

Shared Acute Models of Care for Older People in Hospital

A scoping review of new and
emerging practice

Prepared by:

National Ageing Research Institute

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Contributing authors: Jess Barry, Kathryn Squires, Amy Parker, Stephanie Garratt, Frances Batchelor

Acknowledgements: Sue Williams

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ABBREVIATIONS

ACEM	Australasian College for Emergency Medicine	ESMO	European Society of Medical Oncology
ACEP	American College of Emergency Physicians	G-COACH	Geriatric CO-mAnagement program for Cardiology patients admitted to the Hospital
ADL	Activities of Daily Living	GCG	Geriatric Co-management Group
AMCOP	Acute Models of Care for Older People	GeriCO-V	Geriatrics Co-management of Older Vascular surgery
ANZSGM	Australian and New Zealand Society for Geriatric Medicine	GEDI	Geriatric Emergency Department Intervention
ASCO	American Society of Clinical Oncology	GEDI WISE	Geriatric Emergency Department Innovations in Care through Workforce, Informatics and Structural Enhancements
CGA	Comprehensive Geriatric Assessment	GOSAFE	Geriatric Oncology Surgical Assessment and Function rEcovery after Surgery
CNC	Clinical Nurse Consultant	GRACE	Geriatric Resources for Assessment and Care of Elders
COSA	Clinical Oncology Society of Australia	GTC	Geriatric Trauma Co-Management
CVD	Cardiovascular Disease	JCOG	Japan Clinical Oncology Group
DH	Department of Health	LOS	Length of Stay
ED	Emergency Department	POLDER	Pathway for Older Patients Reaching End Stage Renal Disease
ED-LOS	Emergency Department Length of Stay	SEOM	Spanish Society for Medical Oncology
EDU	Emergency Decisions Unit	ShAMCOP	Shared Acute Models of Care for Older People
EFU	Emergency Frailty Unit	SIOG	International Society of Geriatric Oncology
ESKD	End Stage Kidney Disease	TCN	Transition Care Nurse
ESRD	End Stage Renal Disease		

1. CONTEXT

1.1. Victoria's Ageing Population

Australia's population is ageing, with the number of people aged 65 years and over expected to be 5.7 million, approximately 19% of the population, by 2031.^[1] In Victoria there are more than 1 million people over the age of 60 and older people make up more than 15% of the Victorian population.^[2] An increase in longevity at the population level is not necessarily accompanied by an increase in health as the population ages.^[3] Although older people generally live well as they age, older people experience 41% of the disease burden and have specific health and care requirements that need to be considered in health and aged care settings.^[2]

1.2. The Impact of Ageing on Health

Into the future Victorian health services will be managing an increasingly larger proportion of older people as well as an increasing cohort that are frail and have complex care needs. Several medical, social and functional complexities influence the ageing trajectory and there are also specific medical conditions linked to older age.^[3] Furthermore, as people age, they are more likely to experience several conditions at the same time (co-morbidity). Many chronic diseases become more prevalent with older age and can significantly compromise quality of life.^[4] In 2015, 3 in every 5 Australians (60%) aged over 65 years were reported to have two or more chronic conditions.^[4]

Older age is also characterised by the emergence of several multi-factorial health states that tend to occur only later in life and cannot be classified into discrete disease categories.^[5] In health and medical fields, these are referred to as "geriatric syndromes" and commonly include falls, delirium, incontinence, depression, polypharmacy and frailty.^[5, 6] Geriatric syndromes, including delirium, incontinence and frailty, appear to be better predictors of death than the presence or number of specific diseases.^[5]

Geriatric syndromes are highly relevant to acute illness as the physiological stress of the illness, and associated treatment, may precipitate and/or exacerbate geriatric syndromes.^[6] Conceptually this is due to a reduced physiological ability to tolerate stressors relating to individuals having a limited amount of reserve.^[6] During ageing there is a decline in the homeostatic reserve capacity of all organ systems which renders individuals more susceptible to stressors.^[6] When stressors overwhelm reserve capacity, the development of geriatric syndromes can represent a lack of compensatory ability to manage a particular stressor.^[6]

1.3. Acute Models of Care for Older People

In 2019 NARI conducted the Acute Models of Care for Older People (AMCOP) project in conjunction with the Victorian Department of Health (DH). The aims of this project were to understand how Victorian health services identify and respond to older people in the acute care setting and to showcase good practice and innovative models of care.

The data retrieved from this project suggested that, in Victoria, older people presenting to hospital with acute medical problems are often admitted under general medical units, making it difficult for them to receive specialist geriatric care in a timely manner. The project concluded with a forum and interactive workshop involving 75 health service representatives who identified a need to:

- look at new service models, such as shared care, or co-management programs; and
- build workforce capability to improve the acute care of older people.

This feedback created the impetus to undertake the Shared Acute Models of Care for Older People in Hospital (ShAMCOP) project, a scoping review of new and emerging shared care models and co-management programs.

1.4. Shared Care Programs and Models

Geriatric shared care programs are emerging as a potential strategy to manage frail older people in both inpatient and outpatient settings.^[7] These programs involve decision making and collaboration between non-specialist geriatric and specialist geriatric teams focusing on the prevention and management of geriatric-oriented problems and syndromes.^[8]

Proposed benefits of geriatric shared care models for older people include:

- reduced deterioration;
- more appropriate risk assessment/ management; and
- improved discharge planning and shorter length of stay (LOS).^[7]

Although there are many proposed benefits to geriatric shared models of care for older people, it is important to examine the evidence. This report presents a scoping review of literature as well as local and international programs and perspectives relating to new and emerging shared models of care for older people in acute settings. It also provides an overview of the current shared care programs in Victoria (excluding ortho-geriatrics which is a well-established care pathway within many hospitals) as identified during the AMCOP project consultation process.

2. AIM AND OBJECTIVES

2.1. Aim

The Shared Acute Models of Care for Older People in Hospital (ShAMCOP) project was conducted by NARI on behalf of the Victorian DH to scope the current knowledge, evidence and local practice of new and emerging shared models of care for older people in acute hospital settings.

2.2. Objectives

1. To map the existing literature (both peer reviewed and grey literature) regarding new and emerging shared models of care for older people in acute hospital settings and present a descriptive overview of the findings.
2. To identify any shared models of care for older people in acute hospital settings, including the Emergency Department (ED), that are currently being provided within Victorian health services.
3. To explore the shared models of care for older people in acute hospital settings, including the ED, that are currently being provided within Victorian health services.

3. METHODOLOGY

3.1. Scoping Framework

The project design was based on the scoping review framework outlined by Arksey and O'Malley (2005).^[9] A scoping review framework was chosen to allow for mapping key concepts and themes within the topic area.^[9] The framework outlined by Arksey and O'Malley (2005), includes:

- i. identifying a research question
- ii. identifying relevant studies
- iii. study selection, charting the data
- iv. collating, summarising and reporting results
- v. an optional parallel step of consultation to inform the review.^[9]

3.2. Literature Review

3.2.1. Inclusions

Relevant literature, including grey literature, was located through a scoping literature review. It was important to capture a breadth of information because, as Chodosh and Wiener (2018) assert, many implemented shared care programs are not reported in peer reviewed journals.^[10] For this reason grey literature as well as peer reviewed articles were located through a desktop search. See Appendix 1 for the search strategies used. Relevant information retrieved was tabulated, analysed and then summarised. We also used a 'snowballing method' to update literature from the original end-point of the review (2019) to include publications released in 2020-2021.

3.2.2. Exclusions

Due to the considerable amount of existing literature regarding ortho-geriatric management, we excluded articles relating to this. However we did include other models related to surgical procedures given that surgery is commonly indicated in cancer and cardiovascular care, emergency medicine and the management of many medical conditions. The literature also showed that shared care is sometimes used to describe shared decision making between older people and clinicians rather than models of care.^[11] Articles that had this focus were excluded as this was considered outside the definition of shared care as it relates to this review. For further information on the definition of shared care used within this project, refer to section 1.1 *Definitions* of this report.

3.3. Local Health Service Consultation

3.3.1. Consultation Step 1: AMCOP Consultation and Workshop

The health service consultations and workshop conducted as part of the AMCOP project also shaped the project design. This process identified a number of acute shared models of care for older people operating within Victoria and highlighted relevant issues for clinicians. As per *Figure 1*, this was the first of two consultation processes conducted as part of the project.

3.3.2. Consultation Step 2: Shared Medical Model of Care Clinician Surveys

Two separate surveys were developed to collect further information about shared models of care from clinicians based at Victorian health services.

These were:

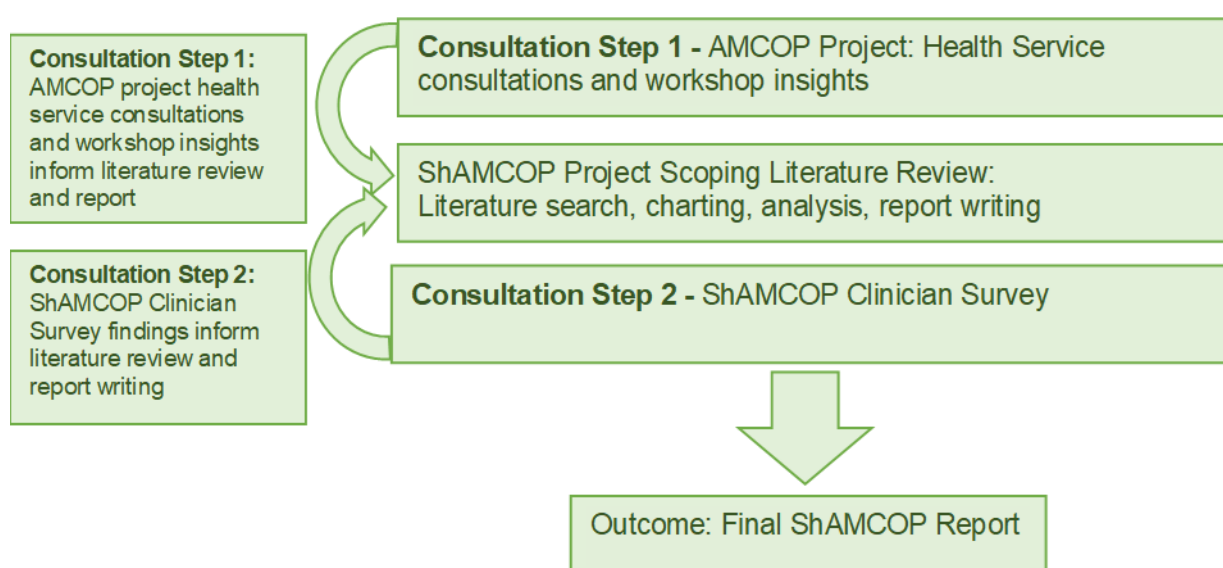
1. Shared Medical Care for Older People in Victorian Hospitals
2. Shared ED Models of Care for Older People in Victorian Hospitals.

Surveys were sent to key clinical contacts at health services, selected on the basis of their knowledge and involvement in shared care models for older people within either an acute ward or ED setting.

A total of four health services responded to the *Shared Medical Care for Older People in Victorian Hospitals* survey. One set of survey data regarding a general medicine model of shared care for older people was not included in this report as not enough data was provided by the service for its inclusion. See Appendix 5 for a summary table of this survey data. Only one health service responded to the *Shared ED Models of Care for Older People in Victorian Hospitals* survey.

Data was de-identified by the REDCap software used to collect the survey responses. Once collected, the data was analysed for inclusion in the report. See Appendices 2-6 for summary tables of data from both surveys. This formed the second of two consultation steps that informed this report.

Figure 1: ShAMCOP Project Design



4. FINDINGS

4.1. Overview of Geriatric Shared Care

4.1.1. Definitions

The definition of ‘**geriatric shared care**’, or ‘**co-management**’, adopted in this report was reached through scoping the literature. One source defined geriatric shared care as, “involving shared responsibility and decision making as well as collaboration between at least one non-geriatric specialist (such as a physician or surgeon) and a geriatrician who provides care in the prevention and management of geriatric-oriented problems.”^[11, 12] This definition was reflected across other literature which described shared care models as, “a strategy to manage frail patients...geriatric teams can be involved in relevant medical issues which can improve effectiveness of a Comprehensive Geriatric Assessment (CGA) approach.”^[7] The literature describes shared models as using two or more teams to provide complementary care with the geriatrician/geriatrics team focussing on prevention and management of geriatric oriented problems and the other team addressing specialist health issues.^[12]

The literature showed that the terms ‘geriatric shared care’ and ‘geriatric co-management’ were often used interchangeably to describe shared models of care for older people.^[13] ‘Shared care’, was also used to describe shared decision making between older people and clinicians rather than medical models of care.^[11] In addition to this some shared care models used co-trained specialists, for example an oncologist, co-trained as a geriatrician, rather than using two clinical teams.^[14] There was also discussion of, ‘generalist or hospitalist,’ physicians trained in geriatric medicine as being involved in shared care models.^[15] Literature which discussed these types of roles was reviewed when it offered insights shared care models and programs.

4.1.2. Purpose

The literature suggests the importance of geriatric care professionals in providing care to frail patients in acute settings.^[7] By doing so, shared care models aim to enhance the use of frailty screening and CGA to detect and then manage frailty, geriatric syndromes and complications.^[7, 16] *Figure 2* below illustrates the elements of a CGA.^[17] *Figure 3* depicts an example of how frailty screening and a CGA can be used in geriatric co-management. In this case a peri-operative pathway for older surgical patients based on incorporating screening for frailty, cognitive impairment and a CGA is depicted.^[16]

Figure 2: Comprehensive Geriatric Assessment (CGA). Activities of Daily Living (ADL) ^[17]

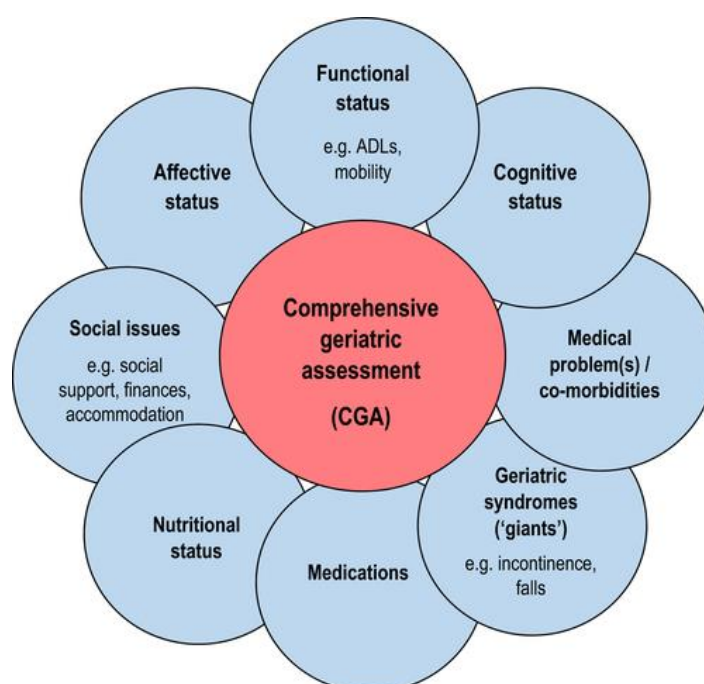
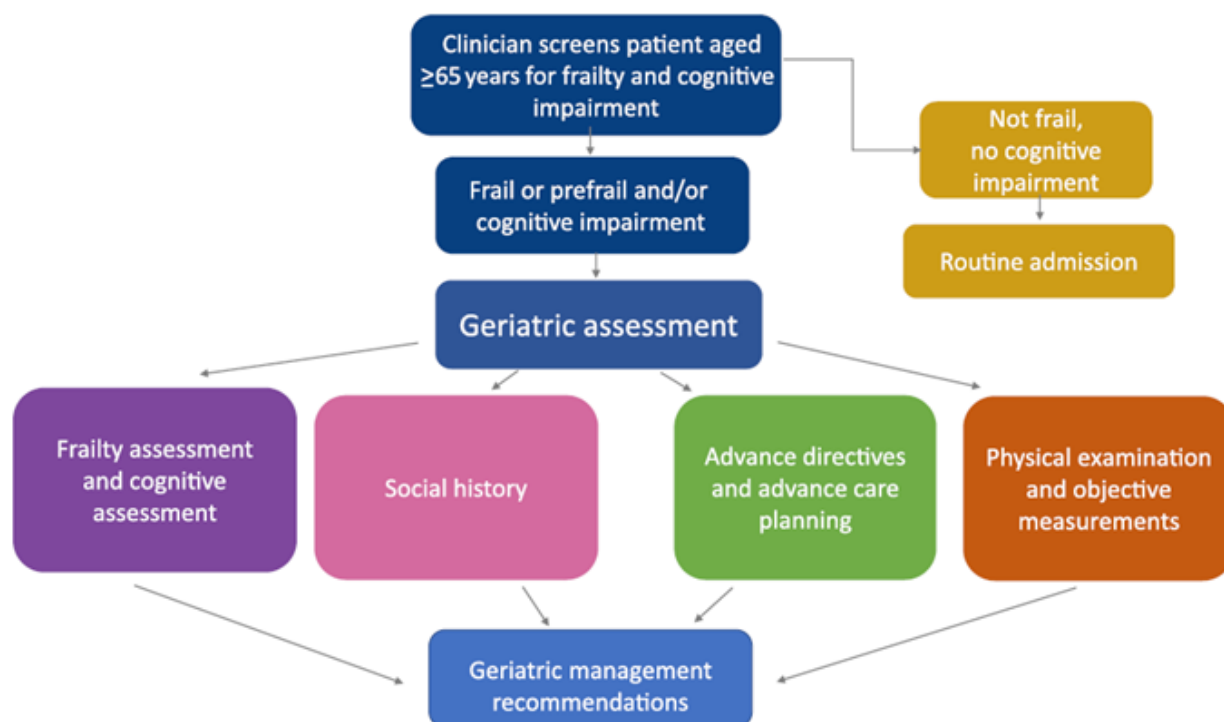


Figure 3: Use of frailty screening, cognitive impairment screening & CGA in a perioperative pathway for older surgical patients ^[17]



4.1.3. Gaps in Evidence and Clinical Practice

The scoping review and local health service consultation revealed that there are some well-established models of geriatric shared care in acute settings that have strong empirical support and have subsequently been embedded as part of routine clinical practice within Victorian hospitals. The most common of these is ortho-geriatrics which supports the management of older orthopaedic inpatients including those with fragility fractures, namely hip fractures. However models involving other disciplines and clinical specialties are emerging areas requiring additional research. A 2017 systematic review and meta-analysis examining the effectiveness of in-hospital geriatric co-management for frail patients on non-geriatric wards concluded that there was an absence of strong evidence in the area.^[12]

Gaps in the research indicate that there is merit in conducting a scoping review of geriatric shared care models. For this reason, this report focuses on new and emerging areas of shared care for the acute health needs of older people, in disciplines where shared models are being proposed and piloted, rather than including established shared care models such as ortho-geriatrics.

4.2. Cardio-Geriatric Models of Care

4.2.1. Cardiovascular Disease

The term cardiovascular disease (CVD) is used to describe many different conditions affecting the heart and blood vessels, with the most common types being coronary heart disease, stroke and heart failure.^[18] In 2016-17, 83% of cardiovascular disease hospitalisation in Australia occurred in those aged 55 and over, with the highest rates in the 85 years and over age group.^[19] Hospitalisation rates for heart failure, cardiomyopathy and stroke all increased with increasing age.^[19] Cardio-geriatrics provides an opportunity to embed comprehensive care for older patients with cardiovascular disease.

An emphasis on preventative strategies has produced a decline in the overall CVD mortality rates in industrialised countries.^[20] Whilst this is a positive outcome, it can also work to shift CVD issues to the 'oldest old' (those aged 80 and above) and move the burden of CVD so that it increasingly affects older groups.^[20] In addition, the mechanisms of ageing predispose an individual to CVD and work to aggregate health challenges which has implications for the management and treatment of CVD.^[21] Hospital admission for CVD is also associated with a reduction in mobilisation, loss of muscle strength, and worsening frailty, and interferes with the maintenance of independence, which is fundamentally important.^[22] Therefore, adapting the model of care to address an older patient group's needs through shared medical management should provide better outcomes. Despite this, evidence on the effectiveness of cardio-geriatric co-management approaches, programs and models is lacking, warranting a review of relevant literature, perspectives, programs and models.

4.2.2. Cardio-Geriatrics: Principles and Approaches

Cardio-geriatrics is defined as "a shared responsibility and decision making between at least a treating physician (e.g. cardiologist) and a geriatrician who provides complementary medical care in the prevention and management of geriatric-oriented problems."^[12] This definition is broadly applicable across the literature which identifies cardio-geriatrics as "the practice of cardiovascular medicine that is adapted to the needs of older people."^[23] While the majority of older patients admitted to a cardiology unit present with at least one geriatric syndrome, guidelines on managing heart disease often do not consider this.^[23]

The literature describes that a geriatric cardiology approach is one that is tailored to the needs of the growing number of older people (those aged 65 or older) experiencing CVD.^[20] Models that use a geriatric cardiology approach consider: the medical, physical and mental profile of a patient to achieve individualised treatment, based not only on CVD diagnosis but with respect to each individual's ageing process.^[20] This approach includes the knowledge of a CGA, altered pharmacokinetics in ageing and the concept of frailty to ensure the adoption of a treatment that can take into account age-associated factors.^[20] The aim of cardio-geriatric models is defined as "overcoming challenges and a mix of age related health deficits and cognitive deficits."^[20] These include: sarcopenia, diminished resiliency, falls, delirium, incontinence, pain and fatigue which can affect the mode and key priorities of the chosen therapeutic approach.^[20]

4.2.3. Cardio-Geriatrics: Research Perspectives and Models

4.2.3.1. Collaboration in improving cardio-geriatric care

Researchers Azad and Mielniczk (2016) outline some of the specific challenges associated with health service delivery for older people with heart failure. These include:

- high use of care services due to complexities associated with geriatric syndromes;
- re-admissions due to multi-morbidity rather than heart failure related problems; and
- physician time constraints and lack of clinical practice guidelines.^[27]

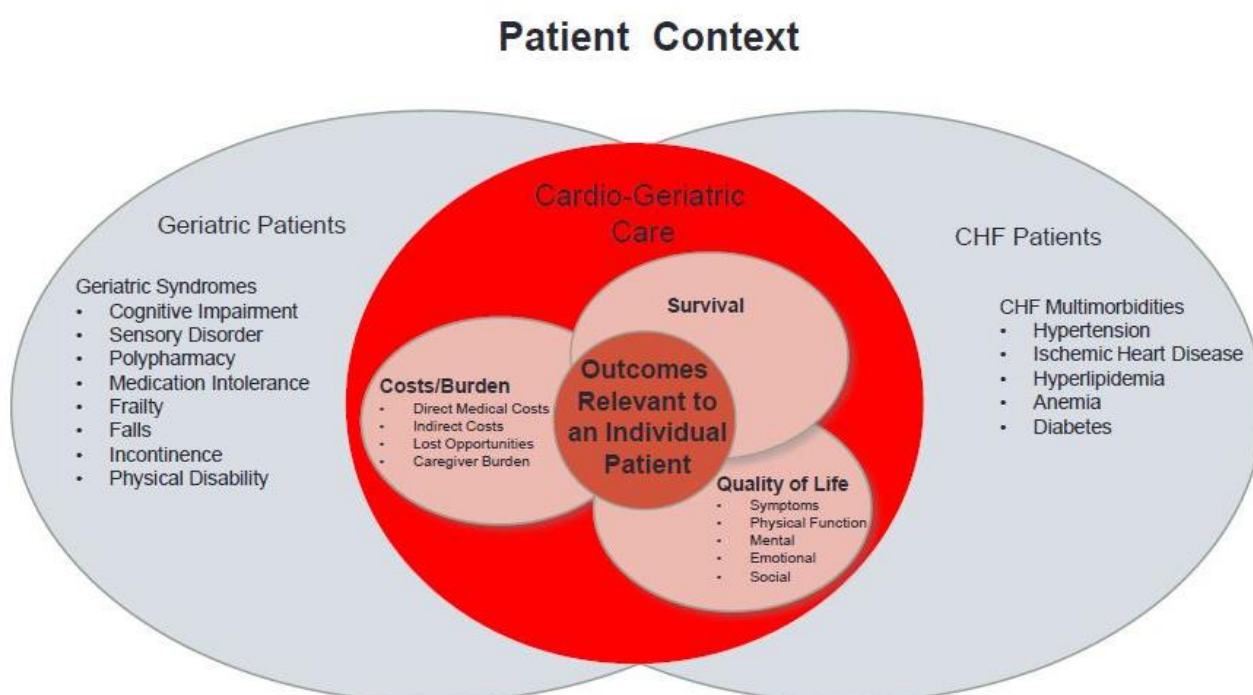
Azad and Mielniczk (2016) argue that improved care in an older patient population could be achieved through a new model of collaboration and teamwork between geriatricians and cardiologists.^[27]

Their proposed cardio-geriatric model, outlined in *Figure 4*, aims to build educational capacity for the workforce and provide an ongoing research environment that translates knowledge into clinical practice by focusing on the following:

- service delivery collaboration model;
- shared educational curriculum in cardio-geriatrics; and
- clinical guidelines informed by research on frailty among older people.^[27]

The researchers outline that this would work to address complex care co-ordination and integrated disease management.^[27]

Figure 4: Cardio-geriatric Care Model ^[27]

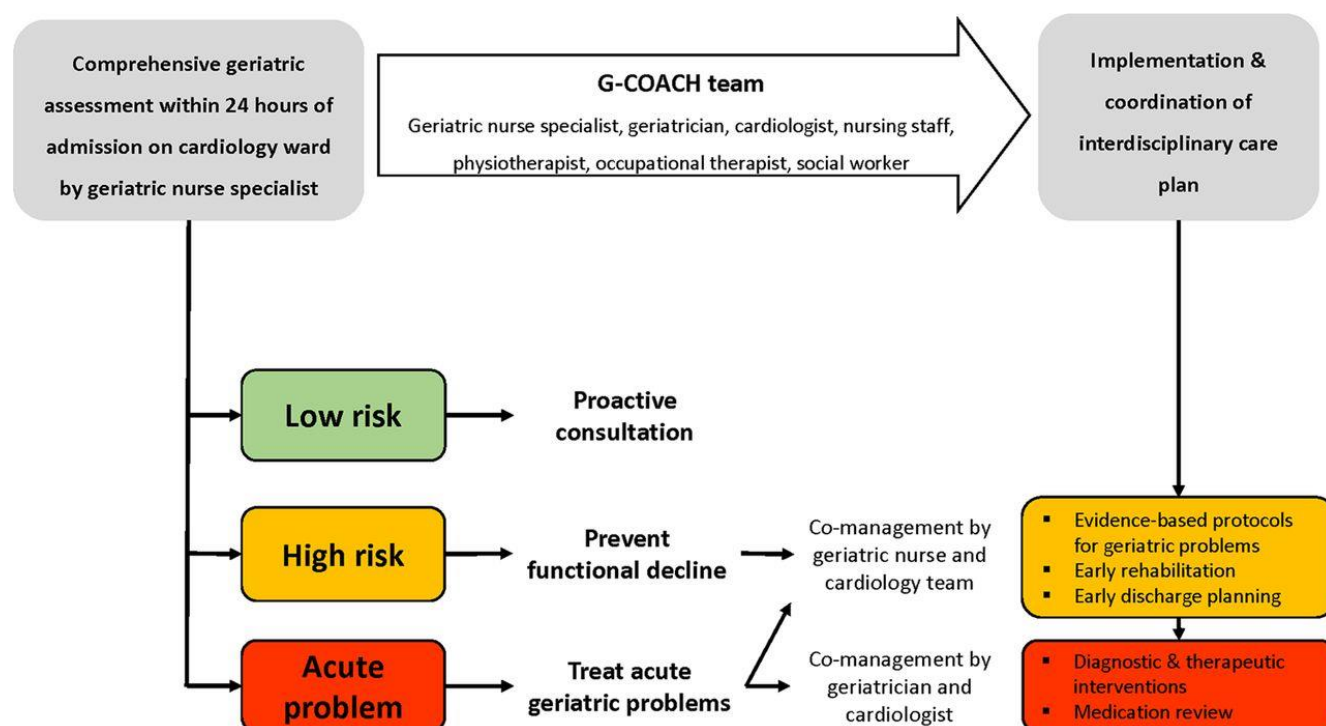


4.2.3.2. Geriatric CO-mAnagement program for Cardiology patients admitted to Hospital (G-COACH)

Researchers in Belgium developed an approach to identify who is frail among the older cohort of cardiology patients (inpatients aged 75 and over)^[28] and developed a Geriatric Co-management program.^[13, 26, 29], which has also been piloted and evaluated.^[7, 8, 30, 31] The model is a geriatric co-management program for cardiology called the "Geriatric CO-mAnagement program for Cardiology patients admitted to the Hospital" (G-COACH).^[13, 26, 29, 30] The G-COACH model assesses patients using a CGA to identify those at risk of functional decline and implement assess management strategies.^[12, 30] *Figure 5* illustrates the various components of the G-COACH model including CGA within 24 hours of admission, stratification of patients according to baseline risk of functional decline and targeted intervention strategies.

In the G-COACH evaluation, 189 patients were in the control group and received usual cardiology care and 188 patients received the G-COACH intervention.^[7, 8, 12, 30] Compared to the standard approach, the G-COACH model did not improve functional status, however incidence of delirium and hospital-acquired infections were significantly reduced. The authors concluded that the G-COACH cardio-geriatric model of care should be standard practice.^[7, 26, 30]

Figure 5: The G-Coach model [7, 26, 30]



Summary of G-COACH Model of Care

- Patients aged ≥ 75 years admitted for acute cardiovascular disease with an expected LOS ≥ 3 days
- G-COACH model (using a CGA to stratify patients based on their risk for developing functional decline and intervening accordingly)

Outcomes

- No improvement in functional status
- Reduced incidence of delirium as well as nosocomial/hospital acquired infections

4.2.3.2.1. G-COACH model 2021 update

In 2021 the G-COACH team undertook further evaluation of the approach. This study was designed to measure the intervention's effectiveness in patients at high risk for functional decline or experiencing acute complications.^[31] The model of care trialled was a nurse-led geriatric co-management program for frail older patients on cardiac care units.^[31] The intervention involved a nurse from the geriatrics department performing a CGA within 24 hours of admission.^[31] The cardiac care team and geriatrics nurse drafted an interdisciplinary care plan focusing on early rehabilitation, discharge planning, promoting physical activity and preventing geriatric syndromes.^[31] The geriatrics nurse provided daily follow-up and coached the cardiac team. A geriatrician co-managed patients with complications.^[31]

Like the previous study, the program was not effective in improving functional status as measured by the Katz Index for independence in activities of daily living (the primary outcome) ^[28, 31], but significantly improved the secondary outcomes incidence of ADL decline and complications, length of stay, unplanned readmissions, survival, and quality of life.^[31] These included significantly fewer cases of delirium and obstipation during hospitalisation, and significantly fewer hospital acquired infections.^[31] Similarly to the previous study findings there were no differences regarding length of stay, readmissions, or survival.^[31] Study participants had a mean age of 85 years.^[31]

Key points from 2021 G-COACH model update are as follows:

1. The nurse-led cardio-geriatric co-management program prevented delirium, infections and obstipation^[31]
2. There was no clinically relevant effect on functional status.^[31]

4.2.3.3. Systematic review of geriatric co-management

A systematic review of the structure, process and outcomes of team-based geriatric co-management of older inpatients was undertaken by researchers involved in G-COACH.^[24] The researchers defined the model of care as, "...a collaboration between a geriatrician/geriatric team and a primary treating physician/team, in the prevention and management of geriatric problems, through shared responsibility and decision making based on comprehensive geriatric assessment."^[24]

Findings of the review indicate that team-based geriatric co-management reduced the LOS for older patients in 9 of 13 studies included. Hospital readmission up to one year follow-up was reduced in only 1 of 4 geriatric co-management intervention studies reviewed.^[24] Out of the interventions reviewed, 1 of 8 reduced in-hospital mortality and 2 of 9 interventions reduced mortality up to one year follow-up.^[24] Researchers therefore concluded that geriatric co-management teams may reduce LOS among older inpatients but not mortality.^[24] Additionally, the effect of team based geriatric co-management on functional status and readmission rates has not been adequately investigated.^[24] A systematic review and meta-analysis carried out in 2017 found that there was low-quality evidence of reduced LOS and reduced number of patients with complications, and very low-quality evidence of improvements in functional status as a result of geriatric co-management of older patients.^[12]

These findings are relevant to the G-COACH model studies because they show that while cardio-geriatric models of care seem to benefit older patients by reducing delirium, infections and obstipation, further evidence is needed as to their efficacy in reducing LOS and mortality.

4.2.3.4. Geriatrics Co-management of Older Vascular surgery patients (GeriCO-V)

The Geriatrics Co-management of Older Vascular surgery patients (GeriCO-V) program is a novel inpatient service designed to co-manage older vascular surgical inpatients at a tertiary academic hospital in Sydney.^[32] The service includes a geriatrician embedded into the vascular surgery team to implement a range of interventions for older patients based on CGA.^[32] In a prospective before-and-after study of patients aged 65 years and over admitted under vascular surgery, 150 patients were included in the pre-intervention control group and 150 patients in the intervention group.^[32] The GeriCO-V intervention was not effective in reducing LOS or mortality, but the intervention group had significantly lower rates of delirium, hospital-acquired geriatric syndromes, cardiac complications and infective complications.^[32] This was despite the intervention group at baseline having higher levels of frailty, unplanned admissions and more major operations than the control group.^[32] In addition to this, the GeriCO-V model of care was implemented during the onset of COVID-19 in Australia (2020) which disrupted hospital care and posed a danger to older frail patients such as those enrolled in the intervention group.^[32]

4.2.4. Cardio-Geriatrics: Limitations and Challenges

The scoping literature review identified key challenges involved in the care of older patient groups with CVD. For older people, CVD is likely to exist in combination with comorbid conditions, disability, poly-pharmacy, falling risks, and body composition changes.^[21] These dimensions of health can result in cumulative frailty with greater clinical complexity, which can impact CVD presentation, prognosis, and treatments.^[21]

Davidson et al. (2015) note that there is a lack of evidence in studies and trials represented across the literature. This is a barrier to determining the benefits that are attributable to individual components of co-management programs and models for chronic heart failure.^[33] Others also note that the field of cardio-geriatrics, “is still in its relative infancy, the training pathways and structure of clinical programs in geriatric cardiology are still being delineated.”^[34 p1] Miller et al. (2018) also note that, after two decades of progress in the field of cardio-geriatrics, the goal of an emphasis on function and quality of life is clear but the specifics on how the field will address this “...are still in development”.^[35]

Malavolta et al. (2017) note that very few randomised placebo-controlled trials of medical treatments are conducted among the oldest population group (80 years and older).^[20] They identify that this lack of studies is the most important challenge in regards to the adoption of new geriatric care models.^[20] An additional challenge in adoption of new models is that there are many shared programs which are implemented but are not reported on in peer-reviewed journals.^[10] This means that opportunities to learn from models, especially those that do not meet their intended outcomes, are limited.^[10] Cardio-geriatrics as a field is still evolving and lacks precise tools and skillsets to define the field, but it is developing toward a distinctive subspecialty with specific skills and services with the common goal to further advance the care of older patients.^[23]

Although the G-COACH model has been the subject of multiple studies to date, the program has not shown significant effectiveness in improving functional status, nor has it shown effect on length of stay, readmissions, or survival.^[30, 31] It has, however, demonstrated an effect in preventing secondary outcomes of delirium, infections, and obstipation.^[31] The findings of a systemic review of team-based geriatric co-management conducted by the researchers involved in the G-COACH model illustrated similar findings, indicating that further evidence is needed to assess the efficacy of geriatric co-management on outcomes such as LOS, readmission, mortality and improved functional status.^[8, 12, 29] In addition, the evaluation of the GeriCO-V model showed similar outcomes where LOS and mortality were unchanged by the intervention but delirium, hospital-acquired geriatric syndromes, cardiac complications and infective complications were reduced.^[32]

In summary, a scoping review of the literature indicated that cardio-geriatrics is an evolving field and further research is required to determine the approaches needed to ensure that shared care of older people with CVD can improve outcomes such as providing greater function, reduced mortality, independence and a high quality of life.^[35]

4.2.5. Cardio-Geriatrics: Literature Summary

- Cardio-geriatrics has the common goal to further advance the care of older patients with an emphasis on function and quality of life.^[35]
- Research into the outcomes of specific cardio-geriatric models such as G-COACH and GeriCO-V offer insights into how a cardio-geriatric model of shared care can work with a nurse-led cardio-geriatric co-management program preventing delirium, infections and obstipation.^[30, 32]
- The GeriCO-V model had no impact on LOS and mortality, but reduced rates delirium, hospital-acquired geriatric syndromes, cardiac complications and infective complications.^[32]
- The G-COACH model consisting of a nurse-led cardio-geriatric co-management program for frail older patients on cardiac care units prevents delirium, infections, and obstipation, but does not improve functional status.^[31]
- The mechanisms and the concept of cardio-geriatrics and related models are evolving and further published research is required to assess outcomes and efficacy.^[10, 20, 23, 35]

- After combining studies, a systematic review indicates that cardo-geriatric co-management may reduce LOS among older inpatients (low quality evidence).^[24]
- The efficacy of cardio-geriatric models on functional status and readmission rates for older patients is unknown as research in the field is in its infancy.^[12, 24, 34]

4.2.6. Cardio-Geriatrics: Clinical Practice Examples in Victoria

During the AMCOP project it was identified that one health service in Victoria, Western Health, has an established acute inpatient cardio-geriatrics model of care for older people. In 2014, Western Health successfully introduced their cardio-geriatric service for heart failure patients over the age of 65.^[36] Eligible patients are co-managed by the specialist cardio-geriatric team which includes daily review by both a cardiologist and a geriatrician as well as specialist cardiology and geriatric nurses, and allied health staff.^[36] The model of care also includes inpatient and community services working together to plan and implement co-ordinated, integrated care for heart failure patients from the point of first presentation through to discharge and ongoing care in the community.^[37]

Summary: AMCOP Consultations and Cardio-geriatric Shared Care

1. Cardio-geriatrics Service – Western Health

Model of Care

- Older patients (65+) presenting with heart failure
- Admitted to the cardiology unit but co-managed by geriatricians
- Members of the multidisciplinary team include:
 - Cardiologist
 - Geriatrician
 - Speciality cardiology and geriatric nurses
 - Dedicated allied health staff
 - Exercise physiologists
- Includes community-based follow up

Key Objectives

1. Improve clinical outcomes for older patients (65+) presenting with heart failure
2. Minimise functional decline and adverse outcomes for older people admitted to hospital with heart failure
3. Improve nursing capacity and capability in cardiology units to provide best care to older patients
4. Establish mechanisms for comprehensive pathways and service assessment for older patients presenting with heart failure to ensure that they receive the right care at the right time and in the right place and are appropriately linked to services to address their cardiac as well as functional and social needs.

Outcomes

- The service reports in improvements in:
 - Mortality
 - LOS
 - Recurrent heart failure re-presentation rates
 - Capability of cardiology to discuss goals of care and provide palliative care to end stage heart failure patients

The *Shared Medical Care for Older People in Victorian Hospitals* survey identified one Victorian health service with a cardio-geriatric model of care (note: only de-identified information was collected from health services as part of this survey). Known as the Cardio-geriatric Heart Failure Service, this model of care was reported as being funded internally by the health service.

Key performance indicator data is reviewed monthly with outcome measures including:

- hospital LOS;
- re-admission rate;
- hospital acquired complications; and
- patient-reported satisfaction.

Figure 6 provides an overview of the service according to the patient journey, with further survey data included in Appendix 2: Clinician Survey Data – Cardio-geriatric Service of this report.

Figure 6: Overview of Cardio-geriatric Heart Failure Service in a Victorian Hospital

Cardio-Geriatric Heart Failure Service <i>(Primary Bed Card: Cardiology)</i>	
Eligibility	- Patients aged over 65 and with a primary admission diagnosis of heart failure meet the eligibility requirements for the service - Specific exclusions for service include: advanced other end organ disease (such as end stage COPD, liver disease, kidney disease), anaemia (haemoglobin less than 80), advanced malignancy and advanced dementia
Intake	- Intake process uses automatic acceptance based on the eligibility criteria - Referrals accepted from Outpatient Clinics, ED and other inpatient units - Most patients referred through ED and accepted by the Cardiology Registrar while other patients are cross-referred by other units and then accepted by the Cardiology Registrar - Some direct admissions occur from the community or through the heart failure clinic (organised by the Heart Failure CNC or a Cardiologist)
Admission	- Initial assessments conducted by: - Specialist Geriatric Nurse - Cardiologist - Geriatrician - Allied Health (Physiotherapy, Occupational Therapy, Dietetics and Social Work – individual referral/s as required) and - Pharmacy
Service Provision	- Standard components of service delivery include: - Use of a clinical pathway - Cardiology review (Mon – Sun) - Geriatric Medicine review (Mon – Fri) - Heart Failure CNC review (Mon – Fri) - Access to allied health (as above) and pharmacy - Multi-disciplinary team case conference and family meetings
Post-Discharge Follow Up	- Standard components of post discharge follow up include: - Follow up phone call within 1/52 post discharge - Rapid Access Outpatient Clinic review 1 – 2 post discharge - Hospital-based outpatient rehabilitation program

4.3. Onco-Geriatric Models of Care

4.3.1. Oncology/Cancer

Cancer is a term used for diseases in which abnormal cells divide without control and can invade nearby tissues. Cancer cells can also spread to other parts of the body through the blood and lymph systems. Cancers can develop from most cell types and are distinguished from one another by the location in the body where the disease began (for example, lung) or by the cell type involved (known as histology).^[38]

The median age of people diagnosed with cancer in Australia is 67.8 years and, in 2015, people aged 65 and over accounted for 76% of cancer related deaths.^[39] People over 65 years old are the most common population in oncological practice.^[40] This indicates a need to consider geriatric-related health issues when delivering acute care for older people with cancer. In the literature two main challenges in the care of older people with cancer are identified: under-treatment due to ageism and over-treatment (in giving treatment to older adults that significantly lowers the quality of their survival).^[41] These concerns about greater risks of treatment toxicity and higher non-cancer mortality can be based on more aggressive cancer biology, competing co-morbidities and decreased physiological reserve among some older people that may reduce an older person's ability to tolerate cancer treatment.^[42] Acute cancer care for older people therefore requires consideration of geriatric syndromes such as frailty. One way to achieve this could be through an onco-geriatric model of acute care.

Although older patients with a cancer diagnosis may benefit from both the disciplines of geriatrics and oncology there is currently little integration between the two areas in Australia.^[39] Geriatric oncology is a relatively young but increasingly important field. As such there is no shared definition of an integrated approach for cancer care of older people.^[43] It is currently considered a niche service, often limited to pilot programs in outpatient settings.^[44]

4.3.2. Onco-Geriatrics: Principles and Approaches

The provision of shared models of care across the cancer care continuum is an emerging field.^[41] A geriatric oncology model of care can be defined as providing, "...cancer-specific, fitness-appropriate and individualised geriatric care, strong integration between medical, supportive and social services and the design and implementation of age-appropriate health care policies and practices."^[41] This definition aligns well with the aim of providing care for older patients as a heterogeneous group with a high prevalence of co-morbid conditions and vulnerabilities to cancer treatment.^[41] The literature also indicates that management options should not be determined solely on age.^[39, 41] It is suggested that onco-geriatric models should consider the functions of health, as this approach accounts for the wide differences that can exist between an individual's chronological and physiological age.^[39]

Valuable lessons can be drawn from existing co-management and interdisciplinary services such as those used in emergency medicine and orthopaedics, where geriatric assessment and services are combined with acute care.^[39] Like cardio-geriatric care, literature regarding the emerging field of onco-geriatrics notes the success of orthopaedic geriatric models of care,^[40] and supports the use of an approach that includes geriatric co-assessment such as CGA and frailty screening to improve the survival and clinical outcomes of older patients.^[40]

Shared onco-geriatric models of care (which incorporate CGA) have the potential to support holistic pre-operative assessment, provide opportunities for pre-rehabilitation, minimise post-operative complications associated with geriatric syndromes and enhance functional capacity.^[11, 45, 46] Most models and research perspectives across the literature agree that CGA is a vital component of onco-geriatric models.^[39, 47, 48] This is because geriatric assessment supports the provision of holistic treatment to a person seeking care, not only with respect to age, but taking into consideration biological vulnerability (whether they are robust or vigorous, pre-frail, frail, or dependent).^[43]

4.3.3. Onco-Geriatrics: Research Perspectives and Models

4.3.3.1. Geriatric Oncology Surgical Assessment and Function rEcovery after Surgery (GOSAFE)

The Geriatric Oncology Surgical Assessment and Function rEcovery after Surgery (GOSAFE) study was a multi-centre study designed to evaluate quality of life for older people after cancer surgery, assess baseline frailty indicators and clarify the most relevant tools in predicting functional recovery and clinical outcomes.^[49] Early analysis of baseline evaluations from 977 patients aged 70 years and over demonstrated that frailty is frequent in older people undergoing major elective cancer surgery.^[49] In particular pre-operative evaluation revealed that a large number of patients experienced weight loss and nutritional imbalance of whom about 10% had moderate to severe nutritional impairment.^[49] Research findings indicated screening for frailty is therefore vitally important for older people with cancer to ensure that health status and function are optimised prior to commencing treatment and that co-morbidities are actively monitored and managed.^[49]

The following is a summary of the GOSAFE Study:^[49]

Summary: Geriatric Oncology Surgical Assessment and Function rEcovery after surgery (GOSAFE)

Outcomes for Older People with Cancer

- Chronic conditions affecting older people put them at higher risk of post-operative complications from cancer treatments
- Personalisation of onco-geriatric patient care is closely related to the preservation of functional capacity

Importance of Pre-operative Evaluation

- Frailty is frequent in older patients undergoing cancer surgery
- Identification of frailty could facilitate opportunities for pre-operative optimisation

4.3.3.2. Geriatric Co-management after Cancer Surgery

Geriatric co-management was associated with reduced 90-day postoperative mortality and higher utilisation of inpatient and outpatient services in study findings presented at the American Society of Clinical Oncology Annual Meeting.^[50, 51] For patients with cancer aged 75 or older positive outcomes of geriatric co-management occurred even though the patients who received co-management were older, had longer procedure times and had one extra day of hospital stay.^[50] Confirmation of these findings in a randomised controlled trial is needed t.^[50, 51]

The following is a summary of the preliminary results of the onco-geriatric co-management study:^[50, 51]

Summary: Geriatric Co-management after Cancer Surgery

Model of Care

- Cancer patients aged 75 or older having elective surgery with length of stay > 1 day
- Geriatric co-management group (GCG) had geriatric pre-operative evaluation and inpatient geriatric co-management

Outcomes

- Reduced 90-day mortality
- No difference in adverse surgical events
- Greater proportion of patients received inpatient physical therapy and occupational therapy

4.3.3.3. Onco-Geriatric model in a university-based cancer centre

Another model for a multi-disciplinary geriatric oncology centre was developed at Thomas Jefferson University, a university-based cancer centre, however definitive evidence of the impact has not yet been established.^[47]

Summary: Onco-geriatric model in a university-based cancer centre

- Multidisciplinary evaluation for people aged ≥ 70
- Evaluation visitation duration ~2 hours
- Patients evaluated by:
 - Medical Oncology
 - Geriatric Medicine (geriatric assessment)
 - Pharmacy
 - Social Work
 - Dietitian/Nutrition Assessment
 - Pharmacist (medication review)
- Patient population determined as fit, vulnerable and frail classifications
- Series of tools and assessments completed including:
 - Vulnerable Elders Survey (VES-13)
 - Functional screening, pharmacy review
 - Mini Nutritional Assessment (MNA)
 - Geriatric Assessment
 - Activities of Daily Living (ADL) scales
 - Timed up and go testing (TUG)
 - Cognitive screening (Mini-cog assessment tool)
 - Estimated life expectancy (Walter and Covinsky Tables and Lee Four Year Mortality Calculator)
 - Risk of Chemotherapy Toxicity Calculator (CARG)
- At conclusion of 2 hour visit the entire interdisciplinary team meet for a case review and to formulate a comprehensive treatment plan

4.3.3.4. Geriatric Oncology Task Force

In Spain, a Geriatric Oncology Task Force has been set up under the auspices of the Spanish Society for Medical Oncology (SEOM).^[52] The aim of the task force is extend the efforts of The International Society of Geriatric Oncology (SIOG) into Spain by generating evidence and raising awareness, as well as helping medical oncologists in their training with respect to older people with cancer.^[52] A national online survey of medical oncology services in Spain was conducted to establish how they were addressing the care of older people with cancer.^[52] The following is a summary of the survey findings:^[52]

Summary: SEOM National Oncology Service Survey (Spain)

- The survey was conducted between March 2016 and April 2017 – 154 answers were collected
- 74 centres (48%) had a geriatrics department and 21 (14%) of medical oncology departments had a person dedicated to Geriatric Oncology
- Majority (n = 135; 88%) had the perception that the number of older patients with cancer seen in clinical practice had increased
- Eighteen (12%) oncologists had specific protocols and geriatric scales were used at 55 (31%) centres
- Almost all (92%) claimed to apply special management practices using specific tools in the treatment of older people with cancer
- SEOM concluded that there was no defined care structure for older cancer patients and that there is an increasing perception of the need for training in Geriatric-oncology

SEOM also provides the following recommendations for onco-geriatric models of care:[43]

Summary: SEOM –Recommendations for onco-geriatric models of care

- CGA can provide a comprehensive appraisal of health status, including medical, cognitive, psychological, social and functional aspects of daily life and should be considered for older people undergoing cancer treatment
- Once an older patient has been assessed an individualised treatment proposal can be made
- Treatment options should consider co-morbidities as these can interact with cancer care in multiple ways
- Specific interventions for geriatric syndromes as detected by CGA can enhance cancer care
- Polypharmacy should be considered via medication review to avoid harmful drug interactions
- There should be consideration of low-toxicity treatment for older cancer patients
- Consideration should be given to prevention and early treatment of the toxic effects of chemotherapy
- Optimal symptomatic control by means of a multidisciplinary approach is recommended for older cancer patients
- Care plans should consider achieving adequate social support for older people undergoing cancer treatment

4.3.3.5. Onco-Geriatric education and clinical practice

The Japan Clinical Oncology Group (JCOG) has conducted clinical research (including multi-centre, phased, clinical trials of multi-disciplinary treatment) focusing on older patients with cancer, and established a set of parameters for geriatric cancer research.[53] These parameters aid patient selection based on treatment tolerance and chronological age, separating research participants into “fit, frail and vulnerable” groups.[53] Study indicators across the multiple trials: include survival, physical function, cognitive function and co-indicators such as incorporation of CGA.[53]

In addition to this, a nationwide survey found education and clinical practice in geriatric oncology in Japan to be in greater need of development, as many medical schools surveyed did not offer education curriculum in geriatrics or the provision geriatric oncology training.[54] As Japan has a large population of older people, researchers concluded that education and training in geriatric oncology should be provided as core knowledge to students, trainees and healthcare professionals.[54] A summary of survey findings are as follows:[54]

Summary: Research Survey - The landscape of onco-geriatric education and clinical practice in Japan

- Forty-eight medical schools participated in the survey and only 23 of these schools offered education in geriatric oncology
- Forty-two graduate schools of medicine participated in the survey and only five of these had an education curriculum in geriatrics but none provided oncology training
- 151 hospitals participated in the survey with 5 having a geriatrics division and 20 employing geriatricians
- There were no geriatric oncology services of geriatric oncology specialists in any of the 151 hospitals that participated
- 70% of hospitals reported performing geriatric assessment for at least some older patients with cancer

4.3.3.6. Onco-Geriatric assessment – current practice in Australia

The Clinical Oncology Society of Australia (COSA) is the primary multidisciplinary oncology society within Australia.[44] The group is a forum for interested clinicians and leads education and research to inform service delivery in the field.[44]

In Australia geriatric-oncology is currently a niche service with the pioneering work of an onco-geriatric clinic being undertaken at the Royal Adelaide Hospital.[44]

This geriatric oncology model implemented in Adelaide proved difficult to sustain for the whole population of older adults accessing cancer treatment and has been transformed into a clinic for only the 'oldest old' of patients, aged 80 years and above.^[44] South Australian researchers highlight factors guiding cancer management in older people can be divided into those relating to cancer (such as cellular type) and those relating to overall fitness, co-morbidities, functional status, mental status and family/social support.^[55] Models of care that incorporate CGA for older people with cancer allow for identification and intervention to address these factors.^[55] Sydney-based researchers have also found that there is an emerging evidence base for the benefits of geriatric assessment and collaboration between geriatricians and oncologists.^[56] However they noted that medical oncologists in Australia report a lack of access despite a desire to engage with geriatric medical services.^[56] Other literature highlights that there is currently no standardised service delivery in for older cancer patients, despite increasing numbers and the growth of aged care services in Australia.^[39] Researchers note the absence of national guidelines and frameworks leads to inconsistency in access to appropriate care for older people with cancer in Australia.^[39]

4.3.4. Onco-geriatrics: Limitations and Challenges

As with many emerging models of care for older people, underrepresentation of older and frail patients in clinical trials is a barrier to the development and implementation of effective models of care for an older patient group.^[11] Overall there is a lack of high-quality evidence relating to older patients' access to quality cancer care.^[57] In addition, where onco-geriatric models of care have been described, the data is limited in terms of assessing efficacy and outcomes.^[47] This is not surprising given the infancy of collaborative models of care for older cancer patients, particularly in Australia where such programs are niche and limited to pilot programs.^[44] According to one study, Australian oncologists show great interest in models of cancer care that incorporate CGA for older patients, but they have difficulty in accessing such services for their practice.^[56] Another source identified that, "worldwide there is a paucity of geriatric training and most of the oncology workforce lacks the skills and knowledge to provide comprehensive care for older patients."^[44] A second review noted that, "Despite the growing scientific attention on clinical and management peculiarities of older patients, scientific research on this topic is poor."^[40]

In addition, the literature also revealed that geriatric oncology services for older people can be overwhelmed by demand given that a high proportion of oncology patient cohorts are comprised of older people.^[44] Increasing patient load and costs of healthcare represent a large challenge to the uptake of geriatric oncology research and interventions in the provision of cancer care for older people.^[44]

4.3.5. Onco-geriatrics: Literature Summary

- Collaborative models of care for older cancer patients are in their infancy, particularly in Australia, which means that data on outcomes and efficacy is limited and there is a lack of high quality evidence as to what aspects of cancer care models for older people enhance their care.^[44]
- Geriatric co-management and associated shared care models are emerging, with the care structure yet to be defined and an increasing recognition of the need for training in geriatric oncology ^[39, 41-44, 52]
- Most models and research perspectives agree that CGA is a vital component of developing onco-geriatric models.^[39, 47, 48]
- Studies indicate that screening for frailty is important for older people with cancer to ensure that health status and function are optimised before commencing cancer treatment and that co-morbidities are actively monitored and managed to improve post-operative function.^[49]
- With this in mind, it is important to strike a balance and neither under nor over-treat older people with cancer; CGA is also useful in providing a good indication of treatment pathways and identification and prioritisation of geriatric syndromes.^[41, 42]
- Geriatric co-management is associated with reduced 90 day postoperative mortality and greater uptake of inpatient and outpatient support services, however, a randomised control trial is required to confirm the findings.^[50, 51]

- A model for multi-disciplinary Geriatric Oncology management was trialed in the setting of a cancer centre in the USA.^[47] The model gives an outline as to what a shared care model or geriatric co-management could consist of in Oncology, such as; multidisciplinary evaluation for people aged ≥ 70 , geriatric assessment informing interdisciplinary team case review and formulated treatment plan.^[47]

4.3.6. Onco-geriatrics: Clinical Practice Examples in Victoria

Currently in Victoria there are no formal shared models of care for older people with cancer who require hospitalisation. The closest example identified was a shared oncology/geriatric ward, but this has been developed without formal workforce and communication processes. In Victoria, two trial onco-geriatric outpatient clinics were identified, both of which incorporate geriatrician review and CGA.

The *Shared Medical Care for Older People in Victorian Hospitals* survey undertaken as part of this report did not identify any Victorian health service with an acute inpatient onco-geriatric model of care.

Summary: AMCOP Consultations and Onco-geriatric Shared Care

1. Shared Onco-geriatric Ward – Peninsula Health

- Shared Oncology and acute care of the elderly inpatient ward
- Geriatricians provide education and advice across the entire ward

2. Outpatient Onco-geriatric Clinic – Melbourne Health

- Study assessing the utility of a CGA and intervention plan in an outpatient clinic for patients aged over 65 years with a new diagnosis of advanced lung cancer
- Outcome measures include quality of life, functional abilities, survival, rates of admission to hospital and health care related costs

3. Outpatient Geriatric Oncology Clinic – Monash Health

- Pilot project including a CGA for older people within an oncology outpatient clinic

4.4. Geriatric-ED Models of Care

4.4.1. Emergency Department (ED)

In 2019-20, there were 8.2 million visits to Australian EDs.^[58] Many public hospital EDs are staffed 24 hours a day, providing urgent care to those needing medical, surgical and other care.^[58] In 2019-20, patients aged 65 and over accounted for 22% of all ED presentations across Australia, although they constituted 16% of the population.^[58] From 2006-11, Australian ED presentations increased at a greater rate than population growth across all age groups.^[59] In this period the greatest rate of increase occurred in those aged 85 years and over, and this trend is expected to accelerate over time, particularly from 2030 onwards.^[59] A study of ED presentations in metropolitan Melbourne in the period 1999-2008 found they were rising for all age groups at a greater rate than population growth.^[60] They found that presentations by people aged 70 and over were increasing at a greater rate than that of the population as a whole and that re-presentations were a significant driver of this.^[60] Additionally, many were potentially avoidable presentations suitable for a primary care setting.^[60]

EDs were established to provide immediate critical care to acutely ill or injured patients. Older people often present with multiple co-morbidities and complex needs that are ill-suited to being diagnosed and managed in an ED environment.^[61] Additionally, ED presentations are often categorised in the literature as a 'sentinel event' that indicates that there has been a failure in co-ordinated care provision.^[62] Older patients are more likely to be admitted than younger cohorts, are more likely to have an increased LOS, to re-present to EDs, to experience delirium, complications and/or functional decline.^[62-64] Additionally, many of these outcomes are due to the experience of being in ED or of hospitalisation as much as the reason for presentation.^[62] The presence of frailty in an individual increases all these risks, particularly accelerated functional decline, increased LOS and delirium.^[63] Frailty is often overlooked or not taken into account in ED presentations.^[63] People living with dementia are also at greater risk of adverse outcomes when presenting to EDs, and the rising prevalence of dementia is likely to exacerbate this.^[63] The physical environment of most EDs is not suitable for older adults in general, and in particular those with dementia.^[61]

The COVID-19 pandemic and the restrictions imposed from March 2020 nationally, and to differing degrees in different jurisdictions thereafter, may have impacted the use of EDs across all age groups in ways that are not yet fully understood. Examining these potential impacts is beyond the scope of this report, and the long term impacts of the pandemic are unlikely to be understood for some years.

4.4.2. Geriatric-ED: Principles and Approaches

Much of the literature relating to the concept of geriatric-EDs is based on the American College of Emergency Physicians (ACEP) Geriatric ED accreditation process and the development of geriatric-EDs to improve emergency care of older people.^[65] Geriatric-ED shared models of care involving innovative workforce practices are also starting to emerge.^[66-68]

Geriatric-ED shared models of care have several principles in common. Firstly, the use of ED staff with geriatric specific training is crucial. Different models have used geriatricians, medical practitioners with additional training in geriatrics, and senior nursing staff with specialty geriatric training, or a combination of these.^[62, 66, 67, 69, 70] Secondly, all models use a form of geriatric assessment, although they vary: some use CGA, some use elements of CGA, and/or initial screening. It must be noted that CGA, followed by appropriate management, is generally considered to be the 'gold standard' of care for older people. Additionally, further aims of these models are to reduce the proportion of older adults admitted after presenting to EDs, reducing LOS of those admitted; and reducing re-presentations.^[62, 67, 70] Recognition that hospital admission is often detrimental to older patients' outcomes is at the core of developing geriatric-ED models and programs. In addition to this, reducing costs associated with readmission is also a motivating factor.

Although positive results have been reported for geriatric approaches to emergency care, this area is still emerging and the outcomes and efficacy require ongoing evaluation.^[66-68] However, based on the literature, an interdisciplinary approach to emergency care is associated with better health care, improved health outcomes and reduced health care costs for older people.^[68]

4.4.3. Geriatric-ED: Research Perspectives and Models

4.4.3.1. Geriatric ED

The first Geriatric EDs were established in the United States of America (USA) in 2008 and guidelines for their implementation were made available in 2014.^[69] Geriatric ED accreditation from the American College of Emergency Physicians (ACEP) has been available since 2018.^[71] Accreditation is available at three levels covering a range of models ranging from those demonstrating 20 best practice criteria, to those which provide staff education and an annual quality improvement project.^[65, 71] Providing tiered accreditation aims to foster innovation and encourage all hospitals regardless of size to consider implementing a Geriatric ED.^[71]

The ACEP criteria specify 7 categories to be addressed by hospitals seeking Geriatric ED accreditation:

1. Staffing
2. Education
3. Policies/protocols, guidelines and procedures
4. Quality improvement
5. Outcome measures
6. Equipment and supplies
7. Physical environment.^[72]

Geriatric EDs use a variety of models of care, however there are common characteristics. The models are based either on separate EDs for older people or integration of best practice in care for older patients within an existing ED.^[65] Geriatric EDs generally utilise emergency specialist staff with additional training in geriatrics. The guidelines for the different levels of Geriatric ED accreditation outline staffing, equipment, policies and procedures for medical care as well as discharge and follow up guidelines.^[65, 69]

To gain accreditation at 'Level Three', the lowest level, hospitals must demonstrate at least one initiative that improves care for older people, and have geriatric trained emergency staff to implement these initiatives. 'Level Two' accreditation requires that models of care for older people are integrated into regular operation of the ED in a sustainable way. Use of a multidisciplinary team and a supervising coordinator are also required. Geriatric EDs with 'Level One' accreditation must demonstrate a comprehensive and coordinated model of care (covering policies, procedures, guidelines and staffing) that operates throughout the hospital and includes care transitions. It must also measure ED outcomes and improve the physical environment for older adults.^[65] As of May 2021, there were 242 Geriatric EDs accredited under the scheme, and 200 of these were at 'Level Three'.^[73]

Staff education on geriatric syndromes and management, including of atypical disease presentations common among older people, is a key component. An initial screen for those 'at-risk' is undertaken for all presenting patients.^[69] Screening and assessment of older people for common issues such as delirium, falls risk, polypharmacy, cognitive decline and elder abuse are included in policies and procedures.^[69] Optimising the physical environment to be suitable for an older population is a key aspect, particularly taking into account the needs of those with mobility, sensory and cognitive deficits.^[69] The literature did not reveal any comprehensive evaluation of the Geriatric ED model, and the variations in the models of care used and the levels of accreditation would make this a difficult proposition.

Southerland et al. (2020) compared the characteristics of four models of care used by Geriatric EDs accredited in the US at one of the two highest levels.^[71] The models examined were Geriatric ED Unit, Geriatric Practitioner Model, Geriatrics Champion and Geriatric-Focused Observation Unit, with results indicating various advantages and limitations in each of the models (see Table 1 below).^[71] The long term patient impacts of geriatric ED models of care have, to this date, not been studied.^[71]

Table 1: Characteristics of four Geriatric ED models adapted from Southerland et al. (2020)

Name	Model	Advantages	Limitations
Geriatric ED unit	Interdisciplinary team of care providers with specialised geriatric training	- Dedicated staff and equipment - Only need to train one team not all ED staff	- Difficulties with patient flow if demand high - Need for dedicated space
Geriatrics practitioner model	- Entire ED takes a geriatric focused approach – no separate unit - Geriatric specialists evaluate patients within usual ED care	- Multidisciplinary geriatric assessments within the ED - Cheaper to run and more flexible than standalone model	- Interdisciplinary geriatric evaluations can extend ED LOS - Shortages of suitable staff
Geriatrics champion	- Geriatrics champion assesses in ED and refers to outside providers - Provides education and policy improvement in ED	- Repurpose existing case management and nursing roles. - Cheaper to run and more flexible than standalone model	- No geriatric specialist in ED - Relies on outpatient clinicians and follow up
Geriatric focused observation unit	- Separate unit within ED for stays 4-48 hrs (generally 8-24hours) - Provides CGA - Interdisciplinary team with geriatric training	- ED specialist staff not needed - Preserves ED flow and LOS while preventing unnecessary admissions	- Needs cooperation of non-ED staff - Needs dedicated unit

4.4.3.2. Australasian College of Emergency Medicine: Care of Older Persons in the ED

The Australasian College of Emergency Medicine (ACEM) has a policy on the care of older people in EDs. Version 6 of this policy was published in 2020, for the first time in conjunction with the Australian and New Zealand Society for Geriatric Medicine (ANZSGM). The policy outlines the principles for providing best practice care, including a focus on person-centred care, shared decision making, comprehensive assessment and care transitions.^[74] The policy also considers the design of the ED to create an environment suitable for older people.^[74] The guidelines do not specifically outline or advocate a shared model of care, however there are elements that point to opportunities to implement these. For example, access to a multidisciplinary team to aid the assessment and management of older patients is advocated, including functional assessment, medical assessment and care planning. Training in geriatric assessment and management for emergency specialist staff is also recommended.^[74] The guidelines also emphasise the importance of recognising frailty and atypical disease presentations common in older adults.^[74]

4.4.3.3. Evaluated shared care models

The literature revealed 3 models of care for shared care in ED that have been tested and evaluated. These are the Geriatric Emergency Department Intervention (GEDI) model, the Leicester Emergency Frailty Unit (EFU) and the Geriatric Emergency Innovations in Care through Workforce, Informatics and Structural Enhancements (GEDI WISE) program, which are outlined individually below.

4.4.3.4. Geriatric ED Intervention (GEDI) Model of Care

The Geriatric ED Intervention (GEDI) is a nurse-led, physician-championed intervention developed by clinicians at Nambour Hospital in Queensland to improve the care of frail older adults in the ED. GEDI nurses provide targeted geriatric assessment, support multi-disciplinary communication and coordinate referrals for all people over 70 years of age who present to the ED.^[66, 67] Critical to the integration of GEDI into the ED is the role the physician plays in driving acceptance, policy change, and clinical support to overcome barriers to implementation.^[66, 67]

The main features of the GEDI model of care are:

- targets all patients over 70 years of age, especially those transferred from Residential Aged Care;^[75]
- uses a multi-disciplinary team consisting of an ED physician champion and advanced practice ED nurses operating as a supplementary sub-specialty team assisting the primary ED team; and
- undertakes targeted geriatric assessment, fast-track management and co-ordinates referrals.^[66, 67]

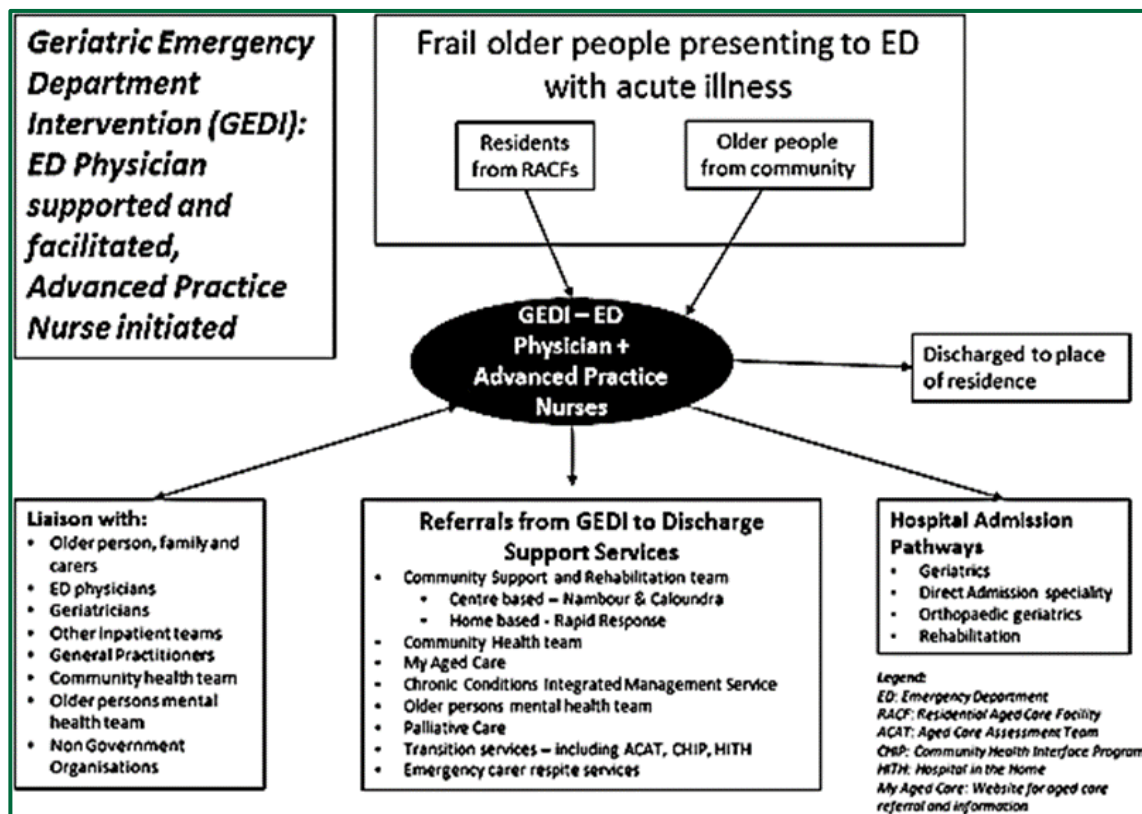
A 2018 Australian study assessed the effectiveness of GEDI. The trial used a pre-post design with the GEDI model shown to reduce the LOS in ED as well as the need for inpatient admission.^[66, 67] For patients who were admitted, hospital LOS was also reduced.^[66, 67] The main findings of the evaluation were that the GEDI program:

1. Reduced ED LOS and need for inpatient admission
2. Reduced hospital LOS (for patients requiring inpatient admission)
3. Did not increase the risk of mortality or risk of same cause re-presentation within 28 days.^[66]

Since the 2018 evaluation, the GEDI program has been expanded to additional sites in Queensland under Queensland Health's 'Rapid Results' Program.^[76] A toolkit has also been developed to detail the planning, implementation and evaluation of GEDI for additional health services setting up the program.^[77] The model of care uses the pathway outlined in *Figure 7*.^[66] As the program cannot take all older patients, they are prioritised in the following order:

1. All residential aged care residents regardless of age or reason for presentation
2. Frail older people over the age of 75 years
3. Older patients who are on palliative care pathways
4. People from Aboriginal or Torres Strait Islander background aged 50 years and over
5. Any other person appearing frail.^[77]

Figure 7: GEDI Model of Care Features ^[66]



4.4.3.5. Geriatric Emergency Department Innovations in Care through Workforce, Informatics and Structural Enhancements (GEDI WISE)

The Geriatric Emergency Department Innovations in Care through Workforce, Informatics and Structural Enhancements (GEDI WISE) intervention was implemented in three large, urban hospitals in the USA, consisting of: the use of Geriatric ED guidelines, and the use of transition care nurses in the ED to identify geriatric patients at risk and work to prevent avoidable admissions.^[62] Transition care nurses were ED nurses and nurse practitioners who underwent additional training. They assessed the patients for:

- cognitive function;
- delirium;
- functional status;
- falls risk;
- care transitions; and
- carer strain.^[62]

The results of the assessments were used to determine the care given in the ED and the transitional resources allocated. Interventions varied between the three hospitals on the basis of their internal resources, policies and procedures.^[62] The evaluation examined the outcomes for eligible patients who had any contact with transition care nurses versus those with no contact and results were examined on an individual hospital basis. During the period evaluated, transition care nurses saw approximately 10% of all ED patients.^[62] Outcomes from the evaluation found that all hospitals recorded a lower rate of admissions from the ED index visit for those with transition care nurses contact.^[62] Lower rates of ED re-presentation within 72 hours were recorded by 2 of the 3 hospitals, and another 2 of the 3 also recorded lower rates of re-admission within 30 days.^[62] The evaluation concluded that the model merited further implementation.

4.4.3.6. Leicester Emergency Frailty Unit (EFU)

This United Kingdom (UK) study evaluated the impact of embedding CGAs and geriatricians into the ED of a large English teaching hospital.^[70] An Emergency Frailty Unit (EFU) was established as part of the Emergency Decisions Unit (EDU), a semi-separate ward linked to the main ED. The EDU provided beds for ED presentations likely to be discharged in under 24 hours but who needed further diagnoses or tests.

Establishing the EFU involved embedding a geriatrician into the unit from 8am-6pm, 7 days a week and allocating half and two-thirds of the beds depending on daily need.^[70] In the usual care model, CGAs were conducted on an ad hoc basis by primary care co-ordinators, who worked with nurses, allied health clinicians and emergency medical staff. Under the new model, the geriatrician routinely had input into CGAs and the process was standardised.^[70] Geriatricians also “fulfilled an in-reach function to the major receiving area of the ED.”^[70] Geriatricians and emergency specialists shared clinical assessments and decision-making, and this extended to joint governance and education meetings. Additionally, there was an emphasis on developing pathways to and from primary care, and integrating internal practices like using the CGA as the admission assessment in the hospital.^[70] Emergency nursing staff were also provided with additional training in geriatric syndromes.^[70]

The model sought to reduce the rate of admissions from ED presentations, particularly in the cohort aged 85 years and over. Comparing a control period (one year immediately prior to the intervention) with a one year period after intervention implementation, substantial reductions were found in the proportion of admitted patients aged 85 years and over (70% to 61%), and readmission rates decreased at each time point in all age groups including those under 65 years. Bed days, however, increased for those aged 85 and over, as did LOS, although these reduced for all younger age groups.^[70]

4.4.4. Geriatric-ED: Limitations and Challenges

Geriatric-ED models that have been evaluated demonstrate improved outcomes in the emergency care of older people. These outcomes included reduced ED and overall hospital LOS^[66], and lower rates of admission and re-presentation/re-admission.^[62, 68] However the literature also identified challenges in implementing geriatric-ED models. The comparison of models undertaken by Southerland et al. (2020) illustrated that there are advantages and limitations to each of the models (Table 1).^[71] In addition, there are barriers that are common across models such as the cost of equipment and lack of resources and staff.^[71] Furthermore, while most health systems would value both a lower LOS and a reduction in re-admissions, it can be a difficult balancing act to achieve a model that delivers both.^[71] A CGA and additional screening and extra care may be required to achieve a reduction in re-admission which, in turn, can increase LOS and slow throughput.^[71]

Southerland et al. (2020) also identify that the use of multiple screening tools and assessments require additional staff time and it can be a challenge to amalgamate the abilities of a wide range of consulting staff and achieve buy-in to a model across multiple disciplines.^[71] This was found during the implementation of the GEDI model, suggesting that, in initiatives that require assessment of frail older people, inter- and intra-facility communication can clash with a ‘just admit’ mentality that is sometimes present among ED physicians.^[78] This mentality was thought to be due to a range of reasons including system-based pressure for fast throughput, a lack of availability of specialist geriatric knowledge, and a feeling of being overwhelmed and under-skilled in the care of older people.^[78] The use of specially trained gerontology nurses in the ED as per the GEDI model was thought to be one solution, however the authors also emphasised that there would be a benefit to enhancing geriatric curricula in nursing and medical education to support models like GEDI.^[78]

There was also acknowledgment in the literature that, as geriatric-ED models are being newly developed, there are challenges in servicing the work required to develop institution-specific models, implement these models and evaluate their outcomes.^[71] Even when this has been successfully achieved at one health site, it can be difficult to achieve the same success with a model when implementing it across multiple hospitals.^[78]

The team involved with the GEDI initiative noted that for their model to be successful in other locations the health services needed to implement it in full rather than using only selected structures and processes and expecting to see the same positive outcomes as the original model.^[78]

4.4.5. Geriatric-ED: Literature Summary

- Geriatric-ED models are usually based either on having separate EDs for older people or integration of best practice in care for older patients within an existing ED.^[65]
- The Australasian College for Emergency Medicine (ACEM) has a policy on the care of older people in EDs which outlines the principles for providing best practice care, person-centred care, shared decision making, comprehensive assessment and care transitions for older people in ED.^[74]
- The literature revealed three models of care for shared care in ED that have been tested and evaluated: Geriatric Emergency Department Intervention (GEDI) (Australia), Geriatric Emergency Innovations in Care through Workforce, Informatics and Structural Enhancements (GEDI WISE) (USA) and Emergency Frailty Unit (EFU) (UK). Positive outcomes have been reported in relation to these geriatric-ED models including reduced ED LOS and reduced hospital LOS,^[66] lower rates of admission and lower re-presentation/re-admission.^[62, 68]
- Challenges that can act as barriers to geriatric-ED models involve balancing aspects of the care model to achieve multiple positive outcomes, costs, staffing resources, the need to imbed geriatric training in EDs to support models, and difficulties in developing, implementing and evaluating models especially once they are taken up by multiple health sites.^[71, 78]
- Enablers of sustainable geriatric-ED models included shared governance between specialities, educating a broad range of staff and developing clear pathways to and from primary care ^[70]
- Despite evidence of positive outcomes a geriatric approach to emergency care is an emerging area and the outcomes and efficacy require ongoing assessment and study.^[66-68]

4.4.6. Geriatric-ED: Clinical Practice Examples in Victoria

Two Victorian health services have recently established geriatrician roles within the ED, in addition to existing multi-disciplinary care co-ordination teams, thereby creating geriatric-ED shared models of care. As both of these models are in the early stages of implementation, specific outcomes are not yet available.

Summary: AMCOP Consultations and Geriatric-ED Shared Care

1. Geriatrician in ED – Alfred Health

Workforce Allocation

- Geriatrician in ED 1.5 – 2 hours /day

Service Objectives

- Encourage early collaboration between members of the multi-disciplinary team
- Facilitate discharge home from ED through referrals to outpatient / community services
- Complete medication reviews to support prescribing / de-prescribing

2. Geriatrician in ED – Western Health

Workforce Allocation

- Full time Geriatrician in ED

Service Objectives

- Reduce acute admissions
- Assist with management of delirium and behavioural and psychological symptoms of dementia
- Assist with end of life care and goal setting

The de-identified *Shared Medical Care for Older People in Victorian Hospitals* survey revealed that another Victorian health service has implemented a shared Geriatric-ED model of care which is currently being evaluated for the following outcomes:

- time spent in ED;
- admission rate; and
- re-admission rate.

A description of the service is summarised in *Figure 8* and further data is available in Appendix 6: Clinician Survey – Geriatric ED Model of Care of this report.

Figure 8: Summary of a Geriatric-ED service in a Victorian Hospital

Geriatric-ED Service	
Eligibility	• Medical conditions of the patient with broad criteria including any age related illnesses • Subacute presentations that may be able to have an admission diverted or direct admission to subacute • Social situation of the patient • Patients from residential aged care facilities to see if a return is possible with support from in-reach, and advance care plans made • Patients who are not safe to return home for a variety of reasons.
Intake	• Initial geriatric assessment from the ED medical team. • Geriatrician assessment/review in the ED.
Admission	• Care planning strategies regarding admission are also used as part of service delivery. These include: ◦ Admission to acute geriatric inpatient service ◦ Admission to sub-acute geriatric inpatient service. • Care planning strategies regarding admission are also used as part of service delivery. These include: ◦ Admission to acute geriatric inpatient service ◦ Admission to sub-acute geriatric inpatient service.
Service Provision	• Care planning strategies: ◦ Phone-call to family members / carers / residential aged care facilities ◦ Phone-call to external service providers ◦ Referral to external service providers • Approximately 7 hours of geriatrician hours a day to the ED • Multi-disciplinary team members in the ED including Care Co-ordination Team • Advice provided for end of life care, delirium and dementia and behavioural management.
Post-Discharge Follow Up	• Post-discharge follow-up options provided by the shared ED model include: ◦ Outpatient clinic review ◦ Hospital-based outpatient rehabilitation program ◦ Residential in-reach program • The outcome measures that are used to evaluate the service include time spent in ED, admission rate, re-admission rate.

4.5. Emerging Areas of Geriatric Shared Care

There are a number of emerging models of geriatric shared care that are promising but very few models have been trialled and little research has been carried out to date.

4.5.1. Geriatric-nephrology

Despite the increase in utilisation of nephrology-related health technologies among older people, recent evidence suggests that the impact of renal disease and dialysis on geriatric syndromes is associated with poor outcomes.^[79, 80] Adults aged 75 and over are the fastest growing group of patients commencing dialysis.^[81] There is a high prevalence of multi-morbidity and of frailty in the older population approaching or with end stage kidney disease (ESKD).^[82-85] The literature notes that incorporating geriatric assessment into routine nephrology care for older adults is a novel approach.^[79] Establishing a co-management team of geriatricians and nephrologists early in the disease course could mean that care would be more tailored to older people's goals.^[80]

While the development of shared models of care in nephrology is in its infancy, there is increasing interest in finding ways of incorporating forms of CGA or modified versions of geriatric assessment. Most studies uncovered by the literature search take a theoretical approach to developing models incorporating geriatric assessment into nephrology practice. One study proposed three possible models: outpatient consults by a multidisciplinary team with recommendations made to the nephrologist; use of a trained nurse to collect data during dialysis sessions and liaising between patient and other providers; and nurse home visits on non-dialysis days.^[82] Another study proposed screening patients for those most in need of CGA in order to reduce the time involved in administering CGA to all older patients.^[81]

Several studies have investigated and/or tested the feasibility of either providing a shared care model using CGA or geriatric assessment, or incorporating geriatric assessment into existing nephrology practices. One UK study used a nephrology nurse to deliver a modified geriatric assessment that could be completed in one hour or less.^[83] The length of time and the expertise in geriatrics needed to complete a CGA were cited as reasons for modifying the process, with a view to incorporating the geriatric assessment into routine care.^[83]

Another study in the US looked at the unmet needs of older dialysis patients with a view to adapting an existing geriatric model of care to meet these needs.^[86] The existing model, **G**eriatric **R**esources for **A**ssessment and **C**are of **E**lders (GRACE), uses an advanced practice provider (nurse practitioner or physician assistant) and social worker who together conduct an in-home geriatric assessment.^[86] They found that the main areas lacking in the existing model for dialysis patients' needs were: mobility; medication management; social support and communication needs.^[86] They developed a model with a view to running a pilot program.^[86] This built on a previous study by the author that implemented programs embedding CGA into nephrology via a geriatrician embedded in a nephrology practice, and a nephrology clinic with extended appointments for geriatric assessments.^[79]

The **P**athway for **O**lder Patients Reaching **E**nd Stage **R**enal Disease (POLDER) initiative is a study in the Netherlands looking at developing care pathways for older patients with end stage renal disease (ESRD).^[87] It involves multiple Dutch hospitals and academic centres working towards embedding geriatric assessment into routine pre-dialysis care using a standardised set of assessments.^[87] A consensus geriatric assessment tailored for use with older patients reaching ESRD was developed using the results of a qualitative study examining attitudes to, barriers and enablers of geriatric assessment for older people reaching ESRD.^[89] The consensus geriatric assessment includes multiple instruments covering functional, cognitive, psychological, somatic, patient preferences, nutritional status, and social domains, and can be administered by a nurse practitioner in approximately one hour.^[89] It is currently being implemented in its pilot phase in 11 Dutch hospitals.^[89]

4.5.2. Geriatric-respiratory

Given there are a number of chronic respiratory conditions that are associated with older age, including chronic obstructive pulmonary disease, geriatric-respiratory co-management would certainly seem appropriate.

In the UK, a pulmonary geriatrics model for older people with respiratory diseases is being implemented.^[90]

The model is delivered by pulmonologists and thoracic surgeons trained in the care of older people who collaborate closely with medical and surgical specialties.^[90] Where appropriate, patients can also be referred to geriatric medicine physicians.^[90]

4.5.3. Geriatric-trauma

Frailty and cognition are often key contributing factors in falls and accidents that lead to fractures and other traumatic injuries.^[91] While ortho-geriatric models are well established, there is less focus on geriatric models for other trauma injuries. In the UK, a model of geriatric consultation is being trialled to assess and provide geriatric-centred care to older trauma patients.^[92] The use of a personalised geriatric assessment and plan in this model aims to decrease hospital mortality, 30-day mortality and intensive care readmission, and increase delirium documentation and advance care plan directives.^[92] In the US, a new Geriatric Trauma Co-Management (GTC) program was compared to usual care.^[91] The study found that baseline characteristics were similar for both groups except that in the group undergoing GTC patients were older (by 3 years), had falls more often as the mechanism of injury, and had greater comorbidities.^[91] Overall mortality (inpatient and hospice discharge), was lower in the co-management group (8.7%) when compared with usual care (15.0%).^[91] Survival differences met significance among patients over the age of 80 and those with lower injury severity scores.^[91]

Another study from the USA evaluated the impact of a multidisciplinary geriatric trauma care model, the Geriatric Injury Institute, at a large tertiary hospital with a level II trauma centre.^[93] The model covered prevention, inpatient care and post-discharge care, utilising a multidisciplinary care team including trauma and emergency staff as well as geriatricians and allied health.^[93] Inpatient care included clinical pathways for common geriatric injuries, use of social work and care coordination for all patients and use of the in-house Geriatric Emergency Medical Services (a level 2 accredited Geriatric ED using a nurse practitioner model).^[73, 93] The evaluation was primarily focused on the impact on hospital costs and whether the model was sustainable on this basis. It found that the model reduced hospital costs and per-patient costs compared to pre-implementation.^[93] It also found an increase in the proportion of patients who underwent a Geriatric Medical Evaluation.^[93]

The Pan London Major Trauma System released the third edition of its guidelines of the management of older trauma patients in April 2021.^[94] Key elements of the guidelines include emphasising the need for geriatrician involvement in local policy and model development, as well as education of trauma staff in geriatrics.^[94] The guidelines provide a number of screening assessments that should be performed on older patients on admission, whether via ED or a trauma unit, including frailty screening in recognition of the impact frailty has on the “expected physiological presentation of major trauma”.^[94] The guidelines also state that all patients should undergo a CGA by a multidisciplinary team and be assessed by a geriatrician within 72 hours of admission.^[94] These guidelines are underpinned by governance standards on older people’s trauma.^[94]

4.5.3.1. Examples of shared geriatric-trauma models of care in Victoria

Responses to the Shared Medical Care for Older People in Victorian hospitals survey included one health service with an ortho-trauma/ortho-geriatric model of care and one with an ortho-geriatric model of care. As specified elsewhere in this report, ortho-geriatric care is an established model of shared geriatric care and so has not been discussed in detail in this report which focusses on emerging areas of medical shared care for older people. For this reason, these services have not been summarised in this report but the information regarding them can be seen in Appendix 3 and Appendix 4 which provides summary tables.

5. CONCLUSION

This scoping review of literature revealed that there are both established and emerging models of shared care and shared management of care for older people in acute hospital settings across a range of disciplines and clinical specialties. A collective theme identified in all approaches to shared care was the desire to improve care outcomes through person-centred and multidisciplinary care that better addresses the needs of frail older patients with co-morbidities. In addition, common features of shared care models included:

- **Collaborative care** – 2 dedicated multi-disciplinary medical / surgical teams (a geriatric and a non-geriatric specialty) working concurrently and co-operatively to support assessment and ongoing management as opposed to a 'consultation request' approach
- **Commitment to geriatric assessment** – standard use of CGA and/or modified geriatric assessment screening, frailty screening or similar
- **Specialist workforce** – incorporating either a Geriatrician or an advanced practitioner, such as a Nurse Practitioner, with specialist training in geriatric medicine within the care team
- **Continuing professional development** – improved geriatric training and knowledge translation for clinicians and specialists

A number of new and emerging geriatric shared care models also identified in the literature demonstrated positive outcomes for older people requiring hospitalisation for acute illness and/or injury which included:

- A **cardio-geriatric care model**, known as G-COACH, which showed significantly fewer cases of delirium and obstipation during hospitalisation, and significantly fewer hospital acquired infections ^[31]
- A **geriatric co-management approach in older oncology patients** which was associated with reduced 90 day postoperative mortality and a greater uptake of inpatient and outpatient support services ^[50, 51]
- Three models of **shared care in ED** including GEDI (Australia), GEDI WISE (USA) and EFU (UK) which resulted in reduced ED and inpatient hospital LOS^[66] as well as lower rates of admission, re-admissions and re-presentation to ED.^[62, 68]

Despite this, further evidence is required regarding other outcomes from geriatric shared care models that may be better observed by longitudinal studies because outcomes manifest over time, such as functional decline and mortality.^[51] Common barriers to implementing and evaluating models of shared care for older people were also identified within the literature and included: resources, cost, workforce education and training, workforce constraints and a lack of high-quality evidence relating to older people and quality care.^[27, 71, 78]

In addition to mapping the literature regarding geriatric shared care, this scoping review also included two consultations with clinicians from Victorian health services. These were: 1) *AMCOP Consultation and Workshop* and 2) *Clinician Surveys regarding Shared Medical Care for Older People in Victorian Hospitals and the ED*. The information obtained from these discussions/survey responses supplemented the scoping literature review in allowing for the identification of a small number of shared models of care for older people in acute hospital settings, including the ED, that are currently being provided within Victorian health services.

Overall, the Shared Acute Models of Care for Older People in Hospital scoping review reveals that shared care of older people in acute hospital settings can provide benefits and improvement in care outcomes. However there is still work to be done in developing, implementing and evaluating models outside of the field of ortho-geriatrics, which has been well-researched and subsequently successfully translated into routine clinical practice. This is particularly the case in Victoria, where models and programs of geriatric shared care for older people in hospital are newly emerging in cardiology, oncology, emergency care and other disciplines.

APPENDICES

APPENDIX 1: Scoping Review Literature Search Tables

Search Table 1

Search Terms	Database	Relevant Articles Found
Shared acute medical models of care	Melbourne university Discovery search (multi-database search)	2
Geriatric medical models of care	Melbourne university Discovery search (multi-database search)	2
Shared geriatric medical models of care	Melbourne university Discovery search (multi-database search)	2
Co-management geriatric medical models of care	Melbourne university Discovery search (multi-database search)	~ 77
Co-management AND geriatrics	Melbourne university Discovery search (multi-database search)	~100
Geriatric medicine shared models	Melbourne university Discovery search (multi-database search)	13

Search Table 2

Database	Search Term	Limitations	Date of Access
Google scholar	Models of Care, geriatrics	Since 2015	22052019
Google scholar	Models of acute medical care, geriatrics	Since 2015	22052019
Google scholar	Shared medical care, geriatrics	Since 2015	22052019
Google scholar	co-management, medical care, geriatrics	Since 2015	22052019
Google scholar	Geriatric cardiac	Since 2015	29052019
Google scholar	geriatric co-management for cardiology patients	Since 2015	29052019
Google scholar	"systematic review" geriatric co-management	Since 2015	29052019
Google scholar	Onco-geriatrics	Since 2015	29052019
Google scholar	Ortho-geriatrics	Since 2015	29052019
Google scholar	Pulmonary geriatrics – no finds	Since 2015	29052019
	Pulmonary geriatrics co-management - no finds		

Google scholar	Surgery Geriatrics co-management	Since 2015	29052019
Google scholar	Neuro* Geriatrics co-management - no finds	Since 2015	29052019
Google scholar	Nephrology geriatrics	Since 2015	29052019
Google scholar	Vascular geriatrics	Since 2015	29052019
Google scholar	Psycho-geriatrics, co-management – no finds	Since 2015	29052019
Google scholar	Urology geriatrics, co-management	Since 2015	29052019
Google scholar	Co-management, geriatrics	Since 2015	29052019
Google scholar	Psycho-geriatrics, models of care, acute medical – no finds	Since 2015	29052019
Google	Acute, models of care, co-management	All	29052019
Google scholar	Models of care, good practice, geriatrics	Google scholar	Google scholar

APPENDIX 2: Clinician Survey Data – Cardio-geriatric Service

CARDIOGERIATRIC HEART FAILURE SERVICE

Structure and workforce

Medical specialties involved in delivering the service:

Geriatric Medicine, Cardiology

Primary bed card:

Cardiology

Multi-disciplinary team members involved in delivering service:

Specialist nursing (Heart Failure CNC), physiotherapy, social work and dietetics.

Patient recruitment

Eligibility criteria:

Age criteria: Over 65 and medical conditions: primary admission diagnosis of heart failure

Specific exclusions for service:

Advanced other end organ disease (end stage COPD, liver disease, kidney disease etc.) Anaemia Hb < 80
Advanced malignancy Advanced dementia

Referrals for the service accepted from:

Outpatient Clinics, Emergency Department, Other Inpatient Unit

Intake and assessment

Intake process for the service:

Automatic acceptance based on meeting eligibility criteria, other - Most patients are referred in via ED - accepted by Cardiology Reg. if meet criteria. Some are cross referred by other units - accepted by Cardiology Reg. Some direct admissions from community or heart failure clinic - organised by the HF CNC or Cardiologist

Initial assessments occurring on admission to the service:

Assessment from Specialist Geriatric Nurse, Assessment from Specialist Medical Unit, Geriatrician Assessment, Allied Health Review by Individual Referral Only, Pharmacy Review

Allied Health discipline/s involved in the assessment process:

Physiotherapy, Occupational Therapy, dietitian, Social Work - as needed.

Service delivery and review

Standard components of service delivery:

Use of a clinical pathway, Geriatrician review, Specialist Medical review, Specialist Nursing (Other – Heart Failure CNC) review)

Frequency of review:

Cardiologist daily. Geriatrician Mon-Fri, Specialist Nurse Heart Failure CNC Mon-Fri.

CARDIOGERIATRIC HEART FAILURE SERVICE

Discharge

The communication and discharge planning strategies used in the service:

Multi-disciplinary team case conference, family meetings.

The following are conducted routinely post-discharge from hospital:

Follow up phone call, Outpatient clinic review, Hospital-based outpatient rehabilitation program

Funding

Internally by health service

Evaluation

Outcome evaluation measures:

Hospital length of stay, re-admission rate, hospital acquired complications, patient-reported satisfaction.

Time-frame that applies to the evaluation data:

Follow-up phone calls within a week, rapid access clinic review 1-2/52 (they review the patient in 1 - 2 weeks following discharge) Monthly review of Key Performance Indicator (KPI) data

Are you willing to share any supporting information you have developed for your service with DHHS/NARI? (E.g. evaluation results, information pamphlets, presentations etc.). If so, do you agree to be contacted individually to discuss these:

Yes

APPENDIX 3: Clinician Survey Data – Ortho/trauma-geriatric Service

ORTHO-GERIATRICS / GERIATRIC-TRAUMA

Structure and workforce

Medical specialties involved in delivering the service:

Orthopaedics, trauma, geriatrics

Primary bed card:

Orthopaedics or trauma

Multi-disciplinary team members involved in delivering service:

Physiotherapy, Occupational Therapy, Social Work

Patient recruitment

Eligibility criteria:

Age: ≥65

Medical Condition/s: dementia, delirium

Specific exclusions for service:

No

Referrals for the service accepted from:

Emergency Department, Other Inpatient Unit

Intake and assessment

Intake process for the service:

Automatic acceptance based on meeting eligibility criteria

Initial assessments occurring on admission to the service:

Geriatrician Assessment

Allied Health discipline/s involved in the assessment process:

Not specified

Service delivery and review

Standard components of service delivery:

Use of a clinical pathway, Geriatrician review, Allied Health review

Frequency of review:

Daily

ORTHO-GERIATRICS / GERIATRIC-TRAUMA

Discharge

The communication and discharge planning strategies used in the service:

Multi-disciplinary team case conference

The following are conducted routinely post-discharge from hospital:

No routine follow-up

Funding

Weighted Inlier Equivalent Separation Funding (WIES)

Evaluation

Outcome evaluation measures:

Hospital length of stay, Re-admission rate, Hospital acquired complications and mortality

Time-frame that applies to the evaluation data:

Not specified

Are you willing to share any supporting information you have developed for your service with DHHS/NARI? (E.g. evaluation results, information pamphlets, presentations etc.). If so, do you agree to be contacted individually to discuss these:

Yes

APPENDIX 4: Clinician Survey Data – Ortho-geriatric Service

ORTHO-GERIATRICS

Structure and workforce

Medical specialties involved in delivering the service:

Geriatric Medicine and Orthopaedics

Primary bed card:

Orthopaedics

Multi-disciplinary team members involved in delivering service:

Specialist Nursing – Orthopaedics, Physiotherapy, Occupational Therapy, Social Work, Dietetics, Speech Pathology, Pharmacy

Patient recruitment

Eligibility criteria:

Age: > 65 or functionally >65

Medical Condition/s: significant long bone fracture

Specific exclusions for service:

minor fractures not requiring admission or not admitted under orthopaedic service

Referrals for the service accepted from:

Outpatient Clinics, Emergency Department, other Inpatient Unit

Intake and assessment

Intake process for the service:

Automatic acceptance based on meeting eligibility criteria

Initial assessments occurring on admission to the service:

Geriatrician Assessment, Comprehensive Geriatric Assessment, Blanket Allied Health Review, Blanket Pharmacy Review

Allied Health discipline/s involved in the assessment process:

All as required.

Service delivery and review

Standard components of service delivery:

Geriatrician review, Full time geriatric Medicine registrar overseas all medial management

Frequency of review:

6 days a week (Sunday by request)

ORTHO-GERIATRICS

Discharge

The communication and discharge planning strategies used in the service:

Daily multi-disciplinary team meeting, Daily multi-disciplinary team ward round, Family meetings, daily registrar ward round 3 x week ortho-geriatric round plus other week days as required Geriatric Medical registrar goes on daily orthopaedic ward round

The following are conducted routinely post-discharge from hospital:

Outpatient clinic review

Funding

DHHS

Evaluation

Outcome evaluation measures:

Hospital length of stay, Re-admission rate, Hospital acquired complications, contributes to the national fracture data base with multiple fields

Time-frame that applies to the evaluation data:

Not specified

Are you willing to share any supporting information you have developed for your service with DHHS/NARI? (E.g. evaluation results, information pamphlets, presentations etc.). If so, do you agree to be contacted individually to discuss these:

Yes

APPENDIX 5: Clinician Survey – General Medicine Geriatric Service

NO NAME (AS OCCURS UNDER GENERAL MEDICINE)

Structure and workforce

Medical specialties involved in delivering the service:

Various, depends on patient needs

Primary bed card:

Depends - but usually Gen Med

Multi-disciplinary team members involved in delivering service:

Not specified

Patient recruitment

Eligibility criteria:

Not specified

Specific exclusions for service:

Not specified

Referrals for the service accepted from:

Other Inpatient Unit

Intake and assessment

Intake process for the service:

Not specified

Initial assessments occurring on admission to the service:

Not specified

Allied Health discipline/s involved in the assessment process:

Not specified

Service delivery and review

Standard components of service delivery:

Not specified

Frequency of review:

Not specified

NO NAME (AS OCCURS UNDER GENERAL MEDICINE)

Discharge

The communication and discharge planning strategies used in the service:

Not specified

The following are conducted routinely post-discharge from hospital:

Not specified

Other comments:

Primarily care is provided under a General Medicine model with sub speciality expertise and consultation and treatment as required

Funding

Public health admitted

Evaluation

Outcome evaluation measures:

Not specified

Time-frame that applies to the evaluation data:

Not specified

Are you willing to share any supporting information you have developed for your service with DHHS/NARI? (E.g. evaluation results, information pamphlets, presentations etc.). If so, do you agree to be contacted individually to discuss these:

Not specified

APPENDIX 6: Clinician Survey – Geriatric ED Model of Care

How many Geriatrician hours are allocated to the ED per day:

About 7

Which other multi-disciplinary team members are involved in the care of older people in the ED?

Care Co-ordination Team

What is the eligibility criteria for Geriatrician review in the ED?

Medical Condition/s and Social Situation

Please specify medical condition/s related to eligibility:

Broad eligibility criteria: any age related illnesses, subacute presentations that may be able to have an admission diverted with community supports, or direct admission to subacute to avoid the acute ward. Advice provided for EOLC, delirium and dementia and behavioural management etc.

Please specify social situation/s related to eligibility:

Often review patients from RACFs to see if they can return there with support from in-reach, and advance care plans made. Review of patients who are medically stable but not safe to return home for a variety of reasons. Homelessness.

What are the referral processes that apply for Geriatrician review in the ED?

Initial assessment from ED medical team

Which initial assessments are conducted as part of the service in the ED?

Geriatrician Assessment

Which care planning strategies are used as part of service delivery?

Admission to acute geriatric inpatient service, Admission to sub-acute geriatric inpatient service, Phone-call to family members / carers / residential aged care facilities, phone-call to external service providers, Referral to external service providers

What are the post-discharge follow-up options provided by the service?

Outpatient clinic review, Hospital-based outpatient rehabilitation program, Residential in-reach program,

Which outcome measures are used to evaluate the service?

Time spent in ED, Admission rate, Re-admission rate

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