and half inpatient days and ED visits than control (18 vs 7 readmissions). Total cost per participant 50% lower in REAP group. Attributed to lower inpatient days and ED expenditure. Average cost REAP intervention per patient $740. Of 97 REAP treatment recommendations only 71% implemented. Main recommendations alteration medication prescription, lab investigation, adjustment nursing procedure or environment e.g. falls. Alteration of medication prescription likely largest contributor to decreased readmissions.	Older patients in aged care facility + specialist geriatrician and NP management (increase regularity and frequency specialist rv in NH) > recommendation (advocate) to GP to alter care specific to geriatric care = 2/3 reduction in readmissions Older patients in aged care facility + specialist geriatrician and NP management in nursing home > alteration of medication (2/3 of recommendations) = likely to be contributing factor to REAP efficacy Older patients in aged care facility + specialist geriatrician and NP management in nursing home > advanced care directive discussions and plans made with patients (implemented in twice as many intervention patients than control) = not demonstrated by data but likely to contribute to reduction hospitalisation	Patients randomly allocated via computer randomization to usual care or REAP protocol. Groups comparable at baseline (proven in baseline demographics). Outcome data complete. Independent study rater was blinded to randomization. Assigned intervention adhered to through trial, not all recommendations implemented but this was shown and analysed in data. If all recommendations were implemented this might have further decreased readmissions
Delgado-Passler and McCaffrey (2006)	Non-empirical: Literature review Purpose of review is to examine NP directed verse RN telemangement discharge programs for heart failure patients	Literature review including research articles from CINAHL and OVID. 5 studies included in r/v. Varying nurse led models for HF patients with aim to decrease hospitalizations. The literature included suggest NP role as effective care coordinator. Reasons for NP: ability to change medications, order outpatient testing, better knowledge HF pathophysiology. Support that tele management post discharge can be effective. NPs able to make decisions about care and collaborate with physicians to individualise care.	Patients with heart failure + post discharge care coordinated by advanced practice nurse > change medications, order lab tests, more education in HF pathophysiology = improved patient outcomes and reduced rehospitalizations	No robust methods however the articles included were of high methodology rigour including RCT. Valuable data regarding why NP might be better suited to support transitions than RN.
Deniger et al. (2015)	Quantitative descriptive: Retrospective health record review Determine the cause of readmissions in patients participating in Geriatric Transitional Care (GTC) and evaluate processes and	Pt >65 assessed in stay by RN or NP using risk tool into mod or high risk. Mod risk received phone call by RN within 72hours discharge and as needed up to 30days. High risk had HV by NP within 48hours discharge and phone calls as needed up to 30days. 26 readmissions in GTC out of 391 enrolled (6.6%). Hospital wide readmissions were 12.7%.	Older vulnerable adults + NP h/v and relationship with patient and family/caregiver > patient has point of contact to navigate health system = patient concerns are addressed early Older vulnerable adults who take multiple/complex medications + NP h/v for reconciliation and	Used case-finding sampling in a defined population suitable to research question. Appropriate quantitative analysis used although no description of theming of readmission causes. Low non-response bias.

	outcomes to identify potential areas of improvement.	Readmission causes described. Ability to escalate level of care in community as opposed to hospital admission. Rapid follow up key to reducing readmissions (within 48 – 72 hours post dc). Transitional care assists in navigating complex health system. Highlights the social needs of vulnerable older adults and last CMO.	medication > improves medication compliance & tolerance NP transitional care visits + social needs are identified & community/psychosocial services are arranged = patient able to cope without requiring visit to hospital Transitional care HV + NP care = identify when increased level of care required and arranged out of hospital	
Dizon and Reinking (2017)	Quantitative nonrandomised: pre-post intervention study Aim to measure effect of multifaceted set of nurse-driven interventions on readmissions in a busy community hospital.	Identification of patients using computer generated risk prediction and clinician referrals. RN project manager facilitate Transition of Care (TOC) and monitor outcomes. RN outpatient case manager trained in Coleman Model – self-management using coaching and facilitating for patient to take active role. 1 HV then 3 f/up calls in 30 days. Patient centred, holistic, psychosocial, and medication approach. Non-RN staff called low risk patients. High risk homebound patients receive physician visit. NP follow up phone calls for high risk patients discharged to nursing facility. Baseline readmission rate 13.7% reduce in following phases to: Planning – 11.8% Implementation – 12.0% Intervention – 11.4%. More than two third patients identified by referral rather than computer risk. Pharmacy technicians corrected 11,130 medication errors, showing average 47% accuracy in pre-discharge medications. Controlling for TOC intensity: patients not completing TOC twice as likely to be readmitted. Efficacy of each specific intervention is mixed but there is an additive effect when combined in comprehensive approach.	High risk patients as identified by clinicians in community hospital + tailoring interventions based on need of patient and initiating early after discharge > appropriate allocation of resources in timeframe = reducing readmissions	Participants representative of target population (those that received TOC model). Measurements of readmissions appropriate (however many variables for hospital wide readmission rate). Outcome data complete (sample was used with complete data). Variables accounted for using logistic regression. Intervention carried out as intended
Echeverry et al. (2015)	Quantitative nonrandomised: Prospective cohort design Develop and test a solution to poor health	Intervention in large private primary care practice. 40 patients selected (convenience sample) with class 3 or 4 HF, all were homebound and not sought primary care at least a year. Patients aged 83 – 93 years old. NP followed patient using electronic health record. Interdisciplinary approach with HV 7 –	Homebound older patients with HF + NP home-based interdisciplinary primary care approach within 1 week discharge > patients had point of contact to raise concerns and provide reassurance and reduce	Participants were those receiving in-home visits by NP therefore representative of target population. Wide range of measurements used, including hospital utilisation and patient feedback. Outcome data is complete. Confounders not accounted for, but this

	outcomes experienced by home bound older adults with heart failure by providing cost effective in-home primary care visits.	10 days post-discharge. Monthly or as needed HV for routine follow-up checks review medication compliance, adverse effects, subjective HF symptoms, physical exam, and create care plan. Education on sign/symptoms, diet, daily weight, and contact if change of symptoms. With acute changes, NP visit done within 2 days. Outcomes compared to same 3 months in a year prior and previous 3 months. Demonstrates significant decrease utilization hospital resources and cost. Average hospital stay for HF $23000. Cost of 3-month HV per patient $450. Included patient feedback statements: 'Not burden family by taking to office'. 'Someone to call'. 'Understood importance eating things'. Patients had sense control over disease and symptom management. Significant improvements seen in physical function, symptoms and quality of life score.	caregiver burden (patient reported self-efficacy significantly improved) = cost effective solution to decreasing hospital utilization (Average hospital stay for HF $23000. Cost of 3-month HV per patient $450 Homebound older patients with HF + NP home-based interdisciplinary primary care approach within 1-week discharge provided patient education > empowered patients to make informed decisions around managing condition (e.g. diet choice) = patients reported improvement in quality of life (54% increase)	is minimized by using both 1 year and 3-month prior intervention measurement data. Intervention administered as intended.
Enguidanos et al. (2012)	Quantitative randomised control trial Determine whether Brief Nurse Practitioner Transition (BNPT) NP can improve patient satisfaction and self-efficacy and reduce medical service use among hospitalized older adults.	NP paired with existing social worker care management service to provide intervention. Inpatient discharge planners identified eligible patients that were over 50, discharged home without hospice, home health, palliative, and no caregiver or caregiver unable to provide full support. Also required to meet risk criteria. NP made HV or phoned within 72hrs discharge (NP no contact prior to discharge). Checklist modified from Coleman transition model to guide NP. NP role included ensuring patient understood instructions, medication errors, meet needs and identify resources, empower patient, ensure follow up arranged, identify management issues or onset symptoms. Also included coordination, support and medication reconciliation. **Self-efficacy** – confidence level in performing certain activities. Usual care had no significant difference in change. Intervention group had significant improvement from 90 – 103 however between group difference not statistically different (? Not enough power with smaller sample). **Satisfaction** – Intervention significant improvement. Usual care group was statistically unchanged. **6-month service utilization** – Intervention group had significantly fewer physician office	Older adults meeting at risk criteria + NP led brief intervention to provide timely coaching and empower patients to seek services > improved self-efficacy = patients improve confidence to manage home and reduce need to visit hospital Older adults meeting at risk criteria + NP led brief intervention > improved satisfaction with care (involvement in care and decision-making, support, coordination, continuity, quality) due to increased nursing support during time of risk post hospital Older adults meeting at risk criteria + NP led brief intervention > improve connection of patient primary care provider ensuring appointments scheduled and facilitating access = avoided exacerbation of conditions decreasing excessive use of primary and specialist care	Randomisation appropriately performed by discharge planner selecting envelope with randomly assigned group (intervention or usual care). Demographic data collected by telephone survey and comparable. Outcome data complete (199 total participants). Baseline and follow up data collected by blinded research assistant telephoning patient. Appears that participants adhered to intervention.

		visits and half as many ED visits but not statistically different.		
Finn et al. (2011)	Quantitative randomised control trial. Can embedding an NP into medical team improve discharge process in terms of communication, patient follow up and hospitalization.	Masters level prepared NP randomly assigned to team as discharge facilitator (5 medical teams total). NP attended daily resident work rounds and interdisciplinary discharge rounds. NP schedules post-discharge follow up and tests, perform medication reconciliation, scripts, anticoagulation services, calls primary care with discharge information and faxes summary. NP writes discharge plan and it is reviewed by resident. NP meets patient to discuss plan and answer questions. Study sample 872 patients. Significantly more discharge summaries completed within 24hours (67% vs 48%). More discharge summaries completed before first follow-up appt (89% vs 76%). Intervention had no effect on 30day readmission or ED visits. Patients in intervention group knew who to call with questions, had better understanding of plans, had better understanding of medications, and were more satisfied with discharge process. Nurses reported being less worried with discharge plan and paperwork completed promptly in intervention group.	Medical patients in teaching hospital + embed NP as discharge facilitator to > improved completion discharge summaries and follow up = did not impact on 30-day readmission or ED visits	Randomisation occurred at level of the ward assigned to NP intervention. Details of randomization not included. Groups were comparable at baseline as seen in baseline characteristics. Outcome data not complete for both groups, 87% complete. Blinded research assistant called patients. Participants adhered to intervention of NP led discharge process.
Hendrix et al. (2013)	Quantitative nonrandomised: Observational study Aims: a) Establish nurse led TLC (transitional care) to veteran patients with high burden chronic illness and social challenges. b) describe adaptation and implementation of evidence TLC model including preliminary results and plans for optimization.	Target population: veterans aged 60 years and above. NP visits inpatient initiating relationship. They assess whether HV required and this occurs within 2 – 3 days of discharge. Additional HV based on the need of patient or caregiver. Evidence based guidelines for medical/geriatric syndromes used to ensure quality care. When patient discharged from programme, summary with meds and recommendations given to primary care.	Older patients with complex needs (chronic conditions and social) + NP led interprofessional transition care team (based on Naylor model) home visits > patients had sense of reassurance with point of contact to raise concerns = less likely to visit hospital when concerns arise Older patients with complex needs (chronic conditions and social) + NP led interprofessional transition care team (based on Naylor model) home visits > reduced need for patient to have to travel back and forward = reduce patient burden and improve access to care Medically vulnerable veterans + NP led interprofessional transition care team (based on Naylor model) home visits > half of caregivers reported decrease in caregiving	Participants were those that received the TLC and compared to patients referred but not enrolled in TLC. Measurements appropriate and included ED visit and readmission and included characteristics. Outcome data complete. Characteristics included but not considered variable and confounders not accounted for. Intervention carried out as intended.

			burden, caregivers have support when concerns arise > caregivers contact NP as opposed to presenting to hospital	
Jones, DeCherrie, et al. (2017)	Quantitative nonrandomised: Experimental study To reduce unnecessary hospitalization by providing higher intensity primary care using a NP co-management programme.	NP make HV as required, physicians still visit but less frequently. NP focuses on symptom management, medication management, quality of life improvement, and care coordination and transitions and becomes the primary point of contact for the patient for all clinical care. Comparison of co-management sample with non-co-management sample. Before enrolment in co-management 56.3% of patients had at least 1 hospitalization compared with 37.9% after. Mean number of hospitalizations reduced by 1.38 before enrolment to 0.74 after ($p < .001$). Percent of patients with any readmission decreased from 17.2% to 5.8% (p=.004). Analysis also took place with patients enrolled for at least 2 weeks (as opposed to only 1 day) and same results. All physicians reported that care received after enrolment in was better than the care they had received before	Homebound patients identified at risk of readmission receive care via HV + co-management between NP and physician > burden shared between 2 practitioners = medical practitioner able to devote more time to other patients Homebound patients identified at risk of readmission receive care via HV + NP able to devote more time to patient improving education and symptom management = decrease hospital readmission	Participants representative of target population as they are referred as high risk from physician or identified by NP and assessed via criteria. Measurements and variables clearly defined. Outcome data complete for all 87 intervention patients and 1027 control. Linear regression used to account for confounders. Intervention administered as intended.
Jones, Ornstein, et al. (2017)	Mixed methods: Observational study including survey, focus group and chart review. Aim of paper is to describe the homebound patients who were referred to the NP co-management program. Findings from physician survey and nurse and social worker focus groups on referral reasons and specific care model elements that worked.	5 step standardized protocol developed: 1. Initial info exchange and documentation. NP notified of ED visit through EHR. NP documented standardized note in hospital chart and for PCP. 2. NP engaged inpatient staff early with patient status and history. 3. NP f/up patients regularly 4. Discharge: NP engage hospital for plan interfaced with social workers. 5. After hospital: NP f/up as soon as possible at home. Within 3 weeks. 7.8% patients referred to co-management of total service patients. Co-management patients were younger, higher comorbidity and higher rates depression, skin ulcers, anxiety, obesity, MI, CHF, vascular disease, pulmonary disease, diabetes, and peptic ulcers. Also had higher hospitalization before enrolment. RN and SW indicated co-management more preferred for acute medical issues than end of life. NP increased HV frequency, co-management patient calls and issues addressed more	Patients with recurrent hospitalizations, need for more frequent home visits and high symptom burden + increase in home visits, prompt response to patient calls/concerns and addressing of urgent issues > patient reassured, and concerns resolved = reduced need for presentation to hospital Patients referred to program had higher co-morbidity score, therefore high symptom burden + more frequent home visit by NP > better support with managing symptoms = less presentation to hospital for symptom exacerbation Patients in program had conditions that require more frequent HV (wounds/COPD) + real time clinical triage through telephone accessibility > NP address/troubleshoot medical issues	Rationale provided to build upon experimental study that found NP co-management to be beneficial so purpose to expand on findings. The focus group findings, survey and chart review data were combined to answer research question. Findings interpreted in discussion and well linked. Inconsistencies between findings of data sources also highlighted and discussed. Quantitative analysis of quality and qualitative methods adhered to and credible.

		quickly. NP more available to make unscheduled urgent visits.	promptly = patient reassured and prevent unnecessary ED visit	
Kutzleb (2015)	Quantitative descriptive: Case series In patients with chronic disease, does a NP-directed patient-education program improve disease self-management and reduce readmissions compared to usual medical management?	NP received referral when inpatient and assessed patients understanding HF and began education. Included self-management, symptom exacerbation, diet, weight, med management, smoking cessation. Socio-economic and family supports integrated. Functional test. Plan of care developed and update with patient/family after each visit. Post d/c weekly calls 1 month, 2 x times second month, once in third month. NP evaluate patient self-management and ability identify change condition. Intervention group had readmission rate 8% compared to 26% for 12months prior. Long term improvement shown by 60- and 90-day readmission for intervention 4% and 3% compared to 27% and 29% usual care. Participants described most positive changes in overall wellbeing as ability to self-manage medications and diet which stemmed from education and follow up. The impact of this is that they were able to maintain independence. Improved financial performance.	Patients with chronic disease + structured NP follow up and self-management education > increase patient perspective of wellbeing and able to self-manage medications and diet = able to maintain independence and not need to visit hospital when symptoms changed.	Sampling strategy of 312 adult patients admitted with Heart Failure relevant and representative of target population. Comparative measurement to heart failure group 12 months prior suitable to study design – variables not accounted for. As variables were not accounted for between comparative group there could be non-response bias due to difference in time and patient characteristics but would not be high. Minimal detail provided on statistical analysis but readmission rates calculation and comparison relative to research design and question.
Leppin et al. (2014)	Non-empirical: systematic review (using PRISMA) Determine the degree to which a number of intervention characteristics, including their impact on patient capacity and workload, might account for differences in their effectiveness.	Activities across models in the 47 interventions included: discharge planning, case management, telephone follow up, telephone monitoring, patient education, self-management, medication intervention, home visits, follow-ups scheduled, patient-centred discharge instructions, clinician continuity, timely follow up, timely PCP communication, patient hotline, rehab intervention, streamlining, making requisite, and other. Intervention characteristics that impacted on effectiveness: -Interventions rated to increase patient capacity -Intervention had at least 5 unique activities -Had at least 2 individuals involved Post hoc meta-regression showed significant and incremental effect of 'comprehensive support'. Interventions that used consistent and complex strategy emphasizing assessment and addressing factors relating to context and capacity for self-care associated lower risk for readmission. Effect on patient workload and site of delivery had no impact.	Patient with treatment burden (workload) and resource scarcity + transitional care interventions that are complex and aim to enhance patient capacity to access and enact post-discharge care = more effective transitional care model (able to reduce readmissions) Context sensitive support to patients + comprehensive transitional care model (improve patient capacity for self-care, at least 5 unique component activities, at least 2 individuals involved in delivery) = reduce risk of early hospital readmission	Rationale provided for using systematic review to review existing data to test theory hypothesis. Comprehensive search strategy included and used PRISMA for reporting. Framework used to analyse extracted data. Limitations identified. Quality of the included articles reported on included low risk for bias.

Lovelace et al. (2016)	Quantitative nonrandomised: cohort study. Retrospective review To examine the impact of the Transitional Care Programme (TCP) implemented in Veteran Medical centre on veteran ED and hospital utilisation and cost.	Transition care team: RN case manager (CM), licensed clinical social worker, pharmacist, and NP (1 inpatient 1 outpatient). Key features: collaborate with inpatient team, pharmacist complete med, referrals to home support, in home RN-CM visit post discharge, collaborating with primary care team, inpatient NP/pharmacist ensured educational needs met, RN-CM provides weekly visits or phones and provides assessment including safety, medication review and physical assessment. Use patient log for patient to monitor vitals weight. NP collaborates and advises such as management clinical symptoms. Reviews medication and renewals. 61% decrease ED visits and 67% decrease hospital admissions. Total estimated programme cost saving $3 823 673. Challenges: Medication discrepancies – pharm added and increased FTE. Phone clinic initiated for those living 50miles or more away from hospital.	Interdisciplinary approach to transitional care + improved collaboration/communication between hospital, outpatient, and primary care = holistic needs of patient met and can self-manage at home CMO based on informal feedback from providers and patients. Research limitations did not collect formal feedback.	Participants screened and meet criteria therefore reflective of target population. Measurements of readmission appropriate within pre and post intervention study design. Assumed complete data set as sample number correlated to result analysis. Confounders and variables not measured therefore affecting rigour of statistical data. Intervention mostly administered as intended however pharmacist added due to burden of medication discrepancies and reduced NP resource in second year.
Mora et al. (2017)	Non empirical paper: Integrative review In community dwelling adults above age 65, can an NP led intervention versus standard care decrease hospital readmissions?	Based on Transitional Care Model (TCM) standard on Naylor 2004 seminal study. 1 x meta-analysis 2 x RCT design 4 x well designed nonrandomised studies Those who had HV by NP had fewer readmissions than usual care group and HV within 3 days and phone call f/up had statistically significant results. Highlights limitations of current research and lack of common practice in NP led interventions.	Older adults + home visit (HV) within 48 hours and daily availability > patient has point of contact and reassured so does not need to present to hospital = decrease in readmission	The article includes 7 quantitative research studies, used PRISMA tool and integrative review methodology of Whittemore and Knafl and did not meet MMAT criteria of mixed-method. Rigour assessed by adapting mixed-method MMAT criteria – eliminating qualitative components. Rationale for integrative review unclear however studies are integrated into answering question and outputs integrated, limitations stated, and reporting guidelines followed. The conclusion didn't compare well to standard care as set out in aim but useful findings in relation to HV and timeliness of follow up so article included.
Ornstein et al. (2011)	Mixed-methods: focus group feedback, billing hospital data, hospital admission data A detailed mixed-methods evaluation was conducted to characterize the hospitalized homebound	5 step standardized protocol developed: 1. Initial info exchange and documentation. NP notified of ED visit through EHR. NP documented standardized note in hospital chart and for PCP. 2. NP engaged inpatient staff early with patient status and history. 3. NP f/up patients regularly 4. Discharge: NP engage hospital for plan interfaced with social workers.	Home-bound older adults referred to co-management programme + NP as accessible interface between primary care and inpatient leads to improve communication to inpatient team from primary care = reduced errors and unnecessary inpatient procedures (as reported by inpatient team and PCP).	Rationale provided for mixed method design to evaluate programme. The focus group statistical and focus group data were combined to answer research question. Findings interpreted in discussion and linked together. Inconsistencies between findings of quantitative data and positive focus group feedback was discussed. Quantitative analysis of quality with in-depth explanation and rationale however

	population and investigate provider feedback and program feasibility, effectiveness, and costs. Length of stay (LOS), case-mix index, and admission-related financial costs were compared before and after the intervention using a pre–post design.	5. After hospital: NP f/up as soon as possible at home. Within 3 weeks. LOS admissions not significantly shorter and no statistical difference in admissions/readmissions. CMI (complex load) statistically significant increase from 1.25 to 1.35. During intervention significant increases in net revenue. Annual cost of program $197000. Positive qualitative feedback across all groups. 'Relief', not having to hunt for information, e.g. updated meds and diagnoses. Discharge planning and communication link. Saves inpatient time. Facilitated discharge, confidence patient would be followed up.	Shared Electronic Medical Record used for documentation + up-to-date accurate information shared 'live time' improving timely communication = improved coordinated care and patient needs met	lack of detail of focus group feedback methods but direct quotes included to validate source information.
Robles et al. (2011)	Quantitative nonrandomised: Retrospective cohort design Purpose to understand whether hiring a NP (physician extender) is beneficial to patient care and allocation of resources (in colorectal and surgical oncology service).	NP worked on inpatient floor assessing needs of patients and ensuring these met prior to discharge. Spent time in outpatients visiting patients and running clinic to address issues that could not be handled over phone. Made phone calls and communicated patients and family from office. Demographics and patient characteristics similar in before and after group. Increase in home services in 'after' group, including nursing, OT, and physical therapy. Significant increase in number calls made to/from nurse in 'after' group. Before group 103 unnecessary ED visits, after group only 54. Significant reduction of 52%. Common reason for visits: fever, pain, nausea/vomiting, weakness, and wound issues. Emergency visits resulting in readmission did not change; reassuring that serious issues not overlooked.	Surgical patients in wards with restricted resident hours + NP to lead discharge processes > identify and meet home care needs shown by increase in discharge services arranged including nursing, physical therapy and OT services covered by Medicare = patients' needs better met when discharged home resulting in decrease unnecessary ED visits Surgical patients in wards with restricted resident hours + NP to lead discharge processes > availability of NP to speak to when concerns arose shown by 64% increase in phone calls, troubleshoot issues and provide reassurance > nurse arrange tests and Outpatient clinic if require so remove need to = decrease emergency visits	Participants were those admitted when NP was allocated on ward and represented target group. Measurements appropriate and included discharge services, emergency visits and hospital readmissions. Outcome data complete. Confounders not accounted for in analysis, but demographics tabled and show no significant difference between pre and post groups. Intervention administered as intended.
Sanon et al. (2019)	Quantitative descriptive: case study Describe the role of a Geriatric ED interdisciplinary team as an innovative Acute Care for Elderly (ACE) model of care for older adults who present to the ED.	Emphasizes patient centred care, nurse driven prevention protocols, frequent interdisciplinary rounds, early discharge planning, and IDT consultation. Transitional NP performs focused assessment including cognitive and functional, recommendations for further ED workup and communicate and coordinate discharges. 40.9% consults included geriatric RN/NP, 71.9% social work, 24.8% pharmacist, 18.5% physical therapy. NP also did post discharge phone calls and coordinate care and visits post discharge. SW met patients' psychosocial	Geriatric designed ED setting + geriatric comprehensive assessment at triage to identify specific geriatric syndromes by Geriatric NP = improve care of older adult in ED setting	Sampling strategy relevant to question and representative, convenience sample of 6050 that received intervention. Results were presented as consults patients received and appropriate to aim looking at interdisciplinary approach. Bias not important in this case series, complete data presented.

		needs and referral to community services. Most common combination of consults was NP and pharmacist and NP and SW. Geriatric triage allows identification of specific geriatric syndromes. Using IDT approach model allows better coordination and meet patients' needs, specifically cognitive assessment, pharmacy, and safe transitional care planning		
Smith et al. (2016)	Quantitative non-randomized: Case-control control study Targeted HV intervention for high risk patients can decrease readmissions and is a better use of resources and targets vulnerable patients.	All adult patients scored on day of discharge using LACE rehospitalization risk tool. High risk referred to Post Acute Care Transition (PACT) through EMR. HV within 72hrs, patients followed 30 days. HV to assess clinical improvement, medication, provide referrals, and adjustments to the clinical care plan. Focused clinical examination, f/up labs ordered, changes communicated to other health providers. Readmission rates for PACT statistically lower - between 42 – 53.9%. PACT works by replacing one size fits all model of discharge with multitude of externally contracted services. Promotes communication between primary care team and individualise care plan and use of shared EMR.	Vulnerable patients (at risk readmission) receiving HV + structured NP assessment with coordinated tailored care plan communicated early to providers = early mitigation of clinical concerns and minimizing need for hospital visit Home visit + tailored NP education based on patient/caregiver understanding disease/medication = improve self-care skills and know when to seek medical attention	Patients representative of target population with clearly defined inclusion/exclusion criteria and use of LACE tool. Appropriate measures for outcomes and analysis defined. LACE scores, age and gender distribution accounted for as variables. Unable to ascertain whether data complete. Confounding factor of age – case group was 4.2 years older however typically older adults more at risk therefore not have distorted data towards outcome of interest. Intervention administered as set out.
Takahashi et al. (2018)	Qualitative design: audio recorded semi-structured interviews. Phenomenological approach Understand the experiences of patients and caregivers in the MCCT (Mayo Clinic Care Transitions) program and to apply this knowledge to improve the clinical program.	Patients scored on Elder Risk Assessment Index. RN visits high risk patients for enrolment. NP evaluation in home within 5 business days. NP performs a comprehensive geriatric assessment. Patient seen or called at least once week for 30days. Approx. 6 visits made, and patient discharged when medical condition stabilizes. Themes: -The home visit -The NP role -Care of the whole person -MCCT program evaluation Rich qualitative data providing what works from patient and provider perspective. Highlighted is the value of care provided in home and the approach of NP being holistic and patient centred.	NP visit within home context with personal patient centred approach + comprehensive assessment and care plan = patient care more personalized and effective NP visit within home context where NP spends more time with patient + patient feels more comfortable and more freedom to openly discuss concerns and ask questions = patient gains more information and able to absorb NP is kind, patient and knowledgeable + addresses whole person and social needs and ADLs/quality of life = more comprehensive approach enabling patient to manage at home and not present to hospital	Phenomenological approach appropriate to aim of study as is data collection of transcribed audio record interviews. Findings are derived through thematic analysis using codes and interpretative process. Results sufficiently supported by direct quotes. Clear links are made between the data source, collection, analysis, and interpretation.
Warren et al. (2019)	Quantitative descriptive: cohort study Aim of project - 20% reduction in the 30-day	Care transition team included: transition facilitator (TF), nurse practitioner and pharmacist. NP role rounded with TF inpatient every morning, reviewed meds meeting patient pre discharge. Determine patients that benefit	Patients at risk of readmission + pharmacist home visit > identification of medication errors, pill box assistance, building rapport	Readmission rate calculated on the enrolled population so representative. Measurement of readmission was compared to before intervention. Minimal detail on measurement.

	readmission rate across all partner hospitals compared with baseline; reduction in the 30-day readmission rate among the high-risk cohort; and achievement of the target volumes for full enrolment.	NP visit post discharge, also referred from TF. Liaise medical staff. Pharmacist complete med review and home visit as required. Target enrolment over 2 years 4.800, actual enrolment 4,978. Initial readmission rate was 13.9%, now 12.5%. Unique use of pharmacist to complete home visits allowing them to be more efficient. Reduction in 30day readmission when patient outreached by pharmacist was 5% lower (11% vs 6%) statistically significant. No statistical significance between home consult or phone. Most common reasons for home visit were pill box assistance, patient education and medication organization.	and patient education = 5% reduction in readmission rate Patients at risk of readmission + multidisciplinary team approach > improved comms between inpatient and outpatient, comprehensive care planning = 11% reduction in readmissions	Appears there is complete data set. Pharmacist visit and mode of visit considered as confounder. The change in administration of intervention was the addition of pharmacist which was considered in measurement.
Weil et al. (2018)	Qualitative research: Case study Present a case of a partnership model using nursing, gerontology, and public health integration to support rural residing elders as a part of building an Adult-Gerontology Acute Care Nurse Practitioner program.	An Adult Gerontology Acute Care NP program developed with an interdisciplinary approach between nursing, community health and gerontology faculty. Focus on understanding rural culture, rural environment, and resources, and coordination of care transitions and collaboration. By combining public health NP students examined rural and elderly health disparities and health at both an individual and population level. Knowledge sharing and building between disciplines can enhance a population centred and person-centred approach in order to improve services for older rural patients. Successfully able to increase number of NP in rural areas and integration of rural health concepts and public health into interdisciplinary course creation	NP undertaken interdisciplinary preparation program + apply health promotion skills using motivational approach = patient centred approach to education and patient changes health behaviour (useful quote in article)	Case study approach appropriate for aim. Data collection from observations and collection student reflections appropriate. Findings and lessons learnt reflective of data presented. Result interpretation supported by quotes and examples. Links made between data, collection, analysis, and interpretation.