NSW Health

Preventing Hospital Acquired Functional Decline

The untapped value of Allied Health

NSW GOVERNMENT

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The NSW Ministry for Health acknowledges the traditional custodians of the lands across NSW. We acknowledge that we live and work on Aboriginal lands. We pay our respects to Elders past and present and to all Aboriginal people.

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The purpose of this document is to outline the methodology, approach and themes raised by the literature and multidisciplinary stakeholders engaged to inform the Hospital Acquired Functional Decline Project. The report highlights opportunities and models of care that LHD/SHN may like to consider within local context for customisation / implementation. It should be noted that views expressed in the report are not necessarily those of the NSW Ministry of Health.

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1 Executive Summary

Hospital Acquired Functional Decline (HAFD) is a hidden epidemic in healthcare systems today. It can be defined as the physical and cognitive deterioration patients experience as a result of an inpatient hospital stay and can lead to a reduction in quality of life and untimely death. Its prevalence is severe, with indications showing that nearly 50% of all hospitalised frail and elderly Australians may be affected, having significant impact to both the healthcare and social care systems. There is an urgent need to challenge the current ways of working to prevent HAFD [2] [3] [4] [5]. Doing so will deliver better outcomes for patients within the system and avoid the unnecessary safety, quality and cost implications currently impacting the NSW hospital and healthcare system.

The NSW Ministry of Health Workplace Planning and Talent Development Branch partnered with consultancy Francis Health to explore the untapped value of the Allied Health Professions (AHP) in preventing HAFD and to develop a practical resource for health networks to support and encourage further adoption of leading practice to release that value.

A review of literature and stakeholder engagement was undertaken to explore the problem and identified three major contributing factors:

- ***Excessive bed rest and immobility***: Prolonged bed rest during hospitalisation can negatively impact cardiovascular, musculoskeletal, respiratory and psychological systems in patients. While bed rest may be well-intentioned, the cumulation of these effects can be physical deconditioning and functional decline [17] [12] [4].
- ***Reactive service design***: The current clinical interventions and related Allied Health resourcing taken to reduce HAFD occur too late in the patient journey.
- ***Specialist professional focus***: The historic orientation of secondary and tertiary care systems towards the treatment of presenting acute illness, combined with increasing trends towards specialism in medicine, limits the ability of the system to proactively manage the multi-factorial causes of HAFD [23].

Outcomes of HAFD can be physical, cognitive, social, and pharmacological in nature. It is for this reason that the Allied Health workforce is ideally positioned to provide the holistic, patient centred care necessary for its prevention. Our investigation has identified nine areas of untapped value in both clinical focus and modes of working.

Changes made to the way AHP resources are oriented and deployed in these focus areas, would make significant impact towards the prevention of HAFD.

Five areas in which AHP can add value through increased clinical leadership include:

- ***Mobilisation and Physical Activity***: physiotherapists and exercise physiologists are specialists in safe patient mobilisation and are best placed to give their colleagues the skills and the confidence to safely assess and practice mobility. In this way the less numerous AHP resources can be focused on higher needs patients that require specialist attention, and intervention can focus on developing tailored physical activity programs geared towards resistance training, gait training and balance exercises which is of greatest benefit [31] [32] [33].
- ***Life Functional Status***: is an individual's ability to perform the Activities of Daily Living (ADL). The holistic, life-functional focus of occupational therapy positions the profession ideally to identify frail patients early in their journey and determine if a patient needs further intervention and refer appropriately [34] [35].
- ***Nutrition, Swallowing and Communication***: are crucial elements of health and disability which strongly influences the ageing process. Assessments by speech pathologists and dietitians must occur earlier in the patient journey to most effectively prevent HAFD. Dietitians and speech pathologists are well placed to remove any barriers to communication that frail and elderly patients may experience, allowing them to maximise their ability to be active participants in their care planning [38] [40] [41].
- ***Polypharmacy***: occurs when a patient has been prescribed four or more medications. When inappropriate it is linked strongly to function decline and falls risk and requires specialist review by a pharmacist. More can be done to facilitate pharmacist leadership in awareness and education efforts with patients and colleagues alike [22] [42] [43] [44].
- ***Psychosocial Health***: psychologists and social workers are instrumental for mitigating the impact of hospitalisation on patients. Earlier interaction with these workforces would support better journey planning and aid transition to home/other care environments [45].

Four different modes of working identified through stakeholder engagement and supplementary research as having potential to optimise the value of AHP in preventing HAFD are as follows:

- ***Interdisciplinary Teamworking***: Extending the use of the interdisciplinary team approach (in contrast to the Multidisciplinary Team (MDT) model) could deliver significant benefit potential for the reduction of HAFD. This framework better supports AHP contributions to clinical care and leadership through collaborative working.
- ***Allied Health Educators***: Expanding the numbers of these positions will enhance sharing of critical skills and expertise across clinical teams, as well as within AHP themselves. These roles may provide a potential focal point for awareness-raising and educational efforts that could support prevention of HAFD.
- ***Weekend Allied Health Services***: Extending selected AHP coverage of the service to a seven-day model offers the potential to reduce the effects of functional decline on patients through providing earlier assessments, treatment, and having the capacity to conduct timely discharge planning earlier in the week. It would also mitigate the effects of high workloads on Mondays and Fridays, and improve transitional care with families and carers [47].
- ***Allied Health Assistants (AHA)***: Wider, more consistent use of AHAs would increase capacity for Allied Health interventions and the intensity of services, enabling AHP to work more consistently to top of scope.

This research acknowledges that work is already underway in some organisations to address these areas. The role of this project has been to recognise areas of innovation and highlight the latent potential for broader adoption across NSW.

A wide range of leading-practice local and international AHP workforce models were reviewed for the potential to better leverage specialist AHP skillsets to prevent HAFD. The six key principles detailed in Figure 1 underpin the characteristics of effective models of AHP-led care.

Based on these principles and the experience of hospitals here and overseas, five research-based, innovative workforce models have been developed to support LHDs and SHNs help tackle HAFD. While these models are supported by research, it is important to remember that they are to be used as an adaptable guide in tackling HAFD. Each LHD/SHN will have distinct needs based on their demographic makeup and should exercise discretion with how they apply these models. These models detailed in Table 1 below, illustrate that a proactive service design coupled with a unified goal will result in system, patient and financial benefits that far exceed the required investment.

Figure 1: *Principles of AHP-led workforce models*

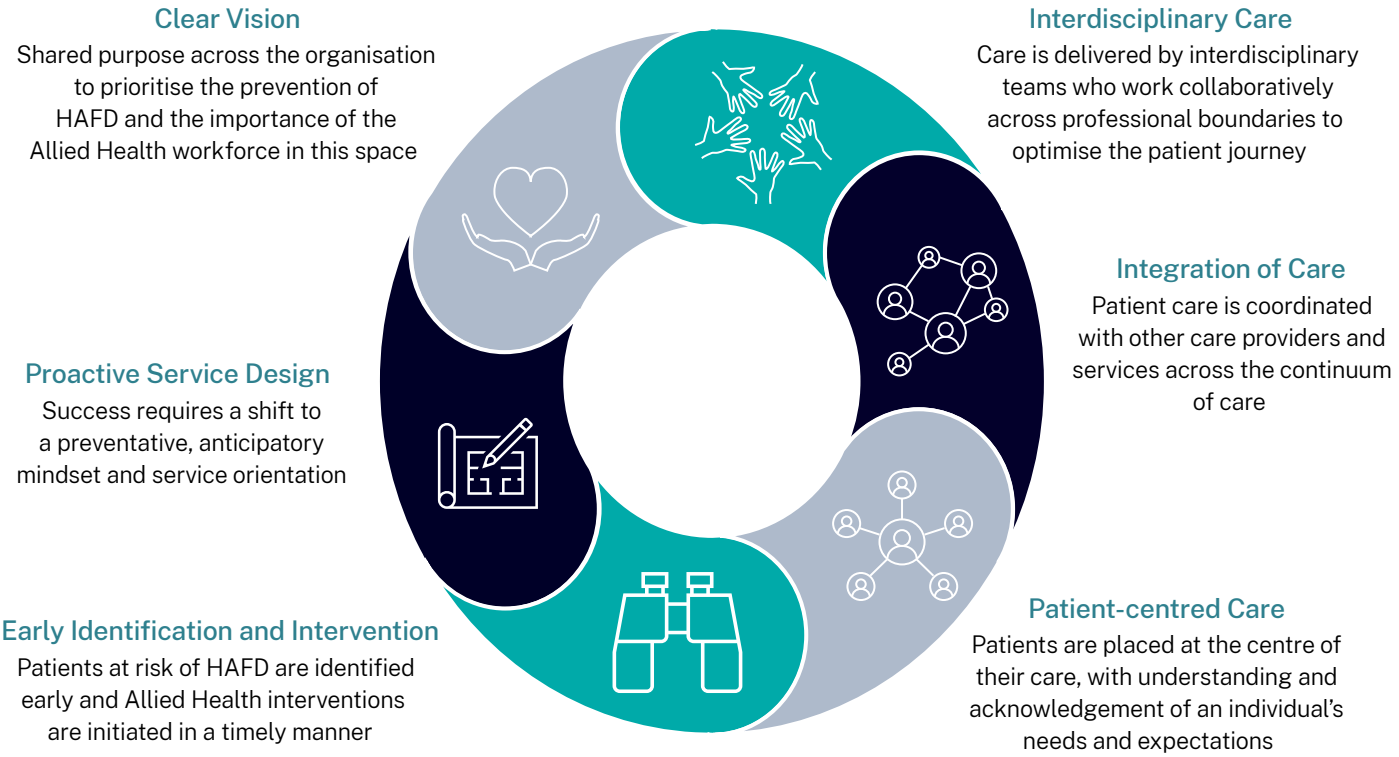


Table 1: Examples of leading practice model value propositions

Model	Purpose
Occupational Therapy in the Emergency Department	Identify and risk stratify frail adults (for safe discharge or admission)
Appoint Allied Health Assistants (AHAs) to the Multidisciplinary Team (MDT)	Provide additional routine therapy, and free up time for AHP to deliver more complex interventions and therapies
Establish a seven-day inpatient allied health service to provide clinical care over weekends	Seven-day allied health service for all patients who are frail or at risk of HAFD

1.1 Glossary

Term	Definition
Activities of Daily Living (ADLs)	Activities are required to live an independent life. For example, showering, preparing food, brushing your teeth, managing budgets
Acute	Hospital setting where a patient receives active treatment for an injury or episode of illness
Allied Health Professional (AHP)	Allied health professionals are healthcare professions (23 professions) who provide services to enhance and maintain functions of their patients (clients) within a range of settings including hospitals, private practice, community health and in-home care. There is an emphasis on health lifestyle and on independence; whether that is physically, psychologically, cognitively or socially
Deconditioning	Muscle mass loss and other physiological changes due to prolonged reduction in physical activity
Frailty	Syndrome characterised by reduced strength, capacity, and physiological function that increases one's reliance on external support
Hospital Acquired Functional Decline (HAFD)	Cognitive and physical decline due to hospitalisation
Interdisciplinary approach	An interdisciplinary approach involves team members from different disciplines working collaboratively, with a common purpose, to set goals, make decisions and share resources
Multidisciplinary approach	A multidisciplinary approach involves team members working independently to create discipline-specific care plans that are implemented simultaneously
Reactive service design	Reflects the holistic nature of the issue and required change. The term includes system culture, clinician behaviour and perspectives
Sub-acute	Hospital setting where a patient receives support to regain their ability to carry out activities of daily life after an episode of illness

1.2 Abbreviation List

Abbreviations	Explanations
MDT	Multidisciplinary Team
IDT	Interdisciplinary Team
RiTH	Rehab in The Home
HiTH	Hospital The Home
CGA	Comprehensive Geriatric Assessment
ED	Emergency Department
AMU	Acute Medical Unit
GEM	Geriatric Evaluation and Management
CQUIN	Commissioning for Quality and Innovation
OPM	Older People's Medicine
ACE	Acute Care for the Elderly
ART	Acute care Rehabilitation Team
ASET	Aged care Service Emergency Team
FIT	Frailty Interface Team
HOPE	Healthcare for Older Persons Earlier
GRACE	Geriatric Rapid Acute Care Evaluation
OACCP	Ortho-Arthritis Chronic Care Program
STRC	Short Term Restorative Care
TACP	Transitional Aged Care Program
LBVC	Leading Better Value Care
CHSP	Commonwealth Home Support Programme
RCT	Randomised Controlled Trial
ACAT	Aged Care Assessment Team

2 Introduction

In early 2020 the Workplace Planning and Talent Development (WP&TD) Branch of the NSW Ministry of Health partnered with Francis Health, to explore means by which the Allied Health Professions (AHP) could be oriented to better mitigate the impact of Hospital Acquired Functional Decline (HAFD) to patients across NSW Health.

The catalyst for this work was the increasing awareness of system leaders in Australia and internationally, that the current orientation of hospital inpatient services may have the unintended consequence of generating harm – in the form of preventable deconditioning – to frail and/or elderly patients. This deconditioning is caused chiefly by the reduced mobility inherent to sustained periods of inpatient bed rest, which is the default setting for most inpatient care [3]. Despite well-intentioned current practice, not being able to move around enough can often make a person physically weaker. This can lead to big decreases in their ability to do everyday things, which can make their outcomes worse, and lead to permanent consequences.

Doctors and nurses are important, but it's the teamwork of AHP that can effectively help patients who are at risk of losing their ability to move.

AHP have special skills and are seen as experts in certain key areas of patient care, however when more patients need their help than there are AHP available, it becomes a systemic problem. Delays to the AHP seeing the patient then often contribute to elongated lengths of stay and increased periods of bed rest, raising the risk and incidence of deconditioning and HAFD. Well-intentioned risk mitigation policies, such as "blanket referrals" to AHP for all patients in an aged care ward (i.e. without assigning priority) for example, may consume resources and drive delays to treatment for all patients, regardless of need.

Many systems recognise this dynamic and are now exploring how to break this cycle by considering different approaches to AHP deployment. Essentially, we're asking how to put AHP in the right place in the patient's treatment journey so they can make the biggest difference in care. This means cutting down on the time patients have to wait for their next treatment or care step. The objective is to determine how best AHP can complement the efforts of nursing and medical workforces via an effective MDT structure, rather than simply substituting for them.

Within this broader context, the COVID-19 pandemic has created an additional catalyst for action. The same frail elderly patients who are most at risk of HAFD, also have the highest overall COVID-19 risk profile. Addressing the challenges posed by HAFD will also mitigate the impact of COVID-19, with the aim to reduce inpatient length of stay and prevent avoidable hospital admissions.

This project identified the impact of HAFD on patients and our hospitals and health services, and highlights the untapped potential of the Allied Health workforce in tackling it. We recognise that progress is already being made to address HAFD across NSW and this document is intended as a repository of current leading practice, to publicise it and promote further uptake giving systemic benefit. The intention is to provide a resource that outlines pragmatic opportunities for AHP to take a leading role in preventing HAFD in their organisations.

The three key objectives of the document are:

- **Provide an understanding of HAFD in the current landscape:** A major contributor to inaction is a lack of understanding and awareness of the impact of HAFD. Through this work we aim to inform and engender greater knowledge and understanding of HAFD for healthcare professionals. We intend that this document be used as a tool to promote knowledge and understanding and act as a catalyst action to address HAFD across the healthcare system.
- **Identify the role Allied Health plays in this space:** AHPs are well placed to take a leading role in driving the necessary change to address HAFD. This document provides a tool to support understanding, and enable clinical leaders and system managers across NSW to feel equipped to collaborate on the implementation of required change.
- **Set out a vision for Allied Health-led workforce models:** The report provides a strategic vision for Allied Health workforce models and multidisciplinary models of care that prevent, mitigate and respond to HAFD. This will support LHD/SHNs to consider opportunities for innovative workforce approaches to tackle HAFD.

The COVID-19 pandemic highlighted the need to strengthen safe alternate assessment and treatment options available to people at home and in the community, with the intent to prevent avoidable hospital presentations. For patients who required admission to hospital, the COVID-19 pandemic also highlighted the need for services to provide holistic intervention to support a safe and timely discharge home, to reduce the length of stay in hospital for patients where possible, and reduce their risk of hospital acquired illness. When admissions are necessary, steps must be taken to consistently recognise frailty and mitigate the risk of HAFD. The potential for Allied Health professions to lead this work is significant and at present, untapped. We intend that this document will assist in driving positive system change and improving care for patients.

3 Defining Hospital Acquired Functional Decline (HAFD)

Hospital Acquired Functional Decline (HAFD) has been characterised as a hidden epidemic in Australia and most of the developed world [1]. It is believed to affect up to half of frail, older Australians experiencing a hospital stay [2].

HAFD impacts the ability of the frail to continue to perform their normal daily activities, spiralling to a reduced quality of life and a greater reliance on primary and acute healthcare providers.

3.1 What is HAFD?

To understand HAFD, it is necessary to define it alongside the related concepts of deconditioning and frailty.

Deconditioning is a process of deterioration leading to a patient's decline in muscle mass and other physiological changes due to prolonged periods of reduced activity (e.g. bed rest) contributing to overall weakening and functional or cognitive decline [3] [4] [5].

The NSW Agency for Clinical Innovation (ACI) Acute Care Taskforce defines **frailty** as:

> *"a predominantly aged-related state of patient fragility or increased vulnerability that results from a compromised ability to maintain homeostasis and limited functional reserves across multiple physiologic systems"* [6].

In other words, frailty is a syndrome characterised by reduced strength, capacity, and physiological function that increases one's reliance on external support [3] [7].

> *Deconditioning can be a physiological process leading to functional and cognitive decline and frailty as the syndrome both resulting from deconditioning and being a risk factor for further deconditioning. When deconditioning occurs as a result of an inpatient stay (often within the span of 24-48 hours) it is considered to be "hospital acquired"* [8].

> *HAFD itself is a widely accepted term for the physical and cognitive deterioration of patients experienced as a result of an inpatient hospital stay* [3] [9]. *It is usually expressed through the diminished ability to perform the key Activities of Daily Living (ADLs) such as eating, dressing, housework, laundry, getting to places beyond walking distance, managing medications, managing personal finances, and using a telephone* [10].

This functional decline is unrelated to the patient's acute illness and can be avoided through appropriate intervention. Frail people who are hospitalised are at a higher risk of HAFD or deconditioning due to their reduced physical capacity and are therefore less likely to return to their premorbid level of ability.

3.2 Clinical outcomes, prevalence and impact

HAFD has a cumulative impact on patients' lives. It can manifest as under-nutrition and dehydration, loss of muscle strength, accelerated bone loss, depression, pressure ulcers, skin tears, and incontinence. Too often, the effects of HAFD are associated with an increased risk of mortality, loss of independence, increased risk of hospital readmission, increased incidence of falls and long-lasting reliance on inpatient or outpatient and community facilities, such as rehabilitation and nursing homes, post-discharge [5] [4] [11].

It would be remiss to discuss HAFD, without also touching on delirium. Delirium is a mental disorder with an acute onset and fluctuating course, characterised by disturbances of consciousness, orientation, memory, thought, perception, and behaviour [62]. The effects of this syndrome are similar to those of HAFD, cumulating in decreased functional status, longer periods of time before recovery and discharge, institutionalisation, premature mortality, and increased health care costs [63].

It is also increasingly prevalent, with an occurrence rate of 83% in the elderly patient cohort in hospitals [64]. There is evidence that supports the existence of an independent relationship between frailty and delirium, though there are notable similarities [65].

Importantly, the preventative measures needed to combat delirium are the same as HAFD, relying on a multifactorial, team-based approach. Preventive interventions such as early and recurrent mobilisation, pain management, adequate nutrition and hydration, reducing sensory impairments, and ensuring proper sleep patterns have all been shown to reduce the incidence of delirium, regardless of the care environment.

While HAFD can affect patients of all ages, the severity and irreversibility are far more pronounced in the frail and elderly [12]. The Australian population, much like the rest of the developed world, is ageing. In 2017, 15% of the population (3.8 million) was aged 65 and over; with this proportion projected to grow steadily over the coming decades. An Australian study showed that almost 21% of the population are estimated to be frail, and a further 48% are estimated to be prefrail (i.e. those subjects that met one or two of the frailty indicators) [13]. By 2031, 5.7 million Australians will be aged 65 years and older. By then if the prevalence rate is unchanged, there will be 1.2 million frail older adults and a further 2.7 million that are prefrail [13].

The Australian Institute of Health and Welfare reported during 2017–18 the greatest increases in healthcare expenditure were for hospitals ($70.4 billion) followed by primary care, ($63.4 billion) [14]. The magnitude of this growing expense and HAFD is further compounded when we consider that older, frail people make up the largest users of medical and social care services [15]. The "Older Australia at a Glance" report states that patients aged 65 and older make up approximately 42% of all hospital admissions and 29% of all unreferred GP attendances. Older Australians are also more likely to stay in hospital longer than the under 65s [16]. Guidelines show that between 34% and 50% of older people experience HAFD and as much as 30% of people aged over 70 return home from a hospital stay with a reduced ability to perform their usual activities of daily living [2].

Figure 2: The Institute for Healthcare Improvement (IHI) Quadruple Aim*

* https://www.health.nsw.gov.au/Value/Pages/about.aspx

3.3 The imperative for change

HAFD affects a large number of frail and elderly Australians, leading to a reduction in their quality of life, and often, a shortening of lifespan. This then increases their dependency on family and/or the healthcare system for support. Whilst the concept of HAFD and its impact have been known since as early as 1995, alongside reasonable and demonstrable solutions to address it, there has been a lack of urgency to tackle this epidemic in Australia. With ever greater numbers of frail, older people one can reasonably deduce that there will be more pressure placed on the healthcare system potentially outweighing the capacity available to service it.

The effects that HAFD has on patients, community and the healthcare systems is, by its very nature, eminently avoidable given timely and appropriate interventions. With an ageing population, it is crucial to act now to prevent and reduce the occurrence and impacts of HAFD.

Effective solutions will help to meet the quadruple aims of healthcare; improving the health outcomes for patients, improving the patient experience during their stay and after discharge, improving the provider experience and finally reducing the per capita cost of care for frail, older people [26].

3.4 Factors contributing to HAFD in NSW

HAFD is a complex issue with a myriad of factors that contribute to its cause. However, there are three broad themes that are consistently described as major contributors to HAFD in NSW. Most fundamental is **excessive bed rest**, leading to reduced physical and cognitive activity. Related to this, is a **service design that is reactive**, i.e. the focus is on rehabilitating patients once they have experienced functional decline, rather than putting in place measures to prevent it. Additionally, each **clinical profession tends to naturally focus on treating the presenting acute illness**, rather than consider the potential deconditioning caused by unnecessary patient waiting during an inpatient stay.

3.4a Excessive bed rest

Physical inactivity or bed rest during hospitalisation is a primary factor contributing to the functional decline of older hospitalised patients [17] [12] [4]. Prolonged bed rest during hospitalisation can negatively impact respiratory, cardiovascular and psychological systems in patients. The cumulation of these effects are cyclical in nature and detrimental to an individual's health. As a result of prolonged bed rest, patients lose muscle mass, strength, and power, suffer from fluid shifts in the body leading to postural hypotension, increased risk of clot formation, increased risk of pneumonia from reduced respiratory excursion and decreased oxygen uptake. Subsequently, when they try to sit up or get out of bed, they are more likely to fall. Patients also suffer from a loss of confidence after prolonged bed rest.

Excessive bed rest has also been associated with reduced cognitive stimulation. Patients often feel hospitals are authoritarian and they require permission to get up and undertake social activities with other patients or to perform normal daily activities such as using the toilet or making a cup of tea. This adds to the effects of physical inactivity, contributing to low mood, cognitive decline and other psychological complications such as loss of motivation, helplessness, lack of control and in some cases delirium.

Bed rest is, at times, a necessary and beneficial component of a patient's physical, emotional, and physiological recovery. However, there are several sub-factors preventing incidental activity. Firstly, echoing work dating back to Goffman (1961) [18] and Lorber (1975) [19] stakeholders reported that patients get into the role of a "good patient", setting their own expectation that they should remain in bed and not cause a fuss.

Anecdotally, there is a perception, consistently reported by stakeholders, that a ward in which all the patients remain in bed is considered far easier to manage, when compared with a ward where multiple patients are up and about. Therefore, if only sub-consciously, there may be a disincentive for healthcare professionals to get patients out of bed.

The physical layout of the ward can also often be a barrier to patients getting out of bed. Hospital equipment which blocks pathways, a lack of communal and outdoor areas, and an absence of clocks can cause patients to remain in bed for fear of missing a meal or contact with their clinical team. Due to the well-known ramifications of excessive bed rest, recommendations have been made to keep patients out of bed as much as possible, and as early as medical treatment allows [2] [12] [20].

3.4b Service design that is reactive

There is an increasing focus on the need to address HAFD and frailty in our health systems, however stakeholders reported that a general lack of awareness, recognition, and prioritisation remains. The current clinical interventions and related Allied Health resourcing taken to reduce HAFD occur too late in the patient journey. Studies have shown that HAFD can occur in the first 24 hours of hospitalisation [4]. Ten days of bed rest can be equivalent to 10 years of ageing for someone aged 80 and over, drastically reducing their functional status [5]. The rapidity of deterioration implies that the runway for delaying HAFD is extremely short and necessitates early clinical decision making to enable swift action.

Early identification of frailty and comprehensive geriatric assessments are well known for being "gold standard" responses to tackling HAFD [11]. In 1995, Robert Palmer hypothesized, amongst other concepts, that healthcare professionals might prevent adverse functional outcomes by detecting frailty early and treating those patients promptly [21]. In 2017, The Asia-Pacific Clinical Practice Guidelines for the Management of Frailty "strongly recommends the use of a validated measurement tool to identify frailty" in order to deliver substantial benefits to the patient [22]. It was also recommended that frailty be identified and managed as early as possible in the patient journey and encourages healthcare professionals to be cognisant of the consequences related to lack of action. However, stakeholders have suggested there is still a lack of standardised frailty identification across hospitals in NSW.

Stakeholders reported that current practice places the focus of Allied Health intervention on the end of the journey rather than the full continuum. Mobilisation plans, nutritional advice, exercise programs, and rehabilitation endeavours are often only discussed on day three or four of a patent's inpatient episode, instead of on day one, adding unnecessary delays for the patient to receive comprehensive care. Informed stakeholders have determined that without a significant cultural shift that instils a shared vision in the system for frail, older patients that enables early intervention and coordinated care, services will continue to be misaligned to demand.

3.4c Specialist professional focus

Current healthcare systems are largely designed to address organ-specific and disease-specific problems one at a time and are not well prepared to deal with the chronic and complex medical needs of the frail and elderly [23]. As HAFD can present itself in a myriad of social, psychosocial, and physical ways, it is especially important that the care provided crosses disciplines and professional groups. Healthcare professionals have described the need for medical, nursing, and AHP groups to work together collaboratively and provide holistic, patient-centred care.

While the concept of holistic, patient-centred care delivered by a MDT – where team members work independently to create discipline-specific care plans and implement them simultaneously – is mature and broadly understood, clinicians continue to see areas of potential for its further implementation. This trend has evolved and is expressed further with the emergence of the interdisciplinary team (IDT) approach. This model has an enhanced focus on how the care plans interact, ensuring complementarity to avoid competing priorities and improve patient outcomes.

Stakeholders identified the main challenge to interdisciplinary teamwork is a health system that enables and promotes a siloed professional focus. Historically, the health system was created to combat infectious disease and maternal and/or perinatal mortality which gave rise to a highly medical model of health focused on acute and episodic care provided in hospital by doctors and nurses [24]. The dominance of this medical model is still prevalent in acute settings today, with the focus of a patient's care being on their acute illness first, relegating care for functional status towards the end of the patient journey to be provided by AHP [3]. This can set up role boundaries between professional groups and a "stay in your lane" mentality.

The issue of role boundaries appears to be linked to a low risk tolerance, especially regarding mobilisation and falls [25]. Falls and fall-related injuries remain a significant public health problem for people aged over 65 years in Australia, and most stakeholders felt there was a lower risk appetite for mobilisation by any profession other than Allied Health, for fear of causing falls. However, as described above, this risk aversion is more likely to lead to a fall than prevent one, due to the physical deconditioning that is caused by inactivity. Nursing staff have expressed a fear of being held responsible for adverse events based on decisions that are outside their perceived scope of practice [25]. As a result, there is a perception that mobilisation is solely AHP's responsibility, creating additional boundaries between the professional groups.

Patients can often experience unnecessarily long wait times for guided mobilisation supported by AHP. These waits are potentially unnecessary as other members of the MDT (e.g. nursing, medical) are capable of safely delivering this service, and more promptly, helping mitigate the risks of immobility. Certainly, AHP have specialist knowledge pertaining to mobilisation (including gait training etc). However, this depth of knowledge is not required to mobilise the less complex/low risk patients and is an ideal shared team task. HAFD is best managed when medical, nursing, and Allied Health workforces work collaboratively together for the best possible outcomes for patients and the system.

4 Why Allied Health?

The Allied Health workforces have emerged as a natural focus point to provide the therapeutic, patient-centred care necessary for the prevention of HAFD due to the physical, cognitive, social, and pharmacological nature of the condition. Additionally, it is noted that successful prevention strategies rely on a holistic view of the patient, contrary to the condition-specific focus that is inherent to the current medical model. A patient-centric view aligns more naturally with the disciplines of the AHP as their roles are predominantly oriented by specialty or ward location. On top of this, AHPs are experienced working across disciplinary groups both within Allied Health and with their medical and nursing colleagues. Taken together these lead us to the conclusion that AHP have a unique skill set that is crucial to unlocking preventative and treatment strategies to address HAFD.

Patients at risk of HAFD may require extensive assistance with physical activity, help with self-management, nutritional advice, and assistance with cognitive tasks. Care must be holistic, well integrated, coordinated and supported with good communication to achieve the best outcomes for patients. This aligns perfectly with AHPs who are highly skilled at delivering holistic, patient centred care spanning the care continuum.

There is growing evidence to support further expansion and investment into the Allied Health workforce and enhancing the professions' role as leading clinical care delivery. A number of economic evaluations have shown how the expansion of Allied Health services in various settings can reduce hospital readmissions, length of hospital stay and admissions, potentially accumulating in significant cost savings to the healthcare system [27] [28] [29].

The challenge is to accurately quantify the cost effectiveness of Allied Health interventions that occur in a MDT, as it is hard to determine which precise intervention caused the reduction. Allied Health services have been used in innovative models in areas such as: emergency departments, inpatient units, specialist outpatient clinics, triaging, and providing complex case management. These models, though not yet common place, are progressively being implemented in the Australian context.

The range of specialties, knowledge and services is the prime reason that the Allied Health workforce is so crucial in the prevention of HAFD. Frailty is a complex syndrome, the adverse outcomes of which can be physical, cognitive, social, or pharmacological in nature. As a result, treatment or intervention must be of a holistic manner, instead of independently focused on specific conditions.

Nine areas of untapped potential have been identified which focus on the way Allied Health resources are oriented and deployed. These changes could make significant positive and impactful contributions towards the prevention of HAFD and help in delivering the NSW Valued Based Healthcare quadruple aims.

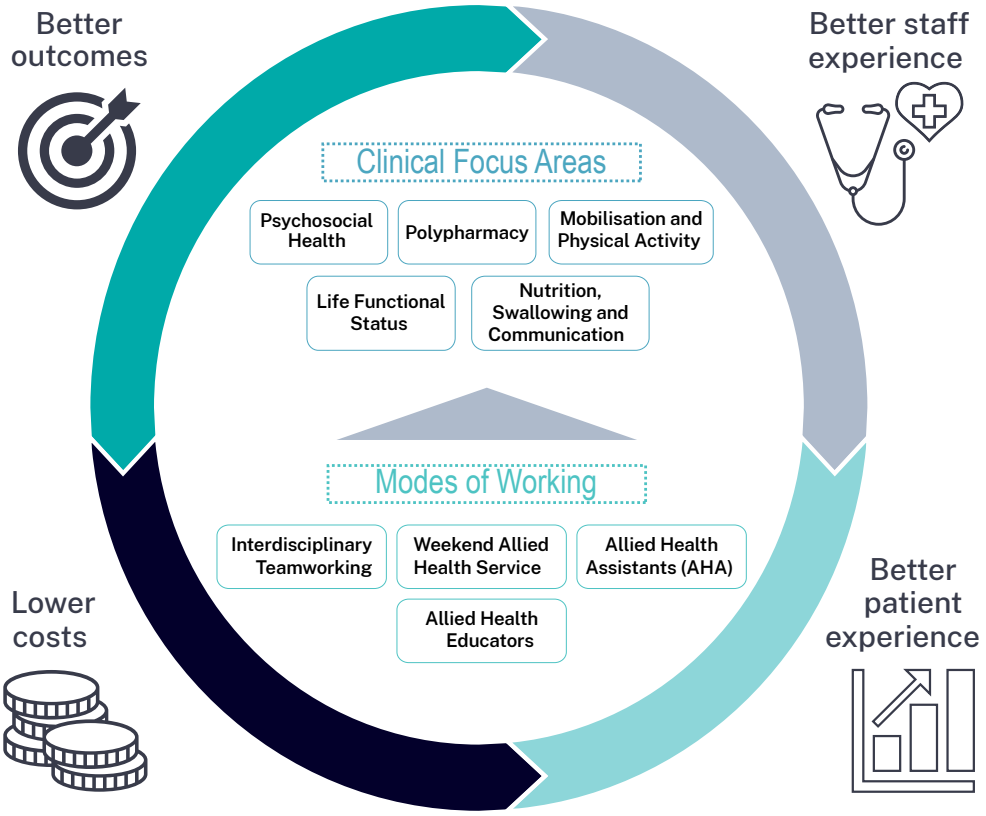
As illustrated in Figure 3, these nine focus areas have been classified in two ways, firstly as changes to clinical focus and secondly in terms of workforce configuration, including roles, resourcing and deployment.

4.1 Clinical Focus

All of the Allied Health disciplines have potential to contribute positively to the prevention of HAFD. Involvement of Allied Health professionals, nurses and medical professionals in a cooperative and coordinated way is essential to providing consistent, high quality patient care. The intention of this work is to acknowledge the expertise that individual Allied Health professions have and encourage the sharing of knowledge across the disciplines to foster better inter-professional relationships, which ultimately results in better patient care and outcomes. In this section, we have focused our analysis on those areas of highest potential impact, as these are the clinical areas and related disciplines which most closely correlate to the factors that drive the development of HAFD.

We recognise that there is often the potential of clinical scopes between AHPs overlapping, and therefore some of the suggested approaches could also be performed by other disciplines. We have indicated here what we consider the most likely approach to resource these new models. Important to emphasise, it is not our intent to exclude any particular profession or erect a barrier to prevent the appropriate participation in new ways of working by those with the expertise to do so.

Figure 3: How Allied Health workforces can better prevent HAFD



4.1.1 Mobilisation and Physical Activity

Physical inactivity or bed rest during hospitalisation has been attributed as a primary factor contributing to the functional decline of older hospitalised patients [17] [12] [21]. Mobilisation has been identified as the key modifiable factor related to functional decline in older adults, meaning that the level of mobility is inversely proportional to decline post hospitalisation [30]. The old saying of "if you don't use it, you lose it" holds true.

Physiotherapists and exercise physiologists are crucial to safe patient mobilisation. Physiotherapists provide physical therapy, mobility assessments and gait training required for reducing functional decline. Exercise physiologists provide individualised assessments and exercise programs. Both disciplines have a strong focus on support, evidence-based treatment and advice, education, and enabling patients to change their lifestyle to treat functional decline and enhance independence.

The literature clearly shows:

- Physical activity is an effective way to maintain and regain physical strength, mobility and function for patients [31] [32].
- Patients significantly benefit from tailored physical activity programs geared towards resistance training, aerobic exercises, and gait training to gain muscle strength, improve balance and reduce the likelihood of falls [33].
- Resistance training has also been demonstrated to improve physical strength and power. It also has the potential to counteract the decline of muscle function and mass normally associated with hospital stays for older people [33] [66].
- Peiris et. al. observed that extra Physiotherapy time reduced length of stay and improved the rate of walking ability, activity, and quality of life [32].

Untapped Value

It has been consistently reported by stakeholders that while physiotherapists have the expertise to provide the interventional therapy required to prevent and/or reverse the effects of HAFD, the workforce simply does not have the capacity to see each patient on an inpatient ward, particularly when shared across multiple wards.

Similarly, exercise physiologists can improve patient outcomes by delivering evidence-based interventions, such as strength, balance and gait training, and providing advice on the safe return to usual physical activity levels. However, exercise physiologists are a growing workforce in NSW Health and are not currently available in many inpatient units. There is also further opportunity for patients identified with frailty and sarcopenia in the hospital to be referred for follow up physiotherapy and exercise physiology in the community. This could diminish some of the effects of HAFD once patients leave the system.

Practically however, it is not possible to expand either workforce sufficiently to fully meet demand. It will never be possible for all frail and elderly patients to be safely mobilised by an AHP in a sufficient and timely way, to sustainably reduce the rate of HAFD in NSW hospitals. Instead, the expertise that physiotherapists and exercise physiologists possess must be better leveraged through the use of suitably trained AHAs and other members (nursing and medical) of the MDT.

Physiotherapists and exercise physiologists are ideally placed to give their colleagues the skills and the confidence to safely assess, encourage and assist patients with lower acuity and complexity to remain physically active and mobilise. In this way the valuable AHP resources can focus on higher needs patients including those that have been identified as frail or high risk of HAFD, whose rehabiliation requires more sophisticated, specialist attention. The CEC has a valuable resource for safe mobilisation: Give It A Go!

4.12 Life Functional Status

Functional status is an individual's ability to perform the Activities of Daily Living (ADL) to the standard sufficient to meet basic needs, fulfil usual roles, and maintain health and well-being. Cognitive and functional decline as a result of hospitalisation impairs ADL performance and can be further attributed to a decreased quality of life, raised healthcare costs and social care costs [34]. Occupational therapists are essential to preventing HAFD and supporting patients to regain functional status once it has declined.

Occupational Therapy is centred on enabling and promoting functional independence of the patient with self-care activities (dressing, cooking, hygiene), productive activities (education, work, volunteering and caring for others) and leisure/social activities (engaging in hobbies, community gatherings and friendships) [35]. Interventional treatment is person-specific, depending on functional deficits, resources available, and environmental conditions. Occupational therapists specialise in maintaining quality of life for their patients, particularly those that are left in vulnerable positions due to disability, illness, and/or frailty.

A range of studies have quantified the economic value of Occupational Therapy to the health system as a whole. This is particularly valid when Occupational Therapy interventions include tailored multiple components and/or the provision of home safety assessments and environmental modifications to enhance independence and participation in activities of daily living for people who experience cognitive and/or functional decline [36].

Untapped Value

The holistic, life-functional focus of Occupational Therapy positions the profession ideally to act as the unofficial "book-end" for patients that are at risk of HAFD. The scope of their role spanning the physical and cognitive function crosses the patient's transition out of secondary care to community/home environments and gives them a valuable perspective on the patient journey. Occupational therapists have an excellent opportunity to identify frail patients early in their journey, to recognise whether the patient needs further Allied Health intervention and refer appropriately. Similarly, they play a substantial role in facilitating the safe discharge of a patient, ensuring they have the appropriate home setup, equipment, services, and help, post their acute illness.

Ward setup and design is another area where occupational therapists could contribute to build-in/encourage HAFD prevention. Stakeholders reported the lack of appropriate ward set up (no patient tea rooms, no gardens, no clocks and dimmed lighting) detracted from patients wanting to move about and engage in physically and cognitively stimulating activity.

"Moving with a purpose" (e.g. patients getting up and walking to make a cup of tea, as opposed to simple mobilisation) is acknowledged as a key factor in decreasing functional decline and stakeholders report that these opportunities are limited in most hospitals. Occupational therapists regularly engage in the modification of environments (e.g. home, work, school, community) and adaptation of activities and tasks. Leveraging this expertise to adjust inpatient environments will better support safe, purposeful patient mobility and help mitigate the risk of HAFD.

Environmental design changes could be further augmented by occupational therapists taking a leadership role in this space, providing training and mentorship to other members of the MDT, ensuring that other AHPs as well as the nursing and medical staff are similarly aware of and comfortable with, the therapeutic value of patient functional mobility in the ward. Alignment of all the clinicians is needed to incorporate these practices consistently.

4.1.3 Nutrition, Swallowing and Communication

Nutrition is an important element of health in the older population and influences the ageing process. As people age, they are more susceptible to what has been termed "the anorexia of ageing". This syndrome is generally defined as a loss of appetite or reduced food intake which then results in a deficit of a range of macro and micronutrients, hormonal deficits and other endocrine system alterations [37].

The prevalence of malnutrition is deeply concerning, reporting rates of 40% in acute settings and associated with impaired wound healing, functional decline, higher hospital readmission rates, higher incidence of falls, and mortality [22].

In Australia, patients suffering from malnutrition can go undetected due to lack of early screening and identification. Furthermore, meal schedules and choices, medication, swallowing problems, and changes in cognitive function can influence a patient's appetite and nutritional intake, but go unnoticed during their hospital stay. As a result, patients can be undernourished as they are discharged.

Dietitians play an important role in assessing all at-risk patients to characterise and determine the cause of nutrition deficits, provide treatment, and communicate the care plan to the patient. For example, studies have demonstrated that nutritional supplements can produce small, consistent weight gain and cause a beneficial effect on mortality and reduced length of stay in hospitalised patients [38]. Nutritional support, in conjunction with exercise interventions, have been proven to reduce the effects of functional decline in older patients [39].

The Department of Dietetics in Illawarra Shoalhaven LHD district implemented malnutrition screening tests completed solely by dietitians within the hospital to understand and address these problems. They established that not only were the in-house dietitians aware of their new patients within 24 hours, but they were also best placed to provide the treatment once the patient was assessed [40]. The paper also showed patients in rehabilitation are far more likely to be malnourished, highlighting the need for Dietetics and food services to focus on aged care as an area for improvement.

With typical ageing, communication skills change subtly at least in part because of changes in physical health, depression, and cognitive decline. The ability to communicate successfully, including speaking, listening, reading, and writing, is a critical factor in remaining healthy. The expertise of speech pathologists is key for assessing and treating communication and swallowing disorders in older adults.

Dysphagia presents a high risk to the older, frail population. It affects 47% of all frail, older patients hospitalised for acute illness, and can result in malnutrition, dehydration, and pneumonia [41]. It has also been known to affect physical performance, as swallowing issues and malnutrition can lead to dysphagia related sarcopenia, increasing the likelihood of further functional decline.

Untapped Value

Stakeholders suggest that there is substantial scope for speech pathologists to conduct early swallowing assessments to diagnose and treat the underlying cause of the disorder. Once identified, the team can design a program of interventions and compensatory strategies to facilitate safe oral intake to the greatest extent possible [41]. Moreover, speech pathologists are also well placed to remove any barriers to communication that frail and elderly patients may experience, allowing them to convey other concerns that they may have. Speech pathologists, working alongside the rest of the team, can understand and treat the issues raised by the patient.

Similarly, stakeholders in Dietetics reiterated how crucial it is for patients to be screened for malnutrition at an early stage of their hospital journey. Dietitians recommended opportunities to partner with food and patient support services to create meal plans that are both appetising and nutritious for frail and/or elderly patients, recognising the need for a tailored, patient centred approach to nutrition.

4.1.4 Polypharmacy

There is considerable research that links polypharmacy to frailty and functional decline [21] [42]. Polypharmacy is most often defined as being prescribed four or more medications and is categorised as follows:

- *Appropriate*: when treatment is suitable
- *Inappropriate*: when a patient takes more drugs than medically necessary or
- *Redundant pseudo-polypharmacy*: when clients are recorded as taking more drugs than they actually do [43].

Pharmacists are professionals who focus on the safe and effective use of medications, as well as providing education on the appropriateness of medication for certain conditions. Pharmacists play a crucial role in reducing polypharmacy.

Older patients are at a higher risk of polypharmacy, as they are more likely to suffer from multiple co-morbidities and are prescribed various medications for each ailment. There are many reasons why taking numerous inappropriate drugs could lead to poor health outcomes. For example, atropinic drugs are associated with frailty, decreased functional decline, delirium and falls across multiple studies [42] [44].

The complexity and, in some cases, toxicity of prescribing drugs means that care must be taken to promote adherence and minimise harm to the patient. The Asia-Pacific Frailty Guidelines recommend that prescribed medications be reviewed regularly to provide better outcomes for older people [22], and where medications are no longer needed, deprescribed.

Pharmacists have the potential to carry out the Screening Tool of Older Persons' Prescriptions (STOPP) and Screening Tool to Alert to Right Treatment (START) assessments required to deprescribe the medication as part of their care intervention. Stakeholders reported that medication reviews should extend to RACFs and the community to prevent medication-related decline, which ultimately leads to hospitalisation. This was further corroborated as a recommendation in the 2021 Royal Commission into Aged Care Quality and Safety report [67].

While pharmacist-led medication reviews for all frail and/or elderly patients would be ideal, stakeholders described limited resources to cover every patient in an inpatient ward.

Untapped Value

There are significant opportunities for pharmacists to lead the setup of educational programs that help patients self-manage their own medications, engaging patients on the benefits of each medication, instead of solely focussing on the side effects. Pharmacists and doctors should have open conversations with patients and their carers regarding the harm versus benefits of prescribed medications and understand how to best care for the patient [22]. Specialist leadership of AHP in this space should be better acknowledged and encouraged to allow multi and interdisciplinary teams to more effectively manage the polypharmacy issues which can drive HAFD.

4.1.5 Psychosocial Health

HAFD can manifest itself through depression, memory loss, anxiety, and loneliness leading to further physical decline, resulting in a vicious cycle for the patient. For example, the loss of independence and social engagement that can accompany hospitalisation and decline has been said to foster a negative emotional state that can cause older adults to decondition faster. Similarly, a weakened physical state can negatively influence mood, which can cause patients to reject the therapy that would otherwise make them better [45].

Stakeholders reported that when hospitalised, patients are forced to confront a new environment, are potentially afraid of the ramifications of their acute illness and are often prevented from spending time with family and doing the things they enjoy. The situation can be difficult to navigate, and in conjunction with the effects of physical decline, can lead to poor health outcomes for the patient. It is important then, that patients are provided with the appropriate support to assist with their mental and emotional wellbeing through this transitional time.

Psychologists and social workers are instrumental for mitigating the impact of hospitalisation on the patients. Psychologists are experts in behaviour, how people think and react to certain stimuli, and social workers are trained to support people to make choices that have a positive impact on their lives.

Untapped Value

Stakeholders identified that social workers are invaluable in coordinating care for patients and their families/caregivers. Due to the nature of their work, they have the expertise and knowledge to communicate with patients, often picking up hidden issues that the patient has been facing. They are key in finding solutions and working these through with the rest of the team. Additionally, they have been identified as advocates for carers and families, recognising carer stress and providing linkages to support available for the carer. This is important for the patient as well, as it ensures that patients are getting the support they need from their carer allowing them to remain at home longer. Patients suffering from complex health conditions, or those who require end of life planning, also have more stringent support requirements, especially when factoring in discussions with family and carers. Stakeholders also reported the necessity of this support early on in the patient journey, such that the support is available from the point of admission and carries on past their hospital stay.

4.2 Modes of working

In addition to the clinical areas discussed above, the roles of AHP and the ways in which they are deployed are also key determinants of patient outcomes. Below we consider four modes of workforce organisation which have significant potential to act as foundational, enabling factors to better prevent HAFD in NSW.

4.2.1 Interdisciplinary Teamworking

Collaborative clinical care should reside at the heart of efforts to prevent HAFD. Patients at risk of or suffering from HAFD will likely have multi-morbidity and require a holistic approach to their care. Frail, elderly people have complex medical, psychological, and social needs and will benefit from an integrated care approach, rather than that of isolated professionals. Managing these complex and inter-related conditions requires consideration of a range of factors and a model of interdisciplinary working is best suited to delivering safe and effective patient care.

Interdisciplinary models comprise a team of clinicians drawn from the relevant professional groups who, together with the patient, undertake assessment, diagnosis, intervention, goal-setting and the creation of a care plan. In contrast, under a multidisciplinary approach, team members work independently to create discipline-specific care plans that are implemented simultaneously, but without explicit regard to their interaction. [46].

Together, team members foster healthy challenge, collaboration and encourage each discipline to step outside their own specialty. Patients are personally involved in their prognosis and care plan and understand why exercises or medications are prescribed.

Untapped Value

Extending the use of the interdisciplinary team (IDT) approach more widely could deliver significant potential benefit for the reduction of HAFD. Effective IDTs can bridge professional boundaries and systemic silos to directly manage critical dependencies for patients. When working optimally IDTs facilitate the delivery of complementary care through shared information and goal setting, and it is this approach which underpins a number of leading practice geriatric/aged care service models in NSW and overseas outlined in appendix one.

Importantly the IDT approach offers a framework that can enhance the clinical contribution of AHP and support their leadership of key elements of care. By working more explicitly in an interdisciplinary way there is potential to better leverage the specialist skills of AHP and address growing demand for their services while also mitigating resource constraints. This being the case IDTs should be considered as foundational in efforts to address HAFD through better use of the AHP workforces.

4.2.2 Allied Health Educators

Allied Health is a crucial workforce in the prevention of HAFD and has a distinct role to play in the leadership and education space. Allied Health is the umbrella term for 23 different professions employed by NSW Health and makes up a significant proportion of the health workforce in NSW. There is however limited dedication to the development and definition to a "Whole-of-Allied-Health" Educator role.

Its absence has led to the emergence of various ad-hoc Allied Health Educator roles across the NSW Health system. While established however, these roles have not been widely appointed to. Although there are many engaged, passionate clinicians across the state, this does not necessarily translate into the consistent application of leading practice in hospital settings. Allied Health professionals suggested that an Allied Health Educator role could resolve two fundamental barriers to preventing HAFD namely:

- Clinician awareness of HAFD
- The importance of safe, patient mobilisation.

Untapped Value

Currently, general awareness, knowledge and understanding of the dangers of HAFD is not widespread. At a macro level, there is scope for an Allied Health Educator to play a role in setting strategic direction, empowering management to see the potential in prioritising and investing in the prevention of HAFD. Stakeholders frequently stated that Allied Health were already "the converted" in this regard, signifying that they were already aware of, and taking measures against, HAFD. The limited understanding of HAFD and its implications, may have contributed to the inconsistencies in models of care implemented to tackle this issue. For example, frailty screening has long been heralded an important risk stratification measure for frail and/or elderly, but this is not consistently implemented across NSW. Allocating an AHP Educator role would drive consistent education of functional health and its importance, potentially engendering a cultural shift towards a proactive service design.

At a micro level, opportunities for an AHP Educator role exist to enhance the effectiveness of the MDT and IDT approaches. AHP Educators, working alongside Nursing Educators, could coach their nursing and medical colleagues on more traditionally-held AHP tasks and the importance of them – i.e. safe patient functional mobility.

It has been noted that a perceived fear from nursing regarding patient mobilisation exists, and that this has gradually developed over many years. An AHP educator could be part of a strategy to address this issue by delivering training and education that includes highlighting the risks associated with extended bedrest and contributes to a grass-roots movement for change. An AHP Educator role would be able to deliver this training, highlight the risks associated with extended bedrest and could contribute to/be a natural focus point for, a grass-roots movement for change (e.g. #endpjparalysis). Stakeholders also suggested the possibility of education within the workforce. While Allied Health workforces are by design, oriented towards collaborative working across disciplines, there is room to improve current interdisciplinary practice. Stakeholders recommended that focused, team-level education sessions, which could explore issues in detail within the various clinical groups would generate better understanding of what tasks can be shared between the professions and what is AHP specific.

A dedicated Allied Health Educator would also be able to inform patients, caregivers, and families of the benefits of mobilisation. A fundamental challenge that all stakeholders raised is the reluctance of patients to get up and move around. Patients are often unaware of how detrimental prolonged bed rest can be, especially to those who are frail and/or elderly and they require the appropriate education to understand these impacts. It is difficult to raise patient awareness of HAFD on an individual basis, and stakeholders agreed that a broader-based, structured campaign/social movement would help provide a baseline of knowledge and thereby a context for those one-on-one conversations with patients. An Allied Health Educator could dedicate the time and resources to create an effective education and communication strategy to ensure patients understand the purpose and importance of being asked to mobilise, and ultimately spearhead a needed change in patient expectations.

4.2.3 Weekend Allied Health Service

In most acute settings, provision of Allied Health services occurs during the working week, Monday to Friday. However, there is strong support to provide some AHP services on a 7-day a week basis, as patients admitted on the weekend suffer from poorer functional outcomes than those admitted during the week [47]. This is especially relevant to patients at risk of HAFD, as they are likely to be on bedrest if they have been admitted without Allied Health assessment.

The disadvantages of the five-day working week in hospitals have been articulated numerous times in many jurisdictions and the negative impact on patient journeys is well known. Impacts can include delays to diagnosis and treatment often resulting in a longer inpatient length of stay, and hence longer exposure to the risks inherent to hospital environments, including HAFD.

The cost of resourcing is typically cited as the reason that Allied Health services are not provided at weekends [48]. While there is emerging evidence in support of cost effectiveness in sub-acute care, evidence pertaining to acute Allied Health services on the weekend remain limited.

Untapped Value

Addressing this gap in research was one of the objectives of this project and accordingly the cost benefit analysis of a seven-day Allied Health service is articulated in section 6.2.3 below.

Stakeholders considered that an increase of Allied Health services on the weekend made logical sense based on current healthcare demands. Patients are, and continue to be, admitted on the weekend, but someone admitted on Saturday morning under current rosters, may not see a relevant AHP until Monday (at the earliest). Extending the Allied Health service to a seven-day model offers the potential to reduce the effects of functional decline on patients, mitigate the effects of high workloads on Mondays and Fridays, and improve transitional care with families and carers.

For example, a controlled trial in Australia introducing Saturday Allied Health team members to a Geriatric Evaluation and Management (GEM) ward, demonstrated patients were discharged at a higher level of functional independence and reduced readmissions within 30 days [48].

4.2.4 Allied Health Assistants (AHA)

Developing a health workforce configuration that is fit for purpose, with the capability to deliver the right skills in the right place, at the right time at the right cost, is essential to overcome the challenges of Australia's rapidly changing healthcare system. This could include delegating in-scope tasks to an AHA workforce, while care planning remains an AHP responsibility. For more information regarding effective use of AHAs refer to the Allied Health Assistant Horizon Scanning and Scenario Generation Report.

Untapped Value

AHAs are defined as individuals employed under the supervision of an AHP who can assist with therapeutic and program related activities. It is understood that wider, more consistent use of AHAs could increase capacity for Allied Health interventions and the intensity of services. Use of AHAs, working to their full scope, could translate to additional occasions of service and therapy intensity resulting in improved patient outcomes in all health settings. The support would afford AHP the opportunity to operate at their top of scope required for complex patients (including those who are frail and identified as at high risk of functional decline), provide longer therapy sessions, and access to services for clients. For the Allied Health workforce to meet the demands that HAFD has and will have on the system, it is necessary to reallocate lower-level tasks to a support workforce to create the capacity required to concentrate on complex tasks only an AHP can do, or those where delivery by an AHP is of significantly higher clinical value.

5 Current Leading Practice

Hospital and health system managers in Australia and overseas, are increasingly aware of the criticality of more effectively managing frail elderly patient cohorts and preventing avoidable patient deconditioning. HAFD arises from the way that services are configured and then how they interact formally and informally, in various combinations depending on the particular patient journey. Seeking to prevent a condition which is a by-product of the system requires a significant quantum of organisational and process change.

Effecting change in acute care environments is not a straight-forward process. Hospitals are complex, adaptive systems and the cause-and-effect relationship between system change and benefit realisation is not always linear. To make sustainable change a range of complementary strategies are usually required.

As different organisations have explored this multi-faceted challenge, a wide variety of solutions have emerged to address various pain-points along the acute patient journey. Some solutions are broader in scope and ambition than others, but all of those detailed below have been identified as delivering sufficient value to warrant sustained investment by the organisation concerned.

In this section we explore the current leading practice AHP-led models deployed to address HAFD at different stages of the patient journey. The purpose here is to highlight leading practice in NSW and other jurisdictions and increase awareness of it, while exploring practical potential future opportunities [24].

5.1 At the Point of Admission

The events which take place at the start of a patient journey to hospital have a determinative influence on the eventual outcome. Delays to accurate diagnosis and effective treatment can lead to significantly extended inpatient length of stay, especially for frail and elderly patients. Hospitals are increasingly recognising this and are seeking to prevent unnecessary admissions while also providing safe, high-quality care in alternative locations, including home and community settings.

Frail and/or elderly patients present to ED with multiple, complex ailments. While most admissions are appropriate, some patients may be admitted because clinicians have insufficient time to consider alternative options for the patient's care. Studies indicate that 20-30% of admissions can be avoided for people aged 75 and over, and stakeholders acknowledged that without hospitalisation, HAFD could be readily avoided. Three models of care that assist hospital avoidance are:

- Allied Health supporting Hospital in the Home (HiTH)
- Rehab in the Home (RiTH)
- Allied Health in ED facilitating safe discharge.

Case Study: AHP-led Frailty Screening, The Heart of England Foundation Trust (UK)

The Heart of England Foundation Trust has two sites, both focused on identifying frailty at the front door. Teams of occupational therapists and physiotherapists were positioned in the ED and Acute Medical Unit (AMU) seven days a week.

Additionally, a geriatrician at the front door model was implemented. This allowed an experienced senior medical officer, who specialises in older people's health, to facilitate admission prevention where possible, with appropriate medical, social, and multidisciplinary interventions completed outside the hospital.

To prevent unnecessary inpatient admissions by facilitating safe discharge, the team worked with community therapists, had access to temporary packages of care, and were trusted assessors for local care beds.

Typically, the MDT assessed between 200-250 patients per month, facilitating discharge in 80% of those seen. They have strong connections with community nurses and Allied Health, access to temporary care packages and inpatient teams to address ongoing therapy needs [29].

5.1.1 Hospital in the Home and Rehab in the Home

Hospital in the Home (HiTH) is an admitted acute care service provided to patients in their own home, or another suitable environment outside hospital. Services are provided by members of the multidisciplinary team including nurses, doctors, and AHP. Evidence shows that HiTH can provide the same quality of care as traditional, hospital-based care for patients, and in some cases, can be better for frail patients [49]. Patients in their home environment are not exposed to the risk of HAFD, respond better to treatment, have familial support and are comfortable in their surroundings. More importantly, patients are not subjected to the normalised delays in care that occurs in the traditional hospital setting, further worsening their decline.

Rehabilitation in the Home (RiTH) substitutes hospital-based rehabilitation for home-based rehabilitation under the governance of a consultant and provides up to a seven-day service from an interdisciplinary team. This model of care sees an improved quality of life and reduces incidents of delirium and mortality compared to inpatient care [49].

While there is an Allied Health component within HiTH/RiTH, there is a significant opportunity to expand the AHP role. It is not uncommon for certain Allied Health services to only be provided for HiTH/RiTH during peak winter season, when hospital admissions are at its highest and capacity is required.

Stakeholders provided examples of increased Allied Health services in HiTH/RiTH amid preparing for the COVID-19 pandemic to ensure frail, older people had a greater chance of remaining at home. This was identified as an area of untapped potential where increased Allied Health involvement could be of significant benefit. It is also worth noting that during the pandemic, private healthcare providers have been increasingly promoting home-based care, including rehabilitation, as another way to mitigate infection risk. This illustrates how the advent of COVID-19 reinforces the safety logic of HiTH/RiTH for elderly patient cohorts. As society moves to a post-COVID "new normal" there is no reason that the optimisation of home-based care should not continue and perhaps become the default setting.

Without adequate provision for Allied Health services however, patients cannot meet the benefits of having their functional needs met at home, and access to these options should not only be accessible when there are capacity issues. There is opportunity for HiTH/RiTH service to be expanded to include professions outside Physiotherapy to consider the multi-modal aspects of functional decline.

Case Study: Integrated Rehabilitation and Enablement Program (iREAP)

iREAP is an anticipatory care rehabilitation model that enables early intervention for frail and elderly patients in the community. It aims to improve physical ability, reduce frailty and improve health literacy and self-management of chronic conditions.

The program is eight weeks in duration and consists of exercise, rehabilitation, health coaching and education delivered by a MDT consisting of several allied health professions. Recently, Speech Pathology services have also been introduced to proactively mitigate the effects of dysphagia via swallowing education, assessments, and support activities.

War Memorial Hospital Waverley in South Eastern Sydney LHD implemented iREAP and evaluation data was collected from March 2016 to July 2016. The results demonstrated that the model was successful in improving outcomes for older people.

- A total of 76 clients completed the program during the evaluation period: 35 in the frailty and falls group and 41 in the neurodegenerative group
- Ten potential hospital admissions were avoided through geriatric assessment, Speech Pathology screening and a reduction in frailty and falls risk
- Significant improvements were seen in the mean Clinical Frailty score, which reduced from five to three ($p < 0.001$), with the mean Timed Up and Go score reducing from 19.3 to 14.4 seconds ($p < 0.001$)
- The frailty and falls group demonstrated a significant improvement in the Falls Efficacy Scale, reducing from 33 to 29 ($p < 0.001$) [61].

5.1.2 Allied Health in the Emergency Department

There have been multiple studies that have looked at the placement of an Allied Health lead multidisciplinary team in the Emergency Department (ED), specifically catered to see older patients that could be frail. The purpose of these teams is to prevent inappropriate and/or unnecessary admissions. They reduce the number of repeat presentations and safely discharge patients to the community with links to community services. Allied Health led multidisciplinary teams in ED are able to consult/ educate patients, families and carers with their requirements for ongoing care. Allied Health in ED models have had significant impacts on admission rates in Australian studies; and the "front door" models are well utilised in the UK [28].

Subject matter experts acknowledged that this could be a considerable opportunity to efficiently re-allocate Allied Health resources to prevent functional decline. They referenced that early identification and intervention is considered "gold standard" of care. Models like these would allow the expertise and specialist knowledge that AHPs possess to shift to the start of the patient journey, removing unnecessary patient waiting and effectively positioning the right people with the right skills in the right place. An important enabling function to this is being well connected to the community in order to link patients to appropriate support.

A NSW Health example of this approach is the Aged Care Service Emergency Teams (ASET) model. ASET was implemented in late 2002 to improve the care and management of older people presenting to the ED. Its purpose was to achieve better patient outcomes for older, at risk, patients and minimise hospitalisation and readmission rates for those aged over 70 years.

ASETs consist of a multidisciplinary team (physiotherapists, occupational therapists, speech pathologists and nurses) that focuses on the requirements of older people with complex medical and social care needs in order to improve their discharge, whether this is at home with appropriate services or into hospital with a care plan in place [50]. Practitioners across the state have acknowledged the benefits of this model. However, it has been noted that there is a high degree of variation as to how the model has been implemented at different NSW Health facilities.

ASET team composition varies across LHDs typically often due to competing priorities, resourcing profiles within the organisations. It is also noted that, although this is a state-wide model, it is subject to local variation at the district/facility level to address local needs. For example, the Nepean Hospital ASET includes a social worker, physiotherapist, speech pathologist and clinical nurse specialist team members as part of its core team in their ED. Whereas other hospitals within NSW metro LHDs may only have a physiotherapist or geriatric nurse.

Case Study: In-reach Team, Geriatric Rapid Acute Care Evaluation Team (GRACE) (NSW)

GRACE provides in-reach support to Hornsby Ku-ring-gai Hospital ED, fracture clinic and inpatient wards and outreach service to RACFs (residential aged care facilities) for deteriorating patients. The enhancements were provided through a team consisting of a clinical nurse consultant, registered nurse, speech pathologist, physiotherapist, and staff specialist. The aims are to reduce hospital admissions from RACFs, safely discharge patient, and provide integrated care through follow up assessments. Their main services are outlined as following:

- Liaise with RACFs to streamline the need for admission by providing phone consultation for rapid patient assessment before patients' arrivals to ED
- GRACE facilitated ED admission for patients are likely to be discharged following ED assessment, e.g. post-fall assessment
- Coordinate and organise fracture clinic follow-up appointments
- Follow-up with orthopaedic inpatient discharges for wound review, follow-up x-ray and x-ray report review [56]

5.2 Comprehensive Geriatric Units/Teams

A Comprehensive Geriatric Assessment (CGA) is a multidimensional diagnostic and therapeutic tool, typically conducted by an interdisciplinary or MDT, measuring medical, psychological, and functional capabilities [31]. The intent of the CGA is to ensure that once the patient has been identified with a problem, the problem is then quantified and managed effectively. As frailty and functional decline involves anatomical, physiological, and social complexity, it dictates that the assessment occurs across the spectrum of domains and disciplines, and all professions develop a multi-faceted plan that enhances recovery and promotes independence [32].

The cornerstone of CGA is the employment of interdisciplinary teams and use of standardised instruments to evaluate function, impairment and social support needs [51]. Interestingly, there are two models of modern CGAs:

- CGA is delivered in a discrete unit with a coordinated specialist interdisciplinary team, involving different Allied Health professions who provide assessment and therapy
- A mobile or peripatetic team visit appropriate patients wherever they are admitted in a general ward setting. The team will assess the patients and make recommendations to the physicians who care for the patients.

A local NSW example of leading practice in this space is the Acute Care of the Elderly (ACE) Unit at Hornsby Ku-ring-gai Hospital (Northern Sydney LHD).

The first randomised controlled trial (RCT) of an ACE Unit was published in 1995 by Landefeld *et al.;* it demonstrated the benefits of this care delivery redesign [52]. This was a seminal publication, launching ACE Unit development and research that continues today.

The implementation of an Acute Care of the Elderly (ACE) unit at Hornsby Ku-ring-gai Hospital incorporates shared care between a geriatrician and attending physician, comprehensive geriatric assessment, and the prevention of functional decline in acutely ill older patients. ACE eligible patients (over 65 years of age, acutely ill, and at risk of functional decline in hospital) are identified in the ED, admitted into the ACE ward where they receive shared care by a MDT and are ideally discharged from the same ward. The focus is on maintaining function, encouraging activity and independence through the acute phase of their illness.

Evaluation of this model have shown significantly improved patient outcomes in the form of:

- Readmission rate within 28 days decreased from 12.4% to 3.1%
- Fewer patients required a stay within a rehabilitation facility from the ACE ward, prior to discharge
- For an ACE patient that required rehabilitation, the ALOS was 11 days compared to the control group which was 21 days.

Case Study: Healthcare for Older Persons Earlier (HOPE) Model at Westmead (NSW)

The HOPE model strives to facilitate the timely assessment, management, and appropriate discharge of elderly patients from hospital, particularly those patients that are deemed frail. The service includes:

- A 4-bed unit located adjacent to – but separate from, the ED – provides an area for the initial rapid assessment either for admission or discharge with appropriate services
- An associated 11 bed ward-based area – provides a space for a more in-depth assessment, treatment, and management plan formulation.

The service is staffed with a full complement of Allied Health, medical and nursing staff in order to provide the patient with the appropriate assessment needs depending on their illness, in line with the principles of a comprehensive geriatric assessment. The Allied Health staff for the HOPE beds consist of designated clinicians from each discipline of occupational therapists, physiotherapists, and social workers. For the continuity of care, these same clinicians see their patients through HOPE ED, the 11-bed unit and the community unit [55].

5.3 Enhanced Allied Health in community

There is a widely held view that patients would benefit from additional Allied Health resources in the community. Approximately 21% of people may be frail, and 48% prefrail, prior to being hospitalised, which means that services may be required prior to admission. It has been indicated that there are opportunities for further Allied Health lead models in the community to mitigate functional decline, expanding on successes of Leading Better Value Programs (LBVC) such as the Osteoarthritis Chronic Care Program (OACCP). Access to these Allied Health led programs, such as the Centre for STRONG Medicine at Concord and Balmain Hospitals, maintains functional wellness and educates individuals to take better care of themselves, improving their quality of life.

Stakeholders raised programs such as Short-Term Restorative Care (STRC), Transitional Aged Care Package (TACP) and Commonwealth Home Support Program (CHSP) but acknowledged that accessibility to these programs are limited. Interestingly, stakeholders expressed that although models of care and programs that prevented HAFD were available – the widespread knowledge for both staff and prospective patients was low. The Allied Health workforce is perfectly positioned to be a system connector between primary and acute settings to enable true integration of care.

Stakeholders raised pre-habilitation as a proactive, cost-effective way to prevent HAFD. Pre-habilitation is the process of enhancing an individual's functional capacity to enable them to withstand a forthcoming stressor (e.g. surgery). The key components of pre-habilitation include:

- exercise programs
- nutritional support
- psychological support
- medical optimisation
- education.

Further research in the space is pending and this is a clear opportunity area for consideration in future service development. All components of pre-habilitation are required for a frail person and ensures that they are in the best functional state possible prior to hospitalisation. Ideally pre-habilitation facilitates an early, integrated intervention before an incident occurs, to prevent an otherwise avoidable admission and improve quality of life.

Case Study: Osteoarthritis chronic care program (OACCP)

Osteoarthritis Chronic Care Program (OACCP) is one of the 13 clinical initiatives of the LBVC program. It describes a MDT, led by a senior physiotherapist, that aims to:

- Enable patients to self-manage their osteoarthritis
- Remove, reduce, or delay the need for surgery
- Give better access to patients needing joint replacement surgery
- Better prepare patients for surgery and improve surgical outcomes.

This model was initially trialled at seven sites in NSW under the directive and support of the ACI network. The Tweed Hospital (Northern NSW Local Health District) implemented the model in their LHD and achieved positive clinical outcomes.

After three months, 73% had improved function and 69% had an improved pain score. At six months, 66% of patients said their walking on flat ground had improved and 66% of patients said their hip or knee in general had improved. At 6-18 months after leaving the program, 4 out of 5 patients did not require surgery, nor go on a waiting list for joint surgery [57].

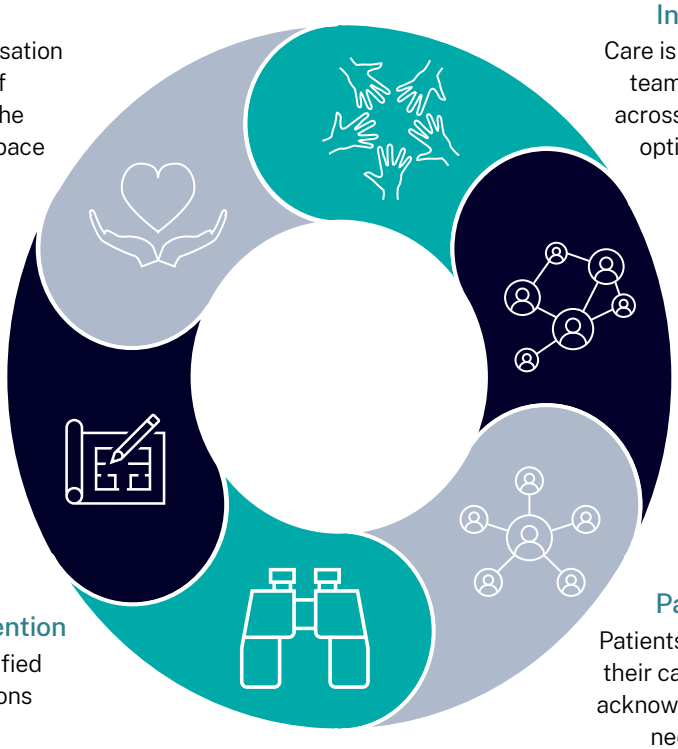
6 Realising the untapped value

There is a recurrent theme – that of how to appropriately separate the delivery of AHP-led care from the inherent wait-time delays of the referral process. Put simply, the prevalence and impact of HAFD can be significantly reduced by aligning the appropriate AHP resources closer to the start of the inpatient journey. In this way, hospital systems can better leverage the specialist skillset of AHPs to help prevent HAFD and to mitigate its impact. As a result of the work of this project, we have identified five new ways of working. These should be considered by NSW hospitals as they are proven to deliver sustained benefit, based on local and international leading practice and are aligned with the design principles detailed below.

6.1 Design principles for Allied Health-led models of care

Through our analysis of current leading practice models of AHP-led care, we have distilled six principles that underpin the opportunities and workforce models for tackling HAFD. These principles articulate how Allied Health workforces can be reorientated to provide proactive rather than reactive services and enable early identification and intervention. They also articulate how the Allied Health workforce should be engaging in care that is patient-centred and is coordinated across the MDT and extends to healthcare providers and services beyond the hospital. All interventions should be guided by a shared vision, prioritising the prevention of HAFD.

Figure 14 *Principles of AHP-led workforce models*



Clear Vision
Shared purpose across the organisation to prioritise the prevention of HAFD and the importance of the Allied Health workforce in this space

Interdisciplinary Care
Care is delivered by interdisciplinary teams who work collaboratively across professional boundaries to optimise the patient journey

Integration of Care
Patient care is coordinated with other care providers and services across the continuum of care

Proactive Service Design
Success requires a shift to a preventative, anticipatory mindset and service orientation

Early Identification and Intervention
Patients at risk of HAFD are identified early and Allied Health interventions are initiated in a timely manner

Patient-centred Care
Patients are placed at the centre of their care, with understanding and acknowledgement of an individual's needs and expectations

When considering service changes, each of these six principles offers a challenge. It is the means by which system leaders can test the design of their proposed initiatives by asking:

- What is the shared vision for what we intend to achieve and to what degree are stakeholders aligned with that vision?
- How does this new model facilitate true interdisciplinary collaboration?
- In what ways does the new model support the shift towards proactive service design, prevention mindset and clinical practice?
- What key dependencies need to be addressed to ensure care is integrated and continuity is sustained?
- By what means will the new approach better support identification of patients with frailty and/or enhance timeliness of AHP interventions?
- How far does the model progress efforts to place the patient truly at the centre of care?

Answering these questions with targeted inquiry will help ensure that those leading change have started to consider the implications of the new ways of working. These explorations will typically uncover additional factors and issues, resolution of which will improve the sustainability of the solution developed.

6.2 Leading Practice models of AHP-led care

The key objective of this project was to articulate a vision of how the NSW Health system can realise the untapped potential of AHPs to prevent HAFD. A core part of achieving this was to identify examples of current leading practice and to demonstrate the potential for adoption in other LHDs/SHNs across NSW.

These models are governed by the six underlying principles and provide the foundation to pivot to a proactive service design.

6.2.1 Appointment of an Occupational Therapist in the ED (or Acute Medical Unit)

IF we can identify patients that are frail or at risk HAFD and provide early assessment and interventions

BY placing an occupational therapist (or other AHP) closer to the point of admission (in the ED or Acute Medical Unit)

THEN we will reduce the number of preventable admissions and avoid unnecessary inpatient bed stays, reducing the incidence of HAFD

Deploy an occupational therapist in ED specifically to identify and risk stratify frail adults into two streams:

1. Patients that can be safely discharged by connecting them to follow up care in the community, or
2. Patients that are likely to be admitted and can benefit from early referrals to the appropriate Allied Health team in the inpatient setting.

6.2.2 Appointment of AHA to the MDT

IF we can provide more frequent therapy sessions for all patients that are frail or at risk of HAFD

BY augmenting the MDT with additional, cost efficient, AHA resourcing

THEN we will reduce the incidence of HAFD, leading to better patient outcomes, reduce inpatient length of stay and enable continuity of care

AHAs support the allied health workforce and support patient load. AHAs will perform additional physical therapy sessions for patients and perform duties delegated by senior staff which do not require high level clinical reasoning. This could include additional exercises with the patient, mealtime assistance, swallowing exercises and talking to the patient to acknowledge and address their needs.

6.2.3 Establishing a seven-day per week Allied Health service

IF we can provide a seven-day per week Allied Health service for all patients that are frail or at risk of HAFD

BY deploying AHP resources (including AHAs) over the weekend

THEN we will reduce the incidence of HAFD leading to better patient outcomes and reducing inpatient length of stay

Establish a dedicated team of Allied Health staff over the weekend to provide a seven-day service. This team will provide early intervention for patients admitted over the weekend, allowing for early mobilisation, functional assistance, and better patient outcomes.

7 Appendix One: Case Studies

The programs, models and initiatives described below are recognised exemplars of leading practice.

Aged Care Service Emergency Teams (ASET) (NSW)

Approach

The Aged Care Service Emergency Teams (ASET) in NSW hospital Emergency Departments (ED) is an initiative that was implemented in late 2002 to improve the care and management of older people presenting to ED. ASET consists of an MDT (physiotherapists, occupational therapists, speech pathologists and nurses) that focuses on the requirements of older people with complex medical and social care needs in order to improve their discharge, whether this is at home with appropriate services or into hospital with a care plan in place [50].

Purpose

The aim was to achieve better patient outcomes for older, at risk, patients and minimise hospitalisation and readmission rates for those aged over 70 years.

Outcomes

Practitioners across the state have acknowledged the benefits of this model. However, it has been noted that there are inconsistencies in how the model has been implemented. Team makeup varies across LHDs and hospitals due to competing priorities within the organisations. It is also noted that, although this is a state-wide model, it is subject to local variation at the district/facility level to address local needs. For example, the Nepean hospital ASET includes social worker, physiotherapist, speech pathologist and clinical nurse specialist team members as part of its core team in their ED, whereas other hospitals (for example, Canterbury Hospital) only have a physiotherapist or geriatric nurse.

Norwich and Norfolk University Hospitals (UK)

Approach:

The Commissioning for Quality and Innovation (CQUIN) is a national framework which is underpinned by a number of schemes aimed at raising patient quality standards or improving the working environment for hospital staff. Under the CQUIN, the hospital implemented a simple screening tool in their ED and Acute Medical Unit (AMU) to identify frail patients, and a "frailty inbox" for potential follow up cases that was managed by their Older People's Medicine (OPM) team.

Purpose

1. Screening of patients to identify those suitable for early intervention by Allied Health team members. The frailty tool alerts staff to those patients with frailty on the eMR and generates an automatic referral to occupational therapy, physiotherapy and the memory matters teams [53]
2. Reduce re-presentations in ED by discharging frail patients that could be seen, treated, and followed up in the community.

Outcomes

The initiative has led to a decrease in the admission rate for the older person age group and improved the quality of information being shared with the patient and their carers/families.

The Heart of England Foundation Trust (UK)

Approach

The Heart of England Foundation Trust has two sites focused on identifying frailty at the front door. Teams of occupational therapists and physiotherapists were positioned in the ED and Acute Medical Unit (AMU) seven days a week.

Additionally, a geriatrician at the front door model was implemented. This allowed an experienced senior medical officer, who specialises in older people's health, to facilitate admission prevention where possible, with appropriate medical, social, and multidisciplinary interventions completed outside the hospital.

Purpose

To prevent unnecessary inpatient admissions by facilitating safe discharge. The team worked with community therapists, had access to temporary packages of care, and were trusted assessors for local care beds.

Outcomes

Typically, the MDT team assessed between 200-250 patients per month, facilitating discharge in 80% of those seen. They have strong connections with community nurses and Allied Health, access to temporary care packages and inpatient teams to address ongoing therapy needs [29].

Portsmouth Hospitals (UK)

Approach

Portsmouth formed a Frailty Interface Team (FIT) supported by AHP, community nurses, older persons' specialist nurses and administrative support. Together, they implemented a frailty screening tool and began conducting CGAs based on the frailty screening information.

Purpose

1. To identify patients that are frail and begin proactive management of these patients
2. Facilitate safe discharge from ED into community care.

Outcomes

Frailty screening allowed the FIT team to provide proactive care, which included identifying those patients that could be safely discharged from the ED and into community care. The trust then carried out a return on investment (ROI) based on the number of avoided admissions. A cohort of 60 patients' notes were reviewed by clinical and coding representatives, to ascertain the potential tariff that would have been incurred. There was an average admission avoidance of 31 per week, which would give an approximate annual saving of £925,288 - $1,661,420 (OANDA 19 Jul) [54].

Acute Care of the Elderly (ACE) Unit at Hornsby Ku-ring-gai Hospital (NSW)

The first randomised controlled trial (RCT) of an ACE Unit was published in 1995 by Landefeld *et al.;* it demonstrated the benefits of this care delivery redesign [52]. This was a seminal publication, launching ACE Unit development and research that continues today.

The implementation of an ACE unit at Hornsby Ku-ring-gai Hospital incorporates shared care between a geriatrician and attending physician, comprehensive geriatric assessment, and the prevention of functional decline in acutely ill older patients. ACE eligible patients (over 65 years of age, acutely ill, and at risk of functional decline in hospital) are identified in the ED, admitted into the ACE ward where they receive shared care by a MDT and are ideally discharged from the same ward. The focus is on maintaining function, encouraging activity and independence through the acute phase of their illness.

Evaluation of this model showed significantly improved patient outcomes in the form of:

- Readmission rate within 28 days decreased from 12.4% to 3.1%
- Fewer patients required a stay within a rehabilitation facility from the ACE ward, prior to discharge
- For an ACE patient that required rehabilitation, the ALOS was 11 days compared to the control group which was 21 days.

Healthcare for Older Persons Earlier (HOPE) Model at Westmead (NSW)

This model of care strives to facilitate the timely assessment, management, and appropriate discharge of elderly patients from hospital, particularly those patients that are deemed frail. The service includes:

- A 4-bed unit located adjacent to - but separate from, the ED – provides an area for the initial rapid assessment either for admission or discharge with appropriate services
- An associated 11 bed ward-based area – providing a space for a more in-depth assessment, treatment, and management plan formulation.

The service is staffed with a full complement of Allied Health, medical, pharmacy and nursing staff in order to provide the patient with the appropriate assessment needs depending on their illness, in line with the principles of a comprehensive geriatric assessment. The Allied Health staff for the HOPE beds consists of designated clinicians from each discipline: Occupational Therapy, Physiotherapy and Social Work. For the continuity of care, these same clinicians see their patients through HOPE ED, the 11-bed unit and the community unit [55].

In-reach Team: Geriatric Rapid Acute Care Evaluation Team (GRACE) (NSW)

GRACE provides in-reach support to Hornsby Ku-ring-gai Hospital ED, fracture clinic and inpatient wards and outreach service to Residential Aged Care Facilities (RACFs) for deteriorating patients. The aims are to reduce hospital admissions from RACFs, safely discharge patients, and provide integrated care through follow up assessments. Their main services are outlined as follows:

- Liaise with RACFs to streamline the need for admission by providing phone consultation for rapid patient assessment before patients' arrival to ED
- GRACE facilitated ED admission for patients are likely to be discharged following ED assessment, e.g. post-fall assessment
- Follow-up with orthopaedic inpatient discharges for wound review, follow-up x-ray and x-ray report review [56].

In-reach Team: ART Team at Wollongong (NSW)

The Acute care Rehabilitation Team (ART) at Wollongong Hospital aims to provide early rehabilitation to appropriate patients while they remain in the acute setting. The ART is a separate team providing multidisciplinary rehabilitation on a referral basis. ART patients receive therapy from the ART therapist(s) in addition to that received on the acute ward. The program supports the philosophy that rehabilitation should be viewed as a continuum that commences in acute care to prevent deconditioning that often results from bed rest and inactivity inherent in the acute hospital environment. The objective being that improving the functional status of patients in the acute setting will lead to discharge directly from acute care, where possible, avoiding the need for a rehabilitation admission or leading to a shorter rehabilitation length of stay.

Enhanced Allied Health in Community

There is a widely held view that patients would benefit from additional Allied Health resources in the community. Approximately 21% of people may be frail, and 48% prefrail, prior to being hospitalised, which means that services may be required prior to admission. It has been indicated that there are opportunities for further Allied Health lead models in the community to mitigate functional decline, expanding on successes of Leading Better Value Programs (LBVC) such as the osteoarthritis chronic care program (OACCP). Access to these Allied Health led programs maintains functional wellness and educates individuals to take better care of themselves, improving their quality of life.

Stakeholders raised programs such as Short-Term Restorative Care (STRC), Transitional Aged Care Packages (TACP) and Commonwealth Home Support Program (CHSP) but acknowledged that accessibility to these programs are limited. Interestingly, stakeholders expressed that although models of care and programs that prevented HAFD were available – the widespread knowledge for both staff and prospective patients was low. The Allied Health workforce is perfectly positioned to be a system connector between primary and acute settings to enable true integration of care.

Stakeholders raised pre-habilitation as a proactive, cost-effective way to prevent HAFD. Pre-habilitation is the process of enhancing an individual's functional capacity to enable them to withstand a forthcoming stressor (e.g. surgery). The components of pre-habilitation include physical exercise programs, nutritional support, psychological support, and medical optimisation.

Further research in the space is pending, however this is a clear opportunity area for consideration in future service development. All components of pre-habilitation are required for a frail person and ensures that they are in the best functional state possible prior to hospitalisation. Ideally pre-habilitation facilitates an early, integrated intervention before an incident occurs, to prevent an otherwise avoidable admission and improve quality of life.

Osteoarthritis Chronic Care Program (OACCP)

OACCP is one of the 13 clinical initiatives of the leading better value care program. It describes a multidisciplinary team, led by a senior physiotherapist, that aims to:

- Enable patients to self-manage their osteoarthritis
- Remove, reduce, or delay the need for surgery
- Give better access to patients needing joint replacement surgery
- Better prepare patients for surgery and improve surgical outcomes.

This model was initially trialled at seven sites in NSW under the directive and support of the ACI network. The Tweed Hospital (Northern NSW Local Health District) implemented the model in their LHD and achieved positive clinical outcomes.

After three months, 73% had improved function and 69% had an improved pain score. At six months, 66% of patients said their walking on flat ground had improved and 66% of patients said their hip or knee in general had improved. At 6-18 months after leaving the program, 4 out of 5 patients did not require surgery, nor go on a waiting list for joint surgery [57].

Short Term Restorative Care (STRC)

The STRC program is a time-limited (up to eight weeks) multidisciplinary and coordinated range of services designed for, and approved by, the patient (i.e. Physiotherapy, Occupational Therapy. The aim of the program is to prevent/reduce functional decline and improve wellbeing for older patients through the delivery of goal orientated, intensive care. It is led by a MDT, consisting of multiple AHPs depending on the patient's requirements. Three or more specialist care providers from different disciplines collaborate to provide each client with comprehensive, outcome-focused treatment. MDT members are selected according to care recipient needs, and a care plan is developed in partnership with the patient.

The program is ideal for people who are:

- Goal-oriented and have the desire to return to earlier or improved levels of independence
- Not receiving a Commonwealth subsidised home care package, transitional aged care package or reside in residential aged care.

The program targets those that are at a stage of functional decline that can be reversed, or at risk of losing independence to such a degree that they will need admission into a RACF or further care without STRC [58].

Transitional Aged Care Program

The Transitional Aged Care Program (TACP) is a joint Australian Government and State funded program. Similar to STRC, it is a short-term restorative program that optimises functional wellness in order to avoid long term placement and readmission to hospital. The program is available for 12 weeks, and targets people that are likely to be discharged from hospital and would benefit from transitional care. Patients must be reviewed by an Aged Care Assessment Team (ACAT) to be approved for TACP.

The program provides different kinds of support, including low-intensity therapy from allied health services (Physiotherapy, Podiatry, Social Work and Occupational Therapy), nursing support, domestic assistance and, personal care support [59].

The TACP differs from the STRC as patients are required to be ready for discharge from hospital and would likely benefit from additional services to aid functional wellness. If a patient requires additional services, the service providers may seek an extension for 42 days but must achieve ACAT approval.

Commonwealth Home Support Program (CHSP)

The CHSP is an entry-level home support program that helps older people to live independently in their homes and communities. It also provides respite services to give carers a break.

The program aims to help older people live as independently as possible and caters to those who do not require more than one or two services. The CHSP provides services such as help around the house, transport, personal care, Allied Health services and planned respite [60].

Integrated Rehabilitation and Enablement Program (iREAP)

iREAP is an anticipatory care rehabilitation model that enables early intervention for frail and elderly patients in the community. It aims to improve physical ability, reduce frailty and improve health literacy and self-management of chronic conditions.

The program is eight weeks in duration and consists of exercise, rehabilitation, health coaching and education delivered by a MDT consisting of several allied health professions. Recently, Speech Pathology services have also been introduced to proactively mitigate the effects of dysphagia via swallowing education, assessments, and support activities.

War Memorial Hospital Waverley in South Eastern Sydney LHD implemented iREAP and evaluation data was collected from March 2016 to July 2016. The results demonstrated that the model was successful in improving outcomes for older people.

- A total of 76 clients completed the program during the evaluation period – 35 in the frailty and falls group and 41 in the neurodegenerative group
- Ten potential hospital admissions were avoided through geriatric assessment, Speech Pathology screening and a reduction in frailty and falls risk
- Significant improvements were seen in the mean Clinical Frailty score, which reduced from five to three ($p < 0.001$), with the mean Timed Up and Go score reducing from 19.3 to 14.4 seconds ($p < 0.001$)
- The frailty and falls group demonstrated a significant improvement in the Falls Efficacy Scale, reducing from 33 to 29 ($p < 0.001$) [61].

8 Appendix Two: Stakeholders

The following stakeholders were either interviewed individually, in a group, or attended the online symposium:

Names	Job Title	Organisation
Professor Stephen Lord	Senior Principal Research Fellow	Falls, Balance and Injury Research Centre
Dr Sue Kurrle	Clinical Director, Rehabilitation and Aged Care Network Curran Chair in Health Care of Older People	NSLHD
Dr Peter Haradine	Director of Rehabilitation & Aged Care Service, Tamworth	HNELHD
Lorraine Lovitt	Lead NSW Falls Prevention Program	Clinical Excellence Commission
Sue Aldrich	Senior Program Officer, Allied Health	HETI
Jenni Johnson	Stream Manager for Trauma, Pain and Rehabilitation	ACI
Louise Sellars	Rehabilitation Network Manager	ACI
Charles Davison	Manager of Aboriginal Workforce, WPTD	Ministry of Health
Katie Hardy	Deputy Manager of Occupational Therapy	CCLHD
Simon Dwyer	Senior Physiotherapist	CCLHD
Kate Vandenheuvel	Senior Physiotherapist	FWLHD
Kristy Murch	Senior Occupational Therapist	FWLHD
Chris Catchpole	Acting Senior Manager, Chronic Disease and Aged Care Services, Community & Aged Care Services - Greater Newcastle Sector	HNELHD
Tamara Orr	Dietitian	HNELHD
Nicole Barratt	Physiotherapist	ISLHD
Lilliana Barone	Dietitian	ISLHD
David Ananin	Physiotherapy Manager	JHFMHN
Susanne Demetz	Palliative Care Occupational Therapist	JHFMHN
Shannon Pike	Rehabilitation Co-Ordinator	MLHD
Anthea George	Aged Care Occupational Therapist	MLHD
Robyn Stanning	Physiotherapy Manager	MNCLHD
Kirsten Deutschmann	Occupational Therapy and Sub Acute Coordinator	MNCLHD
Jenny Gibney	Speech Pathologist	NBMLHD
Sanzida Hoque	Physiotherapy Team Leader	NBMLHD
Lisa Diett	Community Health Manager	NNSWLHD
Susan Cameron	Occupational Therapist	NNSWLHD
Bronwyn Nolan	Outpatients and Allied Health Services Manager	NSLHD

Names	Job Title	Organisation
Deborah Lawlis	Dietitian	NSLHD
Kerry West	Physiotherapy Head of Department	SCHN
Sky Fosbrooke	Rehabilitation Physiotherapist	SCHN
Margaret Beattie	Physiotherapy Manager	SESLHD
Genna O'Neill	Occupational Therapist	SESLHD
Michael Berbari	Director of Occupational Therapy	SLHD
Francis Ling	Physiotherapist	SLHD
David Schmidt	Physiotherapy Advisor	SNSW
Erin Bugden	Physiotherapy Team leader	SVHN
Mallory Hall	Dietitian	SVHN
Carmen Amato	Occupational Therapist	SWSLHD
Sharmane Motuliki	Physiotherapy Deputy Head of Department /Acute Team Leader	SWSLHD
Holly Furness	Physiotherapist	SWSLHD
Kristy Hatswell	Physiotherapy Manager	WNSW
Shalini Balram	Physiotherapy Team Leader	WSLHD
Emma Coyne	Occupational Therapist	WSLHD
Jenny Martin	Director of Allied Health	CCLHD
Becky Smith	Director of Allied Health	FWLHD
Kim Nguyen	Director of Allied Health	HNELHD
Sue Fitzpatrick	Director of Allied Health	ISLHD
Tegan Reid	Director of Allied Health	MLHD
Vicki Rose	Director of Allied Health	NNSWLHD
Julia Capper	Director of Allied Health	NSLHD
Ruth Baker	Director of Allied Health	SCHN
Claire O'Connor	Director of Allied Health	SESLHD
Sarah Whitney	Director of Allied Health	SLHD
Margaret Lazar	Director of Allied Health	SVHN
Sue Colley	Director of Allied Health	SWSLHD
Jacqueline Dominish	Director of Allied Health	WSLHD
Traci Cook	Dietitian Advisory Network Chair	NMBLHD
Kerrie Smyth	Genetic Counsellor Advisory Network Chair	SNSWLHD
Rachel Kingma	Speech Pathology Manager, War Memorial Hospital	SESLHD
Katie Lee	Physiotherapy Manager, Hornsby Ku-Ring-Gai Health Service, Physiotherapy Advisor NSLHD	NSLHD
Julianne Gibbons	Occupational Therapy Advisory Network Chair	WSLHD
Heather Fairfax	Social Worker	JHFMHN
Sheridan Briggs	Director of Pharmacy,	ISLHD
Michelle Riashi	Principal Clinical Psychologist	SESLHD
Kylie Everman	Exercise Physiologist	NNSWLHD

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