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Coláiste na hOllscoile Corcaigh

Evaluation of the 'Pilot Implementation of the Framework for Safe Nurse Staffing and Skill-Mix in Long-Term Residential Settings for Older People'

Report 1 - Baseline Report

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Programme of Research into Safe Nurse Staffing and Skill-Mix

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Section 1
Introduction and Background

1. Overview

1.1 Development of Safe Nurse Staffing Framework

The objective of the Department of Health's Taskforce is to develop evidence-based frameworks that will support the determination of staffing and skill-mix requirements in a number of clinical settings. To date, the research team have worked closely with the Department of Health and clinical stakeholders in identifying and testing frameworks in medical/surgical and emergency department settings. The next phase is to build on this work to develop frameworks in long term residential settings for older people.

As part of the expansion of their remit the Taskforce on Safe Staffing and Skill Mix, the research team was commissioned by the Department of Health to conduct an evidence review on safe nurse staffing and skill-mix within Long-Term Residential Care settings for older people (LTRC).

The research team began the search in August 2020 of the literature related to LTRC settings for older people and these included: nursing homes, day care services, respite and rehabilitative settings. This report presents the results of a rapid review that was conducted to gain an insight into the types of models/approaches/frameworks utilised to determine safe staffing and skill-mix within these settings. The review forms the basis for a larger systematic review that is presently underway.

The review set out to answer what models and/or approaches and/or frameworks have been used within national and international contexts to determine safe staffing levels within LTRC settings for older people, in an attempt to locate a suitable model that could be implemented and tested within an Irish context.

1.2 Introduction

Recent years have seen a substantial rise in the demand for care for older people in LTRC settings; this is predominantly associated with people living longer and requiring more advanced care in later life (Department of Health, 2018). As a result, in some instances demand for LTRC beds can far exceed supply, with this gap anticipated to rapidly widen in the coming years (Department of Health, 2018). As a result, healthcare settings, such as those in the acute sector, are under increased pressure to provide care and services for the older population.

Recently, the Covid-19 pandemic has resulted in an increased burden on LTRC settings with outbreaks of the novel virus in this sector resulting in a call to review standards of care and staffing within these facilities. Based on these concerns, the Department of Health set up an expert group to review the impact and response of the nursing home sector as a result of the COVID-19 pandemic; this resulted in the publication of the *COVID-19 Nursing Homes Expert Panel Examination of Measures to 2021: Report to the Minister for Health* (Department of Health, 2020) (hereto referred to as the *Expert Panel Report)*. Amongst the recommendations, the *Expert Panel Report* identified nursing home staffing and workforce as one of the key areas for consideration and noted that:

> … *the role of staff and the conditions of employment in nursing homes are critical areas that need focused attention ... It is important to not only recognise the significant efforts made by nursing home staff in their care of residents throughout the pandemic, but also to be fully cognisant of the impacts, including psychological, arising from this experience – these staff now need to be supported and cared for* (Department of Health, 2020: 6).

The report further recommended the need for appropriate staffing within nursing home settings and highlighted that, traditionally, staffing levels were based on costs rather than the dependency levels of residents. The *Expert Panel Report* recognised the need for contingency plans to be implemented with recommendation 5.1.1.7 stating that:

> *Short-term measures required are the continuation of the current actions, in the medium term the integration of these on a sustainable basis, acceleration of phase 3 of the Safe Staffing and Skill-mix Framework and in the long-term, capital and environment planning and a model of care review. The Chief Nursing Officer (CNO) Nursing Workforce Strategy proposes a radical new approach to determining nurse staffing levels, designed to put patient needs first and focus on delivering positive patient outcomes* (Department of Health 2020: 56).

Presently, there are no safe nurse staffing skill-mix frameworks applied to LTRC facilities and nursing homes within Ireland.

Ireland, in comparison to its European counterparts, has one of the lowest numbers of long-term residential beds per 1,000 population (Nursing Homes Ireland (NHI), 2020). Between 2009 and 2012, approximately 339 new nursing home beds per annum were made available (NHI, 2020). This compares to annual increases of approximately 1,000 per annum in the years prior to this (NHI, 2020). As a result of a reduction in the number of new beds available, combined with an increase in an older adult population requiring LTRC, public and voluntary sector services may be unable to sustain the provision of care and standards within these facilities. This has notable implications for both the acute sector and wider population groups, as older adults who are unable to avail of care within LTRC settings will need to be cared for within acute hospital settings.

Approximately, 22% of Ireland's population aged 85 years and older require long term care with the Central Statistics Office (CSO) anticipating this to rise to 46% by 2031 (NHI, 2016). The number of people over the age of 65 is projected to more than double over the next 30 years (Department of Health Press release, Launch of Healthy Ireland- A Framework for Improved Health and Wellbeing 2013 – 2025).

Future projections highlight the rapidly growing ageing population at both national and international levels resulting in an increase in demand for LTRC (HSE Service Plan, 2013). In the report, *Financing Long-term Care in an Ageing Society the Challenge Facing Ireland*, Sage Advocacy (2019) highlights that Ireland's old-age dependency ratio, that is, the number of retirees represented as a fraction of the number of workers, is set to double over the coming decades, from 21% to approximately 46% in the middle of this century. In addition, the report highlights that there are currently approximately five persons of working age for each person aged 65 and over; by 2050, it is estimated that this figure will be closer to two – this will have implications for the recruitment of healthcare workers in the provision of care to the ageing population (Sage Advocacy, 2019).

1.3 Background

The provision of long-term residential care (LTRC) for older people varies at both national and international levels; this variation is predominantly related to methods of finance and provider status (public, private, or voluntary), location (home or institutional) and levels of resources (staffing and sill-mix). LTRC care refers to a broad definition of services that aims to provide support to individuals to ensure that they can maintain a degree of functioning either independently or with the assistance of necessary resources (National Institute of Ageing (NIA), 2020). These resources can be provided in an array of formats including home help, rehabilitation, respite care, day care services, residential care, nursing homes and/or community-based hospitals (NIA, 2020). While LTRC may have traditionally be associated with older aged adults it can, in instances, be the provision of services to individuals under 65 years with physical, mental health or intellectual disabilities (Department of Health, 2020).

In recent years, the standards of care and staffing within LTRC settings have raised concerns among healthcare providers and policy makers. Nursing homes, in particular, have seen a substantial increase in interest in recent months as a result of the Covid-19 pandemic. Both national and international bodies including the Health Service Executive (HSE), Nursing Homes Ireland (NHI) and the Health Information Quality Authority (HIQA) as well as the European Commission have published several reports on long-term care and nursing homes, outlining issues pertaining to the quality of care provided and staffing levels. These issues

extend beyond the remit of nursing homes and include wider institutional bodies including community care centres, public health measures, as well as residential and day care services.

1.3.1 Population Growth

Improving healthcare systems and declining birth rates are leading to substantial rises in ageing populations in many countries. At 28.1%, Japan ranks highest in terms of proportion of the population aged 65 years and over, followed by Italy and Greece at 22.7% and 21.9% respectively (OECD, 2020a). Across the OECD countries, the proportion stands at 17.2%, with the UK at 18.3%, and the USA at 16% of the population aged 65 years and older. Ireland is lower than the OECD average with latest figures indicating that the proportion of the Irish population aged 65 and over is 13.9%; however, this figure expected to rise to 17.9% by 2031 and 23.9% by 2051 (OECD, 2020a).

The increase in the proportion of people aged 65 years of age and older, along with a reduction in the availability of informal caregivers, has intensified the demand placed on LTRC services, with many countries forecasting shortages in workers to meet this demand. As an example, current projections indicate that the need for long-term care workers in Australia is expected to almost triple in the next 30 years, rising from 366,000 workers in 2016 to 980,000 in 2050 (Mavromaras et al., 2017). The heavy workload and stressful working conditions arising from increased pressure on long-term care workers creates difficulties in retention and recruitment, which exacerbates the problem as demand increases (OECD, 2020b). Current OECD figures (2020b) indicate that population ageing has outpaced the growth of the long-term care workforce supply in three quarters of countries. Therefore, countries are looking for a means of improving job quality and rates of recruitment and retention, all while maintaining a high level of service.

Various means of attracting health professionals to the LTRC workforce are evident across the OECD countries, ranging from Israel's introduction of scholarships for specialising in geriatric care to the establishment of dual-track general and geriatric care programmes for nurses in the Netherlands and Germany (OECD, 2020b). The introduction of roles such as the advanced nurse practitioner (ANP) to the LTRC sector has been posited as a means of delivering effective older person's care while also offering scope for career progression within the sector. Such roles have been implemented in the United States, the Netherlands, the United Kingdom, Sweden, and Ireland (OECD, 2020b). In Ireland, as of July 2020, there are approximately 30 whole time equivalent posts categorised as clinical nurse specialist (CNS) or ANP in the care of older people in public and Section 38 Voluntary Organisations[1] (HSE,

[1] **Section 38** allows the HSE to *"enter...into an arrangement with a person for the provision of health or personal social services by that person **on behalf of the Executive**"* (Department of Health 2018).

2020a). The development of such specialist roles supports the care of the older person and is theorised as a means of increasing interest in older person's care.

It has been identified that increasing the attractiveness of working in the long-term care sector is beneficial both financially and in terms of resident outcomes. High rates of turnover arising from factors such as low job satisfaction leads to recruitment and training costs, and can lead to periods of understaffing (OECD, 2020b). In addition, high staff turnover can reduce the quality of care provided to residents; for example, Akosa Antwi and Bowblis (2016) found that a 10% increase in staff turnover was associated with decreased quality of care and increased mortality rates among nursing home residents. A study by Nursing Homes Ireland with Ulster University found that the "day-to-day normal routine of activities" (Moore & Ryan, 2017: 99) was central to residents' sense of belonging and community within the home; however, these activities are often negatively impacted by high staff turnover, with the loss of the close relationships with staff members also impacting the sense of community within the setting. It has also been posited that limited staff numbers and high turnover rates can have an adverse impact on the model of care delivery within the residential centre, forcing a move away from autonomy-positive and person-centred practices (Siegel, et al., 2012; Moore & Ryan, 2017; Conyard, et al., 2020). Identifying and addressing staffing issues within the LTRC sector promotes movement towards more individualised care and the cultivation of a more supportive environment for residents.

1.3.2 Long Term Residential Care – Defining the Context

In Ireland over €15 billion was spent on public health services in 2018 and €17 billion in 2019 (Sage Advocacy, 2019). Health expenditure rose by 19% between 2014 and 2018. Spending in hospitals had the highest increase of 25% over this time period, compared with rises of 14% in LTRC facilities and 12% for retailers of medical goods (Central Statistics Office (CSO), 2020). Currently long-term care accounts for 21% of healthcare expenditure in Ireland (CSO, 2020). However, Ireland's health expenditure as a % of GDP is lower in comparison to the OECD average, 6.9% (equating to €22.5bn) and 8.8% respectively (CSO, 2020). Despite these substantial levels of funding, Ireland, like many other countries, faces a challenge to address the sustainability of long-term care systems (Sage Advocacy 2019). The terminology around long-term care can be ambiguous and often refers to several different services working in tandem. Most long-term care is provided at home by unpaid family members and carers; however, the extent to which informal carers provide LTRC is not well defined and varies widely. LTRC can also be provided in a facility such as a nursing home, day care centre or as part of respite or rehabilitative care (this is the focus of this review). The majority of LTRC

services in Ireland are provided by private and voluntary bodies with the public sector accounting for less than 20% of services provided (HSE, 2020).

1.3.2.1 Long-term Residential Settings in Ireland

Long-term residential care (LTRC) settings, also identified as nursing homes (private sector) or community residential units (public sector), provide an important component of the healthcare infrastructure. In Ireland, it is estimated that there are approximately 575 designated centres for older people providing over 32,000 residential places (HIQA, 2020) (see Table 1.1). The sector currently provides LTRC for over 27,000 people (including public, private and voluntary beds). Nursing Homes Ireland (NHI) estimate that approximately 22,000 people are directly employed by the private and voluntary nursing home sector, contributing over €170m annually to the Exchequer through direct taxation (NHI, 2020).

Long-term residential care settings provide essential care to individuals requiring assistance with needs who would otherwise be required to be cared for within acute services and are paramount in the assurance of living well in older age. However, care within these institutions is becoming increasingly more complex.

Table 1.3.2.1: Long-Term Residential Care Beds by Classification in Ireland

Classification	**No. of designated centres**	**Sum of registered beds**	**% of registered beds**
Private Nursing Homes	443	25,361	79.0
Voluntary - Section 38 Arrangement	5	450	1.4
Voluntary - Section 39 Assistance	14	623	1.9
Public - HSE	113	5,676	17.7
Total	**575**	**32,110**	**100**

Source: Oireachtas report 31st July 2020 outlines figures of nursing bed classification from HIQA as of 29th May 2020 (p. 6)

1.3.2.2 Respite Care

In some instances, an individual may require respite care. This may involve providing alternative family or institutional care for a person requiring assistance or with a disability in order to enable the carer to take a short break, a holiday or a rest (NHI, 2020). Respite or temporary care may be based in the community or in a long-term residential setting. In some instances, it may be a break for a few hours so that the carer can rest (HSE,2020). Alternatively, the person being cared for may be admitted to the institution or nursing home for a period of two weeks, or longer. Respite care is predominantly organised through the Public Health Sector or family doctor (General Practitioner) (NHI, 2020).

1.3.2.3 Day Centre Care Services

Day Care Centres provide various services to older individuals or individuals with disabilities (HSE, 2020). These range from social services, recreational activities, leisure facilities as well as medical and rehabilitative. The purpose of day centre care services is to facilitate older people, people with disabilities, and their carers, to live in their communities as much as possible with the promotion of independent living. Availing of day centre care is usually via the public health nurse (PHN) or GP services (HSE, 2020).

1.3.2.4 Population Demographics in Nursing Homes

The latest figures indicate that approximately 30,000 people are currently living in nursing homes in Ireland, on a long- or short-term basis (COVID-19 Nursing Homes Expert Panel, 2020). At the last census in 2016, the Central Statistics Office (CSO) enumerated 22,762 people in long-term residential care (CSO, 2017). Of this cohort, nearly three-quarters (71.9%) of those in enumerated in LTRC were aged 80 years and over (CSO, 2017).

In relation to gender, 51.2% (n=1,723) of residents aged between 65 and 74 years of age were male. However, among residents aged between 75 and 84 years of age, 61.2% (n=4,862) were female. This proportion rose to 75.1% (n=8,599) when looking at all residents 85 years and over: 88.1% (n=163) of residents aged 100 years and over were female. Overall, of the 22,762 people aged 65 years and over enumerated while in long-term residential care in 2016, 66.4% (n=15,105) were female. 87 years was the most common age group, accounting for 5.3% of residents (CSO, 2017).

In comparison to the overall population, data from the last census indicates that less than 1% of all those aged between 65 and 74 years of age in Ireland are in long-term residential settings; this proportion increases exponentially with age. Among those in the 75-84 age band, 4.2% are in long-term residential care, with this figure rising to 17.8% of all those aged 85 years and over with 43.2% of older people aged 100 years and over in long-term residential care. Overall, the proportion of the population aged 65 years and over in nursing homes stands at 3.7% (CSO, 2017) (Table 1.2 to 1.5).

Table 1.3.2.2. Older Adult Population Demographics

Population	Male	Female	Total
65+	296,837	340,730	637,567
85+	23,062	44,493	67,555
Overall	2,354,428	2,407,437	4,761,865

Older Adult Populations source CSO (2017)

Table 1.3.2.3 Percentage of Population in Long-term Residential Care Settings

	65+	85+
Census 2016 % of total population	13.39%	1.42%
% of people in Nursing Homes	3.57%	16.96%

Percentage of Populations in Nursing Homes source CSO (2017)

Table 1.3.2.4 Population Aged 65 and over enumerated at their usual residence

Usual Residence	Male 65+	Female 65+	Total 65+	Male 85+	Female 85+	Total 85+
All private households and communal establishments	284,182	325,128	609,310	21,958	42,389	64,347
Private households	272,597	304,574	577,171	18,389	32,021	50,410
Communal establishments – all persons	11,585	20,554	32,139	3,569	10,368	13,937
Communal establishments –nursing homes	7,657	15,105	22,762	2,855	8,599	11,454
Communal establishment-hospitals	1,588	2,101	3,689	463	996	1,459
Communal establishment- others including not stated	2,340	3,348	5,688	251	773	1,024

Over 65 Population and their enumerated usual residence source CSO (2017).

Table 1.3.2.5 Population Projections Towards 2051

Projections (000s)	2021	2026	2031	2036	2041	2046	2051
All ages	5047.5	5334.9	5614.5	5896.3	6176.7	6445.9	6692.9
65-69	229.0	254.7	281.6	308.0	341.5	381.6	372.4
70-74	196.1	217.1	242.7	269.5	295.7	328.8	368.4
75-79	143.3	177.2	198.1	223.2	249.3	275.2	307.5
80-84	94.0	120.0	150.3	170.3	194.2	219.1	244.1
85+	82.7	102.4	134.0	176.0	216.5	258.8	304.9
Total 65+	745.1	871.4	1006.7	1147.0	1297.2	1463.5	1597.3
% 65+ of overall population	14.76%	16.33%	17.93%	19.45%	21.00%	22.70%	23.87%

Population Projections towards 2051 source CSO (2017)

1.3.3 Policy and Regulations

As one means of addressing the increased pressure on the long-term residential care sector for older people, some countries have introduced various staffing requirements to ensure that an adequate quality of care is provided. In the United States, all certified nursing homes are required to have at least one registered nurse (RN) on duty for at least 8 consecutive hours every day (Harrington, et al., 2012). Policies in Canada vary by province, with seven provinces mandating that a registered nurse be on duty at all times, while five provinces outlined requirements for direct care provision (Harrington, et al., 2012). The OECD report that a scientifically based skill mix determination tool is in development for use in nursing homes to determine adequate staffing levels (OECD, 2020b). To establish the requisite staffing level, this system will factor in the various care interventions required for each resident, the time per resident needed for each intervention, and the qualification level of the individual delivering the intervention.

Within an Irish context, since the 1st July 2009, the Health Information and Quality Authority (HIQA) has been charged with the monitoring and independent inspection of designated centres for the provision of long-term residential care, including those for older people. All providers of such care, across the public, private, and voluntary sectors, must be registered with HIQA. As part of the legislation governing HIQA in their inspection and registration of residential care centres for older people, the Health Act 2007 (Care and Welfare of Residents in Designated Centres for Older People) Regulations 2013 (p.8) stipulates that the registered provider of the designated centre must ensure that "the number and skill mix of staff is appropriate having regard to the needs of the residents […] and the size and layout of the designated centre concerned". The regulations further mandate that the staff of a designated centre include, at all times, at least one registered nurse, except in cases where the Chief Inspector is satisfied that there is no resident of the centre in need of full-time nursing care. While there are minimum guidelines in the National Standards for matters such as communal recreational space per resident and bedroom temperatures, there are currently no precise guidelines for determining appropriate staffing and skill mix levels within designated centres (HIQA, 2016).

The Health Act 2007 (Care and Welfare of Residents in Designated Centres for Older People) Regulations 2013 also stipulates that each designated centre is required to prepare a written statement of purpose which outlines the centre's aims and objectives, the model of care, and the services which are provided. To be reviewed annually, this statement of purpose is also to include information pertaining to the total staffing complement of the centre, in whole time equivalents (WTE), with the required management and nursing complements to meet the needs of the residents. Centres are also expected to have contingency plans in place in the

event of a shortfall in staffing level, a change in the acuity of residents, or having to manage an outbreak of an infectious disease (HIQA, 2016).

1.3.3.1 National Context

Long-Term Residential Care in Ireland

The HIQA Registry (as of August 27th, 2020) (HIQA, 2020b) indicates that there are 572 registered long-term residential care (LTRC) settings in the Republic of Ireland, with 32,005 residential places. This shows an increase from the 31,969 places registered as of 31st December 2019 (HIQA, 2020a), despite the overall number of LTRC settings registered falling from 585 centres. Over two-thirds of LTRC settings (67.7%) have 60 residential places or fewer, with one third of nursing homes having between 41 and 60 beds. 9.4% of nursing homes are registered as having a maximum occupancy in excess of 100 beds (HIQA, 2020b).

LTRC in Ireland is provided by public facilities, section 38 and 39 organisations, or in the private sector. Public centres are those managed by the Health Service Executive (HSE), while section 38 or 39 centres are those which are funded by the HSE under the respective sections of the Health Act, 2004 (COVID-19 Nursing Homes Expert Panel, 2020). Such organisations are typically voluntary, not-for-profit centres run by charities or religious orders.

The HIQA register indicates that 114 centres (19.9%) are managed by the HSE, with the remaining 458 (80.1%) operating in the private/voluntary sector. These figures represent an update on those published in a report by the Houses of the Oireachtas (Special Committee on Covid-19 Response, 2020), which indicated that, as of the 29th May 2020, HIQA classified 443 registered nursing homes as private sector, 5 and 14 nursing homes were classified as voluntary under Section 38 and Section 39 respectively, while 113 were classified as public LTRC settings. The Oireachtas report indicated that 79.0% of registered LTRC settings are privately managed, a total of 3.3% of residential places are in the voluntary sector, while the remaining 17.7% are in public LTRC settings.

Nursing Homes Ireland (NHI) is the majority representative body for the private and voluntary nursing home sector, with 385 members. The latest figures available from the NHI reported that in September 2019, there were 438 nursing homes operating across the private and voluntary sectors, with in excess of 35,000 employees catering to approximately 25,000 residential places (NHI, 2019).

In terms of geographical distribution of residential centres, almost one-fifth (19.1%) are Dublin-based, with Cork having the second highest proportion (12.1%) (Health Information and Quality Authority, 2020b). Considering only private and voluntary LTRC settings, the

proportions remain relatively constant, with Dublin and Cork accounting for 21.2% and 10.5% respectively. When looking exclusively at public LTRC settings however, the order is reversed, with 18.4% of such centres found in Cork, while 10.5% were found in Dublin. Overall, the distribution of centres is largely aligned with the population distribution.

An examination of the Nursing Home Support Scheme, commonly referred to as the 'Fair Deal', was published by the Comptroller and Auditor General in May 2020. The Fair Deal was established in 2009 as a means of providing financial support to people in need of long-term residential care, with eligible participants making a means-tested contribution towards the cost of their care and the balance being met by the HSE (Comptroller and Auditor General, 2020). This report outlined that 23,305 residents were supported by the Scheme at the end of 2018: 4,757 in the public sector and 18,548 across the private and voluntary sectors. The report further outlines that 550 of the 581 facilities on the HIQA register in 2018 were participating in the Scheme. As of January 1st, 2020, the HSE listed 115 public LTRC settings which were approved for participation in the Fair Deal (HSE, 2020b), while a document updated on August 14th, 2020 listed 437 participating LTRC settings in the private and voluntary sectors (HSE, 2020a). Based on these figures, centre participation in the Scheme appears steady at approximately 95%. The report noted the steady demand for the Scheme also, with annual applications for support remaining consistent at around 10,000 per year.

In Ireland, the Irish Association Directors Nursing and Midwifery (IADNAM) is the largest organisation of nursing and midwifery managers and aims to develop, promote and support excellence in healthcare in partnership with recipients, practitioners and policymakers. In their publication, IADNAM (2013) refers to The National Quality Standards for Residential Care Settings for Older People (HIQA, 2009) which outline requirements for a quality, safe service for older people in residential care settings. The position paper noted that managers in older person services have a responsibility for the provision of high quality, care to be provided in line with HIQA standards and play a pivotal role in service planning, co-ordinating and evaluating service provision and appropriate staffing skills and numbers to meet resident's needs.

The Health Act 2007 outlines the need for appropriate staffing to be maintained within LTRC settings and presents the Barthel index as one of the widely acceptable tools for measurement for calculating the numbers of nursing and care staff required based on the dependency levels of residents EXTRACT - HEALTH ACT 2007 (CARE AND WELFARE OF RESIDENTS IN DESIGNATED CENTRES FOR OLDER PEOPLE) REGULATIONS 2013 re Staffing 15. (1) *The registered provider shall ensure that the number and skill mix of staff is appropriate having regard to the needs of the residents, assessed in accordance with Regulation 5, and the size*

and layout of the designated centre concerned. (2) The person in charge shall ensure that the staff of a designated centre includes, at all times, at least one registered nurse. (3) Where the Chief Inspector is satisfied that no resident of the designated centre concerned has been assessed in accordance with Regulation 5 as requiring full time nursing care, paragraph (2) does not apply to the staff of that centre.

1.3.4 Long-Term Residential Care and COVID-19

The importance of contingency plans within LTRC settings was abundantly evident in 2020 as healthcare systems worldwide struggled to manage the outbreak of the novel coronavirus-COVID-19. Classified as a pandemic by the World Health Organisation (WHO) on 11th March 2020 (WHO, 2020a), the outbreak and spread of COVID-19 has brought about significant changes worldwide and represents a serious threat to global public health. As of the 12th November 2020, this pandemic has registered over 52.2 million cases across 217 countries and territories, including 1.29 million deaths (European Centre for Disease Prevention and Control, 2020). In Ireland, 66,247 cases have been confirmed, with 1,965 people having lost their lives as a result of COVID-19 (Health Protection Surveillance Centre, 2020).

Though all age groups are at risk of contracting Covid-19, older people populations and those with certain pre-existing conditions have been shown to be more at risk of developing severe illness and complications (WHO, 2020b). Data from the Health Protection Surveillance Centre (2020) reports that, in Ireland, those aged 65 years and over account for 22.3% (n=6,899) of all confirmed COVID-19 cases as of the 14th September 2020. However, the increased risk faced by this group is evident as 53.7% of all cases hospitalised and 93.2% of deaths are in the over 65-year age group.

The novel nature of the disease and the disproportionate severity of the risk to older people increased the focus on LTRC. LTRC settings are legally required to notify HIQA of any unexpected resident deaths and outbreaks of notifiable diseases. Based on these notifications, 604 deaths where COVID-19 was suspected or confirmed as the cause of death occurred between 1st March and 6th May 2020 across 97 centres (COVID-19 Nursing Homes Expert Panel, 2020). Two hundred and four non-COVID-19 related unexpected deaths were also reported within this timeframe. The first COVID-19 related death in the country was reported on 11th March (Department of Health, 2020b) and by the 6th May 2020, 1,375 suspected or confirmed COVID-19 related deaths had been reported (Department of Health, 2020a). These figures indicate that 43.9% of confirmed or suspected COVID-19 related deaths within this time period were associated with LTRC settings. By the 27th June 2020, LTRC settings clusters were associated with 22% (n=5,608) of all cases in Ireland, with 56% (n=971)

of all COVID-19 related deaths in Ireland being linked to such clusters (COVID-19 Nursing Homes Expert Panel, 2020).

An Expert Panel on Nursing Homes was established in May 2020 to navigate the complexities of managing COVID-19 in this sector. This group employed an extensive methodology which involved a systematic review of the literature and a consultation process with key stakeholders and the general public to identify key concerns and to put recommendations in place to address those concerns arising from the expected ongoing impact of COVID-19 in LTRC settings over a 12-18 month period (COVID-19 Nursing Homes Expert Panel, 2020).

Key stakeholders involved in the consultation process included HIQA, the Irish Nurses and Midwives Organisation (INMO), and clinical and operational leads from the HSE. The need for adequate staffing, contingency planning, and further training was a unanimous theme across the consultations, with this process also indicating that staffing requirements in LTRC settings were typically based on a cost of care model, rather than on an assessment of dependency, (COVID-19 Nursing Homes Expert Panel, 2020). The “acceleration of phase 3 of the Safe Staffing and Skill-mix Framework” (p.56) was identified in these consultations as a required measure to address staffing concerns in this area and to deliver positive patient outcomes. Submissions to the public consultation process offered similar suggestions, calling for shared guidelines on staffing and skill levels across the LTRC sector.

Arising from their examination of the sector, the Expert Panel on Nursing Homes recommended the prioritisation and development of the Framework for Safe Staffing and Skill mix to be applied to the LTRC sector, both public and private, within 18 months of the publication of their report (COVID-19 Nursing Homes Expert Panel, 2020). While the framework is being developed for LTRC settings, the Panel recommend that the learning and evidence acquired from the earlier acute medical and emergency department phases of the Framework be examined to inform short-term interim changes to LTRC settings staffing. The application of learnings from the earlier phases of the Framework to guide contingency planning for “surge situations arising from COVID-19” (COVID-19 Nursing Homes Expert Panel, 2020, p. 104) was also recommended by the Panel.

The need for staffing guidelines in the LTRC sector was also highlighted in HIQA’s report on the impact of COVID-19 in nursing homes (Health Information and Quality Authority, 2020c). The report noted that while the governing regulatory framework requires LTRC settings to have sufficient staff and skill mix to meet residents’ needs, the regulations offer no minimum staffing requirements or guidance on how to determine safe and appropriate staffing levels. Procedures for determining effective staffing levels came under particularly scrutiny when LTRC settings were faced with the challenge of delivering care while minimising risk of

infection among the vulnerable resident population. With infection control and prevention measures requiring those who were confirmed or suspected of having COVID-19 to self-isolate, some centres were left with a "skeleton workforce" (Health Information and Quality Authority, 2020c, p. 23) or with insufficient staffing levels at night. Low staffing levels in the midst of an outbreak can hamper infection control and prevention efforts as staff are required to circulate between all resident areas in the enactment of their duties. Overall, HIQA (2020c) found that 21% of centres inspected in the course of the pandemic were not in compliance with the regulation regarding appropriate staffing levels and skill-mix. This finding emphasises the importance of effective staffing guidelines and contingency planning in LTRC settings, particularly where staff may become unavailable and difficult to replace due to an outbreak of an infectious disease.

1.3.5 Workforce Composition

The composition of the LTRC workforce shows considerable variation from the acute care sector. Across 19 OECD countries, over 70% of LTRC workers are personal carers (formal workers providing LTRC services who are not qualified/certified as nurses), and in two-thirds of countries, these workers carry out tasks which go beyond activities of daily living (OECD, 2020b). In long-term residential care settings in Ireland, formal workers without a nursing degree who provide routine personal care and assistance with activities of daily living, typically under the supervision of a medical professional, are generally referred to as healthcare assistants (HCAs). At present, while there is no legal requirement outside of the public sector for HCAs to have undertaken a recognised training programme, it is recommended to be educated to at least level 5 on the National Framework of Qualifications (Conyard, et al., 2020). To work in the public LTRC sector, the HSE require that the modules 'Care of the Older Person' and 'Care Skills' be completed in order to obtain full-time work, with a view to complete the remaining credits towards a full Major award at level 5 while working (Conyard, et al., 2020). However, there is no regulatory body or national registry in place for the HCA workforce. The variance in HCA education level was highlighted by the Expert Panel on Nursing Homes, with their report recommending that all HCAs have attained or being working towards QQI level 5 accreditation, and that the inclusion of this requirement in the regulatory framework be considered (COVID-19 Nursing Homes Expert Panel, 2020).

Turning to the nursing staff, while nurses are highly educated, it is not guaranteed in many countries that nurses working the LTRC sector will have undertaken specific older person's care training or specialist training suited to their clinical role. Within the OECD countries, there is variation in the requirements for working with older people in LTRC. Iceland, Israel, Estonia, Poland, and Sweden include older person's care education in the general nursing curriculum or require nurses to engage in such education if working in LTRC, with Malta expected to

require LTRC nurses to have obtained a specialist degree in gerontological care in the near future (OECD, 2020b). However, more than half of the surveyed countries only offer older person's care as an optional module. In Ireland, there is no legal requirement for nurses to have undertaken specialist older person's care education. Participants in the Expert Panel on Nursing Homes consultation process proposed that attainment of a gerontological qualification be a requisite to obtain employment within the residential care sector. Arising from their examination of the sector, the report highlighted the need for staff, particularly those in the "director of nursing/person in charge, advanced nursing practitioner and clinical nurse manager" positions, to have studied older person's nursing (COVID-19 Nursing Homes Expert Panel, 2020, p. 88). At present, there are a range of taught postgraduate courses available across seven third-level institutions in Ireland whose subject matter specifically pertains to care for the older person: courses leading to postgraduate certificates, postgraduate diplomas, and master's degrees are available. These courses are available both on a part-time and full-time basis, with many institutions offering content online for the academic year 2020/21 in response to the COVID-19 pandemic.

Among the recommendations of the Expert Panel on Nursing Homes was that HIQA, as the regulatory authority, conduct an audit of existing staffing levels (nurses and HCAs) and qualifications among staff in all LTRC settings across all sectors (COVID-19 Nursing Homes Expert Panel, 2020). It is recommended that this be completed within six months of the publication of the report. The rationale for this recommendation is that an audit would offer an insight into the current staffing and skill-mix landscape within the LTRC sector, providing a baseline reading against which any subsequent reform can be compared.

1.3.6 Dependency Levels in Long-term Residential Care

One of the key factors for consideration in relation to staffing within LTRC settings is the dependency level of residents. In recent years, while overall dependency ratios have remained consistent there has been a significant rise in the number of residents in LTRC settings with high or maximum dependency care needs and those requiring complex or advanced care (Department of Health, 2012). A report published in 2012 from the Department of Health noted that over 80% of HSE residents were in the high and/or maximum dependency groups compared to 59.7% in private LTRC settings (Department of Health, 2012). Other issues outlined were the rise in the older population of residents and in residents with dementia (18.5% in 1997 compared to 31.4% in 2011) in all care facilities (CHSRF 2006). As a result of increased care needs and dependency levels of residents, staff are inevitably required to do more with staffing levels that may already be low or insufficient. The report *Health's Ageing Crisis: Time for Action A Future Strategy for Ireland's Long-Term Residential Care Sector* (BDO, 2014) noted the substantial increase in residents within LTRC and the resulting

increase demand this will place on staff and resource allocation required to sustain standards within these settings.

The Interim Report on Covid-19 in Nursing Homes Special Committee on Covid-19 Response July 2020 cites the Department of Health summary overview paper on nursing homes, in section 4.9 Staffing Issues p.29 stating that:

> *Members of staff in nursing homes are core to ensuring safe care and support are provided to the residents of nursing homes. Given the nature and importance of the role of staff in delivering this care, significant provisions are included in regulation and national standards. Nursing home providers, for example, must ensure that: At all times there are sufficient numbers of staff with the necessary experience and competencies to meet the needs of residents… Contingency plans are in place in the event of a shortfall in staffing levels or a change in the acuity of residents.*

The above highlight the importance of considering resident acuity and dependency levels in relation to staffing and resources as these inevitably have an impact on how services operate and the future demands that LTRC will need to meet.

The purpose of the review was to identify the existing evidence in relation to models on safe staffing and skill-mix within long-term residential care settings to determine a systematic method that can be employed to determine safe staffing levels and skill-mix within long-term care settings in Ireland.

1.3.7 Staffing in Long-Term Residential Care

Staffing within LTRC has traditionally been seen as complex and requiring multiple factors to be considered (Mueller, 2000; Mueller, 2006). While precise staffing ratios for LTRC settings are not well-defined, certain organisations have presented guidelines for these. Legislation concerning minimum staffing standards has been introduced in the US in recognition of the deterioration of quality and standards in older adult care. Many other nursing and healthcare bodies (most notably in the UK, Canada, Australia, and New Zealand) are calling for mandated ratios of hours of staffing per patient in LTRC settings to be implemented. These are discussed below.

1.3.7.1 International Context

This section outlines the international context of long-term residential care in relation to structure and workforce. It is of note that many of these settings and workforce configurations are different from that that operates in Ireland.

<u>UK Context</u>

The UK Nursing Homes Regulation and Quality Improvement Authority (2009) propose that nursing homes are staffed so that over a 24-hour period there is an average of 35 per cent registered nurses (RNs) and 65 per cent healthcare assistants (HCAs) with the following ratios

advised (RN:HCA): for early shifts 1:5, late shifts 1:6 and night shifts 1:10. The Royal College of Nursing (RCN 2012: 7) in their briefing, *Persistent Challenges to Providing Quality Care*, outlined the need for 'national guidance on staffing levels and ratios for care homes, to be determined and applied locally according to the dependency and needs of residents in a home's care and to the demands of the home's day (early and late) and night time shifts'. The Guidance on Safe Nurse Staffing Levels in the UK document published by RCN (Ball, 2014) provides general principles for appropriate staffing in care homes; however, these offer guidelines as opposed to national standard requirements. In the UK, issues with nurse staffing in the nursing home sector have been highlighted; the RCN guidelines noted that, in general, an average ratio of 18 patients per registered nurse (RN) during the day, and 26 patients per RN at night was evident in nursing homes across the UK. Recently, the Care Quality Commission (CQC) (regulatory body for nursing and care homes in England) noted in their *State of Care 2019/20* annual assessment that issues pertaining to staffing, funding and operational support needed to be tackled immediately (CQC, 2020).

US Context

Within the US, there are few requirements for minimum nurse staffing in long term care facilities. The Nursing Home Reform Law of 1987 requires LTRC facilities to have:

- A registered nurse for eight consecutive hours, seven days a week
- Licensed nurses 24 hours a day
- Otherwise "sufficient" nursing staff to meet residents' needs

The term "sufficient" nursing staff is quite ambiguous and often means LTRC facilities are left to interpret how their staffing levels should be structured, despite over 30 years passing since the Reform Law was established. Black et al. (2003) in their two-pronged study consisting of a review of State-Initiated Nursing Home Nurse Staffing Ratios and a guided discussion with national key stakeholders noted the Senate Bill 1125 requires Virginia nursing homes to implement minimum nursing staff standards of 5.2 hours per resident day (HPRD). In relation to Certified Nursing Assistants (CNAs), the Bill requires a minimum ratio of 1:5 residents (on day shifts), 1:5 (on evening shifts), and 1:10 (on night shifts) or a total of 4.0 HPRD, and minimum licensed nurse-to-resident ratios of 1:15 (per day), 1:20 (per evening), and 1:30 (per night) or a total of 1.2 HPRD.

Australian and New Zealand Context

Research by the Australian Nursing and Midwifery Federation (ANMF) (2019) shows that aged care residents in Australia receive approximately 2.5 hours of care per day and the staffing skill-mix is usually comprised of 70% Personal Care Workers and 15% of both Registered Nurses and Enrolled Nurses. However, the report noted that the average individual living in

residential aged care needs 4.3 hours of care per day – almost double the amount of care that the average resident receives and that the ideal mix of staff for a residential aged care facility is:

- 30% Registered Nurses
- 20% Enrolled Nurses
- 70% Personal Care Workers

That 4.3 hours of care per day equates to approximate ratios of:

- AM shift – in charge RN plus 5-6 EN/PCAs (mathematically it is about 5.5 – so enables 5 on some days and six on others)
- PM Shift – in-charge plus five 5-6 EN/PCAs (as above)
- ND shift – 8 staff (inclusive of in-charge)

In New Zealand, LTRC settings are able to develop their own staffing rationale provided they meet the requirements in the Age-Related Residential Care Service (ARRC) Agreement of one registered nurse (RN) on duty at all times if hospital-based care is provided (Whitehead, 2010). Thus, standards in relation to staffing ratios are voluntary. In 2005 the Ministry of Health (MoH) handbook: "Minimum Indicators for Safe Aged Care and Dementia Care for New Zealand Consumers SHNZ HB 8163:2005" (Standards New Zealand, 2005), set a higher threshold than the ARRC agreement and included recommended hours per consumer per week. This included that one RN be present on duty at all times if the facility provides hospital-level care and a minimum of 1.14 hours per resident per day (HPRD) increasing to two hours per resident per day when levels of acuity among residents is high (Standards New Zealand, 2005). However, these are set as guidelines rather than national standards with the recommended ratios as follows: Rest-home level care-1.7 hours of caregiver[2] time and 0.3 hours of RN time per day; people with dementia -2 hours of caregiver and 0.5 hours of RN time per day; Hospital residents-2.4 hours of caregiver and one hour of RN time, with a nurse to be on duty within the facility 24/7.

Canadian Context

In Canada, despite the British Columbia (B.C.) Ministry of Health announcing the investment of $240 million for the long term care sector in 2018, LTRC staffing requirements are a vague instruction for care "to meet the assessed needs of residents" and a minimum requirement of one registered nurse (RN) on duty at all times, with presently no legislated minimum staffing ratios (the number of nursing home staff members compared to the number of residents), and no legislated requirements related to how much care residents receive on a daily basis ("paid hours of care per resident per day", or PHPRD). The report *Filling the Gap: Determining Appropriate Staffing and Care Levels for Quality in Long Term Care* (2019) noted that fewer

[2] Caregiver is a non-registered health provider such as a healthcare assistant.

than 15% of care homes in B.C. are currently funded to meet the minimum staffing thresholds required to reduce health and safety risks. This report also documents that while staffing levels in British Columbia are difficult to compare to other Canadian jurisdictions, they are consistently below those in the United States (BC Care Providers Association, 2019).

In summary evidence suggest that at an international level staffing levels, are below the guidelines recommended by healthcare experts. Several in-depth reports from the UK, Australia, Canada and the U.S. have found that between four and four-and-a-half hours of care per day are necessary to promote the health and well-being of older adults in LTRC. However, in reality care time available tends to be considerably lower.

1.3.8 Skill-Mix in Long-Term Residential Settings

A number of studies have examined the relationship between skill-mix (the proportion of care provided by registered nurses (RNs) compared to other grades) and patient and resident outcomes. In the nursing home sector, Castle and Anderson (2011) undertook a large scale study that examined quarterly staffing data between the years 2003 and 2007 from 2839 nursing homes in the US. It was reported that increasing both RN and healthcare assistant (HCA) staffing levels was associated with better quality outcomes; however, quality outcomes associated with an increase in Licensed Practical Nurses (LPNs) was much weaker. This, it was suggested, was due to the relative lack of hands on care provided by LPNs. Previous research by Castle et al. (2008) has reported that high agency use of HCAs in the nursing home sector is associated with decrease in the quality of care delivered; this is particularly the case if nursing homes replace their established staffing with agency HCAs. Castle et al. (2008), providing an example, state that increasing HCA 'agency staff from 5 FTEs to 35 FTEs can expect an overall 4.1% increase in restraint use, 4.7% increase in catheter use, 5.7% increase in inadequate pain management, and 3.8% increase in pressure ulcers' (p. 248). Lin (2014) on the other hand, found no association with an increase in HCA staffing and quality of care in the nursing home sector in the US; however, an increase in RN staffing was associated with an increase in the quality of care.

On the other hand, a number of studies have reported no association between skill-mix and patient outcomes in a number of settings (Castle and Engberg, 2007, Castle et al., 2007, Decker, 2008, Comondore et al., 2009, Spilsbury et al., 2011, Backhaus et al., 2014, Ball et al., 2016, Ball et al., 2014, Dellefield et al., 2015). Backhaus et al. (2014) reported no association between nurse staffing and quality of care in nursing homes following a systematic review of longitudinal studies; there was a relationship with the incidence of pressure ulcers: more staff resulted in fewer pressure ulcers regardless of who delivered care (RNs or HCAs).

Ball et al. (2014, 2016) has explored the relationship between skill-mix and care left undone on data from the RN4CAST in England and Sweden and found no association between levels of support workers and care left undone. In the Swedish arm of the study, Ball et al. (2016: 2095) concluded that there was 'a small benefit when support worker staffing was at its highest level (compared with having no assistants), the effect was modest compared with the effects of increasing levels of RN staffing'.

One study identified reported better patient outcomes associated with better HCA staffing; Castle and Anderson (2011) reported that a 6% increase in HCAs is associated with a 1% reduction in pressure sores. Spilsbury et al. (2011) undertook a systematic review that explored the relationship between nurse staffing and quality of care in nursing homes. The review concluded that no firm conclusions could be made on the relationship between staffing and quality. A number of reasons were identified for this, not least the quality of the studies (the majority were cross-sectional and utilised secondary data sources) and the variability in methods used and operational definitions of quality that were presented; the review identified 42 indicators of quality, the majority of which were clinically focused. There was 'tentative' evidence that better quality care was associated with better RN and HCA staffing (Spilsbury et al., 2011: 746); however, overall, it was concluded that the evidence, which was predominantly originated from the US nursing home sector, 'produced inconsistent and contradictory results about the link between nurse staffing and quality in nursing homes' (Spilsbury et al., 2011: 748). A recent review of the association between nurse staffing and quality in nursing care in the nursing home sector noted an improvement in the quality of studies undertaken between 2008 and 2014 and reported that a number of longitudinal studies reported a relationship between a higher RN skill-mix and better quality outcomes (Dellefield et al., 2015).

1.3.9 International Evidence

The levels of skill-mix outlined below are based on evidence-based studies as well as policy recommendations in a number of countries.

1.3.9.1 Australia

One of the few evidence based method for determining skill-mix was that undertaken by Willis et al. (2016) in Australia who used Delphi surveys, focus groups and surveys to determine staffing levels and skill-mix in residential settings for older people. This study identified six resident profiles based on a review of 200 care plans with resident classifications ranging from least dependent to most dependent and the minimum number of minutes for RNs, enrolled nurses (ENs) and HCAs to provide care (see Table 1). Based on the work of Willis et al. (2016), it was identified that residents in nursing homes should receive, on average, a minimum of 4.30 hours per resident day (HPRD) with 30% of care provided by RNs, 20% by

ENs and 50% Personal care workers.[3] The approach by Willis et al.(2016), resulted in the development of the *Total Residential Aged and Restorative Care Staffing and Skills Mix Model.* This model was underpinned by the collection of data which measured the time taken to complete assessments, interventions and activities undertaken by nursing and assistant staff. This resulted in the calculation of total resident care hours per day. From these timings, desk top modelling of 200 care plans, identified 6 patient grouping with associated RN, enrolled nurse (EN) and personal care worker timings. These timings were evaluated through focus groups, a MISSED care survey and a Delphi survey. To date, the tool developed by Willis et al. (2016) and the timings allocated to the skill-mix have not been tested in practice (Peters et al. 2021).

Table 1.3.9.1.1 Six Resident Profiles and Associated Hours per Resident Day (Willis et al. 2016)

Profile	Registered nurse care (mins)	Enrolled nurse care (mins)	Personal care worker care (mins)	Total nursing and personal care minutes per resident/ day (mins)	Recommended resident nursing and personal care hours per day (mins/ hours)*
1. 'Voula'	45	30	75	150	180 (3 h)
2. 'Gwen'	54	36	90	180	210 (3.5 h)
3. 'George'	63	42	105	210	240 (4 h)
4. 'Walter'	72	48	120	240	270 (4.5 h)
5. 'Sarah'	81	54	135	270	300 (5 h)
6. 'Norma'	90	60	150	300	360 (6 h)rs)^

* Including the extra 30-mins per resident per day for indirect care recommended by the focus group.
^ Including an additional recommended 30-mins due to palliative care needs.

Building on the work of Willis et al. (2016), Peters et al. (2021) in an opinion paper have highlighted the need for mandated minimum staffing levels (4.3 HPRD) and mandated skill-mix (30% RN, 20% EN and 50% personal care worker). However, this approach has not, to date been tested in practice.

1.3.9.2 United States of America

In the US a Nursing Home Five Star Quality Rating System is used to rate the quality of long-term residential settings for older people (Centers for Medicare and Medicaid (CMS) 2021). One of the measures used to rate this quality are staffing levels, including Registered Nurse hours per resident day (RNHPRD) and total nursing hours (RN and other grades[4]) per resident per day (HRRD). In relation to RN hours per resident, these measures are provided by the Payroll-Based Journal (PBJ) in nursing homes as well as resident census from a Minimum data Set, which includes RUGS-IV scores. For RN staffing and total staffing a star rating is assigned, ranging from 1 (lowest quality) to 5 (highest quality). A skill-mix of less than 0.317 adjusted RN hours per resident day and less than 3.108 hours per resident day is assessed

[3] This post in Australia is similar to HCAs in Ireland.
[4] In the US, other grades predominantly consist of Licensed Practice/Vocational Nurses and Certified Nursing Assistants.

as being 1 star (this approximates to a skill-mix of 10% RN and 90% other grades), whereas a skill- mix of greater than 1.049 adjusted RN hours per resident day and greater than 4.408 hours per resident day is rated as 5 stars (this approximates to a skill-mix of 25% RN and 75% other grades) (CMS 2021). The CMS calculates the nurse home rating from the Staff Time Resource Intensity Verification (STRIVE) study, and the Resource Utilisation Group IV (RUG-IV) classification to measure the case-mix of residents. The rating system leads to a number of potential ratings; this provides variability in the level of skill-mix based on the different levels of care provided by nursing homes.

Table 1.3.9.2.1 Nursing Home Five Star Quality Rating System (CMS 2021)

RN rating and hours		Total nurse staffing rating and hours (RN, LPN and nurse aide)				
		1	2	3	4	5
		< 3.108	3.108–3.579	3.580 - 4.037	4.038–4.407	≥4.408
1	< 0.317	★	★	★★	★★	★★★
2	0.317 - 0.507	★★	★★	★★	★★★	★★★
3	0.508–0.730	★★	★★★	★★★	★★★	★★★★
4	0.731–1.048	★★★	★★★	★★★★	★★★★	★★★★
5	≥1.049	★★★	★★★★	★★★★	★★★★★	★★★★★

Note: Adjusted staffing values are rounded to three decimal places before the cut points are applied.

It is important to note that other grades include licensed practical/vocational (LPNs/LVNs) nurses as well as certified nursing assistants (CNAs). It has been reported that this system has a strong evidence base and has widespread use over two decades in the US following time-measurement studies undertaken by the CMS (CMS 2015; Harrington et al. 2016). The conclusion from these studies was that, on average, a nursing home should have 4.17 total HPRD which consist of 1.08 RNHPRD; this equates to a skill-mix of approximately 25% RN and 75% other grades.

Minimum US Federal staffing recommendations for the nursing home sector in the US also specify that the directors of nursing must be an RN and a full-time employee (Harrington et al. 2016). As well as Federal staffing requirements, the majority of states in the US have put in place staffing standards for the nursing home sector that are higher than Federal recommendations; however, Harrington et al. (2018) highlight that these still remain below expert recommendations.

One consistent recommendation from standards and reports in the US is that staffing levels and skill-mix should be adjusted based on residents' needs for fundamental and skilled nursing care (Harrington et al. 2018). Research undertaken by the Centres of Medicare and Medicaid

(CMS) in 2001 reported that there should be a minimum of 0.75 RN HPRD, 0.55 HPRD for Licensed Practical/Vocational Nurses (LPN/LVN) and 2.8 HPRD for Certified Nursing Assistants (CNA); that is a minimum of 4.1 HPRD (this equates to approximately 20% of care provided by RNs and 80% by other grades)[5]. If RN and LPN/LVN HPRD are considered together, the skill-mix would equate to approximately 30% (RN/LPN/LVN) and 70% CNA. Two studies (Centres for Medicare and Medicaid services 2001; Schnelle at al. 2004) reported that a minimum of 2.8 CNA HPRD are required to provide consistent care to residents. However, follow-on work by Schnelle et al. (2016) has reported that an effective skill-mix is determined by workload with recommendations that 2.8 CNA HPRD are required in nursing homes with lower workloads with 3.6 CNA HPRD identified in nursing homes with higher workloads. This has also be highlighted by Harrington et al. (2018) who reported that there should be a minimum of 4.55 HPRD with adjustments made according to resident acuity and dependency (Harrington et al. 2018). Other reports in the US have recommended that a minimum of 30% of care should be provided by LVNs/LPNs; however, no specific recommendations are made for RNs only stating that RNs should be on duty 24 hours per day (Institute of Medicine 2004; American Nurses' Association 2018). Although there are standards in the US at Federal and state level, Geng et al. (2019) report that that 75% of nursing homes did not meet CMS recommended RN staffing levels with 3.89 the average HPRD reported; this is below the 4.1 HPRD recommended by the CMS (CMS 2019).

In California, skilled subacute nursing that are a distinct part or standalone from an acute care hospital recommend that RN and LVN HPRD should range from 3.8 to 4.0 with CNA requirement at 2.0 HPRD (a total of 5.8 to 6.0 HPRD). (https://www.dhcs.ca.gov/provgovpart/Pages/PoliciesandGuidelines.aspx).

Harrington et al. (2020) drew on a number of studies (CMS 2021; Schnelle at al. 2016) that identified staffing times for each of the RUG IV categories (see Table 3). This is part of the model that the research team are testing in the Pilot research sites and identifies the skill-mix required based on resident need. The table below outlines the average hours for RNs, LVNs and aides per RUG IV category. This has been further broken down into the proportion of care provided by RNs compared to other grades and the proportion of care provided by RNs and LVNs/LPNs compared to nurses' aides. The advantage of this approach is that it takes into account the variability in the needs of residents when determining skill-mix.

[5] The issue is in this calculation is that it is not comparable with Ireland in which there are generally two grades providing care (RNs and HCAs).

Table 1.3.9.2.2 RUG-IV categories, RN, LVN/LPN and Aide HPRD and Skill-Mix

RUG -IV category	RN	LVN/LPN	Aide	Total	Skill-mix (RN:other)	Skill-Mix RN/LVN – Aide)
Extensive Services	1.85	1.36	3.60	6.81	27%:73%	47%:53%
Special Care High	1.36	0.84	3.40	5.61	24%:76%	39%:61%
Special Care Low	1.36	0.84	3.40	5.61	24%:76%	39%:61%
Clinically Complex	1.03	0.67	3.20	4.90	21%:79%	35%:65%
Behavioral Symptoms	0.75	0.55	3.00	4.30	17%:83%	30%:70%
Reduced Physical Functioning	0.75	0.56	3.20	4.51	17%:83%	29%:71%
Average					**22%:78%**	**36%:64%**

1.3.9.3 United Kingdom

The Department of Health, Social Services and Public Safety (DHSSPS) in Northern Ireland (NI) has published Care Standards for Nursing Homes. Although it does not draw on evidence, the DHSSPS recommends under standard 41 – Staffing (p. 119) that 'the registered manager ensures that a minimum skill-mix of at least 35% registered nurses and up to 65% care assistants is maintained over 24 hours.' The DHSSPS further recommends that student nurses or volunteers are not included in the overall staffing numbers. To ensure this standard is met, the DHSSPS states that a number of records are kept, including a record of the staff that work over a 24-hour period as well as the roles in which they were working. The hours worked by each staff member should be verified by the nurse in charge. Although it is also stated that 'a record is kept of the home's calculation to determine staffing requirements. Assessment of resident dependency levels informs the staffing requirements' (DHSSPS 2015: 120) not guidance on the approach to determine these requirements are provided.

The Care Quality Commission (CQC), the regulator of health and social care in England, does not provide specific guidance[6] on levels of skill-mix but states that:

> *Providers should have a systematic approach to determine the number of staff and range of skills required in order to meet the needs of people using the service and keep them safe at all times … In determining the number of staff and range of skills required*

[6] The regulation is similar to that highlighted by HIQA in Ireland.

> *to meet people's needs, they should consider the different levels of skills and competence required to meet those needs, the registered professional and support workers needed, supervision needs and leadership requirements … Staffing levels and skill-mix must be reviewed continuously and adapted to respond to the changing needs and circumstances of people using the service* (Health and Social Care Act 2008 (Regulated Activities) Regulations 2014: Regulation 18).

1.3.9.4 Ireland

There are no recommendations on required skill-mix in long term residential settings in Ireland. A recent survey of 159 private and 77 public LTRC settings in Ireland by HIQA (2021) identified that, on average, the skill-mix in the private LTRC sector was 28% RN and 72% HCA, whereas in the public sector, the skill-mix was 35% RN and 65% HCA.

1.4 Conclusion

Overall, there continues to be a debate on what the appropriate skill-mix should be to provide quality care in the LTRC sector with recent reports and studies highlighting that set staffing levels or skill-mix do not take into account the variability in residents' needs. Two recent studies, one in the US (Harrington et al. 2020 and one in Australia (Willis et al. 2016) have made a number of recommendations regarding the proportion of care that is provided by RNs based on evidence. The most comprehensive is that outlined by Harrington et al. (2020) who, based on the assessment of NHPRD based RUGS IV scores, identifies the skill-mix required by residents according to their need. Although the categories advanced by Willis et al. (2016) are similar to those in the RUGS-IV, this model has not been tested in practice. Therefore, based on the evidence to date, it is recommended that the skill-mix outlined by Harrington et al. (2020), which is based on resident need, is tested in the pilot sites.

Section 2

Identification of a Model to Determine Nurse Staffing Levels and Skill-Mix in Long Term Residential Settings in Ireland

2.1 Introduction

Healthcare staffing within long-term residential care (LTRC) facilities is a growing concern internationally. This is in large part due to the significant outbreaks of infection and high mortality rates among residents in LTRC as a consequence of the Covid-19 pandemic. Therefore, there is a need to ensure that LTRC settings are safely staffed based on resident need. Recent years have seen an increase in evidence pertaining to the appropriate determination of staffing and skill-mix within acute care services including medical surgical wards (Department of Health 2018) and emergency departments (Department of Health 2022). However, to date, appropriate models for determining safe staffing within LTRC settings appears lacking and has traditionally been based on historical assumptions rather than incorporating a systematic structured approach.

In Ireland, there are currently no recommendations on nurse staffing levels or skill-mix for LTRCs. One of the challenges with staffing in long-term residential settings is the forecasted shortages in this area due to demographic changes in society. It is projected that over the next decade, Ireland will require a 48% increase in its primary care workforce, a 43% increase in LTRC beds and a 120% increase in homecare (Department of Health 2018). Aligned with the need to improve retention and recruitment strategies is the need to examine the composition of the LTRC workforce. In residential settings in Ireland the majority of care is provided by healthcare assistants (HCAs) overseen by registered nurses. At present, while there is no legal requirement for HCAs to have undertaken a recognised training programme, it is recommended that they have completed a programme of education to at least level 5 on the National Framework of Qualifications.

Staff within the LTRC represents one of the largest workforce bodies within the healthcare system and therefore it is essential that systematic approaches are used to effectively ensure that LTRC facilities are safely staffed. Additionally, a growth in ageing populations combined with individuals now living with more complex care needs into later life means that the healthcare workforce to provide care in these settings is expected to increase.

Given that many residents in LTRC have complex health conditions, cognitive impairment, and frailty, the level of residents' acuity and dependent can vary greatly with LTRC settings (Castle & Engberg, 2007). Therefore, determining staffing levels based on the needs of

residents is essential. Determining safe staffing is complex and requires a systematic and structured approach and requires consideration of several key factors including: resident acuity and dependency levels; the skill-mix of staff; the type of residential setting and the data available.

2.2 Empirical Evidence

The research team have carried out and completed an extensive evidence review for the development of safe nurse staffing and skill mix framework in LTRC settings and, in partnership with the Taskforce on Safe Nurse Staffing, identifying a safe staffing framework to pilot in LTRC settings.

A rapid review was conducted to identify the safe staffing models and frameworks within the literature that may be adaptable to the Irish LTRC setting. A number of models were identified to address staffing in LTRC facilities and these included: Nursing Hours Per Resident Day (NHPRD), optimisation models, mathematical based models, dependency-based models, web-based tools, observational models and quality improvement models. From the evidence reviewed and extensive consultation, viable models that met the expectations of the 'Safe Staffing and Skill-mix Framework' were narrowed down to the following: NHPRD, The Scottish Care Home Staffing Model (dependency/mathematical-based approach), and the Groningen Observational instrument for Long-Term Institutional Care (observational model) (see Figure 1). Further investigation on the feasibility of validity of the three models were conducted through further literature searches and meetings with the developers and researchers involved in the testing of the models.

2.3 Models Identified

2.3.1 The Groningen Observational Instrument for Long-Term Institutional Care (GO-LTIC)

The Groningen Observational instrument for Long-Term Institutional Care (GO-LTIC) is a validated instrument that standardises nursing activities and is readily adaptable across healthcare settings. It was identified as an instrument that can be used to audit nursing activities to inform staffing decisions; however, it does not provide a systematic approach for determining staffing levels, it is purely observational and is very labour intensive to complete. It was developed and tested in one region of the Netherlands and, to date, has not been widely implemented within the LTRC setting.

2.3.2 Care Home Staffing Model (CHSM)

From a systematic standpoint the CHSM held clear advantages over other models identified in the evidence review. Using the indicator of Relative Needs (ioRN), the CHSM effectively determines staffing levels that mirror the ongoing fluctuation of care home and residents'

dependencies. However, after meetings with the Chief Nurse's Office team in Scotland and the feedback received, the model was not identified as a viable option for implementation into Irish LTRC facilities. The reason being is that the CHSM is no longer in use in Scotland due to the assessment that the model is outdated; the team in Scotland are in the process of developing/identifying an alternative safe staffing model.

The final consideration was the use of the Nursing Hours per Resident Day (NHPRD) to determine staffing levels in the Irish LTRC. Through an extensive review of the literature and consultation with researchers who have used the model in the US, this was identified as a the most appropriate approach to trail in the LTRC setting in Ireland. This was based in particular on the work of Harrington *et al.* (2020) and Schnelle *et al.* (2016). Further details of the proposed approach to be tested in the LTRC setting are outlined below.

2.4 NHPRD – RUG-IV

When considering an approach to determine safe staffing levels Harrington and colleagues suggest that resident acuity should be considered in the calculation of staffing standards to adequately meet the needs of the residents. Harrington et al. (2020), developed a guide to determine the adequacy of staffing levels in LTRC facilities. This involved determining resident acuity using the resident dependency tool (Resource Utilisation Group-IV (RUG-IV)), collecting actual nurse staffing levels, and determining appropriate staffing levels based on resident acuity that reflects the acuity of the LTRC facility. Harrington et al., calculated appropriate staffing levels through extensive research of literature, consideration of expert opinions, and professional recommendations on the minimum staffing levels and investigation of the CMS 1995 to 1997 staff time measurement (STM) study, the CMS expected staffing based on resident acuity and staffing time, and research to calculate minimum Certified Nursing Assistant (CNA) staffing based on the work of Schnelle et al., 2016). From this, Harrington et al., calculated the following NHPRD (Table 1) reflecting six of the seven RUG-IV resident acuity categories (see Instruction manual attached for full breakdown of NHPRD per RUG-IV group):

Table 2.4.1 NHPRD Recommendations based on RUG IV Category

RUG-IV CATEGORY	NHPRD
1. REDUCED PHYSICAL FUNCTION	4.51
2. BEHAVIOURAL SYMPTOMS	4.30
3. CLINICALLY COMPLEX	4.41
4. SPECIAL CARE LOW	5.61
5. SPECIAL CARE HIGH	5.61
6. EXTENSIVE SERVICES	6.77

2.5 RUG-IV as a basis for Calculating NHPRD

RUG-IV was developed to adjust Medicare nursing home prospective payment to provide higher payments for higher resident acuity. In addition, the score produced by the RUG-IV can also be used to assign the NHPRD recommendations as recommended by Harrington et al. (2020). The resident acuity scoring system consists of 48 groups divided into seven categories: rehabilitation services, extensive services, special care high, special care low, clinically complex, behavioural symptoms, and reduced physical function (six of which will used in the NHPRD recommendations). The categories outlined in the RUG-IV are tiered by level of skilled care provided, need for extensive services, clinical complexity, and the resident's cognitive function. They are further subdivided by presence of depression and functional independence as estimated through the Minimum Data Sheet (MDS) evaluation of a resident's self-performance and staff-provided support in Activities of Daily Living (ADL).

Since the RUG-IV has not been tested or implemented in the Irish context, it is understandable that there are queries surrounding the feasibility of its implementation and its capability to capture the direct and indirect nursing care. The RUG-IV is a model that is focused on determining resident dependency based on physical functioning; however, it also considers a psychosocial element within the NHPRD calculation. Additionally, the RUG-IV is recommended as an outcome component of the InterRAI which is expected to roll out across Irish healthcare settings over the coming years (Hermans et al., 2016). Nonetheless, prior to implementing the RUG-IV in the pilot sites, pre-pilot testing of the model to assess the validity and feasibility of the RUG-IV within Irish LTRC facilities was undertaken (see results below).

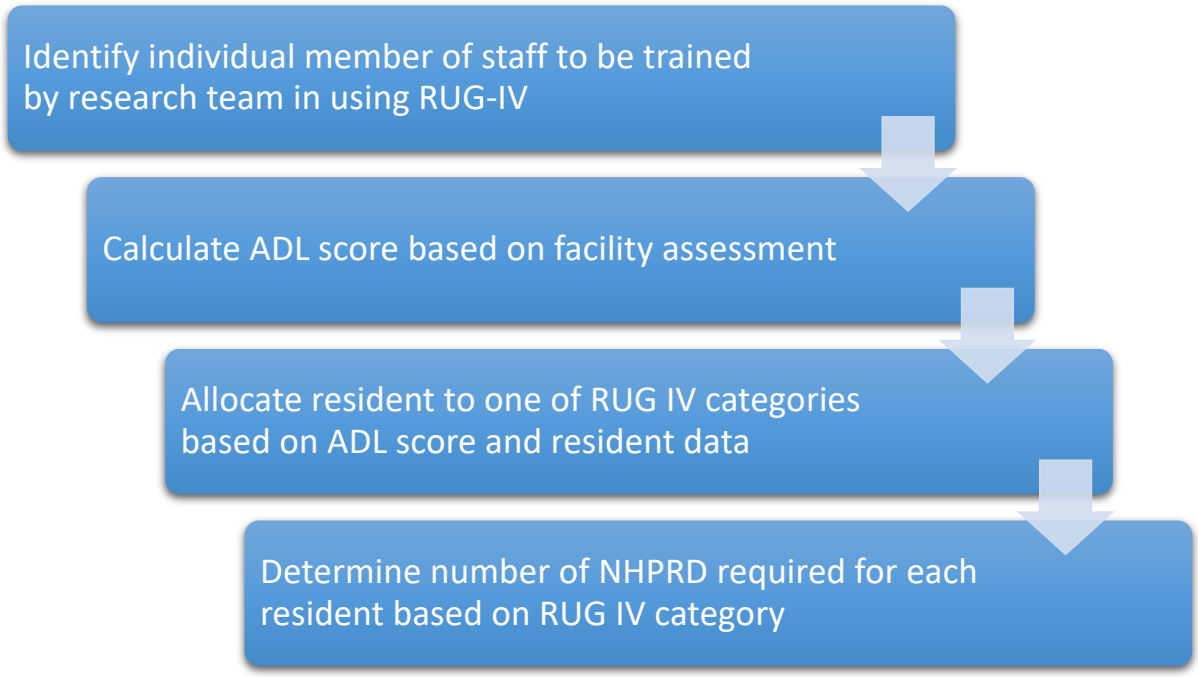
2.6 Requirements for Pilot Sites

Each pilot site was asked to engage in several steps throughout the research study. Training was provided by the research team to key identified individuals within the facility. This person will then acted as the trainer for other members of staff. Pilot sites were asked to work through the RUG-IV with the instruction manual and Excel worksheet developed by the research team provided for each resident within the LTRC. Residential data required for the RUG-IV include:

- hearing speech and vision,
- cognitive patterns, mood,
- behaviour,
- functional status,
- bladder and bowel function,
- active disease diagnosis,
- health conditions,
- swallowing and nutritional status,
- skin conditions, medication,
- special treatments and procedures.

The resident data required for the RUG-IV was obtained from existing care plans and by a member of staff directly assessing the resident. It should be noted that the resident data required for the RUG-IV was completely anonymised. Total staffing levels of the home and number of RNs, HCAs, or other direct nursing staff within the facility were also collected.

Figure 2.6.1. Steps for Pilot Sites



2.7 Conclusion

In conclusion, following an extensive review of the literature and consultation with experts in LTRC, academic settings and clinical practice, and following presentation to the Taskforce, the NHPRD model, using the RUG-IV tool was recommended as the approach to test in the LTRC pilot sites in Ireland. This model incorporates several steps and required staff in the settings to engage with the research team at several time points. NHPRD has been selected given its comprehensiveness; in addition, the wide-spread use of the RUG-IV internationally and its incorporation into the InterRAI suite of measures, identifies it as an instrument that has utility in LTRC settings in Ireland. The results of the testing of the RUG-IV are outlined below.

Section 3
Methods

This section outlines the aims and objectives of the current programme of research as well as the methods that are being currently used to develop, test and implement an approach to determining nurse staffing levels and skill-mix in long-term residential settings for older people.

3.1 Aim

The overall aim is to undertake a three-year programme of research that underpins the implementation and evaluation of safe nurse staffing policy frameworks in the long-term residential setting. This includes measuring the impact of implementing the framework on:

- Residents.
- Staff and organisational outcomes.
- Measuring the economic impact of implementing the framework.
- Provide an assessment of the implementation of the framework in practice.

3.2 Objectives

- To undertake and complete an evidence review on models and approaches to safe staffing in LTRC settings.
- Measure the impact of implementing a pilot safe nurse staffing and skill mix framework on resident outcome measures, staff outcome measures and organisational factors in LTRC settings.
- Examine the extent to which resident outcome measures change overtime as a consequence of the pilot introduction of the framework in LTRC settings.
- Examine the impact of pilot introduction of the framework on safety CLUEs (Care Left Undone Events).
- Determine the impact of the pilot introduction of the framework on nurse outcomes (job satisfaction, intention to stay, burnout).
- Determine the impact of the pilot introduction of the framework on organisational environment factors (unit climate, impact of leadership) and quality of care delivered.
- Determine the cost implications arising from the pilot introduction of the framework and the resources required to deliver national roll-out and to maintain the framework.
- Examine implementation processes/measures in the context of recommendations for future national rollout.
- Examine longitudinal data (using the measures outlined above) over the 3-year period to inform the incremental implementation and evaluation of the framework.

3.3 Research Design

We are currently using both longitudinal and cross-sectional designs in implementing the research programme in pilot long-term residential settings. This is facilitating the research team to measure the association between the variability in nurse staffing and resident, nurse and organisational outcomes over a longitudinal period.

Cross-sectional data is being collected from nursing staff at two time-points: prior to the introduction of the frameworks (baseline) and following the introduction of the frameworks (post-intervention). This report includes baseline data.

Administrative/secondary resident data is being collected longitudinally over the three year programme of research.

It is envisaged that the framework for residential settings that will be developed will consist of three main interventions:

1 The introduction of a systematic approach to determining staffing levels.
2 Determining an appropriate skill-mix.
3 Recommendations on the supervisory role of nurse leadership within the long-term residential setting.

3.3.1 Sample

Pilot sites were selected in conjunction with the Department of Health; with a number of fundamental principles related to sampling in the residential setting in place.

The identification of LTRC settings for the pilot phase of the research was be based on a number of factors: size, sector and geographical location. The HIQA (2020) registry indicated that there were 572 registered LTRC settings in Ireland, with 32,005 residential places and approximately 35,000 employees. Over two-thirds of LTRC settings (67.7%) had 60 residential places or fewer, with one third of LTRC settings having between 41 and 60 beds; 9.4% of LTRC settings were registered as having a maximum occupancy in excess of 100 beds.

Long-term residential care in Ireland is divided across three sectors of varying size: public, private, and voluntary centres. The HIQA register indicates that 114 public centres (19.9%) are managed by the Health Service Executive (HSE), with the remaining (80.1%) operating in the private/voluntary sector.

All RNs and HCAs involved in direct patient care in the selected settings in nursing homes/residential settings are currently included in the research.

3.3.2 Data Collection

A number of administrative and primary data collection methods are currently being used in this study. Data are collected in the following five domains: resident dependency levels, nurse staffing, workload and working environment and, resident outcomes.

3.3.2.1 Predictor/Explanatory Variables

The primary predictor variable in this study is the introduction of the identified staffing method as the approach to determining staffing levels. The approach identified includes the measurement of the total nursing hours available; this is further divided into Registered Nurse (RN) hours and Health Care Assistant (HCA) hours (skill-mix). The predictor variables are those levels of staffing that changed following the implementation of the identified systematic approach to nurse staffing. This approach will allow us to measure outcomes both pre and post the introduction of the staffing method.

We are also taking into consideration variables that may act as covariates in the analysis; including: resident profile (case-mix), size (number of beds), type of nursing home (private/public/voluntary), location (urban/rural), type of care provided (short-term/rehabilitation, long-term), staff turnover, staff costs, and ratio of RNs and HCAs to residents. This study is measuring RN and HCA nursing hours per patient resident, RNs and HCAs per resident (nurse to patient ratios).

3.3.2.2 Demographic and Unit Profile

An overall profile of the LTRC settings has been collected as well as the demographic profile of staff working in these settings.

A demographic profile of staff will be collected pre and post the implementation of the Framework. These variables include: age, gender, level of education (staff with a degree, staff with a specialist qualification in care of the older person), working hours, last shift worked and grade and number of advanced practice nurses.

3.3.2.3 Resident Outcome Measures – Residential Settings

Previous reviews of the literature have identified a number of outcomes that have been associated with nurse staffing in the nursing home/residential sector (Spilsbury *et al.* 2011). The majority of research in this area explores the relationship between nurse staffing and a

number of quality indicators. There are no national data sets in Ireland on outcome measures in the nursing home sector; therefore data is being collected at residential setting level/unit/ward level. There is variation in LTRC settings in Ireland in relation the collection of outcomes with both paper based and electronic systems in place. The outcomes below are being measured using secondary data both from paper-based records and/or the electronic system where available.

- ***Pressure ulcers*** – prevalence of pressure ulcers (stages 2, 3 and 4) as well as the number of residents with pressure ulcers per 100 beds (rate).
- ***Catheter Use –*** proportion of residents who are catharised both prior to and following the introduction of the safe nurse staffing framework in the nursing home/residential setting.
- ***Urinary Tract Infections (UTI) –*** proportion of residents who develop a UTI both prior to and following the introduction of the safe nurse staffing framework in the nursing home/residential setting.
- ***Use of Physical and Chemical Restraints*** – The use of physical restraints is being measured where available. In addition, a single item question from the Conflict Tactics Scale (Straus *et al.* 1996) will also be used in staff surveys that will be administered both prior to and following the introduction of the framework in the nursing home sector. Nursing staff will be asked to respond to the item in two ways: firstly, have they observed a resident being restrained beyond what was needed at the time and, secondly, have they restrained a resident beyond what was needed at the time; the time period provided will be over the last three months. Chemical restraint is defined as 'the use of the use of medication to control or modify a person's behaviour when no medically identified conditions is being treated, or where the treatment is not necessary for the condition or the intended effect of the drug is to sedate the person for convenience or disciplinary purposes' (HIQA 2016: 4). This will be measured by undertaking a retrospective review of sedative prescribing practices both prior to and following the introduction of the framework. Chemical restraint will be defined as the use of antipsychotic, antianxiety or hypnotic agents in the designated nursing home (Lam *et al*. *2017)*; residents with a diagnosis of a psychiatric illness will be excluded.
- ***Functional Status –*** Total dependence scores for activities of daily living will be collected both prior to and following the introduction of the framework in the pilot sites using the Barthel Index.
- ***Falls –*** proportion of falls with injury both prior to and following the introduction of the safe nurse staffing framework in the nursing home/residential setting.
- ***Infections –*** The rates of nosocomial infections including incidence of COVID-19 and C.Difficle.
- ***Mortality –*** this will measure the mortality rate (deaths per 100 nursing home residents) and deaths within 6 months of admission to the nursing home.
- ***Hospitalisation –*** percentage of residents who are hospitalised both prior to and following the introduction of the framework in the pilot nursing homes/residential settings. ; this will be divided into probability of being admitted to a hospital for short stay (< 60 days) and long-stay (> 60 days) residents.

In addition, the rate of adverse incidents will also be measured including adverse clinical events, medication administration errors, slips, trips and falls and never events (administration of medication by the wrong route, overdose of insulin due to abbreviations or incorrect device,

falls from poorly restricted windows, chest or neck entrapment in bed rails, scalding of residents (NHS 2018)).

3.3.2.4 Care Left Undone Events (Safety CLUES)

Framework for Safe Nurse Staffing in Medical, Surgical and Specialist Settings (Department of Health 2018) highlighted the importance of monitoring care left undone events (Safety CLUES) as a means of monitoring the extent to which staffing is safe and recommended that six safety CLUEs are monitored, including: resident surveillance, vital sign monitoring (if required), administration of medications, residents' physical needs, missed staff breaks, delay in completing care plans and transfer of the resident to an acute hospital. In addition, other missed care events measured in previous research undertaken by the research team include: comforting/talking with residents, updating nursing care plans, educating residents, changing of resident's position, oral hygiene, pain management, preparing residents for discharge, skin care and undertaking procedures. Missed or delayed care, if related to adverse outcomes and to staffing levels, may have the potential to provide an immediate indication of whether a unit is adequately staffed.

This component of the research is measuring the prevalence of Safety CLUEs both pre and post the introduction of the recommendations in the *Framework* in nursing home/residential settings (this report includes pre data only). Two measures of 'missed care' are being derived. Firstly, reported prevalence of any care being left undone, based on one or more of the activities having been reported. Secondly, a score indicating the volume of care left undone; this is calculated by summing the number of activities identified per respondent. The items outlined above have recently been used in measuring the association between RN burnout, job satisfaction and missed care in nursing homes in the US (White, Aiken and McHugh 2019).

3.3.2.5 Nursing Staff Outcomes

Job Satisfaction and Intention to Leave - job satisfaction and intention to leave amongst nursing staff is being measured. Job satisfaction is measured using a single item. In addition, the relationship between the introduction of the framework and organisational commitment is being measured through asking staff to indicate their intention to leave the organisation.

Burnout - The human services version of the Maslach Burnout Inventory (HS-MBI) is being used (Maslach *et al.* 1996) to measure three areas associated with burnout over time: emotional exhaustion, depersonalisation and personal accomplishment.

3.3.2.6 Organisational Outcomes

A number of measures are being used to measure the organisational changes in LTRC settings as the pilot Framework is being implemented, including a measure of preparedness to cope with the COVID-19 pandemic.

Practice Environment Scale of the Nursing Work Index (PES – NWI-R) - The PES-NWI- R is a measure of the work environment (Lake *et al.* 2007). The instrument consists of five subscales: nurse autonomy, control over practice, nurse-doctor relations, nursing leadership and resource adequacy. The instrument is measuring staff perceptions of their working environment both prior to and following the introduction of the frameworks in the clinical settings.

Quality of Care - Items from the Agency for Healthcare Research and Quality's survey and the RN4CAST on patient safety culture are measuring quality of care within from the perspective of nursing staff working in LTRC settings.

Preparedness for COVID-19 – it was highlighted in the *COVID-19 Nursing Homes Expert Panel Report* (Department of Health 2020) that there was variation in the preparedness of LTRC settings in Ireland to deal with the COVID-19 pandemic. As the COVID-19 is identified as an issue that LTRC settings will have to deal for at least the next 1 to 2 years, the research team are measuring the preparedness of LTRC settings to deal with the pandemic.

3.4 Economic Analysis

The economic analysis aims to measure the economic impact, including cost and required resources, of implementing the recommendations in the *framework* and the resources required to deliver national roll-out. Economic evaluations provide a means to assess the costs and effects of an intervention and compare this with the next best alternative (Drummond *et al.* 2015). To determine the cost implications of the Framework as per the call, a partial economic evaluation will be employed here to generate a cost analysis. This will estimate the costs of implementing the *Framework* to the Department of Health. This will involve identifying, measuring and valuing the resources involved. Identification means listing all resources involved in implementing the *Framework*. The quantity of these resources will then be measured and valued in line with HIQA (2015) recommendations. This report does not include an economic analysis as this will be addressed following the introduction of the Framework and will be outlined in Report 2. The research team are working with the Health Pricing Office in this regard.

3.5 Data Analysis

All data analysis is being conducted under the quality control system of the Statistics and Data Analysis Unit of the Health Research Board Clinical Research Facility at University College Cork using the R Project for Statistical Computing (R Core Team 2017). The study dataset is being prepared using FAIR principles (Wilkinson *et al.* 2016). Following the creation of the study dataset, we created a descriptive code book. Categorical variables are described using percentages and counts in each category, while continuous variables are described by the appropriate measures of central tendency and variability.

3.6 Ethical Considerations

To undertake a survey of patients and staff, ethics applications were submitted to the relevant research committees. All respondents surveyed were informed about the measurement procedures involved in this study. Respondents were informed about the nature of the research and that they were entitled not to participate in the study if they so choose. Information on these aspects of the study was provided on a Participant Information Leaflet appended to the questionnaire. All data is coded and individuals or individual LTRC settings, community settings are not identifiable in any subsequent reporting of results; identification numbers are used throughout. Each LTRC setting granted permission for the study team to access their secondary data.

Section 4
Results

4.1 Introduction

This section will cover a range of results from data collected from the Resource Utilisation Group IV (RUG-IV) instrument, resident outcomes, which was collected from a variety of sources, and from the staff survey.

4.2 Resource Utilisation Groups (RUGS-IV) Results

The instrument identified and piloted to determine nurse staffing levels and skill-mix is the Resource Utilisation Group IV (RUG-IV). The nine pilot sites completed three separate assessments of RUG-IV on a monthly basis. The results will be broken down into a number of sections, including the number of residents involved in the study per nursing home type (private, public and voluntary), the proportion of residents per nursing home type over the three time points, RUG-IV subcategories results, RUG-IV category breakdown per nursing home, the care required per LTRC and totals, and the Nursing Hours per Resident Day (NHPRD) (see Appendix I for the RUG-IV tool).

4.2.1 Number of Residents per type of LTRC

Table 4.2.1.1 includes total figures for the nine LTRC settings divided by public, private and voluntary. There are four public LTRC settings, three private sites and two voluntary sites. The total number of residents that were included for the three rounds of assessments were 459, 451 and 457 respectively.

The table outlines that the highest number of residents are from public LTRCs with a total of approximately 47%, followed closely by approximately 45% in private LTRC settings and a smaller percentage of approximately 11% for the three rounds from voluntary LTRC settings.

Table 4.2.1.1: Number of Residents per type of LTRC

n %*	**Time 1**	**Time 2**	**Time 3**
Private	204 (44.44)	195 (43.24)	196 (42.89)
Public	211 (45.97)	210 (46.56)	213 (46.61)
Voluntary	44 (9.59)	46 (10.20)	48 (10.50)
Total	**459 (100)**	**451 (100)**	**457 (100)**

*Number of residents are based on the total number of residents that were included in time one, two and three from the RUG-IV assessments provided. Figures are rounded to whole numbers.

4.2.2 Category of Residents per LTRC Type

The highest category for each type of LTRC is *Reduced Physical Functioning* in each round of data; *Behavioural Symptoms and Cognitive Performance* is the second highest category. Table 4.2.2.1 demonstrates that *Reduced Physical Functioning* was the highest category in all settings Private, Public and Voluntary LTRCs. With approximately 50% of residents or higher in this category. In table 4.2.2.1, public LTRCs represent the highest percentage of *Reduced Physical Functioning* residents. Overall the category, *Extensive Services,* makes up the smallest percentage category (<5%) for time one and three.

Table 4.2.2.1: Categories per LTRC Type

n (%)*	Time 1	Time 2	Time 3**
Private			
Extensive Services	0 (0.00)	0 (0.00)	3 (1.53)
Special Care High	7 (3.43)	13.5 (6.92)	6 (3.06)
Special Care Low	10.5 (5.15)	14.5 (7.44)	14 (7.14)
Clinically Complex	4 (1.96)	1.5 (0.77)	7 (3.57)
Behavioural Symptoms and Cognitive Performance	72.5 (35.54)	61 (31.28)	68 (34.69)
Reduced Physical Functioning	110 (53.92)	104.5 (53.59)	98 (50.0)
Public			
Extensive Services	9 (4.27)	0 (0.00)	2 (1.03)
Special Care High	29.67 (14.06)	5.5 (2.62)	12.5 (6.43)
Special Care Low	16 (7.58)	18.75 (8.92)	22.5 (11.58)
Clinically Complex	6.33 (3)	4.75 (2.26)	6.17 (3.17)
Behavioural Symptoms and Cognitive Performance	29.5 (13.98)	28.25 (13.44)	34.17 (17.58)
Reduced Physical Functioning	120.5 (57.11)	153 (72.77)	117 (60.21)
Voluntary			
Extensive Services	0 (0.00)	0 (0.00)	0 (0.00)
Special Care High	3 (6.82)	3 (6.52)	3 (6.25)
Special Care Low	2.5 (5.68)	3 (6.52)	3 (6.25)
Clinically Complex	3 (6.82)	5 (10.87)	2 (4.17)
Behavioural Symptoms and Cognitive Performance	14 (31.82)	12 (26.09)	16 (33.33)
Reduced Physical Functioning	21.5 (48.86)	23 (50.0)	24 (50.0)
Total			
Extensive Services	9 (1.96)	0 (0.00)	5 (1.14)
Special Care High	39.67 (8.64)	22 (4.88)	21.5 (4.90)
Special Care Low	29 (6.32)	36.25 (8.03)	39.5 (9.01)
Clinically Complex	13.33 (2.90)	11.25 (2.49)	15.17 (3.46)
Behavioural Symptoms and Cognitive Performance	116 (25.27)	101.25 (22.44)	118.17 (26.96)
Reduced Physical Functioning	252 (54.90)	280.5 (62.16)	239 (54.52)

*Figures are from RUG scores Time 1, 2 and 3. An average score was calculated for pilot sites that completed inter-rater reliability. (Pilot Sites 1, 5, 7, 8 and 9). Pilot Sites 8 and 9 had differing resident totals for inter-rater reliability and an average was also applied in these cases. Percentages are rounded to two decimal places.

**Time three does not represent the full total, 19 residents from one public LTRC (Pilot Site 6) had not been included for average calculations.

4.2.3 Proportion in subcategories by LTRC type

Each of the RUG-IV categories has a number of sub-categories which determine the hours of nursing care required by the resident. This identify in detail the care required.

At Time 1 (Figure 4.2.3.1) the largest sub-category is PE1 (15%, N=69.7), followed by BA1 and PD1 at 12% (N=56.2) and 12% (N=55.3) respectively. Data was spread across 38 sub-categories of a possible 43.

During Time 2 the largest sub-category remained PE1 at 15%, (N=66), followed by PD1 and BA1 at 14% (N=61.8) and 12% (N=53.5) respectively. Data was spread across 36 sub-categories of a possible 43. See Figure 4.2.3.2.

At Time 3 the largest subcategories were BA1 at 15% (N=66.8), PE1 and PD1 at 15% (N=63.5) and 14% (N=59.7) respectively. There was, at 1% (N=5), a very small proportion of residents in *Extensive Services*, which includes a small number of residents from a private and public LTRCs. Data was spread across 38 sub-categories of a possible 43. See Figure 4.2.3.3.

PE1 (Reduced Physical Functioning), PD1 (Reduced Physical Functioning) and BA1 (Behavioural Symptoms and Cognitive Performance) remained the highest scoring sub-categories for all time points.

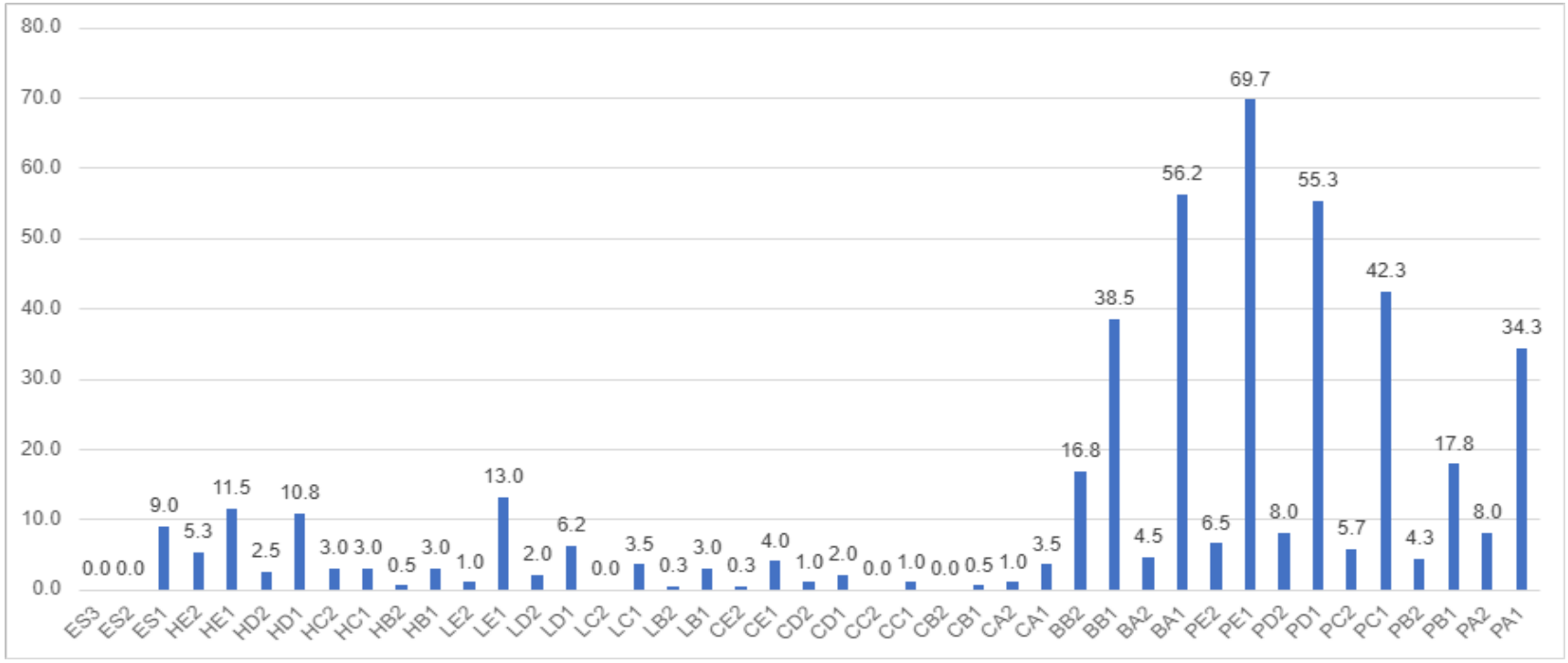


Figure 4.2.3.1: Sub-categories of the RUG-IV at Time 1

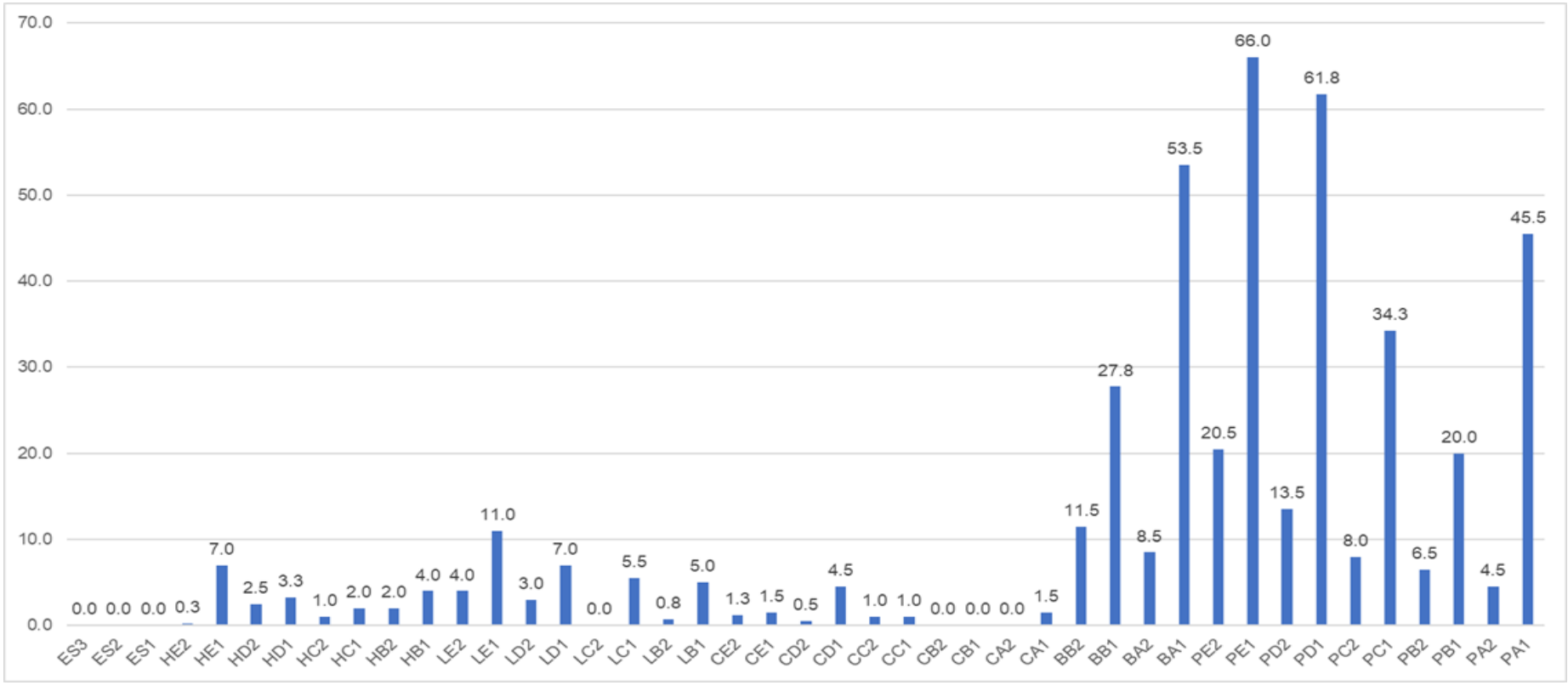


Figure 4.2.3.2: Sub-categories of the RUG-IV at Time 2

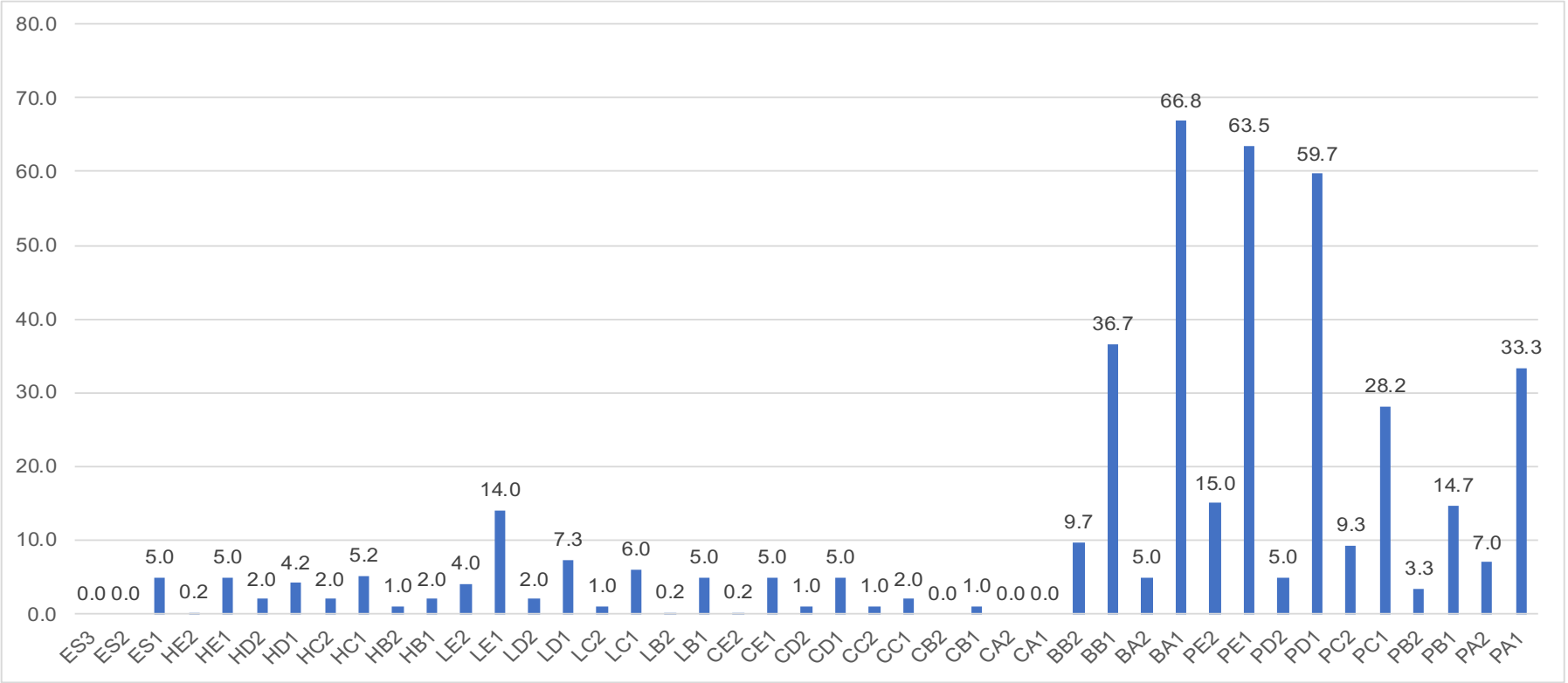
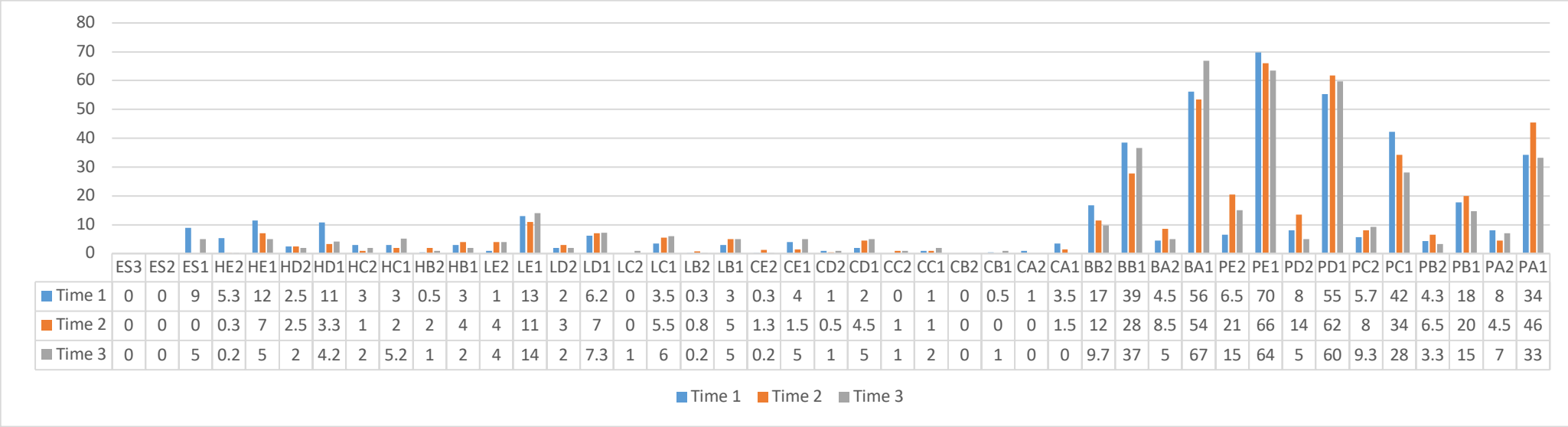


Figure 4.2.3.3: Sub-categories of the RUG-IV at Time 3*

*Time three does not represent the full total, 19 residents from one public LTRC (Pilot Site 6) had not been included for average calculations.



	ES3	ES2	ES1	HE2	HE1	HD2	HD1	HC2	HC1	HB2	HB1	LE2	LE1	LD2	LD1	LC2	LC1	LB2	LB1	CE2	CE1	CD2	CD1	CC2	CC1	CB2	CB1	CA2	CA1	BB2	BB1	BA2	BA1	PE2	PE1	PD2	PD1	PC2	PC1	PB2	PB1	PA2	PA1
Time 1	0	0	9	5.3	12	2.5	11	3	3	0.5	3	1	13	2	6.2	0	3.5	0.3	3	0.3	4	1	2	0	1	0	0.5	1	3.5	17	39	4.5	56	6.5	70	8	55	5.7	42	4.3	18	8	34
Time 2	0	0	0	0.3	7	2.5	3.3	1	2	2	4	4	11	3	7	0	5.5	0.8	5	1.3	1.5	0.5	4.5	1	1	0	0	0	1.5	12	28	8.5	54	21	66	14	62	8	34	6.5	20	4.5	46
Time 3	0	0	5	0.2	5	2	4.2	2	5.2	1	2	4	14	2	7.3	1	6	0.2	5	0.2	5	1	5	1	2	0	1	0	0	9.7	37	5	67	15	64	5	60	9.3	28	3.3	15	7	33

Figure 4.2.3.4: Sub-categories of the RUG-IV at three time-points

4.2.4 RUGS score per LTRC at each Time Point

Table 4.2.4.1 presents the RUG-IV scores for each LTRC at the three time points of resident assessment. The collection of RUG-IV data at individual LTRC level, allowed for the determination of staffing levels based on residents' RUG-IV category.

The majority of LTRCs presented data across all the RUG-IV Categories (Clinically Complex, Behavioural Symptoms and Cognitive Performance and Reduced Physical Functioning), with the exception of *Extensive Services*.

Reduced Physical Functioning is generally the most prevalent category across all LTRC settings (public, private and voluntary). The proportion of residents per pilot site in *Reduced Physical Functioning* category ranged from N=8 (29.63%) in Pilot Site 5 to N=18 (100%) in Pilot Site 8.

Table 4.2.4.1: RUGS categories per LTRC

n (%)	Time 1	Time 2	Time 3
Pilot Site 1 (Rater A)			
Extensive Services	0 (0.00)	0 (0.00)	2 (4.44)
Special Care High	0 (0.00)	0 (0.00)	6 (13.33)
Special Care Low	0 (0.00)	0 (0.00)	5 (11.11)
Clinically Complex	2 (4.44)	1 (2.27)	2 (4.44)
Behavioural Symptoms and Cognitive Performance	3 (6.67)	6 (13.64)	14 (31.11)
Reduced Physical Functioning	40 (88.89)	37 (84.09)	16 (35.56)
Total	**45 (100)**	**44 (100)**	**45 (100)**
Pilot Site 1 (Rater B)*			
Extensive Services	0 (0.00)	0 (0.00)	
Special Care High	0 (0.00)	0 (0.00)	
Special Care Low	0 (0.00)	0 (0.00)	
Clinically Complex	2 (4.44)	2 (4.55)	
Behavioural Symptoms and Cognitive Performance	4 (8.89)	5 (11.36)	
Reduced Physical Functioning	39 (86.67)	37 (84.09)	
Total	**45 (100)**	**44 (100)**	
Pilot Site 2			
Extensive Services	0 (0.00)	0 (0.00)	0 (0.00)
Special Care High	1 (4.17)	1 (4.35)	1 (4.55)
Special Care Low	1 (4.17)	1 (4.35)	1 (4.55)
Clinically Complex	1 (4.17)	0 (0.00)	0 (0.00)
Behavioural Symptoms and Cognitive Performance	6 (25.00)	9 (39.13)	13 (59.09)
Reduced Physical Functioning	15 (62.50)	12 (52.17)	7 (31.82)
Total	**24 (100)**	**23 (100)**	**22 (100)**
Pilot Site 3			
Extensive Services	0 (0.00)	0 (0.00)	0 (0.00)
Special Care High	5 (8.47)	9 (14.75)	5 (8.33)
Special Care Low	3 (5.08)	6 (9.84)	7 (11.67)
Clinically Complex	1 (1.69)	0 (0.00)	0 (0.00)
Behavioural Symptoms and Cognitive Performance	11 (18.64)	11 (18.03)	9 (15.00)
Reduced Physical Functioning	39 (66.10)	35 (57.38)	39 (65.00)
Total	**59 (100)**	**61 (100)**	**60 (100)**
Pilot Site 4			
Extensive Services	9 (11.11)	0 (0.00)	0 (0.00)
Special Care High	22 (27.16)	3 (3.70)	4 (4.88)
Special Care Low	8 (9.88)	12 (14.81)	12 (14.63)
Clinically Complex	3 (3.70)	3 (3.70)	3 (3.66)
Behavioural Symptoms and Cognitive Performance	6 (7.41)	10 (12.35)	9 (10.98)
Reduced Physical Functioning	33 (40.74)	53 (65.43)	54 (65.85)
Total	**81 (100)**	**81 (100)**	**82 (100)**

n (%)	Time 1	Time 2	Time 3
Pilot Site 5 (Rater A)			
Extensive Services	0 (0.00)	0 (0.00)	0 (0.00)
Special Care High	3 (11.11)	3 (10.34)	3 (10.00)
Special Care Low	2 (7.41)	3 (10.34)	3 (10.00)
Clinically Complex	1 (3.70)	2 (6.89)	2 (6.67)
Behavioural Symptoms and Cognitive Performance	13 (48.15)	9 (31.03)	11 (36.67)
Reduced Physical Functioning	8 (29.63)	12 (41.38)	11 (36.67)
Total	**27 (100)**	**29 (100)**	**30 (100)**
Pilot Site 5 (Rater B)			
Extensive Services	0 (0.00)	0 (0.00)	0 (0.00)
Special Care High	3 (11.11)	3 (10.34)	3 (10.00)
Special Care Low	3 (11.11)	3 (10.34)	3 (10.00)
Clinically Complex	1 (3.70)	2 (6.89)	2 (6.67)
Behavioural Symptoms and Cognitive Performance	10 (37.04)	9 (31.03)	11 (36.67)
Reduced Physical Functioning	10 (37.04)	12 (41.38)	11 (36.67)
Total	**27 (100)**	**29 (100)**	**30 (100)**
Pilot Site 6**			
Extensive Services	0 (0.00)	0 (0.00)	0 (0.00)
Special Care High	7 (10.94)	2 (3.13)	2 (3.07)
Special Care Low	7 (10.94)	6 (9.38)	5 (7.69)
Clinically Complex	1 (1.56)	0 (0.00)	1 (1.54)
Behavioural Symptoms and Cognitive Performance	18 (28.13)	11 (17.19)	10 (15.38)
Reduced Physical Functioning	31 (48.44)	45 (70.31)	47 (72.31)
Total	**64 (100)**	**64 (100)**	**65 (100)**
Pilot Site 7 (Rater A)			
Extensive Services	0 (0.00)	0 (0.00)	0 (0.00)
Special Care High	0 (0.00)	0 (0.00)	0 (0.00)
Special Care Low	0 (0.00)	0 (0.00)	0 (0.00)
Clinically Complex	3 (17.65)	3 (17.65)	0 (0.00)
Behavioural Symptoms and Cognitive Performance	2 (11.76)	3 (17.65)	5 (27.78)
Reduced Physical Functioning	12 (70.59)	11 (64.71)	13 (72.22)
Total	**17 (100)**	**17 (100)**	**18 (100)**
Pilot Site 7 (Rater B)*			
Extensive Services	0 (0.00)		
Special Care High	0 (0.00)		
Special Care Low	0 (0.00)		
Clinically Complex	1 (5.88)		
Behavioural Symptoms and Cognitive Performance	3 (17.65)		
Reduced Physical Functioning	13 (76.47)		
Total	**17 (100)**		

n (%)	Time 1	Time 2	Time 3
Pilot Site 8 (Rater A)*			
Extensive Services	0 (0.00)	0 (0.00)	0 (0.00)
Special Care High	0 (0.00)	0 (0.00)	0 (0.00)
Special Care Low	1 (5.26)	1 (5.26)	1 (5.26)
Clinically Complex	1 (5.26)	1 (5.26)	1 (5.26)
Behavioural Symptoms and Cognitive Performance	2 (10.53)	2 (10.53)	2 (10.53)
Reduced Physical Functioning	15 (78.95)	15 (78.95)	15 (78.95)
Total	**19 (100)**	**19 (100)**	**19 (100)**
Pilot Site 8 (Rater B)			
Extensive Services	0 (0.00)	0 (0.00)	0 (0.00)
Special Care High	1 (4.55)	1 (4.55)	1 (4.55)
Special Care Low	1 (4.55)	1 (4.55)	1 (4.55)
Clinically Complex	0 (0.00)	0 (0.00)	0 (0.00)
Behavioural Symptoms and Cognitive Performance	2 (9.09)	2 (9.09)	2 (9.09)
Reduced Physical Functioning	18 (81.82)	18 (81.82)	18 (81.82)
Total	**22 (100)**	**22 (100)**	**22 (100)**
Pilot Site 8 (Rater C)			
Extensive Services	0 (0.00)	0 (0.00)	0 (0.00)
Special Care High	1 (4.55)	1 (4.55)	1 (4.55)
Special Care Low	1 (4.55)	1 (4.55)	1 (4.55)
Clinically Complex	0 (0.00)	0 (0.00)	0 (0.00)
Behavioural Symptoms and Cognitive Performance	2 (9.09)	2 (9.09)	2 (9.09)
Reduced Physical Functioning	18 (81.82)	18 (81.82)	18 (81.82)
Total	**22 (100)**	**22 (100)**	**22 (100)**
Pilot Site 8 (Rater D)*			
Extensive Services		0 (0.00)	0 (0.00)
Special Care High		0 (0.00)	0 (0.00)
Special Care Low		0 (0.00)	0 (0.00)
Clinically Complex		0 (0.00)	0 (0.00)
Behavioural Symptoms and Cognitive Performance		1 (4.55)	1 (4.55)
Reduced Physical Functioning		21 (95.45)	21 (95.45)
Total		**22 (100)**	**22 (100)**
Pilot Site 8 (Rater E)*			
Extensive Services			0 (0.00)
Special Care High			1 (4.55)
Special Care Low			0 (0.00)
Clinically Complex			0 (0.00)
Behavioural Symptoms and Cognitive Performance			0 (0.00)
Reduced Physical Functioning			21 (95.45)
Total			22 (100)

n (%)	Time 1	Time 2	Time 3
Pilot Site 8 (Rater F)*			
Extensive Services			0 (0.00)
Special Care High			0 (0.00)
Special Care Low			0 (0.00)
Clinically Complex			0 (0.00)
Behavioural Symptoms and Cognitive Performance			0 (0.00)
Reduced Physical Functioning			21 (100)
Total			**21 (100)**
Pilot Site 9 (Rater A)			
Extensive Services	0 (0.00)	0 (0.00)	3 (2.63)
Special Care High	2 (1.77)	4 (3.60)	0 (0.00)
Special Care Low	5 (4.42)	6 (5.41)	6 (5.26)
Clinically Complex	2 (1.77)	2 (1.80)	7 (6.14)
Behavioural Symptoms and Cognitive Performance	57 (50.44)	43 (38.74)	46 (40.35)
Reduced Physical Functioning	47 (41.59)	56 (50.45)	52 (45.61)
Total	**113 (100)**	**111 (100)**	**114 (100)**
Pilot Site 9 (Rater B)*			
Extensive Services	0 (0.00)	0 (0.00)	
Special Care High	0 (0.00)	3 (2.70)	
Special Care Low	8 (6.20)	9 (8.11)	
Clinically Complex	2 (1.55)	1 (0.90)	
Behavioural Symptoms and Cognitive Performance	54 (41.86)	39 (35.14)	
Reduced Physical Functioning	65 (50.39)	59 (53.15)	
Total	**129 (100)**	**111 (100)**	

*Pilot site didn't complete inter-rater reliability for all rounds and/or had differing resident totals. Percentages are rounded to two decimal places.

** Pilot Site 6 full data included for time three.

4.2.5 Nursing Hours Required

The RUG-IV tool allowed for the calculation of the nursing hours staff required within the LTRCs per day (24- hour period) based on residents need. The hours required are calculated by multiplying the number of residents in each category by the weighted hours of care determined by the RUGS-IV (see Appendix II for the hours per category). Table 4.2.5.1 shows the total hours required in each unit while Table 4.2.5.2 shows the breakdown of all categories in each unit; both tables include all raters at Times 1, 2 and 3.

As reflected in the RUG-IV categories' table (table 4.2.4.1 above), the care required data was relatively consistent over the three time-periods. There were some changes over time but this was related to the change in the number of residents in a number of the pilot sites.

Table 4.2.5.1: Total hours of care required in each LTRC

Site	Rater	Time 1	Time 2	Time 3
1	A	207.49	201.46	221.34
1	B	208.06	201.88	
1	Average	207.78	201.67	221.34
2	A	107.79	104.34	99.44
3	A	275.26	294.97	287.83
4	A	424.04	394.69	400.68
5	A	127.3	137.94	140.22
5	B	126.85	137.94	140.22
5	Average	127.08	137.94	140.22
6	A	309.85	303.81	308.03
7	A	78.66	79.9	83.6
7	B	79.42		
7	Average	79.04	79.9	83.6
8	A	91.51	91.51	91.51
8	B	106.41	106.41	106.41
8	C	105.58	105.58	105.58
8	D		105.23	105.23
8	E			106.32
8	F			100.9
8	Average	101.167	102.18	102.66
9	A	515.84	509.41	524.48
9	B	586.62	512.71	
9	Average	551.23	511.06	524.48

Table 4.2.5.2: Hours of Care Required per LTRC by RUG-IV Category

hours	Time 1	Time 2	Time 3
Pilot Site 1 (Rater A)			
Extensive Services	0	0	11.82
Special Care High	0	0	33.26
Special Care Low	0	0	28.58
Clinically Complex	10.87	5.53	10.68
Behavioural Symptoms and Cognitive Performance	12.9	25.8	60.2
Reduced Physical Functioning	183.72	170.13	76.8
Total	207.49	201.46	221.34
Pilot Site 1 (Rater B)*			
Extensive Services	0	0	
Special Care High	0	0	
Special Care Low	0	0	
Clinically Complex	10.87	10.68	
Behavioural Symptoms and Cognitive Performance	17.2	21.5	
Reduced Physical Functioning	179.99	169.7	
Total	208.06	201.88	
Pilot Site 2			
Extensive Services	0	0	0
Special Care High	5.79	5.42	5.79
Special Care Low	5.42	5.42	5.42
Clinically Complex	4.42	0	0
Behavioural Symptoms and Cognitive Performance	25.8	38.7	55.9
Reduced Physical Functioning	66.36	54.8	32.33
Total	107.79	104.34	99.44
Pilot Site 3			
Extensive Services	0	0	0
Special Care High	27.47	51	27.84
Special Care Low	17.37	34.37	39.79
Clinically Complex	4.42	0	0
Behavioural Symptoms and Cognitive Performance	47.3	47.3	38.7
Reduced Physical Functioning	178.7	162.3	181.5
Total	275.26	294.97	287.83
Pilot Site 4			
Extensive Services	53.19	0	0
Special Care High	127.01	17	22.79
Special Care Low	46.32	69.11	69.11
Clinically Complex	16.02	15.02	15.02
Behavioural Symptoms and Cognitive Performance	25.8	43	38.7
Reduced Physical Functioning	155.7	250.56	255.06
Total	424.04	394.69	400.68

n (%)	Time 1	Time 2	Time 3
Pilot Site 5 (Rater A)			
Extensive Services	0	0	0
Special Care High	17	17	16.63
Special Care Low	11.58	17.37	16.63
Clinically Complex	4.42	10.87	10.16
Behavioural Symptoms and Cognitive Performance	55.9	38.7	47.3
Reduced Physical Functioning	38.4	54	49.5
Total	127.3	137.94	140.22
Pilot Site 5 (Rater B)			
Extensive Services	0	0	0
Special Care High	16.63	17	16.63
Special Care Low	17	17.37	16.63
Clinically Complex	4.42	10.87	10.16
Behavioural Symptoms and Cognitive Performance	43	38.7	47.3
Reduced Physical Functioning	45.8	54	49.5
Total	126.85	137.94	140.22
Pilot Site 6**			
Extensive Services	0	0	0
Special Care High	39.42	11.21	11.58
Special Care Low	39.79	34	28.21
Clinically Complex	5.34	0	5.34
Behavioural Symptoms and Cognitive Performance	77.4	47.3	43
Reduced Physical Functioning	147.9	211.3	219.9
Total	309.85	303.81	308.03
Pilot Site 7 (Rater A)			
Extensive Services	0	0	0
Special Care High	0	0	0
Special Care Low	0	0	0
Clinically Complex	13.66	15.1	0
Behavioural Symptoms and Cognitive Performance	8.6	12.9	21.5
Reduced Physical Functioning	56.4	51.9	62.1
Total	78.66	79.9	83.6
Pilot Site 7 (Rater B)*			
Extensive Services	0		
Special Care High	0		
Special Care Low	0		
Clinically Complex	4.82		
Behavioural Symptoms and Cognitive Performance	12.9		
Reduced Physical Functioning	61.7		
Total	79.42		

n (%)	Time 1	Time 2	Time 3
Pilot Site 8 (Rater A)*			
Extensive Services	0	0	0
Special Care High	0	0	0
Special Care Low	5.42	5.42	5.42
Clinically Complex	5.53	5.53	5.53
Behavioural Symptoms and Cognitive Performance	8.6	8.6	8.6
Reduced Physical Functioning	71.96	71.96	71.96
Total	91.51	91.51	91.51
Pilot Site 8 (Rater B)			
Extensive Services	0	0	0
Special Care High	5.79	5.79	5.79
Special Care Low	5.79	5.79	5.79
Clinically Complex	0	0	0
Behavioural Symptoms and Cognitive Performance	8.6	8.6	8.6
Reduced Physical Functioning	86.23	86.23	86.23
Total	106.41	106.41	106.41
Pilot Site 8 (Rater C)			
Extensive Services	0	0	0
Special Care High	5.79	5.79	5.79
Special Care Low	5.79	5.79	5.79
Clinically Complex	0	0	0
Behavioural Symptoms and Cognitive Performance	8.6	8.6	8.6
Reduced Physical Functioning	85.4	85.4	85.4
Total	105.58	105.58	105.58
Pilot Site 8 (Rater D)*			
Extensive Services		0	0
Special Care High		0	0
Special Care Low		0	0
Clinically Complex		0	0
Behavioural Symptoms and Cognitive Performance		4.3	4.3
Reduced Physical Functioning		100.93	100.93
Total		105.23	105.23
Pilot Site 8 (Rater E)*			
Extensive Services			0
Special Care High			5.42
Special Care Low			0
Clinically Complex			0
Behavioural Symptoms and Cognitive Performance			0
Reduced Physical Functioning			100.9
Total			106.32

n (%)	Time 1	Time 2	Time 3
Pilot Site 8 (Rater F)*			
Extensive Services			0
Special Care High			0
Special Care Low			0
Clinically Complex			0
Behavioural Symptoms and Cognitive Performance			0
Reduced Physical Functioning			100.9
Total			100.9
Pilot Site 9 (Rater A)			
Extensive Services	0	0	17.73
Special Care High	11.58	22.42	0
Special Care Low	28.21	33.26	33.63
Clinically Complex	9.76	9.76	37.05
Behavioural Symptoms and Cognitive Performance	245.1	184.9	197.8
Reduced Physical Functioning	221.19	259.07	238.27
Total	515.84	509.41	524.48
Pilot Site 9 (Rater B)*			
Extensive Services	0	0	
Special Care High	0	16.63	
Special Care Low	44.84	49.15	
Clinically Complex	10.16	5.34	
Behavioural Symptoms and Cognitive Performance	232.2	167.7	
Reduced Physical Functioning	299.42	273.89	
Total	586.62	512.71	

*Pilot site didn't complete inter-rater reliability for all rounds and/or had differing resident totals.

** Pilot Site 6 full data included for time three.

The majority of care required was for residents in *Reduced Physical Functioning* Category, followed by *Behavioural Symptoms and Cognitive Performance*. The categories on the whole present a similar pattern between the three rounds.

Table 4.2.5.3: Total hours required per RUG-IV category

hours	**Time 1**	**Time 2**	**Time 3****
Extensive Services	53.19	0	29.55
Special Care High	226.16	124.05	120.72
Special Care Low	165.38	205.73	224.20
Clinically Complex	66.53	58.03	79.17
Behavioural Symptoms and Cognitive Performance	498.8	435.38	508.12
Reduced Physical Functioning	1173.17	1307.39	1117.01
Total	2183.23	2130.56	2078.78

**Time three does not represent the full total, as 19 residents from one public LTRC (Pilot Site 6) had not been included for average calculations.

4.2.6 Whole Time Equivalent (WTE) Required

The total hours required per day based on the RUG-IV was converted to calculate the total hours required in a year. WTE was calculated by dividing the number of hours required per year by the number of hours one staff member can work in a year; giving the WTE required for direct care. An extra 17-20% was added on to allow for annual leave, sickness absence, and staff training. The table below shows the total required WTE for each residential unit in the study.

Table 4.2.6.1: Total WTE required for each residential unit based on the RUG-IV

	Time 1	Time 2	Time 3**
1A*	44.81	43.51	47.8
1B*	44.94	43.60	
2	22.7	21.97	20.94
3	57.96	62.11	59.1
4*	91.58	85.24	86.54
5A	26.81	29.05	29.53
5B	26.71	29.05	29.53
6*	66.92	65.62	66.53
7A	16.56	16.83	17.6
7B	16.72		
8A*	19.76	19.76	19.76
8B*	22.98	22.98	22.98
8C*	22.8	22.8	22.8
9A	108.62	107.27	110.44
9B	123.53	107.96	

*WTE calculation includes 20% add-on for leave. The remaining settings include a 17% add-on. **Pilot Site 6 full data included.

4.3 Resident Outcome data

There are no national data sets available in Ireland on outcome measures in the residential setting, as such data was collected from each individual setting in the project. Resident outcome data was collected in all participating LTRC settings, except one which will be closing and exiting the research project. As such, data was not collected from nursing home 2 as there would be no future comparison data available. The data was collected at resident level from electronic systems where available, and included the below measures. In residential settings with the absence of an electronic system, data was collected at an aggregate level provided data was readily accessible.

- Age
- Gender
- Barthel score
- Transfer to acute hospital
- Admissions
- Discharge
- Mortality
- Incidents of falls
- Infections (UTIs, RTIs, Covid-19)
- Indwelling catheters
- Use of restraints
- Regular and PRN prescribed psychotropic medications
- Medication errors
- Pressure Ulcers
- Weight change

Data was collected for a six month period, from January 1st 2022 to June 30th 2022, i.e. 181 days and the following section will discuss the data in terms of aggregate number and proportion of each outcome. This provides baseline data from which future comparisons can be made.

4.3.1 Residential setting profile

Data was not readily accessible in all settings on the resident profile. NH6 resident data was not readily available during the compiling of this report. The research team is continuing to work with the site to collect the data and this will be added as an addendum. However, from the data available, it was evident that the age profile ranges from a mean of 77.2 years to a mean of 88.37 years (mean = 82.90), with a larger proportion of females (64.78%) compared to males (35.22%). The majority of residents were of high dependency (40.90%) based on the Barthel score. The average Barthel score ranged from 6.27 to 9.79, with lower scores indicating higher dependency levels. Residential setting 8 used a different version of Barthel to the other settings and thus was excluded in the overall calculation.

Table 4.3.1.1: Residential Setting profile

Nursing Home	No. residents	Age	Gender		Barthel score					
		mean (SD)	Female n (%)	Male n (%)	Independent n (%)	Low n (%)	Medium n (%)	High n (%)	Max n (%)	Score mean (SD)
1	45	82.93 (7.19)	28 (62.22)	18 (40.00)	^	^	^	^	^	^
3	60	82.84 (8.13)	33 (55.93)	30 (50.85)	0 (0.00)	6 (10.17)	15 (25.42)	18 (30.51)	20 (33.90)	8.05 (5.55)
4	82	77.2 (13.8)	41 (50.00)	40 (48.78)	0 (0.00)	7 (8.54)	14 (17.07)	20 (24.39)	40 (48.78)	6.27 (5.56)
5	30	88.37 (7.28)	22 (70.97)	9 (29.03)	1 (20.00)	4 (12.90)	9 (29.03)	5 (16.13)	10 (32.26)	9.79 (5.74)
6	64	^	^	^	^	^	^	^	^	^
7	18	78.06 (7.62)	15 (88.24)	2 (11.76)	0 (0.00)	4 (23.53)	4 (23.53)	2 (11.76)	7 (41.18)	9.47 (6.29)
8	22	84.55 (9.3)	17 (77.27)	5 (22.73)	0 (0.00)	0 (0.00)	2 (10.53)	2 (10.53)	15 (78.95)	16.23 (19.87)*
9	114	86.34 (7.49)	85 (74.56)	27 (23.68)	0 (0.00)	24 (21.05)	33 (28.95)	28 (24.56)	45 (39.47)	-
Total	435	82.90 (8.69)	241 (64.78)	131 (35.22)	1 (0.30)	45 (13.43)	77 (22.99)	75 (22.39)	137 (40.90)	8.395 (5.79)

^ data not readily accessible
- data not available
* residential setting using original Barthel (not modified), not included in average calculation

4.3.2 Mortality, Absconding and Transfers to/from the residential settings

This data is represented as a proportion of the number of resident days, which is the number of residents multiplied by the number of days in the period of time; i.e. 181 days. This data must be represented in this manner as to avoid inflating the occurrence of these outcomes. Limited data was available across the residential setting under these outcomes, with mortality the only data available 100% across each of the settings. It is clear that mortality ranged from 0.03% to 0.13% in the six month period, with the average at 0.08%.

There were very few (0.01%) absconding incidents during the time period, with the greatest number seen in residential setting 6. However, investigation of this data showed varying levels of completion in the settings.

Transfers to acute hospitals were low (0.07%), ranging from 0.03% to 0.16%. Complete data on admissions and discharges were limited in each site.

Table 4.3.2: Mortality and movements to/from the residential settings represented as proportion of resident days

	Mortality n (%)	Admissions n (%)	Absconding n (%)	Transfers n (%)	Discharge n (%)
1	5 (0.06)	11 (0.14)	0 (0.00)	9 (0.11)	0 (0.00)
3	5 (0.05)	^	^	^	10 (0.09)
4	8 (0.05)	^	0 (0.00)	9 (0.06)	^
5	5 (0.09)	^	(0.00)	9 (0.16)	^
6	12 (0.10)	^	5 (0.04)	14 (0.12)	^
7	1 (0.03)	2 (0.06)	0 (0.00)	2 (0.06)	0 (0.00)
8	5 (0.13)	^	^	1 (0.03)	^
9	19 (0.09)	^	^	13 (0.06)	^
Total	60 (0.08)	13 (0.02)	5 (0.01)	57 (0.07)	10 (0.01)

^ data not readily accessible

4.3.3 Falls, pressure ulcers, medication errors

Falls, pressure ulcers and medication errors are also represented as a proportion of resident days. Falls is the only outcome type with 100% completion across the sites. The overall average number of falls was 0.61%, ranging from 0.18% in setting 1 to 1.20% in setting 9.

A low number of medication errors occurred during the six month period (0.01%) with three settings reporting no medication errors. A total of 65 pressure ulcers (0.08%) were recorded in the six months, with varying levels of completion in the settings. Note: Mortality rate refers only to resident who died in residential care setting and does not include acute.

Table 4.3.3: Falls, pressure ulcers and medication errors represented as proportion of resident days

	Falls	Medication errors	Pressure ulcers		
			Grade 1/2	Grade 3/4	Total
	n (%)	n (%)	n (%)	n (%)	n (%)
1	15 (0.18)	^	7 (0.09)	0 (0.00)	8 (0.10)
3	14 (0.13)	2 (0.02)	2 (0.02)	0 (0.00)	3 (0.03)
4	37 (0.25)	0 (0.00)	3 (0.02)	0 (0.00)	3 (0.02)
5	24 (0.43)	1 (0.02)	1 (0.02)	0 (0.00)	1 (0.02)
6	96 (0.83)	1 (0.01)	^	^	20 (0.17)
7	38 (1.23)	0 (0.00)	1 (0.03)	(0.00)	1 (0.03)
8	7 (0.18)	^	^	^	^
9	247 (1.20)	0 (0.00)	26 (0.13)	2 (0.01)	29 (0.14)
Total	478 (0.61)	4 (0.01)	40 (0.05)	2 (0.00)	65 (0.08)

^ data not readily accessible

4.3.4 Indwelling catheters, restraints, infections and Psychotropic medication

Indwelling catheters, restraints (bed bumpers, bed rails) and psychotropic medications were averaged across the six month period and is represented as a proportion of the residents. Infections are taken as a total and represented as a proportion of total residents. Indwelling catheters ranged from 0 residents (0.00%) to 37 residents (57.81%) with 11.98% of total residents having an indwelling catheter in the six month period.

Restraint use ranged from 0% to 31.11%, however there is varying definition of restraint use amongst the residential settings. Some residential settings do not count restraint use if the resident has requested and consented to the restraint use, while others consider it any use of restraints. As such, this measure is not currently comparable across the settings.

Data on infections collected consisted of urinary tract infections (UTIs), respiratory infections (RIs), and Covid-19. Varying levels of data completion was evident with data on UTIs and RIs not readily accessible in all settings. Approximately, 0.07% of residents developed a UTI, while 0.05% developed a respiratory infection, and 26.73% of residents contracted Covid-19 during the six month period.

Psychotropic medication can be PRN or regular use. As with other types of resident outcome data, there are various levels of data on this outcome. Approximately, 7% of residents were on PRN psychotropic medications (data not readily available on PRN use), while approximately 43.55% were taking psychotropic medication regularly.

The research team is further examining the level of resident data that is available at each site level. In addition to the above, the team are working with the sites to review notifiable events such as unexplained deaths, absconding, and falls. This level of data was not readily accessible at the time of compiling this report but is being further explored for analysis and reporting in subsequent reports.

Table 4.3.4: Indwelling catheters, restraints, infections and Psychotropic drugs represented as a proportion of total residents

	Catheters	Restraints	Infections			Psychotropic medication	
			UTIs	RTIs	Covid-19	PRN	Regular
	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)
1	2 (4.44)	14 (31.11)	2 (0.02)[1]	^	^	4 (8.89)	13 (28.89)
3	1 (1.69)	^	^	^	22 (37.29)	5 (8.47)	36 (61.02)
4	3 (3.66)	17 (20.73)	17 (0.11)	10 (0.07)	45 (54.88)	unknown	65 (79.27)
5	4 (12.90)	(0.00)	20 (0.36)	20 (0.36)	14 (45.16)	21 (67.74)	23 (74.19)
6	37 (57.81)	^	^	^	30 (46.88)	1032 (daily doses)[2]	1032 (daily doses)
7	0 (0.00)	1 (5.88)	7 (0.23)	^	5 (29.41)	1 (5.88)	10 (58.82)
8	2 (9.09)	^	4 (0.10)	8 (0.20)	^	^	^
9	3 (2.63)	0 (0.00)	9 (0.04)	1 (0.00)	^	unknown	42 (36.84)
Total	52 (11.98)	32 (7.37)	57 (0.07)	39 (0.05)	116 (26.73)	31 (7.14)	189 (43.55)

[1] limited data available
[2] data not included in total calculation
^ data not readily accessible

4.3.5 Weight change

Weight change was only readily accessible from those residential settings with an electronic data collection system. Overall, there was average weight loss of 1.04kg, with weight loss being evident in 59.19% of residents. Of those that had a weight loss, there was an average weight loss of 3.57kg. Approximately 39% of residents gained weight in the six month period, ranging from a weight gain of 2.12kg to 3.40kg. A small percentage of residents (1.71%) did not have any change in weight over the six month period.

While a change in weight was noted, it is important to state that it was not possible to establish if the weight loss was intentional or not; that is, it is not known if the resident who had lost weight was part of weight management programme or whether the resident was underweight and experienced weight loss due to malnutrition or illness.

Table 4.3.5: Weight change

	Overall change	Weight loss		Weight gain		No change	Range of change
	Average kg (SD)	n (%)	Average kg (SD)	n (%)	Average kg (SD)	n (%)	
1	-	-	-	-	-	-	-
3	-0.66 (5.70)	28 (47.46)	-4.91 (4.82)	29 (49.15)	3.40 (3.13)	2 (3.39)	-19.8kg to 14.6kg
4	-	-	-	-	-	-	-
5	-1.63 (4.29)	17 (65.38)	-3.61 (3.92)	9 (34.62)	2.12 (1.55)	0 (0.00)	-17.5kg to 4.85kg
6	-	-	-	-	-	-	-
7	-1.32 (11.28)	11 (68.75)	-3.03 (5.87)	5 (31.25)	2.38 (2.49)	0 (0.00)	-8.2kg to 4.3kg
8	-	-	-	-	-	-	-
9	-0.53 (3.34)	64 (55.17)	-2.73 (2.35)	48 (41.38)	2.35 (2.21)	4 (3.44)	-11.15kg to 8.5kg
Total	-1.04 (6.15)	120 (59.19)	-3.57 (4.24)	91 (39.10)	2.56 (2.35)	6 (1.71)	-19.8kg to 14.6kg

- not available

4.3.6 Conclusion

It was evident that there was various levels of data completion across the residential settings. Those settings with an electronic system had a much better level of data completion than those without; these were predominantly private or voluntary residential settings. Overall, the residential settings have high dependency levels, but had low levels of adverse resident outcomes over the six months. However, this is a very small sample size and over a short period of time. As such, more data is required and over a longer period of time in order to determine if there is any association between staffing and resident outcomes.

4.4 Staff Survey

Staff across the four nine study sites, including clinical nurse managers (CNMs), staff nurses and healthcare assistants (HCAs), were asked to complete the staff survey. The survey measures a number of items including demographics, education, the number of residents being cared for by staff, the working environment, quality of care, care left undone or delayed, job satisfaction and intention to stay/leave, burnout, and the prevalence of violence and aggression, and the nursing practice environment. These are variables that have previously be shown to be related to staffing levels. In addition, staff experiences of, and contact with, COVID-19 and the ongoing impact of COVID-19 was also measured as part of the survey.

4.4.1 Profile of respondents

The demographic profile of the respondents is outlined in Table 4.4.1.1. The majority of respondents were HCAs (55.0%) with RNs comprising 43.8% of the staffing cohort. A large proportion held full-time contracts (78.3%) and had been working in their current nursing home for approximately 8 years. Respondents were predominantly female (80.3.0%) and had an average of 12 years' experience as a RN/HCA. The majority of RNs had completed degree level education and above (70.3%); approximately a quarter of HCAs had completed degree level education (22.0%). Of the RNs surveyed, 21.4% had received a specialist qualification in gerontological nursing. The majority of HCAs had obtained a FETAC level 5 qualifications (90.8%).

Staff also provided country of nursing pre-registration training, as shown in Table 3.4.1.2. Just under two thirds (63.1%) received their nursing education overseas, predominantly in India (23.9%) and the Philippines (16.5%).

Overall, eight hour day shifts were undertaken by 11.3% of the workforce, twelve hour day staff by 53.7% and 12 hour night by 29.4% of respondents. Approximately 6.0% of respondents that stated they worked irregular hours. Table 4.4.1.2 also details the total number of RNs and HCAs working different shifts.

Table: 4.4.1.1: Profile of Respondents

Characteristic	NH 1 (n = 46)	NH 2 (n = 9)	NH 3 (n = 31)	NH 4 (n = 27)	NH 5 (n = 18)	NH 6 (n = 44)	NH 7 (n = 26)	NH 8 (n = 18)	NH 9 (n = 27)	Total (n =246)
Response rate, %	62.2%	42.9%	51.7%	28.4%	60.0%	51.8%	74.3%	54.5%	27.5%	46.3%
Job Title, n (%)										
RN	21 (45.7)	2 (22.2)	6 (18.8)	15 (55.6)	9 (45.0)	28 (63.6)	8 (32.0)	10 (52.6)	10 (37.0)	109 (43.8)
HCA	25 (54.3)	7 (77.8)	24 (75.0)	12 (44.4)	11 (55.0)	16 (36.4)	17 (68.0)	8 (42.1)	17 (63.0)	137 (55.0)
Other			2 (6.2)					1 (5.3)		3 (1.2)
Nursing Qualifications, n (%)										
RN only										
Registered nurse – cert.	0 (0.0)	0 (0.0)	0 (0.0)	3 (18.8)	1 (14.3)	8 (28.6)	0 (0.0)	1 (10.0)	0 (0.0)	13 (12.9)
Registered nurse – diploma	4 (19.0)	0 (0.0)	1 (20.0)	3 (18.8)	1 (14.3)	4 (14.3)	1 (50.0)	2 (20.0)	1 (10.0)	17 (16.8)
Registered nurse – degree	15 (71.5)	1 (50.0)	4 (80.0)	5 (31.3)	2 (28.5)	8 (28.6)	0 (0.0)	7 (70.0)	8 (80.0)	50 (49.5)
Post-graduate certificate	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (14.3)	1 (3.6)	0 (0.0)	0 (0.0)	0 (0.0)	2 (2.0)
Post-graduate diploma	2 (9.5)	1 (50.0)	0 (0.0)	4 (25.0)	1 (14.3)	2 (7.0)	1 (50.0)	0 (0.0)	1 (10.0)	12 (11.9)
Masters in Nursing	0 (0.0)	0 (0.0)	0 (0.0)	1 (6.1)	1 (14.3)	4 (14.3)	0 (0.0)	0 (0.0)	0 (0.0)	6 (5.9)
PhD in Nursing	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (3.6)	0 (0.0)	0 (0.0)	0 (0.0)	1 (1.0)
Educational Qualification, n (%)										
No Formal Education	0 (0.0)	1 (11.1)	0 (0.0)	0 (0.0)	0 (0.0)	1 (2.6)	0 (0.0)	0 (0.0)	0 (0.0)	2 (1.00)
Junior Cert./Intermediate Cert.	3 (7.3)	1 (11.1)	3 (10.3)	1 (4.2)	0 (0.0)	0 (0.0)	1 (4.2)	0 (0.0)	0 (0.0)	9 (3.9)
Leaving Cert (or equivalent)	7 (17.1)	1 (11.1)	4 (13.8)	6 (25.0)	0 (0.0)	9 (23.1)	1 (4.2)	5 (26.3)	3 (11.1)	36 (15.7)
Vocational/Technical	10 (24.4)	4 (44.5)	9 (31.0)	9 (37.5)	13 (72.2)	10 (25.6)	7 (29.1)	8 (42.1)	8 (29.6)	78 (33.9)
Qualification										
Certificate (Third-level)	3 (7.3)	1 (11.1)	2 (7.0)	2 (8.3)	1 (5.6)	7 (17.9)	1 (4.2)	1 (5.3)	3 (11.1)	21 (9.1)
Diploma (Third-level)	3 (7.3)	0 (0.0)	3 (10.3)	3 (12.5)	2 (11.1)	5 (12.8)	4 (16.7)	3 (15.8)	1 (3.7)	24 (10.4)
Bachelor's Degree	15 (36.6)	1 (11.1)	6 (20.8)	3 (12.5)	2 (11.1)	4 (10.3)	5 (20.8)	2 (10.5)	11 (40.8	49 (21.3)
Master's Degree	0 (0.0)	0 (0.0)	1 (3.4)	0 (0.0)	0 (0.0)	3 (7.7)	5 (20.8)	0 (0.0)	1 (3.7)	10 (4.3)
Doctoral Degree (e.g. PhD)	0 (0.0)	0 (0.0)	1 (3.4)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (0.4)
Bachelor's or above (RN)	20 (95.2)	2 (100)	5 (100)	12 (85.7)	8 (88.9)	21 (75.0)	5 (62.5)	10 (100)	10 (100)	93 (86.9)
Bachelor's or above (HCA)	11 (44.0)	1 (14.3)	9 (37.5)	1 (8.3)	0 (0.0)	3 (20.0)	9 (56.3)	1 (12.5)	8 (47.1)	43 (31.9)
Other			1 (50.0)							1 (33.3)
Specialist qualification in gerontological nursing, n (%)										
Yes	6 (28.6)	1 (50.0)	1 (25.0)	4 (28.6)	0 (0)	5 (19.2)	2 (50.0)	1 (10.0)	1 (10.0)	21 (21.4)
No	15 (71.4)	1 (50.0)	3 (75.0)	10 (71.4)	7 (100)	21 (80.8)	2 (50.0)	9 (90.0)	9 (90.0)	77 (78.6)
FETAC level 5 (HCA only)	15 (88.2)	7 (100)	15 (71.4)	11 (100)	7 (100)	15 (100)	9 (90.0)	8 (100)	12 (92.3)	99 (90.8)

Working Contract, n (%)										
Full-time	44 (95.7)	5 (55.6)	28 (87.5)	18 (69.2)	16 (80.0)	34 (81.0)	13 (54.2)	6 (33.3)	27 (100)	191 (78.3)
Part-time	2 (4.3)	3 (33.3)	4 (12.5)	6 (23.1)	4 (20.0)	6 (14.2)	11 (45.8)	12 (66.6)	0 (0.0)	48 (19.7)
Agency	0 (0.0)	0 (0.0)	0 (0.0)	2 (7.7)	0 (0.0)	1 (2.4)	0 (0.0)	0 (0.0)	0 (0.0)	3 (1.2)
Other	0 (0.0)	1 (11.1)	0 (0.0)	0 (0)	0 (0.0)	1 (2.4)	0 (0.0)	0 (0.0)	0 (0.0)	2 (0.8)
Gender, n (%)										
Female	32 (69.6)	7 (77.8)	21 (67.7)	22 (84.6)	19 (95.0)	37 (86.0)	20 (83.3)	18 (100)	20 (74.1)	196 (80.3)
Male	14 (30.4)	2 (22.2)	10 (32.3)	4 (15.4)	1 (5.0)	6 (14.0)	4 (16.7)	0 (0.0)	7 (25.9)	48 (19.7)
Years as a nurse/HCA mean (SD)										
As Nurse/HCA	13.89 (6.78)	13.71 (16.34)	7.82 (7.61)	15.76 (12.58)	11.93 (11.72)	16.68 (12.01)	5.89 (8.78)	12.18 (6.94)	10.78 (7.30)	12.47 (10.22)
Current Hospital	7.68 (6.50)	9.22 (13.96)	7.14 (6.00)	12.10 (10.01)	6.38 (8.46)	12.09 (10.00)	1.81 (1.74)	4.73 (3.09)	6.12 (6.42)	8.26 (8.53)
Current Unit	N/A	N/A	N/A	3.00 (--)	N/A	3.33 (1.53)	N/A	2.00 (--)	N/A	3.00 (1.22)
Agency	1.25 (1.06)	N/A	N/A	4.03 (5.26)	1.50 (0.71)	1.22 (0.69)	0.08 (--)	N/A	N/A	1.94 (2.78)
Received Pre-Reg (nursing) training in Ireland, n (%)										
Yes	2 (10.0)	2 (100.0)	1 (16.7)	5 (33.3)	7 (77.8)	11 (42.3)	3 (50.0)	6 (66.7)	1 (10.0)	38 (36.9)
No	18 (90.0)	0 (0.0)	5 (83.3)	10 (66.7)	2 (22.2)	15 (57.7)	3 (50.0)	3 (33.3)	9 (90.0)	65 (63.1)
Countries										
UK	1 (4.8)	0 (0.0)	0 (0.0)	4 (26.6)	0 (0.0)	3 (10.7)	0 (0.0)	2 (20.0)	0 (0.0)	10 (9.1)
India	5 (23.8)	0 (0.0)	3 (50.0)	3 (20.0)	0 (0.0)	6 (21.4)	2 (25.0)	1 (10.0)	6 (60.0)	26 (23.9)
Other EU	1 (4.8)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (12.5)	0 (0.0)	0 (0.0)	1 (0.9)
Philippines	10 (47.6)	0 (0.0)	0 (0.0)	1 (6.7)	2 (22.2)	4 (14.3)	0 (0.0)	0 (0.0)	1 (10.0)	18 (16.5)
Other Worldwide	1 (4.8)		1 (16.7)	1 (6.7)	0 (0.0)	1 (3.6)	0 (0.0)	0 (0.0)	1 (10.0)	5 (4.5)
Received HCA/Other training in Ireland, n (%)										
Yes	21 (84.0)	--	19 (79.2)	11 (100.0)	11 (100.0)	15 (100.0)	10 (62.5)	9 (100.0)	11 (64.7)	114 (84.4)
No	4 (16.0)	--	5 (20.8)	0 (0.0)	0 (0.0)	0 (0.0)	6 (37.5)	0 (0.0)	6 (35.3)	21 (15.6)
Countries										
UK	0 (0.0)	0 (0.0)	3.8)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	2 (11.8)	2 (1.4)
India	1 (4.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	6 (35.3)	0 (0.0)	0 (0.0)	8 (5.7)
Other EU	0 (0.0)	0 (0.0)	1 (3.8)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (0.7)
Philippines	3 (12.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	3 (17.6)	6 (4.3)
Other Worldwide	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (5.9)	1 (0.7)

Table: 4.4.1.2: Profile of respondents' shift type

	NH 1 (n = 42)	NH 2 (n = 9)	NH 3 (n = 32)	NH 4 (n = 23)	NH 5 (n = 17)	NH 6 (n = 39)	NH 7 (n = 24)	NH 8 (n = 19)	NH 9 (n = 26)	Total (n=231)
**Overall shifts*										
Day Shift (8 hours)	1 (2.4)	1 (11.1)	9 (28.1)	5 (21.7)	1 (5.9)	4 (10.3)	1 (4.2)	2 (10.5)	2 (7.7)	26 (11.3)
Day Shift (12 Hours)	26 (61.9)	6 (66.7)	13 (40.6)	12 (52.2)	8 (47.1)	16 (41.0)	13 (54.2)	9 (47.4)	21 (80.8)	124 (53.7)
Night shift (12 hours)	12 (28.6)	2 (22.2)	4 (12.5)	6 (26.1)	6 (35.3)	17 (43.6)	10 (40.0)	8 (42.1)	3 (11.5)	68 (29.4)
Other hours	3 (7.1)	0 (0.0)	6 (18.8)	0 (0.0)	2 (11.8)	2 (5.1)	0 (0.0)	0 (0.0)	0 (0.0)	13 (5.6)
Registered Nurses										
Day Shift (8 hours)	0 (0.0)	0 (0.0)	0 (0.0)	3 (33.3)	1 (11.1)	4 (16.0)	0 (0.0)	1 (10.0)	1 (10.0)	11 (10.9)
Day Shift (12 hours)	12 (63.2)	2 (100)	4 (66.7)	6 (50.0)	2 (22.2)	10 (40.0)	4 (50.0)	5 (50.0)	7 (70.0)	52 (51.2)
Night shift (12 hours)	5 (26.3)	0 (0.0)	1 (16.7)	2 (16.7)	4 (44.4)	9 (36.0)	4 (50.0)	4 (40.0)	2 (20.0)	31 (30.7)
Other hours	2 (10.5)	0 (0.0)	1 (16.7)	0 (0.0)	2 (22.2)	2 (8.0	0 (0.0)	0 (0.0)	0 (0.0)	7 (6.9)
Health Care Assistants										
Day Shift (8 hours)	1 (4.3)	1 (14.3)	9 (37.5)	1 (9.1)	0 (0.0)	0 (0.0)	1 (6.3)	1 (12.5)	1 (6.3)	15 (11.8)
Day Shift (12 hours)	14 (60.9)	4 (57.1)	9 (37.5)	6 (54.5)	6 (75.0)	6 (42.9)	9 (56.3)	3 (37.5)	14 (87.4)	71 (55.9)
Night shift (12 hours)	7 (30.4)	2 (28.6)	3 (12.5)	4 (36.4)	2 (25.0)	8 (57.1)	6 (37.5)	1 (50.0)	1 (6.3)	37 (29.1)
Other hours	1 (4.3)	0 (0.0)	3 (12.5)	0 (0.0	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	4 (3.1)

*Three 'other staff' were included in overall shift types, these were one multitask attendant staff and two recreational staff

4.4.2 Staff to Resident Ratios

Respondents were asked to self-report the minimum, maximum and average number of residents they had direct responsibility for on their most recent shift; Table 4.4.2.1 outlines the nurse-to-resident ratios. A maximum resident caseload of 17.14 residents per shift (on average) was found across the nine LTRC settings. The average number of residents cared for by HCAs and RNs were also split and compared, with RNs averaging 2-3 more residents in average (HCAs = 12.32, RNs = 15.78) and minimum categories (HCAs = 11.47, RNs = 14.99).

Also examined within this questionnaire, was the differential staff-to-resident ratios between day and night staff. Eight-hour day staff were responsible for an average of 11.52 residents per shift, 12-hour day staff averaged 12.33 residents, while night staff had an average of 17.92 residents per shift through the duration of their last shift.

While interpreting this data, it should be noted that this represents self-report and also represents the total number of residents cared for rather than on an hourly basis. Thus, this may not accurately reflect the workload of staff.

Additionally, the number of occupied beds was taken as the resident count and not the actual numbers of beds available. Registered nurse to resident ratios, HCA to resident ratios and total staff to resident ratios are evident in Table 4.4.2.2. The data is presented across each shift i.e. day and night. The percentage skill mix for each of the pilot sites is also represented in the Table. While interpreting this data it should be noted that it is based on a month's data averaged. Data for Nursing Home 2 was not collected as this site had left the pilot study at stage.

Roster data from April 2022 was used to determine care hours available based on staffing hours scheduled to be worked. RUG IV categories for the Round 2 data were used as care hours required as this was collected in April/May 2022. This data is presented in Table 4.4.2.3.

Table: 4.4.2.1: Number of Residents Cared for by Nurses and Health Care Assistants Over a Shift (Mean, SD)

	NH 1 (n = 42)	NH 2 (n = 8)	NH 3 (n = 28)	NH 4 (n = 23)	NH 5 (n = 18)	NH 6 (n = 35)	NH 7 (n = 25)	NH 8 (n = 17)	NH 9 (n = 23)	Total Ave (n = 219)
Average of Cared for Residents per staff										
Minimum residents	7.17 (3.61)	18.50 (8.16)	14.50 (8.64)	13.26 (7.00)	17.30 (10.18)	14.59 (10.88)	7.79 (4.94)	14.67 (5.22)	17.16 (12.40)	13.03 (9.07)
Maximum residents	10.93 (6.06)	18.63 (7.93)	20.90 (10.20)	18.61 (8.86)	26.65 (6.75)	17.61 (10.02)	8.25 (4.81)	17.42 (5.53)	21.11 (12.86)	17.14 (9.97)
Average residents	8.50 (4.35)	18.50 (8.16)	17.37 (7.69)	15.59 (8.21)	17.10 (10.31)	15.77 (11.28)	7.83 (4.34)	15.65 (5.45)	15.20 (7.96)	13.84 (8.57)
Registered Nurses										
Minimum residents	6.41 (2.09)	23.50 (0.71)	16.00 (5.62)	10.92 (3.70)	22.44 (9.34)	15.81 (12.81)	12.75 (5.90)	14.56 (5.34)	25.50 (14.14)	14.99 (10.46)
Maximum residents	10.56 (5.26)	23.50 (0.71)	19.00 (3.35)	16.33 (8.33)	26.11 (8.08)	18.58 (12.15)	13.00 (6.09)	15.40 (5.48)	31.00 (13.26)	18.15 (10.62)
Average residents	8.50 (4.55)	23.50 (0.71)	17.00 (4.36)	13.63 (7.03)	23.56 (9.93)	17.23 (13.60)	11.75 (5.95)	15.00 (5.53)	24.44 (2.74)	15.75 (9.73)
Health Care Assistants										
Minimum residents	7.68 (4.32)	16.83 (8.93)	13.95 (9.64)	15.82 (8.88)	13.09 (9.15)	12.15 (4.86)	5.31 (1.25)	15.25 (5.60)	11.60 (7.24)	11.47 (7.62)
Maximum residents	11.20 (6.66)	17.00 (8.67)	20.86 (10.97)	21.09 (9.13)	27.09 (5.80)	15.93 (4.28)	5.88 (0.34)	19.38 (5.18)	15.29 (8.53)	16.18 (9.29)
Average residents	8.50 (4.28)	16.83 (8.93)	16.86 (8.05)	17.73 (9.18)	11.82 (7.41)	13.31 (5.14)	5.88 (0.34)	16.87 (5.67)	10.27 (4.57)	12.32 (7.23)
**Average residents cared for by shift type*										
Day Shift (8 hours)	4.00 (n/a)	6.00 (n/a)	14.63 (3.62)	11.20 (5.81)	10.00 (n/a)	9.00 (n/a)	5.00 (n/a)	13.00 (2.83)	9.00 (n/a)	11.52 (4.80)
Day Shift (12 Hours)	7.68 (3.91)	19.80 (8.35)	15.42 (7.14)	14.50 (8.11)	15.00 (9.80)	13.27 (4.76)	7.69 (4.19)	10.88 (0.35)	15.08 (7.84)	12.33 (7.03)
Night shift	11.00 (5.27)	21.50 (2.12)	24.67 (14.22)	21.42 (7.88)	25.83 (7.89)	20.50 (16.17)	8.30 (4.86)	21.86 (0.38)	24.00 (2.83)	17.91 (11.00)

*Certain averages were not available when there were no staff at a given nursing home working a certain shift
**Standard deviations were not available when the sample size was one.

Table 4.4.2.2 Staff to Resident Ratios Over Shift based on Roster Data

	NH1	NH2	NH3	NH4	NH 5	NH 6	NH 7	NH 8	NH 9
Average of Cared for Residents per RN staff as a Ratio									
Day shift	6.21	-	16	7.68	21.23	5	10.9	9.73	20.5
Night shift	12.78	-	32	13.67	28.7	10.83	16.5	22	26.9
Average of Cared for Residents per HCA staff									
Day Shift	5.47	-	5.8	5.57	6.86	9.29	2.54	7.86	15.06
Night Shift	9.85	-	12.8	14.74	15.5	15.12	5.15	14.96	22.0
Average of Cared for Residents per Total (RN and HCA) staff								4.31	
Day Shift	2.91	-	4.27	3.23	5.18	3.25	2.06	8.91	12.29
Night Shift	5.56	-	9.14	7.09	10.06	6.3	3.93		33.5
Average RN to HCA ratio									
Day Shift							4.29		
Night Shift	1.14	-	2.75	1.38	3.09	1.85	3.2	1.24	4.45
	1.30	-	2.5	0.93	1.85	1.39		1.47	1.00

Table 4.4.2.3 Care Hours Required versus Care Hours Available based on Roster Data.

	NH1	NH2**	NH3	NH4	NH5	NH6	NH7	NH8	NH9
RUG IV Care Hours required based on Round 2 data (April/May 22) ^ excluding CNM2	201.67	-	294.97	394.69	137.94	303.81	79.9	102.18	511.06
Care Hours available (based on roster data April 22) *	516.5	-	105.5	289	103.22	580	147.81	100.34	425.1
Difference in care hours	314.83	-	-189.47	-105.69	-34.72	276.19	67.91	-1.84	-85.96

^Round 2 data was chosen as it was collected in April 2022 for which we have the most accurate roster data. Note the above is based on roster data provided with hours worked by staff added.
*Week that RUG IV Round 2 data was collected
** Left pilot study, data not available on rosters

4.4.3 Nursing Work Index

The Nursing Work Index (NWI) (Lake 2002) was employed to assess characteristics of the nursing work environment. The NWI is composed of 31 items across five subscales: Nurse Participation in LTRC Affairs; Nursing Foundations for Quality of Care; Nurse Manager Ability, Leadership, and Support of Nurses; Staffing and Resource Adequacy and Collegial Nurse-Doctor Relations. Each item was scored on a scale of 1 to 4 where 1 = strongly disagree, 2 = disagree, 3 = agree and 4 = strongly agree. A mean for each subscale was calculated to facilitate comparisons across the subscales. Higher scores were indicative of a positive work environment and a mean of 2.5 is considered a neutral midpoint on the 4-point scale (Lake, 2002).

The mean of each subscale can be seen in Table 4.4.3.1 for all nine LTRC settings. Apart from Staffing and Resource Adequacy, scoring a mean of 2.47, the remainder sub-scales each scored from 2.74 up to 2.99. In the category Staffing and Resource Adequacy, LTRC settings 3,4,5,6 and 8 each scored below the neutral mean of 2.5 indicating a lower rating on this variable.

Table: 4.4.3.1: Nursing Work Index

NWI, mean (SD)	NH 1 (n = 29)	NH 2 (n = 4)	NH 3 (n = 7)	NH 4 (n = 18)	NH 5 (n = 12)	NH 6 (n = 28)	NH 7 (n = 13)	NH 8 (n = 12)	NH 9 (n = 15)	Overall (n = 138)
Staffing and Resource Adequacy	2.58 (0.68)	2.88 (1.05)	2.46 (0.70)	2.22 (0.70)	2.15 (0.61)	2.19 (0.57)	3.15 (0.85)	2.44 (0.68)	2.67 (0.69)	2.47 (0.73)
Collegial Nurse-Doctor Relations	3.17 (0.41)	2.75 (0.74)	2.80 (0.73)	2.35 (0.77)	3.08 (0.29)	2.80 (0.60)	3.15 (0.57)	3.23 (0.48)	3.40 (0.44)	2.99 (0.61)
Nurse Manager Ability, Leadership, and Support	2.83 (0.58)	3.05 (0.66)	2.84 (0.89)	2.69 (0.62)	2.42 (0.75)	2.62 (0.61)	3.05 (0.62)	3.26 (0.67)	3.25 (0.46)	2.85 (0.66)
Nurse Participation in Hospital Affairs	2.80 (0.47)	2.92 (0.81)	2.74 (0.70)	2.50 (0.62)	2.57 (0.45)	2.47 (0.53)	2.94 (0.65)	2.96 (0.61)	3.13 (0.42)	2.74 (0.58)
Nursing Foundations for Quality of Care	2.98 (0.43)	2.95 (0.54)	2.88 (0.54)	2.78 (0.46)	2.84 (0.35)	2.83 (0.45)	3.08 (0.55)	3.11 (0.44)	3.25 (0.84)	2.96 (0.52)

4.4.4 Time Available and Quality of Care

Single item measures were used to assess staff perceptions (RNs and HCAs) of time available to deliver care, additional time required to deliver care and the quality of care delivered on the last shift worked.

Staff were asked to rate the time available to them to deliver care on their last shift on a 3-point scale ranging from “less time than usual” to “more time than usual.” The majority of staff (71.6%) reported that they had “about the same time as usual” available to them to provide care on their last shift while 20.6% of staff reported having “less time than usual” to provide care to residents on their last shift.

Staff were asked to make an approximation regarding how much more time they required in order to provide necessary care to residents as per their nursing care plan on a 6-point scale ranging from “No more time needed” to “Greater than 60 minutes.” 80.7% of staff reported that they required additional time to provide resident care across all LTRC settings. The majority of staff (46.1%) reported that they required an additional 15 to 30 minutes per shift to provide the quality of care as detailed in their nursing care plans. Responses to these items are detailed in Table 4.4.4.1 by each individual Nursing Home and by an overall total.

Nursing staff perceptions of the quality of care delivered on their most recent shift are detailed in Table 4.4.4.1. Staff were asked to rate the quality of care provided on their last shift on a 4-point scale ranging from “poor” to “excellent.” Baseline measures show that the majority of staff across all LTRCs rated the quality of care provided on their last shift as either “good” (42.9%) or “excellent” (36.4%).

A single-item measure asked staff to give the LTRCs in which they work an overall grade for resident safety on a 5-point scale ranging from “failing” to “excellent.” The majority of staff gave their LTRC setting a grade of “very good” (44.5%) for resident safety. A minority of staff (7.7%) graded their LTRC as either “failing” or “poor” in its provision of resident safety.

Staff were asked to reflect on the quality of resident care provided in the last 6 months in their department and state whether it had “deteriorated,” “remained the same,” or “improved”. The majority (46.3%) of staff stated that the quality of care provided in their Nursing Home “remained the same” while 16.0% of staff stated that the quality of care provided had “deteriorated” with 37.7% of staff stating that the quality of care provided in their LTRC setting had “improved”.

Table: 4.4.4.1: Quality of care

Quality of care, n (%)	NH 1 (n = 45)	NH 2 (n = 9)	NH 3 (n = 30)	NH 4 (n = 26)	NH 5 (n = 18)	NH 6 (n = 44)	NH 7 (n = 26)	NH 8 (n = 18)	NH 9 (n = 27)	Total (n = 243)
Time available to deliver care										
Less time than usual	6 (13.3)	2 (22.2)	8 (27.6)	7 (26.9)	8 (40.0)	16 (36.4)	0 (0.0)	3 (16.7)	0 (0.0)	50 (20.6)
Same amount of time	33 (73.3)	6 (66.7)	19 (65.5)	19 (73.1)	11 (55.0)	25 (56.8)	23 (92.0)	14 (77.8)	24 (88.9)	174 (71.6)
More time than usual	6 (13.3)	1 (11.1)	2 (6.9)	0 (0.0)	1 (5.0)	3 (6.8)	2 (8.0)	1 (5.6)	3 (11.1)	19 (7.8)
Additional time needed										
No more time needed	8 (18.2)	4 (44.4)	5 (15.6)	3 (11.5)	3 (15.0)	9 (20.9)	13 (54.2)	1 (5.6)	1 (3.7)	47 (19.3)
Less than 15 minutes	2 (4.5)	1 (11.1)	4 (12.5)	2 (7.7)	2 (10.0)	7 (16.3)	2 (8.3)	7 (38.9)	4 (14.8)	31 (12.8)
15 to 30 minutes	27 (61.4)	4 (44.4)	15 (46.9)	14 (53.8)	9 (45.0)	12 (27.9)	8 (33.3)	9 (50.0)	14 (51.9)	112 (46.1)
31 to 45 minutes	5 (11.4)	0 (0.0)	3 (9.4)	0 (0.0)	1 (5.0)	2 (4.7)	1 (4.2)	0 (0.0)	2 (7.4)	14 (5.8)
46 to 60 minutes	0 (0.0)	0 (0.0)	2 (6.3)	3 (11.5)	1 (5.0)	8 (18.6)	0 (0.0)	0 (0.0)	1 (3.7)	15 (6.2)
Greater than 60 minutes	2 (4.5)	0 (0.0)	3 (9.4)	4 (15.4)	4 (20.0)	5 (11.6)	0 (0.0)	1 (5.6)	5 (18.5)	24 (9.9)
Quality of care										
Poor	1 (2.2)	0 (0.0)	2 (6.3)	1 (3.8)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (3.7)	5 (2.0)
Fair	8 (17.4)	2 (22.2)	12 (37.5)	6 (23.1)	7 (35.0)	8 (18.2)	1 (4.0)	0 (0.0)	2 (7.4)	46 (18.6)
Good	24 (52.2)	2 (22.2)	8 (25.0)	13 (50.0)	7 (35.0)	23 (52.3)	5 (20.0)	8 (44.4)	16 (59.3)	106 (42.9)
Excellent	13 (28.3)	5 (55.6)	10 (31.3)	6 (23.1)	6 (30.0)	13 (29.5)	19 (76.0)	10 (55.6)	8 (29.6)	90 (36.4)
Grade of patient safety										
Failing	0 (0.0)	0 (0.0)	2 (6.3)	1 (3.8)	0 (0.0)	1 (2.3)	0 (0.0)	0 (0.0)	0 (0.0)	4 (1.6)
Poor	1 (2.2)	0 (0.0)	8 (25.0)	2 (7.7)	0 (0.0)	1 (2.3)	0 (0.0)	2 (11.1)	1 (3.7)	15 (6.1)
Acceptable	12 (26.1)	1 (11.1)	7 (21.9)	7 (26.9)	11 (55.0)	13 (29.5)	3 (12.0)	1 (5.6)	2 (7.4)	57 (23.1)
Very good	23 (50.0)	5 (55.6)	8 (25.0)	16 (61.5)	8 (40.0)	20 (45.5)	6 (24.0)	7 (38.9)	17 (63.0)	110 (44.5)
Excellent	10 (21.7)	3 (33.3)	7 (21.9)	0 (0.0)	1 (5.0)	9 (20.5)	16 (64.0)	8 (44.4)	7 (25.9)	61 (24.7)
Quality of care, last 6 months										
Deteriorated	2 (4.4)	1 (11.1)	14 (43.8)	5 (19.2)	7 (35.0)	6 (13.6)	2 (8.3)	1 (5.6)	1 (3.8)	39 (16.0)
Remained the same	22 (48.9)	6 (66.7)	7 (21.9)	15 (57.7)	10 (50.0)	22 (50.0)	9 (37.5)	14 (77.8)	8 (30.8)	113 (46.3)
Improved	21 (46.7)	2 (22.2)	11 (34.4)	6 (23.1)	3 (15.0)	16 (36.4)	13 (54.2)	3 (16.7)	17 (65.4)	92 (37.7)

4.4.5 Care Left Undone and Delayed

The descriptive statistics of care left undone events (CLUEs) are care delayed (CD) are derived from respondents with registered nurse qualifications and health care assistants. Nurses were asked to identify care activities which had been necessary but left undone and/or delayed on their most recent shift due to lack of time.

The mean number of items of care left undone and the number of shifts where at least one item of care was left undone is reported in Table 4.4.5.1 at a total level and across each LTRC setting. Baseline measurements showed that 52.8% of nurses reported that at least one item of care was left undone due to a lack of time during their last 12-hour shift. Overall, baseline measurements revealed that, on average, 2.28 necessary care activities were left undone per shift due to a lack of time to complete these items of care.

Across all LTRC settings, the items of care most frequently reported as left undone were comforting residents (14.2%), and educating residents and their families (9.8%).

The mean number of necessary care activities which were delayed per shift and the number of shifts where at least one care activity was delayed are displayed in Table 3.4.5.1. 83.8% of staff reported that the provision of at least one item of necessary care was delayed during their last shift. Baseline reports by nurses revealed that on average a total of 6.07 care tasks per shift were delayed in their provision due to a lack of time available.

Across all nine LTRC settings, baseline measurements revealed that the items of care most frequently reported by nurses as delayed, but not left undone, during their last shift were: patient surveillance (23.1%), clinical documentation (22.4%), monitoring nutrition/hydration (16.9%),

A single item also assessed if staff meal breaks had been missed or delayed due to lack of time. The majority of staff reported having missed or delayed meal breaks on their most recent shift (17.4% and 39.1% respectively). 43.5% reported neither a missed or delayed meal break on their last shift. A full breakdown of missed and delayed meal breaks experienced by nursing staff in during their most recent shift can be found in Table 4.4.5.2.

Table: 4.4.5.1: Care left undone and care delayed overall total

CLUEs	NH 1 (n = 30)	NH 2 (n = 3)	NH 3 (n = 9)	NH 4 (n = 20)	NH 5 (n = 17)	NH 6 (n = 29)	NH 7 (n = 11)	NH 8 (n = 14)	NH 9 (n = 16)	Total (n = 149)
Number of activities undone, mean (SD)	2.29 (3.17)	2.50 (2.89)	3.33 (5.43)	2.70 (2.96)	3.50 (3.09)	2.61 (3.42)	1.00 (2.09)	2.15 (3.34)	0.88 (1.36)	2.28 (3.10)
Shifts with at least one item undone, n (%)	14 (45.2)	2 (50.0)	3 (50.0)	14 (70.0)	9 (75.0)	17 (60.7)	4 (33.3)	6 (46.2)	6 (37.5)	75 (52.8)
Number of activities delayed, mean (SD)	7.26 (7.01)	3.50 (2.38)	7.33 (7.45)	5.95 (3.75)	6.58 (4.66)	6.89 (5.89)	3.92 (5.85)	4.69 (3.95)	5.00 (5.51)	6.07 (5.61)
Shifts with at least one item delayed, n (%)	26 (83.9)	3 (75.0)	4 (66.7)	18 (90.0)	11 (91.7)	25 (89.3)	8 (66.7)	11 (84.6)	13 (81.3)	119 (83.8)

*Where standard deviations are unavailable, there was only a sample size of one

Table 4.4.5.2: Missed and/or Delayed meal breaks

	NH 1 (n = 29)	NH 2 (n = 4)	NH 3 (n = 6)	NH 4 (n = 20)	NH 5 (n = 12)	NH 6 (n = 27)	NH 7 (n = 12)	NH 8 (n = 13)	NH 9 (n = 16)	Total (n = 139)
Meal break missed, n (%)	0 (0.0)	1 (25.0)	2 (40.0)	1 (5.0)	3 (25.0)	7 (25.9)	3 (25.0)	2 (15.4)	5 (31.3)	24 (17.4)
Meal break delayed, n (%)	10 (34.5)	2 (50.0)	1 (20.0)	9 (45.0)	9 (75.0)	8 (29.6)	2 (16.7)	4 (30.8)	9 (56.3)	54 (39.1)
Neither missed or delayed, n (%)	19 (65.5)	1 (25.0)	2 (40.0)	10 (50.0)	0 (0.0)	12 (44.4)	7 (53.3)	7 (53.8)	2 (12.5)	60 (43.5)

4.4.6 Job Satisfaction and Intention to Leave

The respondents' level of job satisfaction by LTRC setting, ranging from very dissatisfied to very satisfied, is displayed in Table 3.4.6.1. Overall, approximately 80% of respondents reported that they were satisfied or very satisfied in their job. However, there was variability according to the LTRC setting surveyed.

Respondents' intention to leave is reported in Table 4.4.6.1. Most respondents reported that they would probably/definitely not leave their current employment in the future (68.1%) with a third reporting that they would probably or definitely leave. Most respondents would recommend their unit to a colleague, with 36.2% reporting "probably yes" and 42.7% reporting "definitely yes".

Overall, the majority (79.4%) of respondents would definitely or probably recommend their department to family or friends should they require LTRC.

Table 4.4.6.1: Job satisfaction and intention to leave overall total

Job Satisfaction and Intention to leave	NH 1 (n = 45)	NH 2 (n = 9)	NH 3 (n = 33)	NH 4 (n = 27)	NH 5 (n = 20)	NH 6 (n = 44)	NH 7 (n = 26)	NH 8 (n = 18)	NH 9 (n = 27)	Total (n = 247)
Satisfaction with current job										
Very dissatisfied	0 (0.0)	1 (11.1)	2 (6.3)	0 (0.0)	0 (0.0)	3 (6.8)	0 (0.0)	0 (0.0)	1 (3.7)	7 (2.8)
Dissatisfied	2 (4.4)	0 (0.0)	11 (34.4)	8 (29.6)	11 (55.0)	9 (20.5)	1 (4.0)	1 (5.6)	1 (3.7)	44 (17.8)
Satisfied	29 (64.4)	1 (11.1)	10 (31.3)	16 (59.3)	7 (35.0)	25 (56.8)	9 (36.0)	6 (33.3)	18 (66.7)	121 (49.0)
Very satisfied	14 (31.1)	7 (77.8)	9 (28.1)	3 (11.1)	2 (10.0)	7 (15.9)	15 (60.0)	11 (61.1)	7 (25.9)	75 (30.4)
Satisfaction with being a nurse										
Very dissatisfied	0 (0.0)	1 (11.1)	1 (3.3)	1 (3.7)	0 (0.0)	1 (2.3)	0 (0.0)	0 (0.0)	0 (0.0)	4 (1.6)
Dissatisfied	1 (2.2)	0 (0.0)	6 (20.0)	3 (11.1)	2 (10.0)	1 (2.3)	1 (4.0)	1 (5.6)	1 (3.7)	16 (6.5)
Satisfied	22 (48.9)	1 (11.1)	12 (40.0)	11 (40.7)	13 (65.0)	26 (59.1)	11 (44.0)	7 (38.9)	13 (48.1)	116 (47.3)
Very satisfied	22 (48.9)	7 (77.8)	11 (36.7)	12 (44.4)	5 (25.0)	16 (36.4)	13 (52.0)	10 (55.6)	13 (48.1)	109 (44.5)
Recommend unit to colleague										
Definitely no	0 (0.0)	0 (0.0)	7 (22.6)	2 (7.4)	0 (0.0)	3 (6.8)	0 (0.0)	0 (0.0)	0 (0.0)	12 (4.9)
Probably no	5 (11.1)	1 (11.1)	8 (25.8)	5 (18.5)	8 (40.0)	9 (20.5)	2 (8.0)	1 (5.6)	1 (3.7)	40 (16.3)
Probably yes	17 (37.8)	1 (11.1)	9 (29.0)	14 (51.9)	8 (40.0)	10 (22.7)	7 (28.0)	6 (33.3)	17 (63.0)	89 (36.2)
Definitely yes	23 (51.1)	7 (77.8)	7 (22.6)	6 (22.2)	4 (20.0)	22 (50.0)	16 (64.0)	11 (61.1)	9 (33.3)	105 (42.7)
Recommend unit to family/friends										
Definitely no	1 (2.3)	0 (0.0)	11 (37.9)	1 (3.7)	7 (35.0)	4 (9.1)	0 (0.0)	0 (0.0)	0 (0.0)	24 (9.9)
Probably no	5 (11.6)	1 (11.1)	6 (20.7)	3 (11.1)	2 (10.0)	6 (13.6)	1 (4.0)	1 (5.6)	1 (3.7)	26 (10.7)
Probably yes	13 (30.2)	0 (0.0)	6 (20.7)	16 (59.3)	5 (25.0)	19 (43.2)	4 (16.0)	5 (27.8)	13 (48.1)	81 (33.5)
Definitely yes	24 (55.8)	8 (88.9)	6 (20.7)	7 (25.9)	6 (30.0)	15 (34.1)	20 (80.0)	12 (66.7)	13 (48.1)	111 (45.9)
Feelings about future in hospital										
Definitely will leave	0 (0.0)	1 (11.1)	5 (16.1)	3 (11.1)	7 (35.0)	1 (2.3)	2 (8.3)	0 (0.0)	2 (7.4)	21 (8.6)
Probably will leave	8 (17.8)	1 (11.1)	12 (38.7)	4 (14.8)	3 (15.0)	16 (36.4)	4 (16.7)	1 (5.9)	8 (29.6)	57 (23.4)
Probably will not leave	22 (48.9)	2 (22.2)	7 (22.6)	13 (48.1)	7 (35.0)	16 (36.4)	13 (54.2)	8 (47.1)	11 (40.7)	99 (40.6)
Definitely will not leave	15 (33.3)	5 (55.6)	7 (22.6)	7 (25.9)	3 (15.0)	11 (25.0)	5 (20.8)	8 (47.1)	6 (22.2)	67 (27.5)
Leave due to job dissatisfaction (yes)	6 (13.3)	3 (33.3)	15 (51.7)	10 (37.0)	8 (57.1)	12 (27.3)	5 (20.0)	4 (23.5)	5 (19.2)	68 (28.6)
Leaving for										
Nursing in another hospital	4 (66.7)	0 (0.0)	5 (35.7)	1 (11.1)	6 (66.7)	3 (33.3)	3 (75.0)	3 (60.9)	2 (40.0)	27 (42.9)
Nursing, but not in a hospital	1 (16.7)	2 (100.0)	1 (7.1)	4 (44.4)	0 (0.0)	3 (33.3)	0 (0.0)	0 (0.0)	1 (20.0)	12 (19.0)
Non-Nursing	1 (16.7)	0 (0.0)	8 (57.1)	4 (44.4)	3 (33.3)	3 (33.3)	1 (25.0)	2 (40.0	2 (40.0)	24 (38.1)

4.4.7 Burnout

The Maslach Burnout Inventory (MBI) (Maslach et al., 1996) was used to measure burnout in staff. The MBI-Human Services Survey Medical Personnel (MBI-HSS MP) is composed of 22 items across three subscales: emotional exhaustion; depersonalization; lack of personal accomplishment. The emotional exhaustion subscale addresses feelings of being emotionally overextended by work. Depersonalization subscale assesses an impersonal response to recipients of care and personal accomplishment subscale measures feelings of competence and achievement in one's work. Items are measured on a 7-point scale of 0 to 6 (never = 0 to every day = 6). High scores in emotional exhaustion and depersonalization and low scores in personal accomplishment indicate burnout.

Overall, staff had low average scores in emotional exhaustion (2.07) and depersonalisation (0.89) and high scores in personal accomplishment (4.44).

Table 4.4.7.1: Maslach burnout inventory scale

0	1	2	3	4	5	6
Never	A few times a year or less	Once a month or less	A few times a month	Once a week	A few times a week	Everyday

Table: 4.4.7.2: Maslach burnout inventory scores overall

MBI	NH 1	NH 2	NH 3	NH 4	NH 5	NH 6	NH 7	NH 8	NH 9	Total
mean, (SD)	(n = 45)	(n = 8)	(n = 27)	(n = 27)	(n = 20)	(n = 43)	(n = 25)	(n = 19)	(n = 25)	(n = 238)
Emotional Exhaustion	1.98 (1.25)	1.39 (1.52)	2.70 (1.72)	2.58 (1.46)	2.21 (1.45)	2.55 (1.34)	1.27 (1.23)	1.52 (1.31)	1.53 (1.31)	2.07 (1.45)
Depersonalisation	0.86 (0.80)	0.50 (0.68)	1.46 (1.31)	0.70 (0.77)	1.81 (2.04)	0.94 (1.06)	0.66 (1.02)	0.46 (0.83)	0.46 (0.67)	0.90 (1.13)
Personal Accomplishment	4.51 (0.96)	5.30 (1.03)	4.03 (1.57)	4.37 (0.90)	4.07 (0.93)	4.46 (1.04)	4.58 (1.33)	5.01 (0.89)	4.25 (1.45)	4.44 (1.17)

4.4.8 Prevalence of Violence and Aggression

The Conflict Scale was developed by Straus (1979) and is most commonly used in family violence research. The scale has been adapted to suit the LTRC setting for the purpose of this study. Staff were asked to rate how often events occurred in the last three months, ranging from never to more than 10 times. This is a 10-item survey divided into three separate elements; physical, psychological and conflict.

4.4.8.1 Physical prevalence of violence and aggression

The physical mistreatment of staff is displayed below in Table 4.4.8.1. Overall, more than half of respondents had a resident throw something at them (52.3%) and has been pushed, grabbed, shoved or pinched by a resident (63.2%) at least once. 62.9% of all respondents have also been slapped or hit at least once in the last 3 months. Furthermore, 55.8% of all respondents have been kicked or hit with their fist.

4.4.8.2 Psychological violence and aggression experienced by staff

The Psychological Prevalence of Violence and Aggression is reported in Table 4.4.8.2. In total, 74.6% of respondents have been sworn at or insulted at least once in the last 3 months. 84.7% of respondents have been shouted at in anger. 56.5% of staff reported residents threatening to hit or throw something at them in the last 3 months. LTRC setting 4 reported the highest level of psychological mistreatment while LTRC settings 7, 8 and 9 reported the lowest levels of psychological mistreatment.

4.4.8.3 Conflict experienced by staff

Table 3.4.8.3 illustrates the level of conflict experienced by respondents. Altogether, 65.5% of respondents experienced residents arguing with them. The majority (52.9%) of respondents reported residents' complaints about care they had received. Additionally, 31.2% of respondents report experiencing conflict with a resident's visitors at least once in the last 3 months.

4.4.8.4 Overall mistreatment experienced by staff

Overall, 63.2% of staff reported that they experienced a physical assault, 84.7% psychological/verbal mistreatment and 55.5% conflict with residents.

While a significant proportion of staff reported experiencing PVA, results should be interpreted with caution and the specific setting context should be noted. As a significant proportion of residents within LTRC settings experience dementia and behavioural and psychological symptoms of dementia (or BPSD), incidents may relate to this. Additionally, it is not known as to how many of these incidents resulted in a formal report and follow through to the Health and Safety Authority. Of the 7,477 inspections made into violent and aggression

complaints by the HSA in 2021, 446 of these were in health and social care settings (HSA, 2022).

Table 4.4.8.1 Physical Prevalence of Violence and Aggression

Physical	NH 1 (n = 45)	NH 2 (n = 9)	NH 3 (n = 32)	NH 4 (n = 27)	NH 5 (n = 20)	NH 6 (n = 44)	NH 7 (n = 25)	NH 8 (n = 19)	NH 9 (n = 26)	Total (n = 247)
Resident thrown something at you										
Never	19 (44.2)	2 (22.2)	17 (53.1)	9 (33.3)	10 (50.0)	12 (27.3)	15 (60.0)	17 (89.5)	17 (65.4)	118 (47.8)
Once	11 (42.4)	1 (11.1)	2 (6.3)	5 (18.5)	2 (10.0)	7 (15.9)	2 (8.0)	1 (5.3)	2 (7.7)	33 (13.4)
2-10 times	12 (26.7)	4 (44.4)	8 (25.0)	11 (40.7)	8 (40.0)	22 (50.0)	7 (28.0)	1 (5.3)	7 (26.9)	80 (32.4)
>10 times	3 (6.7)	2 (22.2)	5 (15.6)	2 (7.4)	0 (0.0)	3 (6.8)	1 (4.0)	0 (0.0)	0 (0.0)	16 (6.5)
Resident slapped or hit you										
Never	20 (44.4)	2 (22.2)	11 (34.4)	12 (44.4)	9 (45.0)	6 (13.6)	7 (28.0)	11 (57.9)	14 (52.9)	92 (37.1)
Once	9 (20.0)	0 (0.0)	2 (6.3)	3 (11.1)	3 (15.0)	3 (6.8)	6 (24.0)	1 (5.3)	5 (18.5)	32 (12.9)
2-10 times	12 (26.7)	6 (66.7)	13 (40.6)	10 (37.0)	3 (15.0)	22 (50.0)	9 (36.0)	6 (31.6)	7 (25.9)	88 (35.5)
>10 times	4 (8.9)	1 (11.1)	6 (18.8)	2 (7.4)	5 (25.0)	13 (29.5)	3 (12.0)	1 (5.3)	1 (3.7)	36 (14.5)
Resident kicked you or hit you with their fist										
Never	22 (48.9)	2 (22.2)	11 (34.4)	14 (51.9)	10 (50.0)	9 (20.5)	10 (40.0)	13 (68.4)	18 (69.2)	109 (44.1)
Once	11 (24.4)	1 (11.1)	5 (15.6)	5 (18.5)	2 (10.0)	6 (13.6)	5 (20.0)	3 (15.8)	1 (3.8)	39 (15.8)
2-10 times	10 (22.2)	4 (44.4)	10 (31.3)	8 (29.6)	3 (15.0)	20 (45.5)	8 (32.0)	2 (10.5)	6 (23.1)	71 (28.7)
>10 times	2 (4.4)	2 (22.2)	6 (18.8)	0 (0.0)	5 (25.0)	9 (20.5)	2 (8.0)	1 (5.3)	1 (3.8)	28 (11.3)
Resident pushed, grabbed, shoved or pinched you										
Never	18 (40.0)	2 (22.2)	10 (31.3)	8 (29.6)	9 (45.0)	7 (15.9)	12 (48.0)	11 (57.9)	14 (53.8)	91 (36.8)
Once	8 (17.8)	1 (11.1)	3 (9.4)	7 (25.9)	4 (20.0)	6 (13.6)	1 (4.0)	4 (21.1)	4 (14.4)	38 (15.4)
2-10 times	14 (31.1)	5 (55.6)	8 (25.0)	8 (29.6)	6 (30.0)	19 (43.2)	9 (36.0)	1 (5.3)	6 (23.1)	76 (30.8)
>10 times	5 (11.1)	1 (11.1)	11 (34.4)	4 (14.8)	1 (5.0)	12 (27.3	3 (12.0)	3 (15.8)	2 (7.7)	42 (17.0)

Table 4.4.8.2 Psychological Prevalence of Violence and Aggression

Psychological/Verbal	NH 1 (n = 45)	NH 2 (n = 9)	NH 3 (n = 32)	NH 4 (n = 27)	NH 5 (n = 20)	NH 6 (n = 44)	NH 7 (n = 25)	NH 8 (n = 19)	NH 9 (n = 27)	Total (n = 248)
Resident insulted or sworn at you										
Never	6 (13.3)	1 (11.1)	10 (31.3)	2 (7.4)	9 (45.0)	6 (13.6)	12 (48.0)	4 (21.1)	13 (48.1)	63 (25.4)
Once	16 (35.6)	1 (11.1)	2 (6.3)	2 (7.4)	4 (20.0)	4 (9.1)	2 (8.0)	0 (0.0)	4 (14.8)	35 (14.1)
2-10 times	8 (17.8)	6 (66.7)	8 (28.1)	9 (33.3)	3 (15.0)	16 (36.4)	9 (36.0)	9 (47.4)	5 (18.5)	74 (29.8)
>10 times	15 (33.3)	1 (11.1)	11 (34.4)	14 (51.9)	4 (20.0)	18 (40.9)	2 (8.0)	6 (31.6)	5 (18.5)	76 (30.6)
Resident shouted at you in anger										
Never	4 (8.9)	2 (22.2)	8 (25.0)	1 (3.7)	4 (20.0)	6 (13.6)	7 (28.0)	0 (0.0)	6 (22.2)	38 (15.3)
Once	16 (35.6)	1 (11.1)	2 (6.3)	4 (14.8)	6 (30.0)	6 (13.6)	7 (28.0)	2 (10.5)	7 (25.9)	51 (20.6)
2-10 times	10 (22.2)	4 (44.4)	11 (34.4)	7 (25.9)	5 (25.0)	20 (45.5)	8 (32.0)	11 (57.9)	8 (29.6)	84 (33.9)
>10 times	15 (33.3)	2 (22.2)	11 (34.4)	15 (55.6)	5 (25.0)	12 (27.3)	3 (12.0)	6 (31.6)	6 (22.2)	75 (30.2)
Resident threatened to hit or throw something at you										
Never	22 (50.0)	1 (11.1)	11 (34.4)	6 (22.2)	10 (50.0)	12 (27.3)	16 (64.0)	13 (68.4)	16 (61.5)	107 (43.5)
Once	6 (13.6)	1 (11.1)	3 (9.4)	5 (18.5)	4 (20.0)	3 (6.8)	2 (8.0)	1 (5.3)	0 (0.0)	25 (10.2)
2-10 times	12 (27.3)	6 (66.7)	8 (25.0)	8 (29.6)	5 (25.0)	20 (45.5)	4 (16.0)	1 (5.3)	7 (26.9)	71 (28.9)
>10 times	4 (9.1)	1 (11.1)	10 (31.3)	8 (29.6)	1 (5.0)	9 (20.5)	3 (12.0	4 (21.1)	3 (11.5)	43 (17.5)

Table 4.4.8.3 Conflict Reported within Prevalence of Violence and Aggression

Conflict	NH 1 (n = 45)	NH 2 (n = 9)	NH 3 (n = 32)	NH 4 (n = 27)	NH 5 (n = 20)	NH 6 (n = 44)	NH 7 (n = 25)	NH 8 (n = 19)	NH 9 (n = 26)	Total (n = 247)
Resident argued with you about waiting to be seen										
Never	18 (40.0)	3 (37.5)	11 (34.4)	8 (29.6)	11 (55.0)	17 (38.6)	19 (76.0)	13 (68.4)	10 (37.0)	110 (44.5)
Once	9 (20.0)	5 (50.0)	5 (15.6)	7 (25.9)	3 (15.0)	2 (4.5)	1 (4.0)	1 (5.3)	6 (22.2)	38 (15.4)
2-10 times	14 (31.1)	1 (12.5)	9 (28.1)	5 (18.5)	5 (25.0	17 (38.6)	3 (12.0)	3 (15.8)	8 (29.6)	65 (26.3)
>10 times	4 (8.9)	0 (0.0)	7 (21.9)	7 (25.9)	1 (5.0)	8 (18.2)	2 (8.0)	2 (10.5)	3 (11.1)	34 (13.8)
Resident complained to you about their care										
Never	23 (51.1)	3 (37.5)	13 (41.9)	7 (25.9)	4 (28.6)	21 (47.7)	18 (75.0)	13 (72.2)	10 (37.0)	112 (47.1)
Once	9 (20.0	2 (25.0	1 (3.2)	8 (29.6)	7 (50.0)	9 (20.5)	2 (8.3)	1 (5.6)	5 (18.5)	44 (18.5)
2-10 times	10 (22.2)	2 (25.0)	10 (32.3)	9 (33.3)	3 (21.4)	10 (22.7)	2 (8.3)	3 (16.7)	10 (37.0)	59 (24.8)
>10 times	3 (6.7)	1 (12.5)	7 (22.6)	3 (11.1)	0 (0.0)	4 (9.1)	2 (8.3)	1 (5.6)	2 (7.4)	23 (9.7)
Experienced conflict with a Resident's visitor										
Never	35 (77.8)	6 (66.7)	22.2 (68.8)	15 (55.6)	11 (55.0)	27 (61.4)	21 (84.0)	15 (78.9)	18 (69.2)	170 (68.8)
Once	6 (13.3)	2 (22.2)	3 (9.4)	9 (33.3)	2 (10.0)	6 (13.6)	2 (8.0)	0 (0.0)	15.4 (4)	34 (13.8)
2-10 times	2 (4.4)	1 (11.1)	5 (15.6)	2 (7.4)	0 (0.0)	7 (15.9)	1 (4.0)	2 (10.5)	3 (11.5)	23 (9.3)
>10 times	2 (4.4)	0 (0.0	2 (6.3)	1 (3.7)	7 (35.0)	4 (9.1)	1 (4.0)	2 (10.5)	1 (3.8)	20 (8.1)

Table: 4.4.8.4 Overall Mistreatment Experienced by staff

	NH 1 (n = 45)	NH 2 (n = 9)	NH 3 (n = 32)	NH 4 (n = 27)	NH 5 (n = 20)	NH 6 (n = 44)	NH 7 (n = 25)	NH 8 (n = 19)	NH 9 (n = 26)	Total (n = 247)
Physical assault	36 (80.0)	8 (88.9)	25 (78.1)	21 (77.8)	14 (70.0)	41 (93.2)	19 (76.0)	10 (52.6)	15 (57.7)	189 (76.5)
Verbal mistreatment	41 (93.2)	9 (100.0)	24 (75.0)	26 (96.3)	16 (80.0)	43 (97.7)	20 (80.0)	19 (100.0)	21 (80.8)	219 (89.0)
Conflict	33 (73.3)	7 (87.5)	22 (71.0)	22 (81.5)	13 (92.9)	32 (72.7)	8 (33.3)	8 (44.4)	20 (74.1)	165 (69.3)

Table 4.4.8.5 Staff Outcomes and staffing requirements based on RUG IV data

				No adjustment			20% or >				5% or less
Staff Outcome	**NH1**	**NH6**	**NH7**	**Overall**	**NH3**	**NH5**	**Overall**	**NH4**	**NH8**	**NH9**	**Overall**
NWI											
Staffing and Resource Adequacy	2.58	2.19	3.15	2.64	2.46	2.15	2.31	2.22	2.44	2.67	3.00
Collegial Nurse-Doctor Relations	3.17	2.80	3.15	3.04	2.80	3.08	2.94	2.35	3.23	3.40	2.99
Nurse Manager Ability, Leadership, and Support	2.83	2.62	3.05	2.83	2.84	2.42	2.63	2.69	3.26	3.25	3.06
Nurse Participation in NH Affairs	2.80	2.47	2.94	2.74	2.74	2.57	2.66	2.50	2.96	3.13	2.86
Nursing Foundations for Quality of Care	2.98	2.83	3.08	2.96	2.88	2.84	2.86	2.78	3.11	3.25	3.04

*Higher scores on Emotional Exhaustion and Depersonalisation and lower scores on Personal Accomplishment indicate burnout.
^based on RUG IV data from Round 3.
Note NH2 has left the pilot study and hence is missing from the above table.

4.4.9 Levels of Training and Support during the Covid-19 pandemic

Staff were asked questions about the level of training and support they felt when adjusting to work during the COVID-19 pandemic. Questions concerned receiving adequate training, measures taken for infection control and emotional support. The scale was adapted from a validated scale on training, protection and support from a SARS sub-scale which was modified for Covid-19 (Maunder et al., 2006). Nine questions were rated on a Likert scale from 1 (Strongly Disagree) to 4 (Strongly Agree). Mean scores for the Training and Support during the Covid-19 pandemic were above the midpoint of 2, at 3.1. Table 4.4.9.1 provides details on individual mean scores across each of the LTRC settings.

4.4.10 Staff experiences of stress/anxiety during the COVID-19 pandemic

To examine staff experiences with stress and anxiety during the pandemic, the COVID-19 Preparedness Scale was included in the survey. The scale comprises of 13 questions, focused on perceived risk, stress and current fear in relation to COVID-19 (Tayyib and Alsolami, 2020). It examined the levels of both past and present psychological feelings the participants had towards COVID-19. The original SARS study (Chong et al., 2004), highlights perceived threat and how feelings and perceptions can change throughout time. The perceived threat of COVID ranged from a high of 3.2 to a low of 2.1 from our study. Internationally, comparisons can be drawn from our study and previous studies conducted in the USA, as well as Europe.

One American study has measured nursing home staff's perceived stress levels in relation to working in long-term residential care settings. The method utilized for measuring COVID related stress is highlighted by Cimarolli et al. (2022) as being on a scale from 1-5. "(1= not stressed at all; 5 = extremely stressed)". Similarly, our study rates COVID-19 anxiety on a scale from 1-4, with 1 being strongly disagree to 4 strongly agree. The results closer to 4 indicate higher levels of COVID related anxiety. The mean result was 2.87 for the overall stress levels for working during COVID-19. The mean result for our study is similarly 2.71, noting that our range was slightly lower (1-4 instead of 1-5).

In Northern Italy 44% of participants in a study fell into the category of moderate to severe GAD-7 (Generalized Anxiety Disorder). The study portrays a few factors that may lead to higher levels of anxiety and PTSD in a nursing home setting during the pandemic, and these include: the nature of a longer stay in LTCFs in comparison to hospitals, the population type (older persons are more vulnerable to COVID-19), and the geographical location of LTRC settings could also be a contributing factor.

In France, anxiety levels contributed to the highest percentage for nursing home staff surveyed (21%), including depressive symptoms (10%) and PTSD (7%). Some of the reasons presented in the study for the causes of anxiety included, difficulties caring for residents who had COVID-

19, lack of staff and time to carry out duties, lack of appropriate PPE and overall communication within the facility.

The risks to be considered in the questions were influenced by altruistic values, as well as evaluation of one's own wellbeing in relation to the pandemic. Each question was scored on a scale of 1 to 4 where 1 = strongly disagree, 2 = disagree, 3 = agree and 4 = strongly agree. As seen in table 3.4.10, mean scores were used to evaluated staff experiences, stress and anxiety during COVID-19. Perceived threat of COVID-19 ranged from a high of 3.2, to a low of 2.1.

Altruistic acceptance of risk was assessed in a single item in the scale, and was scored 3 or above in all LTRC settings except one, which scored 2.8. Items that assessed current fear of Covid-19 reported neutral scores, ranging from 2.1 to 2.9.

Overall, across each of the LTRC settings, there were neutral scores of perceived threat of COVID-19 and 'Current fear of Covid-10' with means of 2.7 and 2.4 respectively while Altruistic acceptance of risk was notably higher at 3.2.

4.4.11 Staff Contact with COVID-19

Staff were asked four dichotomous questions about whether they worked directly with residents with COVID-19, and whether they were quarantined due to contact with residents, whether they were quarantined due to contact with relatives or friends and whether they were quarantined due to a diagnosis of Covid-19.Table 4.4.11.1 provides information on rates of contact staff had with residents who had Covid-19 and whether they were quarantined.

87.9% of staff reported working directly with residents who had Covid-19 and 51% were quarantined due to contact with these residents. Scores varied widely between LTRC settings in relation to staff reporting on whether they were quarantined due to contact with residents who had Covid-19.

47.9% of staff reported being quarantined due to contact with friends or relatives who had Covid-19, and scores ranged from 32% to 57.8%. 68.9% were quarantined due to suspicion of contracting or a diagnosis of Covid-19.

Table 4.4.9.1 Training and Support during the COVID-19 Pandemic

	NH 1 (n = 46)	NH 2 (n = 9)	NH 3 (n = 32)	NH 4 (n = 27)	NH 5 (n = 20)	NH 6 (n = 44)	NH 7 (n = 25)	NH 8 (n = 19)	NH 9 (n = 27)	Total (n = 249)
Mean (SD)	3.09 (0.56)	3.07 (0.86)	2.85 (0.75)	3.00 (0.54)	3.23 (0.39)	2.71 (0.68)	3.41 (0.50)	3.38 (0.47)	3.35 (0.57)	3.08 (0.64)

1 (Strongly Disagree) to 4 (Strongly Agree).

Table 4.4.10.1 Perceived Treat and Acceptance during the COVID-19 Pandemic

	NH 1 (n = 45)	NH 2 (n = 9)	NH 3 (n = 32)	NH 4 (n = 27)	NH 5 (n = 20)	NH 6 (n = 44)	NH 7 (n = 24)	NH 8 (n = 19)	NH 9 (n = 27)	Total (n = 246)
Perceived threat of COVID-19	2.92 (0.58)	2.57 (0.45)	2.45 (0.81)	2.75 (0.56)	2.93 (0.41)	2.82 (0.53)	2.12 (0.67)	2.64 (0.66)	3.22 (4.86)	2.74 (1.70)
Altruistic acceptance of risk	3.31 (0.73)	3.67 (0.50)	3.28 (0.89)	3.19 (0.74)	3.35 (0.81)	3.32 (0.74)	3.00 (0.93)	3.53 (0.77)	2.85 (1.01)	3.25 (0.82)
Current fear of COVID-19	2.87 (0.85)	2.22 (1.00)	2.32 (1.08)	2.48 (0.76)	2.47 (0.77)	2.51 (0.78)	2.13 (0.76)	2.46 (0.98)	2.17 (0.87)	2.45 (0.88)

1 (Strongly Disagree) to 4 (Strongly Agree).

Table 4.4.11.1 Staff Contact with COVID-19 n (%)

	NH 1 (n = 45)	NH 2 (n = 9)	NH 3 (n = 32)	NH 4 (n = 27)	NH 5 (n = 20)	NH 6 (n = 44)	NH 7 (n = 24)	NH 8 (n = 19)	NH 9 (n = 27)	Total (n = 247)
Worked directly with residents who had COVID	45 (100.0)	8 (88.8)	28 (87.5)	25 (92.6)	16 (80.0)	41 (93.2)	14 (58.3)	18 (94.7)	22 (81.5)	217 (87.9)
Quarantined due to contact with residents who had COVID	36 (80.0)	2 (22.2)	15 (48.4)	10 (37.0)	12 (60.0)	24 (54.5)	8 (33.3)	1 (5.3)	17 (65.4)	125 (51.0)
Quarantined due to contact with relatives/friends who had COVID	26 (57.8)	4 (50.0)	8 (39.3)	8 (32.0)	8 (42.1)	22 (50.0)	13 (56.5)	8 (42.1)	14 (51.9)	114 (47.9)
Quarantined due to being diagnosed with or suspected of contracting COVID	38 (84.4)	5 (62.5)	18 (62.1)	22 (88.0)	8 (42.1)	30 (68.2)	14 (60.9)	11 (57.9 (18)	18 (66.7)	164 (68.9)

4.4.12 Impact of Events Scale

The ongoing impact of COVID-19 was assessed by administering the Impact of Event Scale – Revised (IES-R) scale (Weiss and Marmar, 1996). The scale has items related to distress caused by traumatic events and assesses symptoms of possible PTSD, each scored on a subscale, these being Intrusion, Avoidance and Hyperarousal, and enquires whether these symptoms were experienced in the last seven days. The questions in this scale were asked in relation to COVID-19 related events. The scale is scored on a 5-point Likert scale ranging from 0 (“not at all”) to 4 (“extremely”), with 22 items and a total score ranging from 0-88. Scores were interpreted using established cut off scores, with 0-23 being below any cut-off score for concern, 24-32 being of clinical concern for the possibility of PTSD, and 33 or above being above the cut-off for being predictive for a diagnosis of possible PTSD (Creamer et al., 2022). Overall. 68.4% of staff were below the cut-off score for concern, while 13.4% scored for clinical concern and 18.2% had the probability of experiencing PTSD. Table 4.4.12.1 provides details on the different rates of IES-R scores in each of the nine LTRC settings.

Table 4.4.12.1 Impact of Events Scale

n (%)	NH 1 (n = 46)	NH 2 (n = 9)	NH 3 (n = 31)	NH 4 (n = 26)	NH 5 (n = 20)	NH 6 (n = 44)	NH 7 (n = 25)	NH 8 (n = 19)	NH 9 (n = 27)	Total (n = 247)
Cut off scores										
Below cut-off	27 (58.7)	8 (88.9)	22 (71.0)	18 (69.2)	16 (80.0)	24 (54.5)	22 (88.0)	14 (73.7)	24 (88.9)	175 (70.9)
Clinical concern	13 (28.3)	0 (0.0)	1 (3.2)	6 (23.1)	0 (0.0)	11 (25.0)	1 (4.0)	1 (5.3)	0 (0.0)	33 (13.4)
Possibility of PTSD	6 (13.0)	1 (11.1)	8 (25.8)	2 (7.7)	4 (20.0)	9 (20.5)	2 (8.0)	4 (21.1)	3 (11.1)	39 (15.8)

Table 4.4.12.2: Subscales of the Impact of Events Scale

mean (SD)	NH 1 (n = 46)	NH 2 (n = 9)	NH 3 (n = 31)	NH 4 (n = 26)	NH 5 (n = 20)	NH 6 (n = 44)	NH 7 (n = 25)	NH 8 (n = 19)	NH 9 (n = 27)	Total (n = 247)
Intrusion	1.09 (0.84)	0.40 (0.51)	0.66 (0.83)	0.58 (0.55)	0.96 (0.82)	0.97 (0.85)	0.41 (0.43)	0.72 (0.87)	0.52 (0.60)	0.77 (0.78)
Avoidance	1.03 (0.79)	0.47 (0.64)	0.98 (0.91)	0.66 (0.71)	1.09 (1.37)	1.07 (0.88)	0.77 (0.88)	0.84 (1.05)	0.54 (0.69)	0.88 (0.90)
Hyperarousal	0.75 (0.83)	0.32 (0.41)	0.67 (0.91)	0.59 (0.65)	0.96 (1.00)	0.88 (0.91)	0.42 (0.73)	0.67 (0.76)	0.40 (0.63)	0.67 (0.82)

4.4.11 Conclusion

The profile of the respondents in each nursing home was similar, with typically more HCA staff responses than RN responses, with the exception of Nursing Home 4 and 8. Similar levels of education were obtained by RNs and HCAs respectively across LTRC settings, although specialist qualification in gerontology was low at 20.9%. Self-report was obtained of the average number of residents an individual was caring for, and indicated wide variation among staff between LTRC settings, and RNs having more staff to care for than HCAs.

The NWI results were neutral in regard to participation with hospital affairs and staffing adequacy but were positive for foundations of quality of care and collegial relations. These results are mirrored in staff perceptions of the quality of care and resident safety being generally rated as good or excellent (80.1% and 69.6 respectively). However, NH 3 was an exception with a notably lower rating of perceived care and patient safety being good or excellent (57.3% and 45.4% respectively). Despite the positive result on quality care and patient safety, 80.7% of staff reported needing additional time to deliver care. The requirement of more time could be associated with the high numbers of staff reporting at least one undone (55.7%) and one delayed (64.4%) care responsibility. Time issues could also be related to most staff either missing or delaying a meal break (18% and 38.8% respectively).

Job satisfaction and satisfaction with the profession were both very high, although there was more dissatisfied or very dissatisfied with the job (20.6%) when compared to the profession (6.1%). The highest rate of job dissatisfaction came from Nursing Home 5 (55%) and Nursing Home 3 (40.1%). Despite the high satisfaction, a sizable minority of staff intended to leave in the near future, with 7.8% stating they would definitely leave and 24.2% stating they would probably leave. The majority of staff would recommend their unit to a colleague, with the exception Nursing Home 3, with 50% of staff stating they would not recommend their unit to a colleague.

In a recent review McGilton et al. 2022, noted that stress related to residents' behaviors was negatively associated with job satisfaction, and, it moderated the positive association between supervisory support and job satisfaction. In the study 591 nursing assistants in 42 nursing homes in Canada and Spain were analysed with mixed-effects regression. Stress related to family conflict moderated a positive association of supervisory support and job satisfaction differently in each state: in Canada, greater stress was associated with a weaker association between supervisory support and job satisfaction; in Spain, this was also observed but only when supervisory support was sufficiently weak. Our study demonstrated high levels of Prevalence of Violence and Aggression however, results should be interpreted with caution and need to be cognisant of the setting in which this study took place due to the

high levels of dementia and behavioural and cognitive symptoms experienced by residents. This report does not present results demonstrating a correlation between job satisfaction and incidences of reports of PVA as it is outside the remit of this study however, further data is being reviewed to assist with exploring the relationship between staffing and violence and aggression.

Similarly to the above, Slater et al. 2020 found that personal satisfaction and satisfaction with profession and resources, and organisational commitment were significantly related to intention to leave. Younger nurses reported higher levels of intention to leave and there was variability among clinical specialties. Measures of stress and practice environment had no significant relationship with intention to leave (McGilton et al. 2022).

Staff reported low levels of emotional exhaustion, depersonalisation and report feeling high levels of person accomplishment in their work.

A sizable minority of staff reported experiencing aggression either 2-10 times or more than 10 times in the last 3 months. Across various expressions of aggression, an average of 43.4% of staff had experienced physical violence, 46.4% had experience psychological violence and 30.7% had reported conflict with residents or a resident's visitor. Studies performed in nursing homes indicate values between 11.4% and 40.0% for violence and aggression (Astrom et al. 2002; Astrom et al. 2004). Other studies have found rates to be as high as 83.9% of employees suffering physical and 90.3% verbal aggression (Franz et al. 2010).

Staff across all LTRC settings reported high levels of training and support during the Covid-19 Pandemic. The staff experiences of stress and anxiety indicate that most staff had high acceptance of the risk involved in delivering care and comparably lower current fear and perceived threat at the time of the outbreak of Covid-19, although scores were above the midpoint of the scale.

Almost all staff (87.9%) had worked with residents who were diagnosed with Covid-19 and just over half of staff (51%) had been quarantined due to contact with residents who contracted Covid-19. Less than half of staff were quarantined due to contact with friends and relatives who had Covid-19 (47.9%) and most had been quarantined due to a diagnosis of Covid-19 or suspected of having contracting the virus (68.9%). Most staff were below the cut-off of cause of concern regarding a lasting traumatic impact of the Covid-19 (74.9), nonetheless, 25.1% scored highly on the IES-R scale indicating a relatively severe impact of events. A recent study found that there were significant differences between nurses, healthcare assistants (HCA) and non-clinical staff history in terms of age, ethnicity, years' experience, history of Covid-19 infection and contact with Covid-19 positive acquaintances. Moderate–severe post-traumatic stress disorder symptoms were found in 45.1% (95% confidence interval [CI]

40.2%–50.1%) of all staff. However Vitale (2022) found relatively low levels of the IES-R values in 597 participants in total and the related sub-dimensions indicating low levels of PTSD both in nurses and in nursing students, respectively.

Overall, the staff data indicate high levels of satisfaction that are mirrored in positive NWI and MBI scores. However, improvements are yet to be made when it comes to nurses obtaining specialist gerontology qualifications, providing additional time for staff to provide care and ensuring those who experienced stressful events as a consequence of working through the Covid-19 pandemic are supported.

Section 5
Discussion

This baseline report outlines for the first time in Ireland, the identification and implementation of an approach to determine safe nurse staffing levels in long-term residential care (LTRC) settings for older people. In addition, the report outlines the process that is currently underway to test the approach identified as well as the collection, measurement and analysis of outcomes related to safe nurse staffing and skill-mix in LTRC settings.

The work here is based on the guidance and recommendations from the Taskforce on Safe Nurse Staffing and Skill-Mix, chaired by the Chief Nurse in the Department of Health.

This Report identified the projected increase in the requirement for long-term care for older people in addition to the associated staffing requirements to meet this demand. This requires a systematic approach to determine nurse and healthcare assistant staffing levels that is based on resident need as recommended in the *COVID-19 Nursing Homes Expert Panel Examination of Measures to 2021: Report to the Minister for Health* (Department of Health, 2020). The research was also undertaken in the context of Covid-19 which disproportionally impacted on the nursing home sector greater than other sections of society.

This baseline study highlighted the challenges facing the LTRC setting, in particular, the issues related to staffing and skill-mix. Following an extensive literature search and consultation with experts in a number of countries including the UK, the Netherlands, Australia and the US, an evidence-based approach to determine nurse staffing levels and skill-mix was identified. This approach, in keeping with that implemented in medical and surgical (Department of Health 2018) and emergency settings in Ireland (Department of Health 2022), is based on Nursing Hours per Resident Day (NHpRD). To determine the required NHpRD it is necessary to identify a measure that will assess resident acuity and dependency and then convert this need into nursing hours. Following extensive consultation, the work of Harrington[7] et al. (2020), was influential in identifying an approach to ensure the adequacy of staffing levels in LTRC facilities. This involved determining resident acuity using the resident dependency tool (Resource Utilisation Group-IV (RUG-IV)), collecting actual nurse staffing levels, and determining appropriate staffing levels based on resident need that reflects the acuity of the LTRC facility.

The pilot implementation of this approach through using the RUG-IV as a method for determining staffing levels has shown promising results in the first phase of research. The

[7] The research team has a number of consultations with Harrington and colleagues in developing the approach outlined in this Report.

baseline testing of the RUG-IV instrument identified that the majority of residents are in the reduced physical functioning and behavioural symptoms and cognitive performance categories; this is reflective of the categories of residents in the nursing home sector in the US (Harrington et al. 2020) and a value for Money report recently published in Ireland (Department of Health 2019).

Although further testing is required, including further reliability testing and validation, the RUG-IV instrument is straight forward for staff to use and determines staffing levels that are reflective of the needs of the pilot LTRC settings. The development of the RUG-IV instrument by the research team was associated with extensive training materials and support for nursing staff in each of the pilot sites (see Appendix III).

In relation to skill-mix, a number of approaches were identified. The conclusion from a review of the literature and the use of the RUG-IV in the pilot sites is that skill-mix should be adjusted based on residents' need for fundamental and skilled-nursing care. This is based on the approach outlined by both Harrington et al. (2020) and Schnelle et al., (2016). However, it is acknowledged that further ongoing research is required before a final recommendation on skill-mix in the Irish LTRC is proposed.

The research team also explored the resident outcome data available in the pilot LTRC settings. The rationale was to identify data that could be associated with staffing levels as well as identifying the changes that occur as a consequence of implementing the recommendations in the Framework for long-term residential settings. Unlike other countries, particularly the US, no national data sets from LTRC settings are available in Ireland. The data available was of variable quality with wide variation in how resident data is collected ranging from pen and paper to sophisticated commercial software systems. There was also wide-variation in the level of measurement of the variables that were identified as being associated with nurse staffing. The quality of data from those with computer based software systems (these were predominantly in the private and voluntary sectors) was much better that that collected in settings that manually recorded resident outcomes using pen and paper systems (predominantly public sector).

Both RNs and HCAs were surveyed in a number of areas that have been identified as being associated with staffing levels. In addition, the extent to which staff were impacted upon during the COVID-19 pandemic was also measured. Overall, the majority of RNs received their nurse education outside Ireland with the vast majority of HCA respondents receiving their FETAC or equivalent training in Ireland. Only a fifth of respondents had a specialist qualification in older person's nursing. Overall, the majority of staff identified that they were working in good clinical environments with the biggest challenge in the area of staffing and resource adequacy;

however, there was large variability between LTRC settings in this regard. The vast majority of respondents reported that the care delivered and the level of patient safety in their LTRC was good or excellent. Care left undone or delayed varied between sites but was generally lower than that reported in medical and surgical or emergency settings. Levels of job satisfaction were high with associated lower levels of respondents stating that they would leave their place of employment. Levels of burnout reported, although variable across sites, was lower than that experienced by nursing staff in the acute sector. Staff did experience varying incidents of violence and aggression from the residents that they cared for. Overall, staff in the pilot sites reported that they received good levels of training and support throughout the pandemic and demonstrated a high level of altruism in accepting the risk associated with Covid-19 while caring for residents in their care.

Based on the baseline, the following is recommended in relation to the next phase of research:

1. The RUG-IV approach to determine safe nurse staffing levels continues to be implemented and tested across the LTRC pilot sites.
2. The approach to skill-mix outlined by Harrington et al. (2020), which is based on resident need, continues to be tested within the LTRC pilot sites. This approach requires further modelling and simulation before a final recommendation is made.
3. Consideration be given to introducing electronic, software based data collection systems for resident outcome data in those sites that currently use manual pen and paper systems. The rationale being that this will increase the quality of the data collected as well as providing an overview of the quality of care provided in the LTRC setting.
4. The software system should be capable of measuring the following variables:
    a. Age
    b. Gender
    c. Barthel score
    d. Transfer to acute hospital
    e. Admissions
    f. Discharge
    g. Mortality
    h. Incidents of falls
    i. Infections (UTIs, RTIs, Covid-19)
    j. Indwelling catheters
    k. Use of restraints

l. Regular and PRN prescribed psychotropic medications
m. Medication errors
n. Pressure Ulcers
o. Weight change

5. A proportion of staff are experiencing stressful events as a consequence of working throughout the COVID-19 pandemic. Due to the anonymity of the survey, individual nurses and HCAs cannot be identified; therefore, nursing leaders in each of the sites will be made aware of the results that pertain to their institution. This will enable the leadership team to identify and communicate supports available to staff who require assistance as a consequence of working through the pandemic.

Conclusion

The results from the baseline data collection identify that the RUG-IV tool as an approach to determine safe nurse staffing levels in LTRC settings has merit and should undergo further testing within the pilot sites. In addition, in order to successfully complete research of this nature in residential settings, a standard electronic system should be implemented to collect resident data consistently across all sites. In the absence of a system, a method to access this data consistently and readily should be developed and implemented in the residential settings. Without this in place, it will not be possible to determine if there is any effect of the testing of the Framework on resident outcomes.

This is the first of this type of research to be undertaken in Ireland. Part of this process is determining whether this type of research is feasible or not. While there are barriers and limitations, this baseline report has made it evident that research of this nature is possible and should continue to the next phase.

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Appendices

Appendix I

Models for Determining Staffing Levels in Older Persons' Settings Identified in Literature Review

Model	Calculation Basis	Pros	Cons
Shelford Safer Nursing Care Tool	The only nurse staffing tool approved by the National Institute of Health and Care Excellence in the UK, was identified as having some applicability in wards for older people in the acute sector	x	No evidence of its applicability to the nursing home sector.
The RCN Toolkit for Older People's Wards	Was developed for safe staffing of older people's wards but not particularly for nursing homes. This Toolkit identifies two levels of staffing ratios and skill-mix; one level to provide basic safe care and a higher level to facilities the provision of good quality care	x	Does not meet the framework's assumptions
Rhys Hearn model	Employed a framework for determining the number of hours that are required for individual residents based on care needs as well as a ratio of staff to residents at different times of the day. There is flexibility in the model in that the number of hours required can be adjusted due to the dependency level of the residents. The model categorised as either: self-caring (Category A), low dependency (Category B), medium dependency (Category C) or high dependency (Category D).	x	It is outdated and has no strong evidence based. In addition, the three categories (self-caring, medium and high dependency) were identified as not suitable to capture the complexity of residents that require care in nursing homes today
MILP Staffing Optimisation Model	Mathematical optimisation approach for staffing, which resulted in more efficient care delivery and better-balanced workload	Mathematical model. Mathematical driven staffing approaches can greatly support nursing homes in their search for ways to further reduce their costs while maintaining an appropriate quality level of care	This model has only been tested in one nursing home, so it has limited generalisability
Optimized Nurse Staffing (sweet spot) Estimation Theory	Optimized nurse staffing estimation theory is multi-dimensional econometric theory similar to the optimization model. It explores the relationship between staffing levels and Quality of Care outcomes but advances from the optimisation model by addressing the financial costs of staffing interventions	Provides a multi-dimensional econometric theory to help determine the level of spending and nurse staffing required to ensure optimal quality of care, was developed by theory synthesis.	This model is purely theoretical and has not been implemented into a LTCF or tested for validity or reliability

Staff Management and Quality Improvement System	The level of unlicensed staff necessary to provide quality ADL care to residents in an Assisted Living Facility (ALF	Documents staff time required to provide quality ADL during morning and evening.	A full-time supervisor whose job title was 'continuous quality improvement coordinator' observed two resident care episodes per week for a total of 64 observations, for 29 unique residents and 33 staff members over 12 consecutive months
Queueing Model	The Queueing Model is based on the 'care on demand' process in Belgian nursing homes and can be used by nursing home managers to determine the staffing level required to meet a specific service level. The model is based on the theory that queues occur whenever service demands exceed the system's capacity	Offers numerical formulas to calculate staffing needs	The results are only based on night shifts, and the use of the queueing model in guiding staffing decisions within LTCFs is still limited
Staff Assist: Web-based Quality Improvement Tool	A simulation model was conducted using the secondary data above so the various outcomes for QMs in the web-based tool could be more accurately estimated. A focus group consisting of 10 nursing homes gave feedback	Tool is feasible low-cost model that is easily accessible to NHs and can be replicated to provide further info. For other areas of quality improvement in NHs	Cannot provide a robust evaluation of quality improvements coming from the tool. In addition, more unit specific information may be useful for nursing home decision makers.
The Lean Six Sigma	The Lean Six Sigma (LSS) is a Quality improvement model which distinguishes activities that are 'value-adding' and 'non-value adding	Considered quality care as well as staffing	The Six Sigma tools and techniques provide evidence-based approaches that support QI in practice. no evidence of its applicability to the nursing home sector
Care Level-based Nurse-to-Resident Ratio Vs. Standard Minimum Nurse-to-Resident Ratio	Staffing levels in German LTCFs are based on 4 care levels. Every resident is assigned to a care level, and staffing is subject to that care level. Residents are generally assigned to level 0 to 3 as level 4 is reserved for cases with high levels of care requirements	Ratios and skill mix considered	The care level-based nurse-to-resident classification system lacks theory-based development. It was concluded that If classification systems are utilised, they must be empirically tested and open to further development.

The Groningen Observational Instrument for Long-Term Institutional Care (GO-LTIC)	Observational instrument to identify and examine the amount of time spent on nursing interventions in long-term institutional care using a standardized language	The GO-LTIC is advantageous insofar that it allows for the identification of nursing interventions performed in specific populations. This may increase the visibility of nursing staff's contribution to quality-of-care outcomes	Observational – very time consuming and requires trained observers with nursing background for consistency. Developed as a part of a PhD, not implemented in LTRC facilities. Would need 2-4 observers in sites for 7 days.
Scotland Care Home Staffing Model	Based on the dependency levels of residents, to determine an indicator of relative need score. Although identified as similar to the Rhys Hearn model, it is identified as having greater flexibility and includes a greater number of categories to assess residents' needs	Provides a summary of persons functional needs and degree of dependency. Excel based and free access. Produces an aggregate ioRN score for the home by combining the ioRN information for every resident. Questions offers nurses an opportunity to categorise a resident per dependency question. More robust and complex than Rhys Hearns Tool. Considers the mental health needs of residents by considering domains such as, 'aggression', 'co-operation' and 'risk	A number of limitations were identified, including the relatively broad generalisation of the dependency categories, the lack of patient-centred terminology and its emphasis on task-oriented measures. No longer in use.
Nurse Hours per Resident Day	The general recommendation regarding staffing levels in nursing homes in the US is that total nursing hours, at a minimum, should be 3.5 hours. Five step process	Meets assumptions and previous work packages. 5 step process is easy to follow. Could use MDS with RUG IV/RAI which appear interchangeable. MDS data comprehensive	Uses systems that not currently used in Ireland e.g. MDS, CMS, PDPM- could substitute payroll and MDS. Staff Training would be required. Very much still in infancy stage. MDS is retrospective- collected quarterly – time delay for attaining data.

Appendix II – RUG-IV Patient Dependency Tool Developed for use in the Pilot Sites

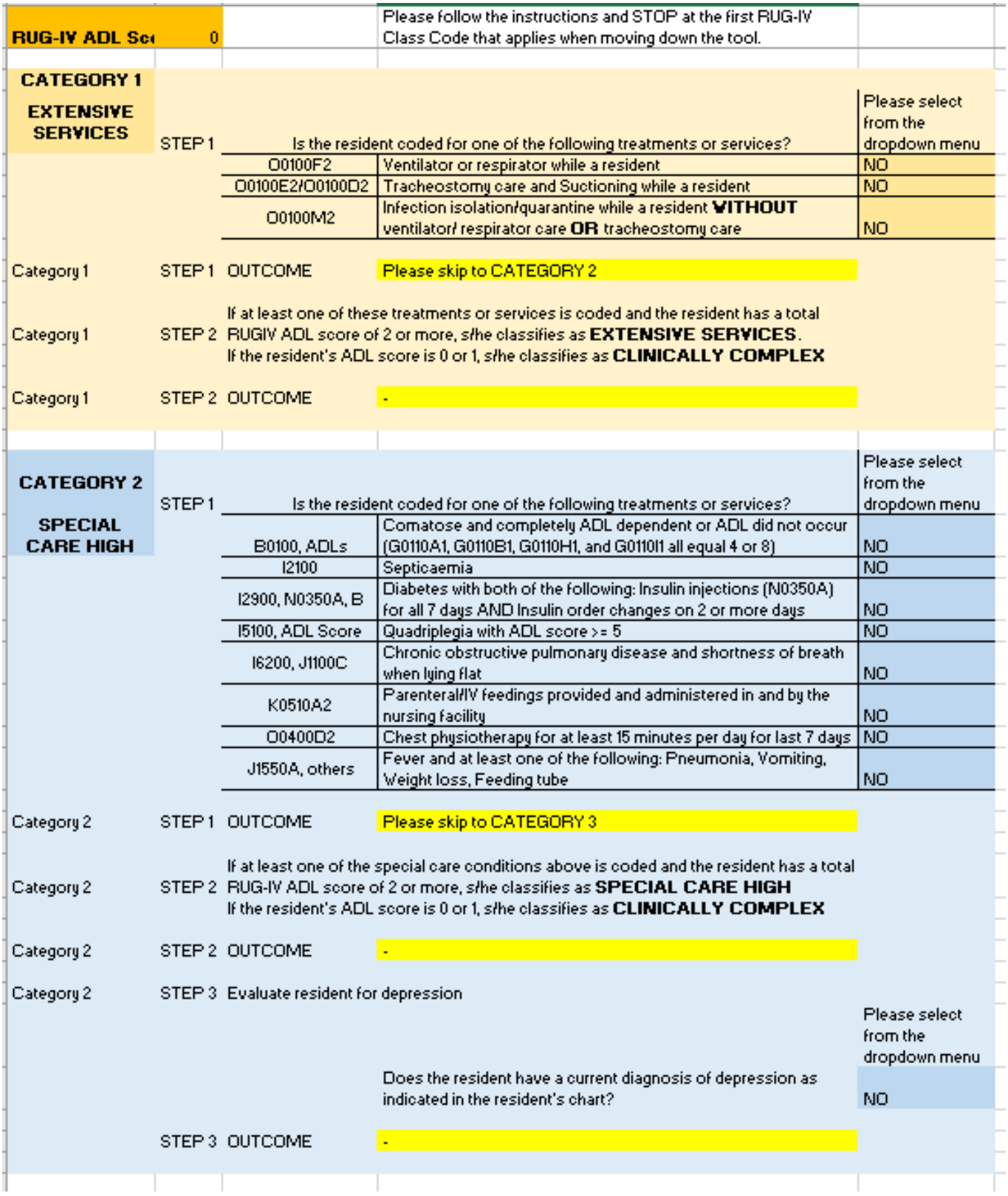
	G0110A BED MOBILITY		G0110B TRANSFER		G0110C TOILET USE		G0110H EATING		ADL score				
RESIDENT CODE	Self-Performance	Support	Self-Performance	Support	Self-Performance	Support	Self-Performance	Support	G0110A BED MOBILITY	G0110B TRANSFER	G0110C TOILET USE	G0110H EATING	RUG-IV Total ADL score
12345	Supervision	Setup help only	Supervision	Setup help only	Supervision	Setup help only	Supervision	Setup help only	0	0	0	0	0

RESET DROPDOWN MENUS FOR NEW RESIDENT ENTRY

Coding instruction of Level of Self-Performance	
Level of Self	**Definition**
Independe	Resident completed activity with no help or over-sight every time during the seven day look back period.
Supervision	Oversight, encouragement, or cueing was provided three or more times during the seven-day look-back period.
Limited assistance	Resident was highly involved in activity and received physical help in guided manoeuvring of limbs, or other non-weight bearing assistance on three or more times during the seven-day look-back period.
Extensive Assistance	Resident performed part of the activity over the seven-day look-back period, help of the following type(s) was provided three or more times: Weight-bearing support provided three or more times. Full staff performance of activity during part but not all of the seven-day look-back period
Total Dependenc	There was full staff performance of an activity with no participation by resident for any aspect of the ADL activity. The resident must be unwilling or unable to perform any part of the activity over the entire seven-day look-back period
Activity occurred only once	The activity occurred but not three or more times.
Activity did not occur	The activity did not occur, or family and/or non-facility staff provided care 100% of the time for that activity over the entire seven-day look-back period

Coding instruction of ADL support Code for the most support provided over all shifts; code regardless of resident's self-performance classification	
Level of ADL Support	**Definition**
No Setup or physical	Resident completed activity with no help or oversight
Setup help only	Resident is provided with materials or devices necessary to perform the ADL independently. This can include giving or holding out an item that the resident takes from the caregiver
One-person physical	Resident was assisted by one staff person
Two+ person physical assist	Resident was assisted by two or more staff persons
ADL activity did not occur during the	The activity did not occur, or family and/or non-facility staff provided care 100% of the time for that activity over the entire seven day look-back period

Figure 1: ADL calculation



RUG-IV ADL Sc	0		Please follow the instructions and STOP at the first RUG-IV Class Code that applies when moving down the tool.	
CATEGORY 1 EXTENSIVE SERVICES	STEP 1	Is the resident coded for one of the following treatments or services?		Please select from the dropdown menu
		O0100F2	Ventilator or respirator while a resident	NO
		O0100E2/O0100D2	Tracheostomy care and Suctioning while a resident	NO
		O0100M2	Infection isolation/quarantine while a resident **WITHOUT** ventilator/ respirator care **OR** tracheostomy care	NO
Category 1	STEP 1	OUTCOME	Please skip to CATEGORY 2	
Category 1	STEP 2	If at least one of these treatments or services is coded and the resident has a total RUGIV ADL score of 2 or more, s/he classifies as **EXTENSIVE SERVICES**. If the resident's ADL score is 0 or 1, s/he classifies as **CLINICALLY COMPLEX**		
Category 1	STEP 2	OUTCOME	-	
CATEGORY 2 SPECIAL CARE HIGH	STEP 1	Is the resident coded for one of the following treatments or services?		Please select from the dropdown menu
		B0100, ADLs	Comatose and completely ADL dependent or ADL did not occur (G0110A1, G0110B1, G0110H1, and G0110I1 all equal 4 or 8)	NO
		I2100	Septicaemia	NO
		I2900, N0350A, B	Diabetes with both of the following: Insulin injections (N0350A) for all 7 days AND Insulin order changes on 2 or more days	NO
		I5100, ADL Score	Quadriplegia with ADL score >= 5	NO
		I6200, J1100C	Chronic obstructive pulmonary disease and shortness of breath when lying flat	NO
		K0510A2	Parenteral/IV feedings provided and administered in and by the nursing facility	NO
		O0400D2	Chest physiotherapy for at least 15 minutes per day for last 7 days	NO
		J1550A, others	Fever and at least one of the following: Pneumonia, Vomiting, Weight loss, Feeding tube	NO
Category 2	STEP 1	OUTCOME	Please skip to CATEGORY 3	
Category 2	STEP 2	If at least one of the special care conditions above is coded and the resident has a total RUG-IV ADL score of 2 or more, s/he classifies as **SPECIAL CARE HIGH** If the resident's ADL score is 0 or 1, s/he classifies as **CLINICALLY COMPLEX**		
Category 2	STEP 2	OUTCOME	-	
Category 2	STEP 3	Evaluate resident for depression		
				Please select from the dropdown menu
			Does the resident have a current diagnosis of depression as indicated in the resident's chart?	NO
	STEP 3	OUTCOME	-	

Figure 2: Categories 1 and 2 of the RUGS

RUG-IV ADL Sc	0		Please follow the instructions and STOP at the first RUG-IV Class Code that applies when moving down the tool.	
CATEGORY 3 **SPECIAL CARE LOV**	STEP 1	Is the resident coded for one of the following treatments or services?		Please select from the dropdown menu
		I4400, ADL Score	Cerebral palsy, with ADL score >=5	NO
		I5200, ADL Score	Multiple sclerosis, with ADL score >=5	NO
		I5300, ADL Score	Parkinson's disease, with ADL score >=5	NO
		I6300, O0100C2	Respiratory failure and oxygen therapy provided within the facility	NO
		K0510B2	Feeding tube	NO
		M0300B1	Two or more stage 2 pressure ulcers with two or more selected skin treatments**	NO
		M0300C1, D1, F1	Any stage 3 or 4 pressure ulcer with two or more selected skin treatments**	NO
		M1030	Two or more venous/arterial ulcers with two or more selected skin treatments**	NO
		M0300B1, M1030	1 stage 2 pressure ulcer and 1 venous/arterial ulcer with 2 or more selected skin treatments**	NO
		M1040A, B, C; M1200I	Foot infection, diabetic foot ulcer or other open lesion of foot with application of dressings to the feet	YES
		O0100B2	Radiation treatment while a resident	NO
		O0100J2	Dialysis treatment while a resident	NO
			"Selected skin treatments: Turning/repositioning, Nutrition or hydration intervention, Pressure ulcer care, Application of dressings (not to feet), Application of ointments (not to feet), Pressure relieving chair and/or bed (count as one treatment	
Category 3	STEP 1	OUTCOME	Please proceed to STEP 2	
Category 3	STEP 2	If at least one of the special care conditions above is coded and the resident has a total RUG-IV ADL score of 2 or more, s/he classifies as **SPECIAL CARE LOV** If the resident's ADL score is 0 or 1, s/he classifies as **CLINICALLY COMPLEX**		
Category 3	STEP 2	OUTCOME	Clinically Complex: Please skip to CATEGORY 4 - STEP 2	
Category 3	STEP 3	Evaluate resident for depression		
				Please select from the dropdown menu
			Does the resident have a current diagnosis of depression as indicated in the resident's chart?	NO
Category 3	STEP 3	OUTCOME	ERROR	

CATEGORY 4 **CLINICALLY COMPLEX**	STEP 1	Is the resident coded for one of the following treatments or services?		Please select from the dropdown menu
		I2000	Pneumonia	NO
		I4900, ADL	Score Hemiplegia/hemiparesis with ADL score >=5	NO
		M1040D, E	Surgical wounds or open lesions with any selected skin treatment*	NO
		M1040F	Burns	NO
		O0100A2	Chemotherapy while a resident	NO
		O0100C2	Oxygen therapy provided (within the facility) while a resident	NO
		O0100H2	IV medications provided, instilled, and administered exclusively by the facility while a resident	NO
		O0100I2	Transfusions while a resident	NO
			"Selected Skin Treatments: Surgical wound care, Application of dressing (not to feet), Application of ointments (not to feet)	
Category 4	STEP 1	OUTCOME	Please skip to CATEGORY 5	
Category 4	STEP 2	Evaluate resident for depression		
				Please select from the dropdown menu
			Does the resident have a current diagnosis of depression as indicated in the resident's chart?	NO
Category 4	STEP 2	OUTCOME	Please skip to Category 5	

Figure 3: Categories 3 and 4 of the RUGS

RUG-IV ADL Sco	0		Please follow the instructions and STOP at the first RUG-IV Class Code that applies when moving down the tool.	
CATEGORY 5 **BEHAVIOURAL SYMPTOMS AND COGNITIVE PERFORMANCE**	STEP 1	Determine ADL score If the resident's ADL score is 5 or less, go to Step 2. If the ADL score is greater than 5, skip to CATEGORY 6		
Category 5	STEP 1	OUTCOME	Please proceed to STEP 2	
Category 5	STEP 2	Evaluate the cognitive status of the resident		Please select from the dropdown menu
			Does the resident meet the criteria for cognitive impairment as indicated by their score on the Mini Mental State Examination (MMSE)?	NO
	STEP 2	OUTCOME	Please skip to STEP 5	
Category 5	STEP 3	Determine the resident's cognitive status based on resident interview using the Brief Interview for Mental Status (BIMS). The BIMS items involve the following: - C0200 Repetition of three words - C0300 Temporal orientation - C0400 Recall Item C0500 provides a BIMS Summary Score for these items and indicates the resident's cognitive performance, with a score of 15 indicating the best cognitive performance and 0 indicating the worst performance. If the resident interview is not successful, then the BIMS Summary Score will equal 99. BIMS Summary Score		
Category 5	STEP 3	OUTCOME	Please enter a BIMS Summary Score value in the yellow box above	
Category 5	STEP 4	Determine whether the resident meets the criteria for cognitive impairment based on the staff assessment rather than on resident interview. The RUG-IV Cognitive Performance Scale (CPS) is used to determine cognitive impairment. **NOTE: This step is only to be completed if no MMSE or BIMS data is available.**		

	The resident has a cognitive impairment if **ONE** of the three following criteria applies:	Please select from the dropdown menu if condition is present
1	B-10100 coma (B0100 = 1) **AND** completely ADL dependent or ADL did not occur	NO
2	C1000 Severely impaired cognitive skills (C1000 = 3)	NO
3	B0700, C0700, C1000 two or more of the following impairment indicators are present: B0700 ≥2 problem being understood C0700 = 1 Short-term memory problem C1000 >0 Cognitive skills problem **AND** One or more of the following severe impairment indicators are present: B0700 ≥2 Severe problem being understood C1000 ≥2 Severe cognitive skills problem	NO

Category 5	STEP 4	OUTCOME	Please proceed to STEP 5	
Category 5	STEP 5	Determine whether the resident presents with one of the following behavioural symptoms		Please select from the dropdown menu
	E0100A	Hallucinations		NO
	E0100B	Delusions		NO
	E0200A	Physical behavioural symptoms directed toward others (occurred at least once on 4 or more days of the last 7)		NO
	E0200B	Verbal behavioural symptoms directed toward others (occurred at least once on 4 or more days of the last 7)		NO
	E0200C	Other behavioural symptoms not directed toward others (occurred at least once on 4 or more days of the last 7)		NO
	E0800	Rejection of care (occurred at least once on 4 or more days of the last 7)		NO
	E0900	Wandering (occurred at least once on 4 or more days of the last 7)		NO

Category 5	STEP 5	OUTCOME	Please skip to CATEGORY 6	
Category 5	STEP 6	Determine Restorative Nursing Count		
		Indicate if the following interventions were provided for 15 or more minutes a day for 6 or more of the last 7 days:		Please select from the dropdown menu
		H0200C, H0500**	Urinary toileting programme and/or bowel toileting programme	NO
		O0500A, B**	Passive and/or active ROM	NO
		O0500C	Splint or brace assistance	NO
		O0500D, F**	Bed mobility and/or walking training	NO
		O0500E	Transfer training	NO
		O0500G	Dressing and/or grooming training	NO
		O0500H	Eating and/or swallowing training	NO
		O0500I	Amputation/prostheses care	NO
		O0500J	Communication training	NO
		"Count as one intervention even if both provided		
		Restorative Nursing Count	0	
Category 5	STEP 6	OUTCOME	RUG-IV Class BA1	

Figure 4: Category 5 of the RUGS tool

CATEGORY 6		Residents who do not meet the conditions of any of the previous categories, including those who would meet the criteria for the Behavioural Symptoms and Cognitive Performance category but have a RUG-IV ADL score greater than 5, are placed in this category.		
REDUCED PHYSICAL	STEP 1	Determine Restorative Nursing Count		
		Indicate if the following interventions were provided for 15 or more minutes a day for 6 or more of the last 7 days:		Please select from the dropdown menu
		H0200C, H0500**	Urinary toileting programme and/or bowel toileting programme	YES
		O0500A, B**	Passive and/or active ROM	NO
		O0500C	Splint or brace assistance	NO
		O0500D, F**	Bed mobility and/or walking training	NO
		O0500E	Transfer training	NO
		O0500G	Dressing and/or grooming training	YES
		O0500H	Eating and/or swallowing training	NO
		O0500I	Amputation/prostheses care	NO
		O0500J	Communication training	NO
		"Count as one intervention even if both provided		
		Restorative Nursing Count	2	
Category 6	STEP 1	OUTCOME	RUG-IV Class PA2	

Figure 5: Category 6 of the RUGS tool

Resident Code	RUG-IV Class
example 1	PA2
example 2	BA1
example 3	ES1
example 4	HD1
example 5	LD2
example 6	HC2

Extensive Services
1
Special Care High
2
Special Care Low
1
Clinically Complex
0
Behavioural Symptoms and Cognitive Performance
1
Reduced Physical Functioning
1
Total
6

ES3	ES2	ES1
0	0	1

HE2	HE1	HD2	HD1	HC2	HC1	HB2	HB1
0	0	0	1	1	0	0	0

LE2	LE1	LD2	LD1	LC2	LC1	LB2	LB1
0	0	1	0	0	0	0	0

CE2	CE1	CD2	CD1	CC2	CC1	CB2	CB1	CA2	CA1
0	0	0	0	0	0	0	0	0	0

BB2	BB1	BA2	BA1
0	0	0	1

PE2	PE1	PD2	PD1	PC2	PC1	PB2	PB1	PA2	PA1
0	0	0	0	0	0	0	0	1	0

Figure 6: Dependency profile

Appendix II (continued)

	Resident Count (example)	Recommended Hours	Hours of Care Required
ES3	0	7.68	0
ES2	0	6.84	0
ES1	2	5.91	11.82
HE2	2	5.79	11.58
HE1	1	5.79	5.79
HD2	0	5.79	0
HD1	0	5.79	0
HC2	0	5.42	0
HC1	0	5.42	0
HB2	3	5.42	16.26
HB1	1	5.42	5.42
LE2	0	5.79	0
LE1	0	5.79	0
LD2	0	5.79	0
LD1	1	5.79	5.79
LC2	2	5.42	10.84
LC1	0	5.42	0
LB2	1	5.42	5.42
LB1	0	5.42	0
CE2	0	5.53	0
CE1	2	5.34	10.68
CD2	1	5.53	5.53
CD1	0	5.34	0
CC2	1	4.86	4.86
CC1	0	4.82	0
CB2	2	4.86	9.72
CB1	0	4.82	0
CA2	2	4.42	8.84
CA1	1	4.42	4.42
BB2	4	4.3	17.2
BB1	5	4.3	21.5
BA2	3	4.3	12.9
BA1	5	4.3	21.5
PE2	4	4.9	19.6
PE1	3	4.9	14.7
PD2	5	4.9	24.5
PD1	2	4.9	9.8
PC2	2	4.53	9.06
PC1	4	4.5	18
PB2	3	4.53	13.59
PB1	5	4.5	22.5
PA2	6	4.1	24.6
PA1	4	4.1	16.4

Figure 1: Recommended hours of care required with example data

Hours of Care Required (example)
Extensive Services
11.82
Special Care High
39.05
Special Care Low
22.05
Clinically Complex
44.05
Behavioural Symptoms and Cognitive Performance
73.1
Reduced Physical Functioning
172.75
Total
362.82

Figure 2: Total hours of care required based on example data

Appendix III

Section A

University College Cork, Ireland
Coláiste na hOllscoile Corcaigh

Instruction Manual

Nurse Staffing and Resident Dependency Data Collection

Study Title: Programme of Research into Safe Nurse Staffing and Skill-Mix

Principal investigator's name: Jonathan Drennan

Principal investigator's title: Professor of Nursing and Health Services Research,

School of Nursing & Midwifery

University College Cork

Dear Colleague,

We are undertaking research that will identify an approach to determine staffing levels that meet resident need in the nursing home sector. In order to determine safe staffing levels, we need to calculate the Nursing Hours per Resident Day (NHPRD). This involves several steps detailed below.

SECTION 1: DETERMINING PATIENT DEPENDENCY/ RUG-IV:

The first step is to determine the **collective resident dependency** and care needs using resident assessment data and overall resident care plans. The Resource Utilisation Group (RUG) IV instrument is used to determine this.

The RUG-IV has distinct groups outlined, which are tiered by level of skilled care required, the need for extensive services, clinical complexity, and resident cognitive function. They are further subdivided by presence of depression and functional independence as estimated through the Minimal Data Sheet (MDS) evaluation of a resident's self-performance and staff-provided support in Activities of Daily Living (ADLs).

Instructions on Completing The RUG-IV

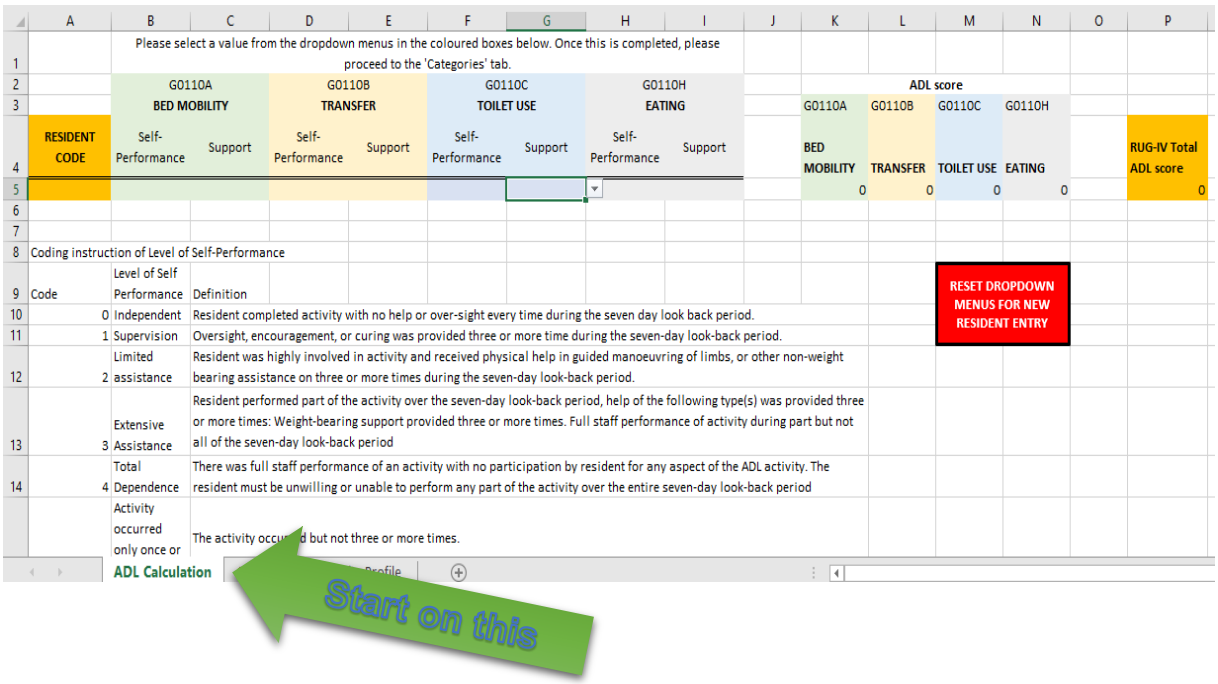
The following worksheet is a step-by-step walk through to manually determine the appropriate classification for your resident based on the information from the RUG IV assessment.

You work through all the **43 classification groups** (e.g., ES3, ES2, ES1 = Extensive Services, BB2, BB1 BA2, BA1 = Behavioural Symptoms and Cognitive Performance), noting each classification for which the resident qualifies. When finished, you select the classification with the highest case mix index. This group is the index-maximized classification for the resident.

The initial step is to determine the residents ADL score.

Calculation of Total ADL Score

The ADL score is a component of the calculation for placement in all RUG-IV groups, based upon bed mobility, transfer, toilet use, and eating. This score indicates the level of functional assistance or support required by the resident. The ADL calculation can be found on the first sheet of the workbook under 'ADL Calculation'. It is necessary to complete this before proceeding to the 'Categories' sheet, as the ADL score will be used throughout (see below).



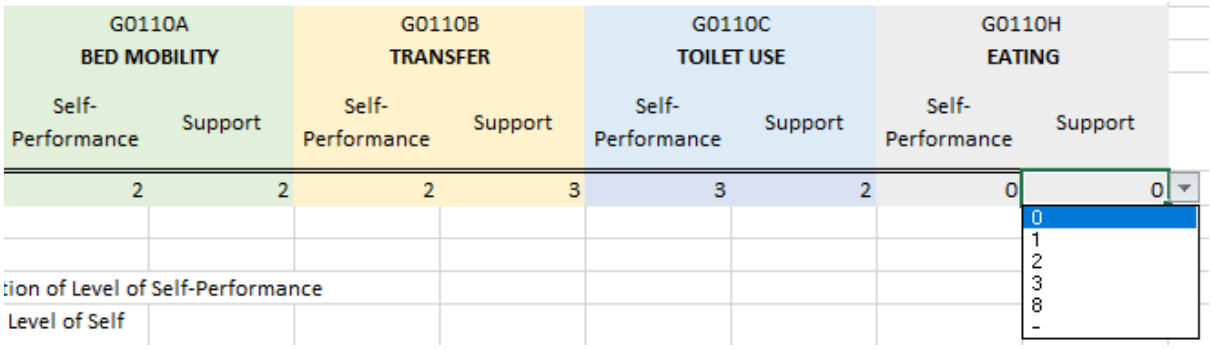
STEP # 1

To calculate the ADL score, use the following chart to score 'self-performance' of resident **and** 'support' for bed mobility, transfer, eating and toilet use. Enter the ADL score for each item using the scoring codes provided below:

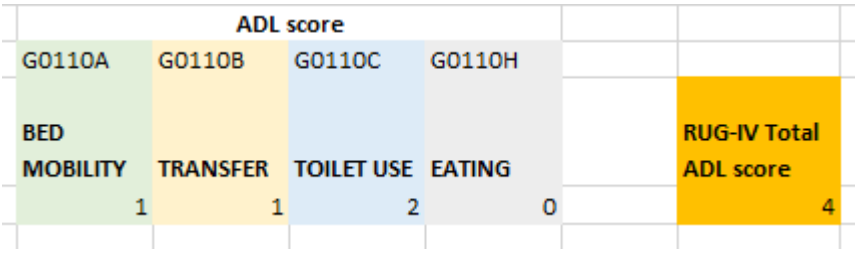
Scoring Codes:

Code	**Level of Self Performance**	**Definition**
0	Independent	Resident completed activity with no help or over-sight every time during the seven day look back period.
1	Supervision	Oversight, encouragement, or curing was provided three or more time during the seven-day look-back period.
2	Limited assistance	Resident was highly involved in activity and received physical help in guided manoeuvring of limbs, or other non-weight bearing assistance on three or more times during the seven-day look-back period.
3	Extensive Assistance	Resident performed part of the activity over the seven-day look-back period, help of the following type(s) was provided three or more times: weight-bearing support provided three or more times. Full staff performance of activity during **part** but **not all** of the seven-day look-back period
4	Total Dependence	There was **full** staff performance of an activity with **no participation** by resident for any aspect of the ADL activity. The resident must be unwilling or unable to perform any part of the activity over the entire seven-day look-back period
7	Activity occurred only once or twice	The activity occurred but not three or more times.
8	Activity did not occur	The activity did not occur, or family and/or non-facility staff provided care 100% of the time for that activity over the entire seven-day look-back period
Coding instruction of ADL support Code for the most support provided over all shifts; code regardless of resident's self-performance classification		
0	No setup or physical Assist	Resident completed activity with no help or oversight
1	Setup help only	Resident is provided with materials or devices necessary to perform the ADL independently. This can include giving or holding out an item that the resident takes from the caregiver
2	One-person physical assist	Resident was assisted by **one** staff person
3	Two + person physical assist	Resident was assisted by **two or more** staff persons
8	ADL activity did not occur during the entire period	The activity did not occur, or family and/or non-facility staff provided care 100% of the time for that activity over the entire seven-day look-back period

Self-performance and support score can be entered using the drop-down menu pictured below:



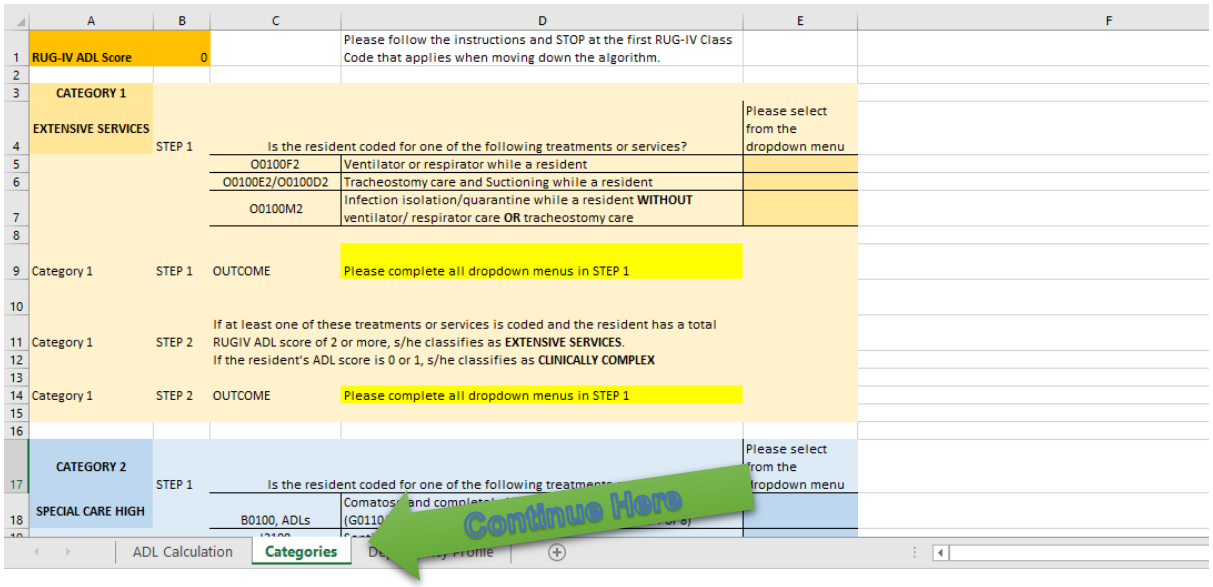
Once **self-performance** and **support scores** have been entered for bed mobility, transfer, toilet use and eating, a total RUG-IV ADL score will be calculated automatically. The total ADL score ranges from 0 through 16" 0 being the lowest dependency score and 16 being the highest ADL dependency score.



The ADL scoring will be used effectively throughout the RUG-IV to determine the appropriate grouping of residents according to their needs. This will be automatically transferred to the 'Categories' sheet and accounted for as you work through the rest of the workbook. You can now proceed to the 'Categories' worksheet which is divided into the following 6 sections to reflect resident dependency:

I. Extensive services
II. Special care high
III. Special care low
IV. Clinically complex
V. Behavioural symptoms
VI. Reduced physical function

These categories can be found on 'Dependency Profile' sheet of the workbook.

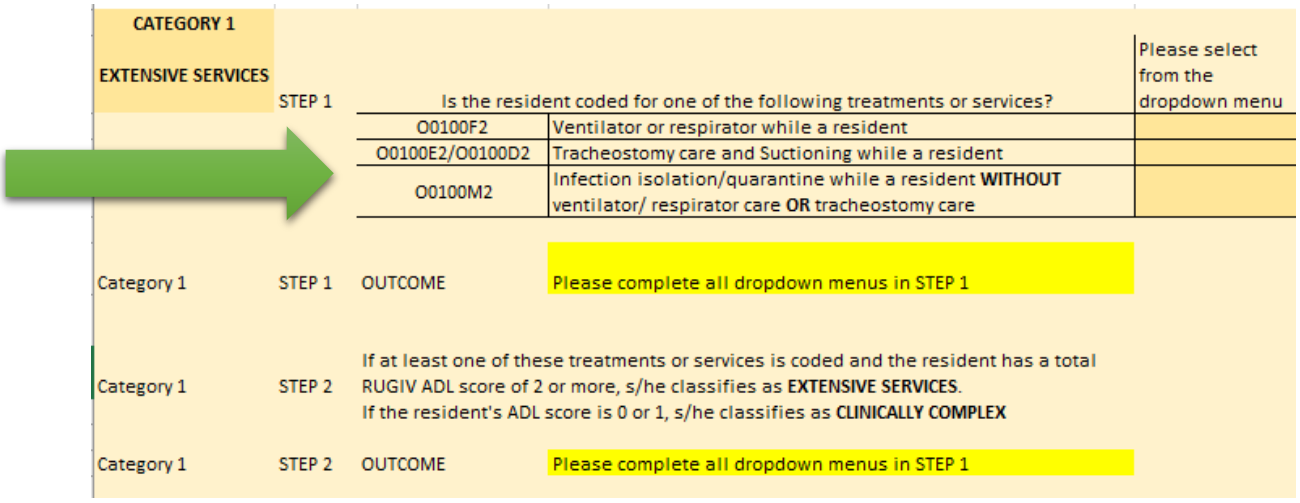


Category I: Extensive Services

The classification groups in this category are based on various services provided. You will be asked to follow the instructions and STOP at the first RUG-IV Class Code that applies when moving down the workbook.

STEP # 1

Using the dropdown menu, determine whether the resident receives one of the following treatments or interventions in the last 7 days: Ventilator or respirator while a resident, tracheostomy care and suctioning while a resident, and infection isolation/quarantine while a resident without ventilator/respirator care or tracheostomy care in the last 7 days.



Note:

To select 'yes' for infection isolation/quarantine (O0100M2), residents must satisfy ALL FOUR of the following criteria:

1. Active infection - Demonstration of associated symptoms and/or a positive lab test.
2. Transmission-based precautions taken, over and above standard precautions, (e.g. droplet precaution).
3. Resident must be alone in room. Do not code for isolation if resident is cohorted (nursed) with another resident, even if other resident is being treated or isolated for infection
4. Resident must remain in their room at all times. All services must be provided in resident's room.

If the resident does not receive one of these treatments or services, you can skip to Category II now.

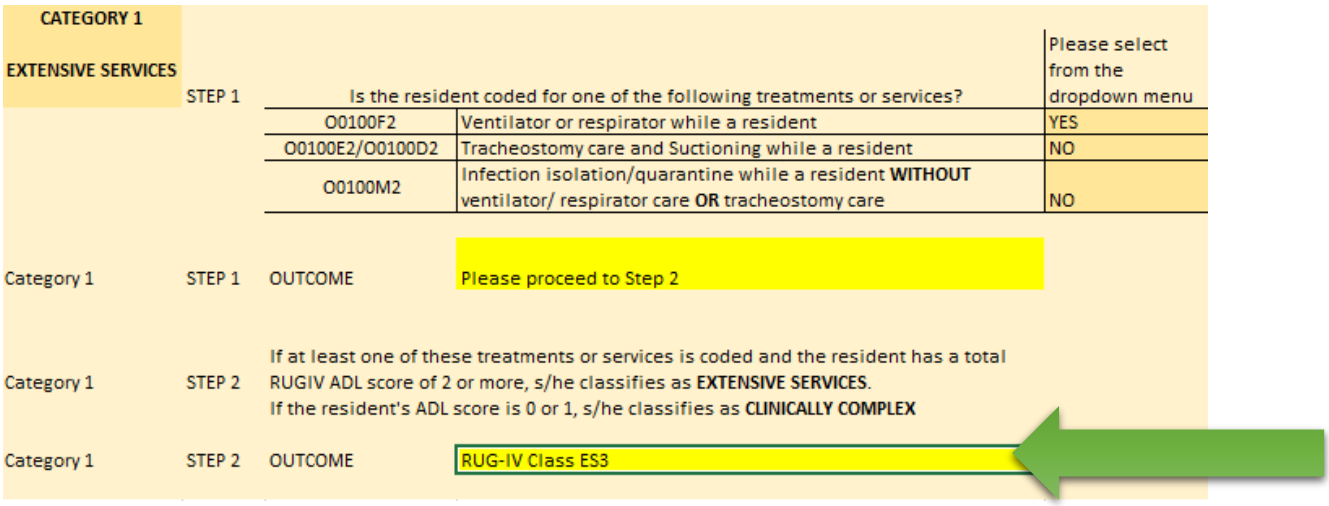
STEP # 2

If at least one of these treatments or services is coded and the resident has a total **RUG-IV ADL** score of **2 or more**, he/she classifies as **Extensive Services, and will be categorised into one of the following:**

Extensive Services Conditions	RUG-IV Class
Ventilator/Respirator*	ES3
Tracheostomy care and Suctioning*	ES2
Infection isolation/quarantine* without ventilator/respirator care or tracheostomy care	ES1

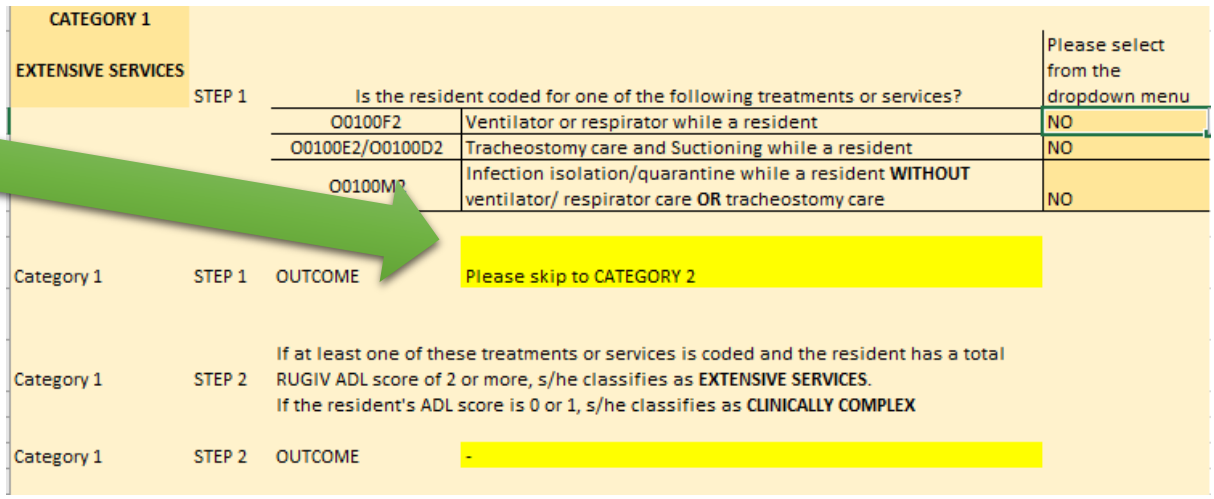
*while a resident

Example of Category 1:



CATEGORY 1 EXTENSIVE SERVICES				Please select from the dropdown menu
	STEP 1	Is the resident coded for one of the following treatments or services?		
		O0100F2	Ventilator or respirator while a resident	YES
		O0100E2/O0100D2	Tracheostomy care and Suctioning while a resident	NO
		O0100M2	Infection isolation/quarantine while a resident **WITHOUT** ventilator/ respirator care **OR** tracheostomy care	NO
Category 1	STEP 1	OUTCOME	Please proceed to Step 2	
Category 1	STEP 2	If at least one of these treatments or services is coded and the resident has a total RUGIV ADL score of 2 or more, s/he classifies as **EXTENSIVE SERVICES**. If the resident's ADL score is 0 or 1, s/he classifies as **CLINICALLY COMPLEX**		
Category 1	STEP 2	OUTCOME	RUG-IV Class ES3	

If the resident's **ADL score is 0 or 1**, she/he classifies as **Clinically Complex**. You will be asked to skip to **Category V, STEP #2. If the resident does not meet either of these two conditions, you will be asked to proceed to the next category: Special Care High.**



CATEGORY 1 EXTENSIVE SERVICES				Please select from the dropdown menu
	STEP 1	Is the resident coded for one of the following treatments or services?		
		O0100F2	Ventilator or respirator while a resident	NO
		O0100E2/O0100D2	Tracheostomy care and Suctioning while a resident	NO
		O0100M2	Infection isolation/quarantine while a resident **WITHOUT** ventilator/ respirator care **OR** tracheostomy care	NO
Category 1	STEP 1	OUTCOME	Please skip to CATEGORY 2	
Category 1	STEP 2	If at least one of these treatments or services is coded and the resident has a total RUGIV ADL score of 2 or more, s/he classifies as **EXTENSIVE SERVICES**. If the resident's ADL score is 0 or 1, s/he classifies as **CLINICALLY COMPLEX**		
Category 1	STEP 2	OUTCOME	-	

Category II: Special Care High

The classification groups in this category are based on certain resident conditions or interventions. using the dropdown menu, determine whether the resident is coded for one of the following treatments or services:

CATEGORY 2 SPECIAL CARE HIGH	STEP 1	Is the resident coded for one of the following treatments or services?		Please select from the dropdown menu
		B0100, ADLs	Comatose and completely ADL dependent or ADL did not occur (G0110A1, G0110B1, G0110H1, and G0110I1 all equal 4 or 8)	NO
		I2100	Septicaemia	NO
		I2900, N0350A, B	Diabetes with both of the following: Insulin injections (N0350A) for all 7 days AND Insulin order changes on 2 or more days (N0350B)	
		I5100, ADL Score	Quadriplegia with ADL score >= 5	YES NO
		I6200, J1100C	Chronic obstructive pulmonary disease and shortness of breath when lying flat	
		K0510A2	Parenteral/IV feedings provided and administered in and by the nursing facility	
		O0400D2	Respiratory therapy for all 7 days	
		J1550A, others	Fever and one of the following I2000 Pneumonia, J1550B Vomiting, K0300 Weight loss (1 or 2), **OR** K0510B2 Feeding tube*	
			Tube feeding classification requirements: (1) K0710A3 is 51% or more of total calories **OR (2) K0710A3 is 26% to 50% of total calories and K0710B3 is 501 cc or more per day fluid enteral intake in the last 7 days.*	

If the resident does <u>not</u> have one of these conditions, skip to Category III <u>now</u>.

STEP #2
If at least one of the special care conditions above is coded and the resident has a total RUG-IV ADL score of 2 or more, he or she classifies as **Special Care High**. **Move to STEP #3.**

If the resident's ADL score is 0 or 1, he or she classifies as Clinically Complex. Skip to Category IV, STEP #2.

STEP #3
This section evaluates the resident for depression. Signs and symptoms of depression are used as a third-level split for the Special Care High category. Residents with signs and symptoms of depression are identified by the Resident Mood Interview (PHQ-9©) or the Staff Assessment of Resident Mood (PHQ-9-OV©) below.

Category 2	STEP 1	OUTCOME	Please proceed to STEP 2	
Category 2	STEP 2	If at least one of the special care conditions above is coded and the resident has a total RUG-IV ADL score of 2 or more, he or she classifies as **SPECIAL CARE HIGH** If the resident's ADL score is 0 or 1, s/he classifies as **CLINICALLY COMPLEX**		
Category 2	STEP 2	OUTCOME	Special Care High: Please proceed to STEP 3	
Category 2	STEP 3		Evaluate resident for depression	
		Signs and symptoms of depression are used as a third-level split for the Special Care High category. Residents with signs and symptoms of depression are identified by the Resident Mood Interview (PHQ-9©) or the Staff Assessment of Resident Mood (PHQ-9-OV©)		
				Please select from the dropdown menu
			Does the resident qualify as depressed?	
	STEP 3	OUTCOME	ERROR	

Section D	Mood

D0100. Should Resident Mood Interview be Conducted? – Attempt to conduct interview with all residents

Enter Code	
	0. **No** (Resident is rarely/never understood) → Skip to and complete D0500 – D0600, Staff Assessment of Resident Mood (PHQ-9-OV) **1.** **Yes** → Continue to D0200, Resident Mood Interview (PHQ-9)

D0200. Resident Mood Intervention (PHQ-9©)

Say to resident: "Over the last two weeks, have you been bothered by any of the following problems?"

If symptom is present, enter 1 (yes) in column 1, symptom presence.
If yes in column 1, then ask the resident: "about **how often** have you been bothered by this?"
Read and show the resident a card with the symptom frequency choices. Indicate response in column 2, symptom frequency.

1. Symptom Presence 0. **No** (Enter 0 in Column 2) 1. **Yes** (enter 0-3 in Column 2) 9. **No response** (leave Column 2 Blank)	**2. Symptom Frequency** 0. **Never or 1 day** 1. **2-6 days** (several days) 2. **7-11 days** (half or more days) 3. **12-14 days** (nearly every day)	**1. Symptom Presence**	**2. Symptom Frequency**
		Enter Score in Boxes	
A. Little interest or pleasure in doing things			
B. Feeling down, depressed, or hopeless			
C. Trouble falling or staying asleep, or sleeping too much			
D. Feeling tired or having little energy			
E. Poor appetite or overeating			
F. Feeling bad about yourself – or that you are a failure or have let yourself or your family down			

G. Trouble concentrating on things, such as reading the newspaper or watching television	☐	☐
H. Moving or speaking slowly that other people could have noticed. Or the opposite being fidgety or restless that you have been moving around a lot more than usual	☐	☐
I. Thoughts that you would be better off dead, or hurting yourself in some way	☐	☐

D0300. Total Severity Score

Enter score ☐	**Add scores for all frequency responses in column 2**, symptom frequency. Total score must be between 00 and 27. Enter 99 if unable to complete interview (i.e. symptom frequency is blank for 3 or more items

D0350. Safety Notification – complete only if D0200I1 = 1, where one indicates possibility of residents self-harm.

Enter score ☐	Was the responsible staff or provider informed that there is a potential for resident self-harm?

Over the last two weeks, did the resident have any of the following problems or behaviours?

If symptom is present, enter 1 (yes) in column 1, symptom presence.
Then move to column 2, symptom frequency, and indicate symptom frequency

2. **Symptom Presence** 2. **No** (Enter 0 in Column 2) 3. **Yes** (enter 0-3 in Column 2) 2. **Symptom Frequency** 0. **Never or 1 day** 1. **2-6 days** (several days) 2. **7-11 days** (half or more days) 3. **12-14 days** (nearly every day)	1. Symptom Presence	2. Symptom Frequency
	Enter Score in Boxes	
J. **Little interest or pleasure in doing things**		
K. **Feeling down, depressed, or hopeless**		
L. **Trouble falling or staying asleep, or sleeping too much**		
M. **Feeling tired or having little energy**		
N. **Poor appetite or overeating**		
O. **Feeling bad about yourself – or that you are a failure or have let yourself or your family down**		
P. **Trouble concentrating on things, such as reading the newspaper or watching television**		
Q. **Moving or speaking slowly that other people could have noticed. Or the opposite being fidgety or restless that you have been moving around a lot more than usual**		
R. **Thoughts that you would be better off dead, or hurting yourself in some way**		

D0600. Total Severity Score

Enter score	
	Add scores for all frequency responses in column 2, symptom frequency. Total score must be between 00 and 33.

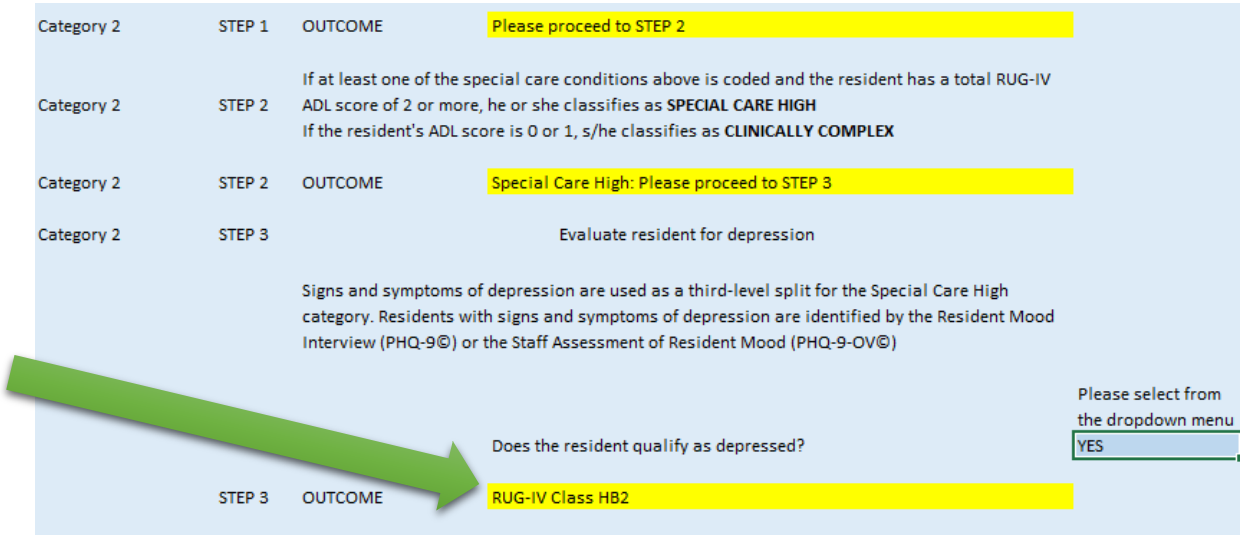
D0650. Safety Notification – complete only if D0200I1 = 1, where one indicates possibility of residents self-harm.	
Enter score	Was the responsible staff or provider informed that there is a potential for resident self-harm?

These items are used to calculate a Total Severity Score for the resident interview at Item D0300 and for the staff assessment at Item D0600. The resident qualifies as depressed for RUG-IV classification in either of the two following cases:

The D0300 Total Severity Score is greater than or equal to 10 but not 99,
Or
The D0600 Total Severity Score is greater than or equal to 10.

NOTE: Qualification for depression is based on a yes/no classification. The PHQ-9-OV© may be interchangeable with depression scales already implemented into LTRC facilities in Ireland once they provide the same classification for depression among residents. Further investigation of interchangeability is required.

Once the resident has been assessed for depression and inputted using the dropdown menu provided. The resident will automatically be categorised in a RUG-IV class based on their ADL scores.



Category III: Special Care Low

The classification groups in this category are based on certain resident conditions or services. using the dropdown menu, determine whether the resident is coded for one of the following treatments or services:

SPECIAL CARE LOW			
	I4400, ADL Score	Cerebral palsy, with ADL score >=5	NO
	I5200, ADL Score	Multiple sclerosis, with ADL score >=5	NO
	I5300, ADL Score	Parkinson's disease, with ADL score >=5	NO
	I6300, O0100C2	Respiratory failure and oxygen therapy provided within the facility while a resident	YES / NO
	K0510B2	Feeding tube*	
	M0300B1	Two or more stage 2 pressure ulcers with two or more selected skin treatments**	
	M0300C1, D1, F1	Any stage 3 or 4 pressure ulcer with two or more selected skin treatments**	
	M1030	Two or more venous/arterial ulcers with two or more selected skin treatments**	
	M0300B1, M1030	1 stage 2 pressure ulcer and 1 venous/arterial ulcer with 2 or more selected skin treatments**	
	M1040A, B, C; M1200I	Foot infection, diabetic foot ulcer or other open lesion of foot with application of dressings to the feet	
	O0100B2	Radiation treatment while a resident	
	O0100J2	Dialysis treatment while a resident	
		**Tube feeding classification requirements: (1) K0710A3 is 51% or more of total calories OR (2) K0710A3 is 26% to 50% of total calories and K0710B3 is 501 cc or more per day fluid enteral intake in the last 7 days.*	
		***Selected skin treatments: M1200A,B# Pressure relieving chair and/or bed, M1200C Turning/repositioning, M1200D Nutrition or hydration intervention, M1200E Pressure ulcer care, M1200G Application of dressings (not to feet), M1200H Application of ointments (not to feet), #count as one treatment even if both provided.*	

If the resident does not have one of these conditions, <u>skip to Category IV now</u>.

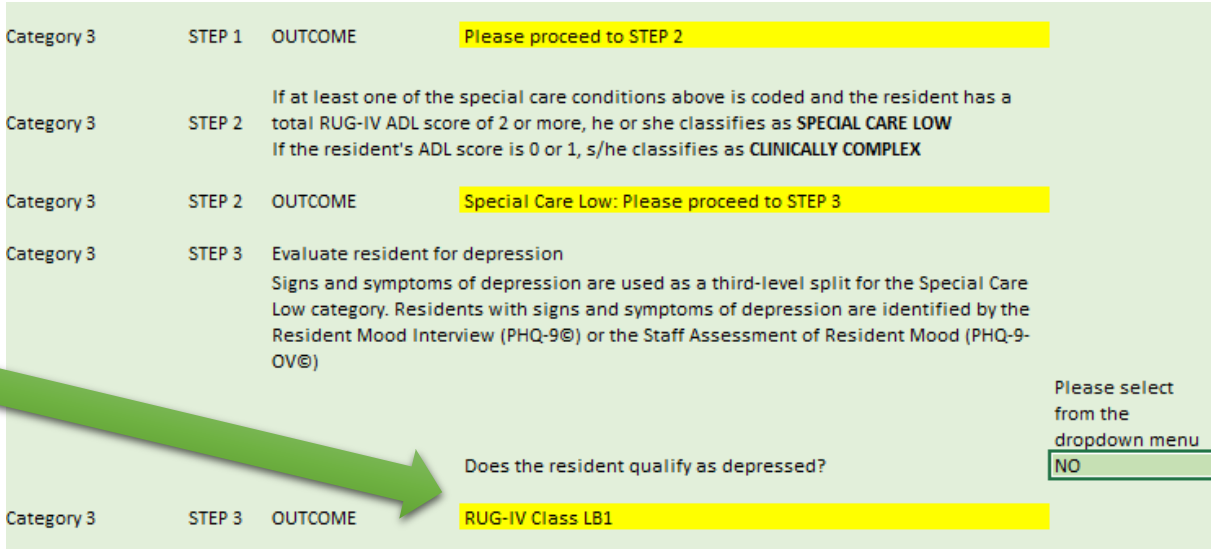
STEP #2

If at least one of the special care conditions above is coded and the resident has a total RUG-IV ADL score of 2 or more, he or she classifies as Special Care Low. **Move to Step #3.**

If the resident's ADL score is 0 or 1, he or she classifies as Clinically Complex. Skip to Category IV, Step #2.

STEP #3

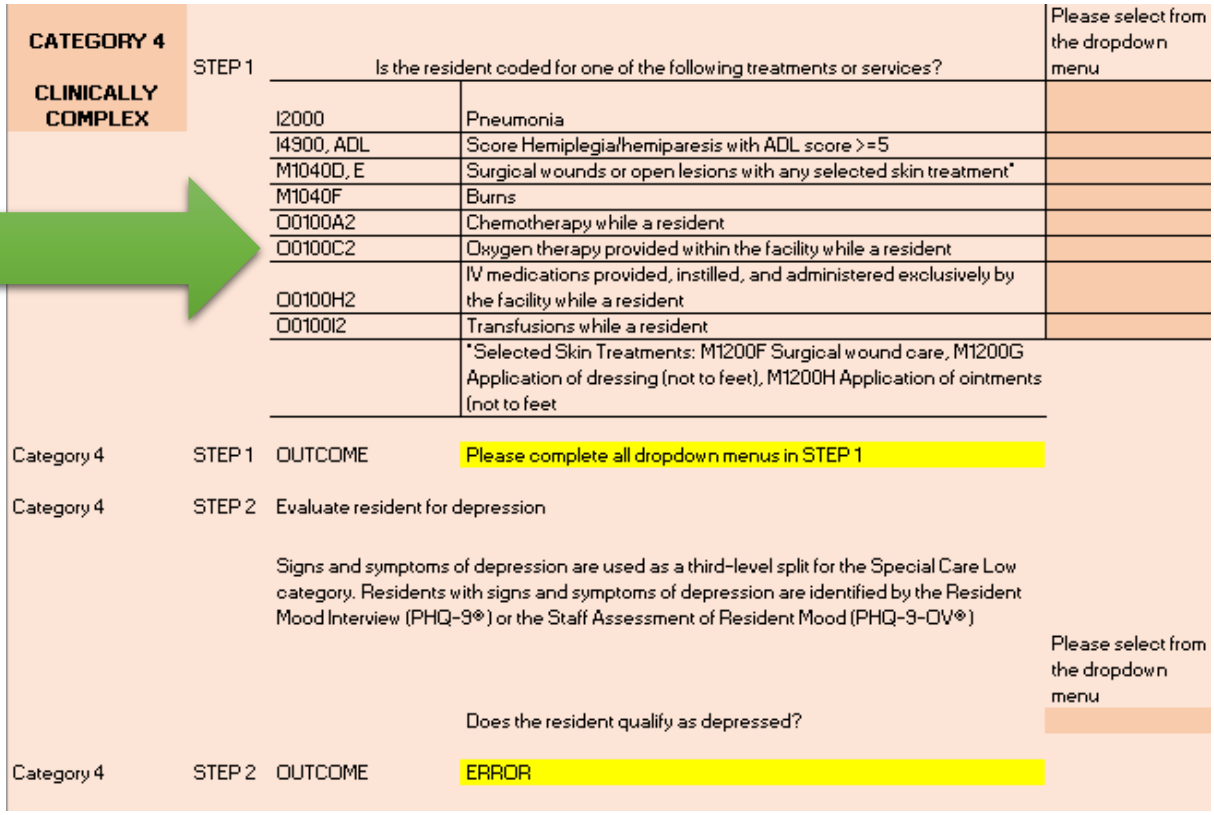
Evaluation for depression described above (PHQ-9-OV©). Residents will be categorised according to their evaluation for depression and ADL scores:



Category 3	STEP 1	OUTCOME	Please proceed to STEP 2	
Category 3	STEP 2	If at least one of the special care conditions above is coded and the resident has a total RUG-IV ADL score of 2 or more, he or she classifies as **SPECIAL CARE LOW** If the resident's ADL score is 0 or 1, s/he classifies as **CLINICALLY COMPLEX**		
Category 3	STEP 2	OUTCOME	Special Care Low: Please proceed to STEP 3	
Category 3	STEP 3	Evaluate resident for depression Signs and symptoms of depression are used as a third-level split for the Special Care Low category. Residents with signs and symptoms of depression are identified by the Resident Mood Interview (PHQ-9©) or the Staff Assessment of Resident Mood (PHQ-9-OV©)		Please select from the dropdown menu
			Does the resident qualify as depressed?	NO
Category 3	STEP 3	OUTCOME	RUG-IV Class LB1	

Category IV: Clinically Complex

The classification groups in this category are based on certain resident conditions or services. Using the dropdown menu, determine whether the resident is coded for one of the following treatments or services:

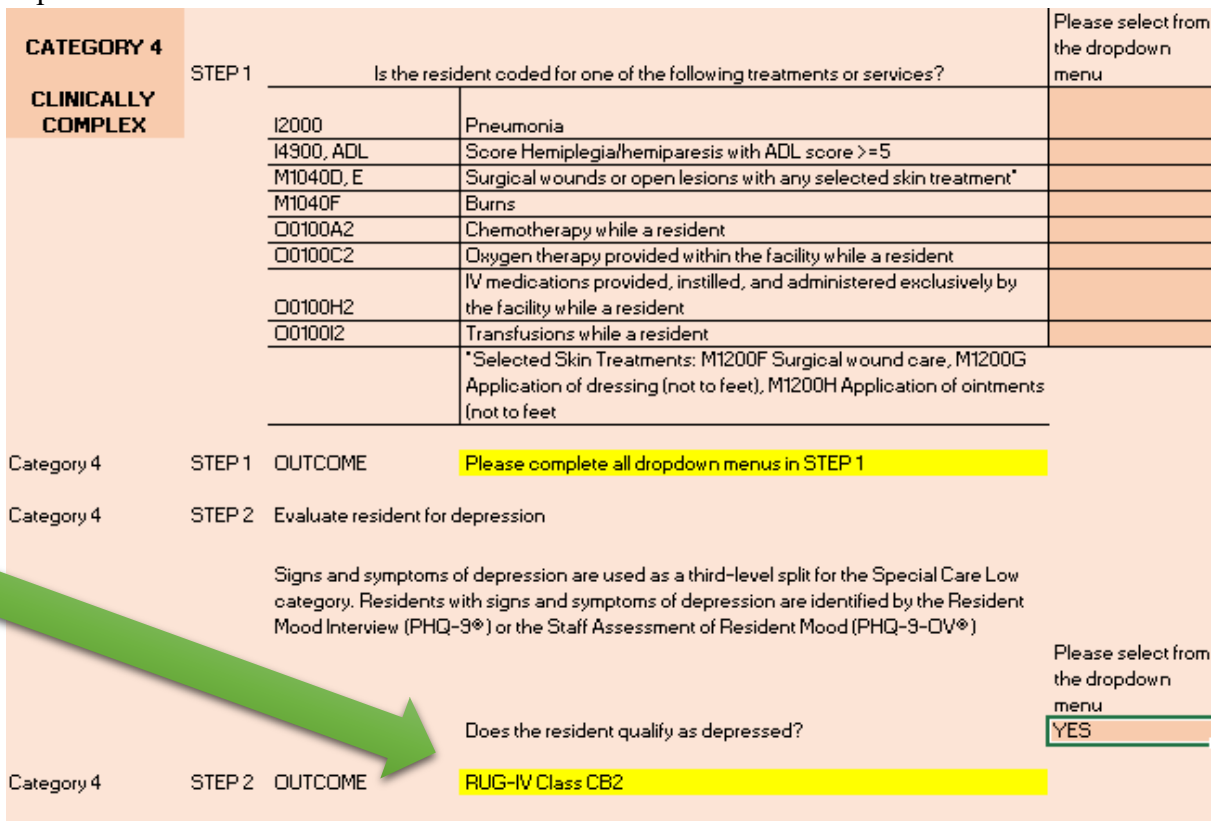


CATEGORY 4 **CLINICALLY COMPLEX**	STEP 1	Is the resident coded for one of the following treatments or services?		Please select from the dropdown menu
		I2000	Pneumonia	
		I4900, ADL	Score Hemiplegia/hemiparesis with ADL score >=5	
		M1040D, E	Surgical wounds or open lesions with any selected skin treatment*	
		M1040F	Burns	
		O0100A2	Chemotherapy while a resident	
		O0100C2	Oxygen therapy provided within the facility while a resident	
		O0100H2	IV medications provided, instilled, and administered exclusively by the facility while a resident	
		O0100I2	Transfusions while a resident	
			*Selected Skin Treatments: M1200F Surgical wound care, M1200G Application of dressing (not to feet), M1200H Application of ointments (not to feet	
Category 4	STEP 1	OUTCOME	Please complete all dropdown menus in STEP 1	
Category 4	STEP 2	Evaluate resident for depression Signs and symptoms of depression are used as a third-level split for the Special Care Low category. Residents with signs and symptoms of depression are identified by the Resident Mood Interview (PHQ-9®) or the Staff Assessment of Resident Mood (PHQ-9-OV®)		Please select from the dropdown menu
			Does the resident qualify as depressed?	
Category 4	STEP 2	OUTCOME	ERROR	

If the resident does not have one of these conditions, skip to Category V now.

STEP #2

Evaluate for depression - (PHQ-9-OV©). Residents will be categorised according to their evaluation for depression and ADL scores:



CATEGORY 4 CLINICALLY COMPLEX				Please select from the dropdown menu
	STEP 1	Is the resident coded for one of the following treatments or services?		
		I2000	Pneumonia	
		I4900, ADL	Score Hemiplegia/hemiparesis with ADL score >=5	
		M1040D, E	Surgical wounds or open lesions with any selected skin treatment*	
		M1040F	Burns	
		O0100A2	Chemotherapy while a resident	
		O0100C2	Oxygen therapy provided within the facility while a resident	
		O0100H2	IV medications provided, instilled, and administered exclusively by the facility while a resident	
		O0100I2	Transfusions while a resident	
			*Selected Skin Treatments: M1200F Surgical wound care, M1200G Application of dressing (not to feet), M1200H Application of ointments (not to feet	
Category 4	STEP 1	OUTCOME	Please complete all dropdown menus in STEP 1	
Category 4	STEP 2	Evaluate resident for depression		
		Signs and symptoms of depression are used as a third-level split for the Special Care Low category. Residents with signs and symptoms of depression are identified by the Resident Mood Interview (PHQ-9®) or the Staff Assessment of Resident Mood (PHQ-9-OV®)		
				Please select from the dropdown menu
			Does the resident qualify as depressed?	YES
Category 4	STEP 2	OUTCOME	RUG-IV Class CB2	

Category V: Behavioural Symptoms and Cognitive Performance

Classification in this category is based on the presence of certain behavioural symptoms or the resident's cognitive performance. Use the following instructions:

STEP #1

If the resident's ADL score is 5 or less, the workbook will ask you to go to Step #2.

If the ADL score is greater than 5, the workbook will ask you to skip to Category VI now.

STEP #2

Determine the resident's cognitive status based on resident interview using the Brief Interview for Mental Status (BIMS). The BIMS items involve the following:

- C0200 Repetition of three words
- C0300 Temporal orientation
- C0400 Recall

Item C0500 provides a BIMS Summary Score for these items and indicates the resident's cognitive performance, with a score of 15 indicating the best cognitive performance and 0 indicating the worst performance. If the resident interview is not successful, then the BIMS Summary Score will equal 99.

If the resident's Summary Score is **less than or equal to 9**, he or she is has a cognitive impairment and classifies in the Behavioural Symptoms and Cognitive Performance category. **Skip to Step #5. If score is greater than 9 but not 99 proceed to Step #4. If resident's summary score is 99 or blank proceed to step #3.**

NOTE: It may be possible the BIMS can be interchangeable with cognitive impairment already implemented into LTRC facilities in Ireland. Further investigation of interchangeability is required.

Brief Interview for Mental Status (BIMS)

ARD Date:

Resident Name: Room #:

Repetition of Three Words

Ask the resident: "I am going to say three words for you to remember. Please repeat the words after I have said all three."
"The words are: **sock, blue and bed.** Now tell me the three words."
Number of words repeated after first attempt

0. None
1. One
2. Two
3. Three

↓Enter Code

After the resident's first attempt, repeat the words using cues ("sock, something to wear; blue, a color; bed, a piece of furniture"). You may repeat the words up to two more times.

Temporal Orientation (orientation to year, month and day)

Ask the resident "Please tell me what year it is right now."

A. Able to report correct year

↓Enter Code

0. **Missed by > 5 years** or no answer
1. **Missed by 2-5 years**
2. **Missed by 1 year**
3. **Correct**

B. Ask the resident: "What month are we in right now."

↓Enter Code

0. **Missed by > one moth or** no answer
1. **Missed by 6 days to 1 month**
2. **Accurate within 5 days**

↓Enter Code

C. As the resident: "What day of the week is today?'

0. **Incorrect** or no answer
1. **Correct**

Recall

Ask the resident: "Let's go back to an earlier question. What were those three words I asked you to repeat?" If unable to remember a word, give cue (something to wear; a color; a piece of furniture) for that word.

A. Able to recall "sock"

↓Enter Code

0. **No** - could not recall
1. **Yes, after cueing** ("something to wear")
2. **Yes, no cue required**

B. Able to recall "blue"

↓Enter Code

0. **No** - could not recall
1. **Yes, after cueing** ("a color")
2. **Yes, no cue required**

C. Able to recall "bed"

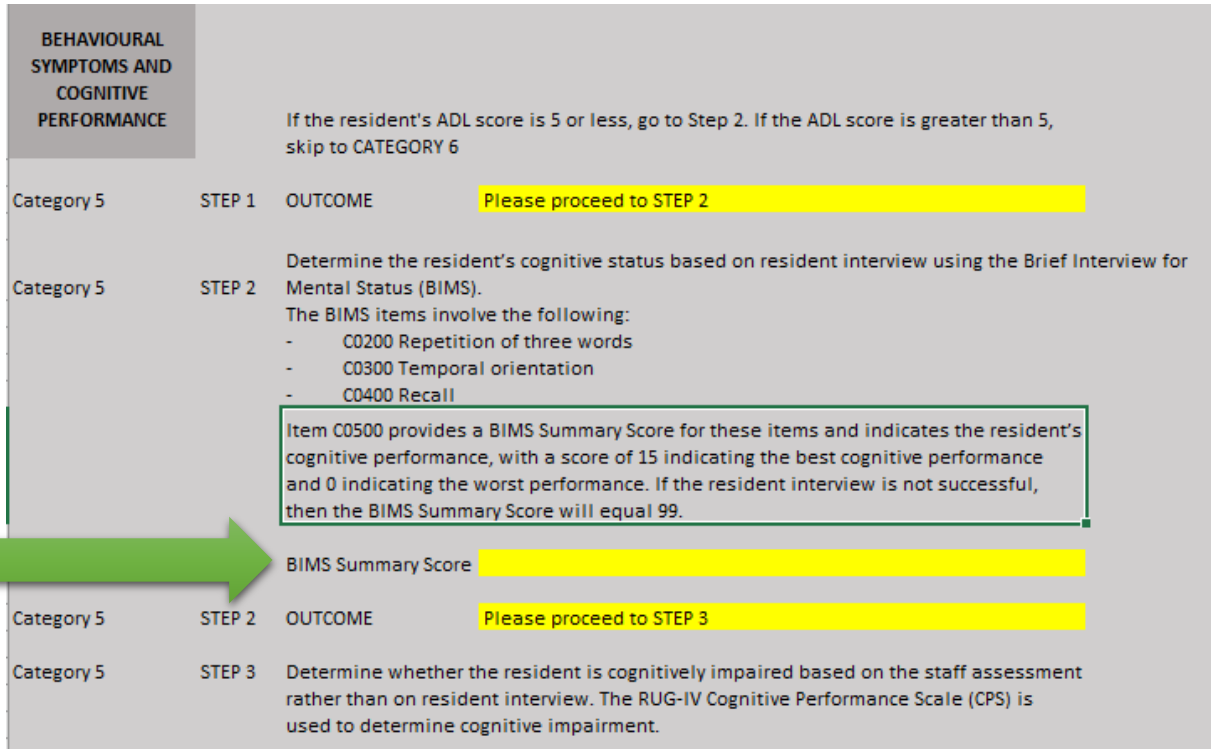
↓Enter Code

0. **No** - could not recall
1. **Yes, after cueing** ("a piece of furniture")
2. **Yes, no cue required**

Summary Score

Add scores for above questions and fill in total score (00-15)
Enter 99 if unable to complete one or more questions of the interview

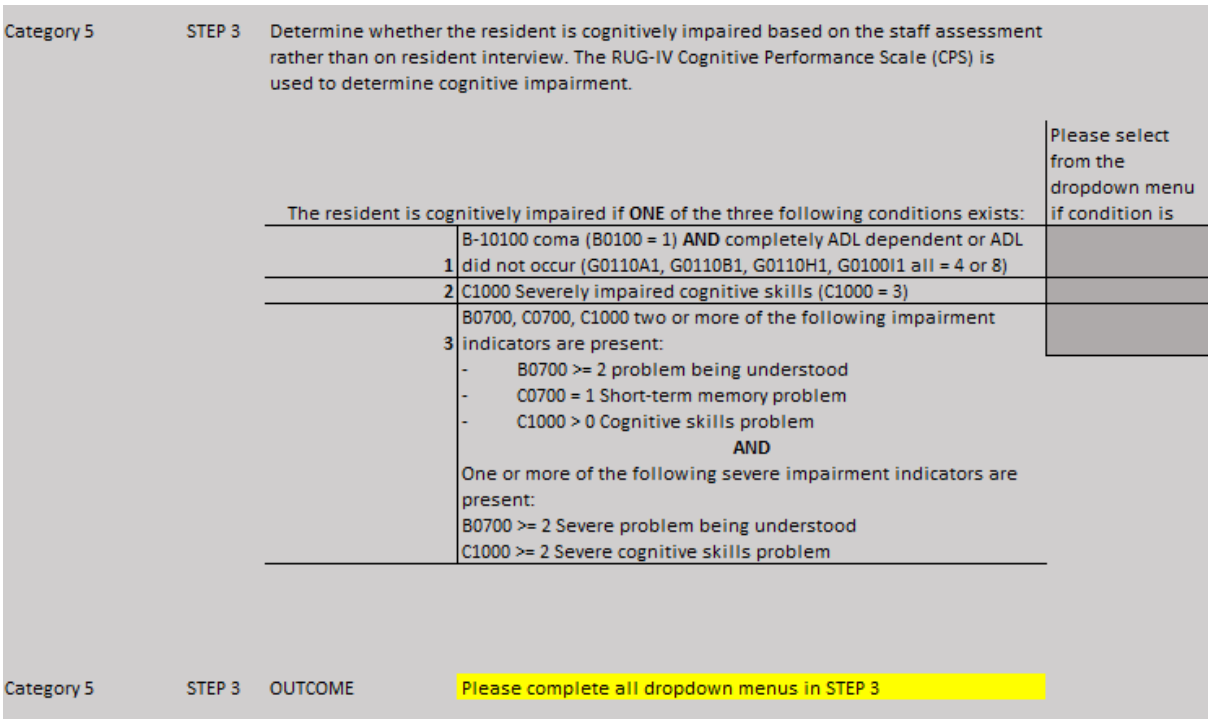
Signature/Title of person completing summary_____Date_____



BEHAVIOURAL SYMPTOMS AND COGNITIVE PERFORMANCE		
		If the resident's ADL score is 5 or less, go to Step 2. If the ADL score is greater than 5, skip to CATEGORY 6
Category 5	STEP 1	OUTCOME — Please proceed to STEP 2
Category 5	STEP 2	Determine the resident's cognitive status based on resident interview using the Brief Interview for Mental Status (BIMS). The BIMS items involve the following: - C0200 Repetition of three words - C0300 Temporal orientation - C0400 Recall
		Item C0500 provides a BIMS Summary Score for these items and indicates the resident's cognitive performance, with a score of 15 indicating the best cognitive performance and 0 indicating the worst performance. If the resident interview is not successful, then the BIMS Summary Score will equal 99.
		BIMS Summary Score
Category 5	STEP 2	OUTCOME — Please proceed to STEP 3
Category 5	STEP 3	Determine whether the resident is cognitively impaired based on the staff assessment rather than on resident interview. The RUG-IV Cognitive Performance Scale (CPS) is used to determine cognitive impairment.

STEP #3

Determine whether the resident has a cognitive impairment based on the staff assessment rather than on resident interview. The RUG-IV Cognitive Performance Scale (CPS) is used to determine cognitive impairment.



Category 5	STEP 3	Determine whether the resident is cognitively impaired based on the staff assessment rather than on resident interview. The RUG-IV Cognitive Performance Scale (CPS) is used to determine cognitive impairment.	
		The resident is cognitively impaired if **ONE** of the three following conditions exists:	Please select from the dropdown menu if condition is
	1	B-10100 coma (B0100 = 1) **AND** completely ADL dependent or ADL did not occur (G0110A1, G0110B1, G0110H1, G0100I1 all = 4 or 8)	
	2	C1000 Severely impaired cognitive skills (C1000 = 3)	
	3	B0700, C0700, C1000 two or more of the following impairment indicators are present: - B0700 >= 2 problem being understood - C0700 = 1 Short-term memory problem - C1000 > 0 Cognitive skills problem **AND** One or more of the following severe impairment indicators are present: B0700 >= 2 Severe problem being understood C1000 >= 2 Severe cognitive skills problem	
Category 5	STEP 3	OUTCOME — Please complete all dropdown menus in STEP 3	

The resident is cognitively impaired if one of the three following conditions exists:

1. B-10100 **coma** (B0100 = 1) and **completely ADL dependent** or **ADL did not occur** (G0110A1, G0110B1, G0110H1, G0100I1 all = 4 or 8)

2. C1000 Severely impaired cognitive skills (C1000 = 3)
3. B0700, C0700, C1000 two or more of the following impairment indicators are present:
    - B0700 >= 2 problem being understood
    - C0700 = 1 Short-term memory problem
    - C1000 > 0 Cognitive skills problem

    And

    One or more of the following severe impairment indicators are present:

    B0700 >= 2 Severe problem being understood

    C1000 >= 2 Severe cognitive skills problem

If the resident meets the criteria for being cognitively impaired, then he or she classifies in Behavioural Symptoms and Cognitive Performance. You will be prompted to continue to Step #5

			The resident is cognitively impaired if **ONE** of the three following conditions exists:	Please select from the dropdown menu if condition is
		1	B-10100 coma (B0100 = 1) **AND** completely ADL dependent or ADL did not occur (G0110A1, G0110B1, G0110H1, G0100I1 all = 4 or 8)	YES
		2	C1000 Severely impaired cognitive skills (C1000 = 3)	NO
		3	B0700, C0700, C1000 two or more of the following impairment indicators are present: - B0700 >= 2 problem being understood - C0700 = 1 Short-term memory problem - C1000 > 0 Cognitive skills problem **AND** One or more of the following severe impairment indicators are present: B0700 >= 2 Severe problem being understood C1000 >= 2 Severe cognitive skills problem	NO
Category 5	STEP 3	OUTCOME	Resident meets the criteria for being cognitively impaired and classifies in the Behavioural Symptoms and Cognitive Performance category Please skip to STEP 5	

If the resident does not present with a cognitive impairment as defined here, proceed to Step #4.

			The resident is cognitively impaired if **ONE** of the three following conditions exists:	Please select from the dropdown menu if condition is
		1	B-10100 coma (B0100 = 1) **AND** completely ADL dependent or ADL did not occur (G0110A1, G0110B1, G0110H1, G0100I1 all = 4 or 8)	NO
		2	C1000 Severely impaired cognitive skills (C1000 = 3)	NO
		3	B0700, C0700, C1000 two or more of the following impairment indicators are present: - B0700 >= 2 problem being understood - C0700 = 1 Short-term memory problem - C1000 > 0 Cognitive skills problem **AND** One or more of the following severe impairment indicators are present: B0700 >= 2 Severe problem being understood C1000 >= 2 Severe cognitive skills problem	NO
Category 5	STEP 3	OUTCOME	Please proceed to STEP 4	

STEP #4

Determine whether the resident presents with one of the following behavioural symptoms:

		Determine whether the resident presents with one of the following behavioural symptoms		Please select from the dropdown menu
Category 5	STEP 4	E0100A	Hallucinations	
		E0100B	Delusions	
		E0200A	Physical behavioural symptoms directed toward others (2 or 3)	
		E0200B	Verbal behavioural symptoms directed toward others (2 or 3)	
		E0200C	Other behavioural symptoms not directed toward others (2 or 3)	
		E0800	Rejection of care (2 or 3)	
		E0900	Wandering (2 or 3)	

If the resident presents with one of the symptoms above, then he or she classifies in Behavioural Symptoms and Cognitive Performance. Proceed to Step #5. If he or she does not present with behavioural symptoms or a cognitive impairment, skip to Category VI.

STEP #5

Determine Restorative Nursing Count

You will be asked to count the number of the following services provided for 15 or more minutes a day for 6 or more days of the last 7 days. Residents will be assigned to a RUG-IV class according to their ADL score and Restorative Nursing Count. This will be calculated automatically.

Category 5	STEP 5	Determine Restorative Nursing Count		
		Count the number of the following services provided for 15 or more minutes a day for 6 or more of the last 7 days:		Please select from the dropdown menu
		H0200C, H0500**	Urinary toileting program and/or bowel toileting program	YES
		O0500A, B**	Passive and/or active ROM	NO
		O0500C	Splint or brace assistance	YES
		O0500D, F**	Bed mobility and/or walking training	NO
		O0500E	Transfer training	NO
		O0500G	Dressing and/or grooming training	YES
		O0500H	Eating and/or swallowing training	NO
		O0500I	Amputation/prostheses care	NO
		O0500J	Communication training	NO
		**Count as one service even if both provided		
		Restorative Nursing Count	3	
Category 5	STEP 5	OUTCOME	RUG-IV Class BB2	

Category VI: Reduced Physical Function

STEP # 1

Residents who do not meet the conditions of any of the previous categories, including those who would meet the criteria for the Behavioural Symptoms and Cognitive Performance category but have a RUG-IV ADL score greater than 5, are placed in this category.

STEP #2

Determining Restorative Nursing Count

You will be asked to count the number of the following services provided for 15 or more minutes a day for 6 or more of the last 7 days:

CATEGORY 6		Residents who do not meet the conditions of any of the previous categories, including those who would meet the criteria for the Behavioural Symptoms and Cognitive Performance category but have a RUG-IV ADL score greater than 5, are placed in this category.		
REDUCED PHYSICAL FUNCTION	STEP 1	Determine Restorative Nursing Count		
		Count the number of the following services provided for 15 or more minutes a day for 6 or more of the last 7 days:		from the dropdown menu
		H0200C, H0500**	Urinary toileting program and/or bowel toileting program	
		O0500A, B**	Passive and/or active ROM	
		O0500C	Splint or brace assistance	
		O0500D, F**	Bed mobility and/or walking training	
		O0500E	Transfer training	
		O0500G	Dressing and/or grooming training	
		O0500H	Eating and/or swallowing training	
		O0500I	Amputation/prostheses care	
		O0500J	Communication training	
		**Count as one service even if both provided		
		Restorative Nursing Count	Please complete all dropdown menus in STEP 1	
Category 6	STEP 1	OUTCOME	Please complete all dropdown menus in STEP 1	

STEP #3

Resident will be assigned a RUG-IV Classification by using the RUG-IV ADL score and the Restorative Nursing Count. This will be calculated automatically:

REDUCED PHYSICAL FUNCTION	STEP 1	Determine Restorative Nursing Count		
		Count the number of the following services provided for 15 or more minutes a day for 6 or more of the last 7 days:		from the dropdown menu
		H0200C, H0500**	Urinary toileting program and/or bowel toileting program	YES
		O0500A, B**	Passive and/or active ROM	NO
		O0500C	Splint or brace assistance	NO
		O0500D, F**	Bed mobility and/or walking training	YES
		O0500E	Transfer training	YES
		O0500G	Dressing and/or grooming training	NO
		O0500H	Eating and/or swallowing training	NO
		O0500I	Amputation/prostheses care	NO
		O0500J	Communication training	NO
		**Count as one service even if both provided		
		Restorative Nursing Count	3	
Category 6	STEP 1	OUTCOME	RUG-IV Class PB2	

Once you have assigned a RUG-IV category to the resident you will be asked to record this in the 'Dependency Profile' sheet before moving onto a new resident assessment.

Resident Code	RUG-IV Class
xxxx	HD1
xxxx	CD2
xxxx	CA2
xxxx	CE1
xxxx	ES3

Extensive Services	ES3	ES2	ES1
1	1	0	0

Special Care High	HE2	HE1	HD2	HD1	HC2	HC1	HB2	HB1
1	0	0	0	1	0	0	0	0

Special Care Low	LE2	LE1	LD2	LD1	LC2	LC1	LB2	LB1
0	0	0	0	0	0	0	0	0

Clinically Complex	CE2	CE1	CD2	CD1	CC2	CC1	CB2	CB1	CA2	CA1
3	0	1	1	0	0	0	0	0	1	0

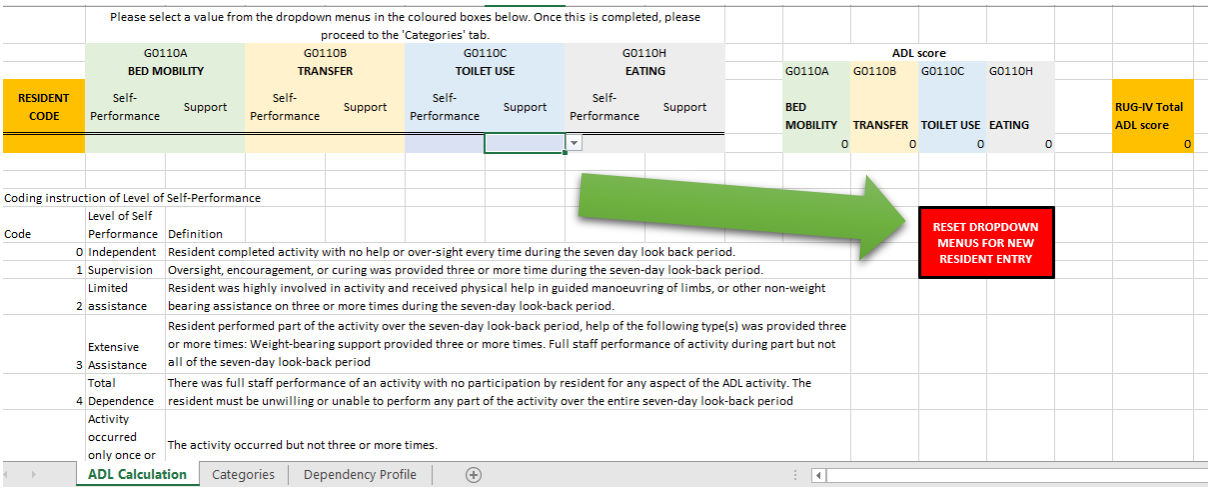
Behavioural Symptoms and Cognitive Performance	BB2	BB1	BA2	BA1
0	0	0	0	0

Reduced Physical Functioning	PE2	PE1	PD2	PD1	PC2	PC1	PB2	PB1	PA2	PA1
0	0	0	0	0	0	0	0	0	0	0

Total
5

ADL Calculation | Categories | Dependency

Once you have recorded the residents RUG-IV Class, you can proceed to the next resident assessment. Before proceeding to the next assessment please reset dropdown menus. The reset button can be found on the ADL Score sheet.



Please select a value from the dropdown menus in the coloured boxes below. Once this is completed, please proceed to the 'Categories' tab.

RESIDENT CODE	G0110A BED MOBILITY Self-Performance	G0110A BED MOBILITY Support	G0110B TRANSFER Self-Performance	G0110B TRANSFER Support	G0110C TOILET USE Self-Performance	G0110C TOILET USE Support	G0110H EATING Self-Performance	G0110H EATING Support

ADL score G0110A BED MOBILITY	G0110B TRANSFER	G0110C TOILET USE	G0110H EATING	RUG-IV Total ADL score
0	0	0	0	0

RESET DROPDOWN MENUS FOR NEW RESIDENT ENTRY

Coding instruction of Level of Self-Performance

Code	Level of Self Performance	Definition
0	Independent	Resident completed activity with no help or over-sight every time during the seven day look back period.
1	Supervision	Oversight, encouragement, or curing was provided three or more time during the seven-day look-back period.
2	Limited assistance	Resident was highly involved in activity and received physical help in guided manoeuvring of limbs, or other non-weight bearing assistance on three or more times during the seven-day look-back period.
3	Extensive Assistance	Resident performed part of the activity over the seven-day look-back period, help of the following type(s) was provided three or more times: Weight-bearing support provided three or more times. Full staff performance of activity during part but not all of the seven-day look-back period
4	Total Dependence	There was full staff performance of an activity with no participation by resident for any aspect of the ADL activity. The resident must be unwilling or unable to perform any part of the activity over the entire seven-day look-back period
	Activity occurred only once or	The activity occurred but not three or more times.

ADL Calculation | Categories | Dependency Profile

RUG-IV Coding Definitions and Tips

Nurse Staffing and Resident Dependency Data Collection

Study Title: Programme of Research into Safe Nurse Staffing and Skill-Mix

Principal investigator's name: Jonathan Drennan

Principal investigator's title: Professor of Nursing and Health Services Research,

School of Nursing & Midwifery

University College Cork

Activities of Daily Living (ADL)

Definitions

Bed Mobility:
How resident moves to and from lying position, turns side or side, and positions body while in bed or alternative sleep furniture.

Transfer:
How resident moves between surfaces including to or from: bed, chair, wheelchair, standing position (excludes to/from bath/toilet).

Toilet use:
How resident uses the toilet room, commode, bedpan, or urinal; transfers on/off toilet; cleanses self after elimination; changes pad; manages ostomy or catheter; and adjusts clothes. Do not include emptying of bedpan, urinal, bedside commode, catheter bag or ostomy bag.

Eating:
How resident eats and drinks, regardless of skill. Do not include eating/drinking while taking medication. Includes intake of nourishment by other means (e.g., tube feeding, total parenteral nutrition, IV fluids administered for nutrition or hydration).

CATEGORY 1 – EXTENSIVE SERVICES

O0100F2 Ventilator or Respirator:

Invasive mechanical ventilator or respirator **while a resident.**

Coding Tips:

- Code any type of electrically or pneumatically powered closed-system mechanical ventilator support device that ensures adequate ventilation in the resident who is or who may become (such as during weaning attempts) unable to support his or her own respiration in this item. During invasive mechanical ventilation, the resident's breathing is controlled by the ventilator. Residents receiving closed-system ventilation include those residents receiving ventilation via an endotracheal tube (e.g., nasally or orally intubated) or tracheostomy.
- A resident who has been weaned off of a respirator or ventilator in the last 14 days or is currently being weaned off a respirator or ventilator, should also be coded here. Do not code this item when the ventilator or respirator is used only as a substitute for BiPAP or CPAP

O0100E2 Tracheostomy**:**

Code cleansing of the tracheostomy and/or cannula in this item. This item may be coded if the resident performs his/her own tracheostomy care.

O0100D2 Suctioning**:**

Code only tracheal and/or nasopharyngeal suctioning in this item. Do not code oral suctioning here. This item may be coded if the resident performs his/her own tracheal and/or nasopharyngeal suctioning.

O0100M2 Isolation for Active Infectious Disease:

(does not include standard precautions)

Code **only when the resident requires transmission-based precautions and single room isolation (alone in a separate room) because of active infection (i.e., symptomatic and/or have a positive test and are in the contagious stage) with highly transmissible or epidemiologically significant pathogens that have been acquired by physical contact or airborne or droplet transmission.** Do not code this item if the resident only has a history of infectious disease (e.g., s/p MRSA or s/p C-Diff - no active symptoms). Do not code this item if the precautions are standard precautions, because these types of precautions apply to everyone. Standard precautions include hand hygiene compliance, glove use, and additionally may include masks, eye protection, and gowns. Examples of when the isolation criterion would not apply include urinary tract infections, encapsulated pneumonia, and wound infections. Code for "single room isolation" only when **all** the following conditions are met:

1. The resident has **active infection** with highly transmissible or epidemiologically significant pathogens that have been acquired by physical contact or airborne or droplet transmission.
2. Precautions are over and above standard precautions. That is, **transmission-based precautions** (contact, droplet, and/or airborne) must be in effect.
3. The **resident is in a room** alone because of active infection and cannot have a roommate. This means that the resident must be in the room alone and not cohorted with a roommate regardless of whether the roommate has a similar active infection that requires isolation.
4. The **resident must remain in his/her room**. This requires that all services be brought to the resident (e.g. rehabilitation, activities, dining, etc.).

CATEGORY 2 – SPECIAL CARE HIGH

B0100 comatose:

Could not be aroused/ persistent vegetative state – A pathological state in which neither arousal (wakefulness, alertness) nor awareness exists. The person is unresponsive and cannot be aroused; he/she does not open his/her eyes, does not speak and does not move his/her extremities on command or in response to noxious stimuli (e.g., pain).

Persistent vegetative state: Sometimes residents who were comatose after an anoxic-ischemic injury (i.e., not enough oxygen to the brain) from a cardiac arrest, head trauma, or massive stroke, regain wakefulness but do not evidence any purposeful behaviour or cognition. Their eyes are open, and they may grunt, yawn, pick with their fingers, and have random body movements. Neurological exam shows extensive damage to both cerebral hemispheres

Coding Tip:

Only code if a diagnosis of coma or persistent vegetative state has been assigned. For example, some residents in advanced stages of progressive neurologic disorders such as Alzheimer's disease may have severe cognitive impairment, be non-communicative and sleep a great deal of time; however, they are usually not comatose or in a persistent vegetative state, as defined here

I2100 Septicaemia:

Active diagnosis in the last 7 days

I2900 Diabetes Mellitus (DM):

e.g., diabetic retinopathy, nephropathy, and neuropathy **-** active diagnosis in the last 7 days

N0350A/ N0350B Insulin Injections:

Insulin injections (N0350A) for all 7 days Insulin order changes on 2 or more days (N0350B)

Coding Tips:

- For sliding scale orders:
  - A sliding scale dosage schedule that is written to cover different dosages depending on lab values does not count as an order change simply because a different dose is administered based on the sliding scale guidelines.
  - If the sliding scale order is new, discontinued, or is the first sliding scale order for the resident, these days can be counted and coded.
- For subcutaneous insulin pumps, code only the number of days that the resident actually required a subcutaneous injection to restart the pump.

I5100 Quadriplegia:

Quadriplegia primarily refers to the paralysis of all four limbs, arms, and legs, caused by spinal cord injury.

Coding Tip:

- Coding I5100 Quadriplegia is limited to spinal cord injuries and must be a primary diagnosis and not the result of another condition.

- Functional quadriplegia refers to complete immobility due to severe physical disability or frailty. Conditions such as cerebral palsy, stroke, contractures, brain disease, advanced dementia, etc. can also cause functional paralysis that may extend to all limbs hence, the diagnosis functional quadriplegia. For individuals with these types of severe physical disabilities, where there is minimal ability for purposeful movement, their primary physician-documented diagnosis should be coded on the MDS and not the resulting paralysis or paresis from that condition. For example, an individual with cerebral palsy with spastic quadriplegia should be coded in I4400 Cerebral Palsy, and not in I5100, Quadriplegia

I6200 Asthma, Chronic Obstructive Pulmonary Disease (COPD), or Chronic Lung Disease:

e.g., chronic bronchitis and restrictive lung disease such as asbestosis – active diagnosis in the last 7 days

J1100C Shortness of breath (dyspnea) or trouble breathing when lying flat:

If shortness of breath or trouble breathing is present when the resident attempts to lie flat. Also, code this as present if the resident avoids lying flat because of shortness of breath

K0510A2 Nutritional Approaches, Parenteral/IV feeding while a resident:

Introduction of a nutritive substance into the body by means other than the intestinal tract (e.g., subcutaneous, intravenous).

K0510A includes any and all nutrition and hydration received by the nursing home resident in the last 7 days either at the nursing home, at the hospital as an outpatient or an inpatient, provided they were administered for nutrition or hydration

IV fluids can be coded in K0510A if needed to prevent dehydration if the additional fluid intake is specifically needed for nutrition and hydration.

Prevention of dehydration should be clinically indicated and supporting documentation should be provided in the medical record.

The following items are **NOT** to be coded in K0510A:

- IV Medications—Code these when appropriate in O0100H, IV Medications.
- IV fluids used to reconstitute and/or dilute medications for IV administration.
- IV fluids administered as a routine part of an operative or diagnostic procedure or recovery room stay.
- IV fluids administered solely as flushes.
- Parenteral/IV fluids administered in conjunction with chemotherapy or dialysis.

O0400D2 Respiratory Therapy:

record total number of minutes this therapy was administers to resident in the last 7 days

Respiratory Therapy Definition:

Services that are provided by a qualified professional (respiratory therapists, respiratory nurse). Respiratory therapy services are for the assessment, treatment, and monitoring of patients with deficiencies or abnormalities of pulmonary function. Respiratory therapy services include coughing, deep breathing, nebulizer treatments, assessing breath sounds and mechanical ventilation, etc., which must be provided by a respiratory therapist or trained respiratory nurse. A respiratory nurse must be proficient in the modalities listed above either through formal nursing or specific training and may deliver these modalities as allowed under the state Nurse Practice Act and under applicable state laws.

J1550A Problem Conditions, Fever:

Fever is defined as a temperature 16.4 degrees Celsius higher than baseline. The resident's baseline temperature should be established prior to the Assessment Reference Date.

- Fever assessment prior to establishing base line temperature: A temperature of 38 degrees C on admission (i.e., prior to the establishment of the baseline temperature) would be considered a fever.

CATEGORY 3 – SPECIAL CARE LOW

I4400 cerebral palsy:

active diagnosis in the last 7 days

I5200 Multiple Sclerosis (MS):

active diagnosis in the last 7 days

I5300 Parkinson's Disease:

active diagnosis in the last 7 days

I6300 Respiratory Failure:

active diagnosis in the last 7 days

O0100C2 Oxygen Therapy:

Coding Tip:

Code continuous or intermittent oxygen administered via mask, cannula, etc., delivered to a resident to relieve hypoxia in this item. Code oxygen used in Bi-level Positive Airway Pressure/Continuous Positive Airway Pressure (BiPAP/CPAP) here. Do not code hyperbaric oxygen for wound therapy in this item. This item may be coded if the resident places or removes his/her own oxygen mask, cannula.

K0510B2 feeding tube, nasogastric or abdominal (PEG):

Presence of any type of tube that can deliver food/ nutritional substances/ fluids/ medications directly into the gastrointestinal system. Examples include, but are not limited to, nasogastric tubes, gastrostomy tubes, jejunostomy tubes, percutaneous endoscopic gastrostomy (PEG) tubes.

M0300B1 Stage 2 Pressure Ulcers:

Partial thickness loss of dermis presenting as a shallow open ulcer with a red-pink wound bed, without slough or bruising. May also present as an intact or open/ ruptured blister.

Coding Tips:

- Stage 2 pressure ulcers by definition have partial thickness loss of the dermis. Granulation tissue, slough, and eschar are not present in Stage 2 pressure ulcers.
- Do not code skin tears, tape burns, moisture associated skin damage, or excoriation here.
- When a pressure ulcer presents as an intact blister, examine the adjacent and surrounding area for signs of deep tissue injury. When a deep tissue injury is determined, do not code as a Stage 2.

M0300C1, Stage 3 Pressure Ulcers:

Full thickness tissue loss. Subcutaneous fat may be visible, but bone, tendon or muscle is not exposed. Slough may be present but does not obscure the depth of tissue loss. May include undermining or tunnelling (see definition of undermining and tunnelling below).

Definitions:

Undermining
The destruction of tissue or ulceration extending under the skin edges (margins) so that the pressure ulcer is larger at its base than at the skin surface.

Tunnelling

A passage way of tissue destruction under the skin surface that has an opening at the skin level from the edge of the wound.

Coding Tips:

- The depth of a Stage 3 pressure ulcer varies by anatomical location. Stage 3 pressure ulcers can be shallow, particularly on areas that do not have subcutaneous tissue, such as the bridge of the nose, ear, occiput, and malleolus.
- In contrast, areas of significant adiposity can develop extremely deep Stage 3 pressure ulcers. Therefore, observation and assessment of skin folds should be part of overall skin assessment. Do not code moisture-associated skin damage or excoriation here.
- Bone/tendon/muscle is not visible or directly palpable in a Stage 3 pressure ulcer.

M0300D1 Stage 4 Pressure Ulcers:

Full thickness tissue loss with exposed bone, tendon, or muscle. Slough or eschar may be present on some parts of the wound bed. Often includes undermining and tunnelling.

Coding Tips:

- The depth of a Stage 4 pressure ulcer varies by anatomical location. The bridge of the nose, ear, occiput, and malleolus do not have subcutaneous tissue, and these ulcers can be shallow.
- Stage 4 pressure ulcers can extend into muscle and/or supporting structures (e.g., fascia, tendon, or joint capsule) making osteomyelitis possible.
- Exposed bone/tendon/muscle is visible or directly palpable.
- Cartilage serves the same anatomical function as bone. Therefore, pressure ulcers that have exposed cartilage should be classified as a Stage 4.

M0300F1 Unstageable Pressure Ulcers (Slough and/or Eschar):

Known but not stage-able due to coverage of wound bed by slough and/or eschar

Coding Tips:

- Pressure ulcers that are covered with slough and/or eschar, and the wound bed cannot be visualized, should be coded as unstageable because the true anatomic depth of soft tissue damage (and therefore stage) cannot be determined. Only until enough slough and/or eschar is removed to expose the anatomic depth of soft tissue damage involved, can the stage of the wound be determined.
- Stable eschar (i.e., dry, adherent, intact without erythema or fluctuance) on the heels serves as “the body’s natural (biological) cover” and should only be removed after careful clinical consideration, including ruling out ischemia, and consultation with the resident’s physician, or nurse practitioner, physician assistant, or clinical nurse specialist if allowable under state licensure laws.
- Once the pressure ulcer is debrided of slough and/or eschar such that the anatomic depth of soft tissue damage involved can be determined, then code the ulcer for the reclassified stage. The pressure ulcer does not have to be completely debrided or free of all slough and/or eschar tissue in order for reclassification of stage to occur.

M1030 Number of Venous and Arterial Ulcers:

***Venous Ulcers*:** Ulcers caused by peripheral venous disease, which most commonly occur proximal to the medial or lateral malleolus, above the inner or outer ankle, or on the lower calf area of the leg.

Coding Tips:

- The wound may start with some kind of minor trauma, such as hitting the leg on a wheelchair. The wound does not typically occur over a bony prominence, and pressure forces play virtually no role in the development of the ulcer

Arterial Ulcers: Ulcers caused by peripheral arterial disease, which commonly occur on the tips and tops of the toes, tops of the foot, or distal to the medial malleolus.

Coding Tips:

- Arterial Ulcers: Trophic skin changes (e.g., dry skin, loss of hair growth, muscle atrophy, brittle nails) may also be present. The wound may start with some kind of minor trauma, such as hitting the leg on a wheelchair. The wound does not typically occur over a bony prominence, however, can occur on the tops of the toes. Pressure forces play virtually no role in the development of the ulcer, however, for some residents, pressure may play a part. Ischemia is the major aetiology of these ulcers. Lower extremity and foot pulses may be diminished or absent.

M1040A Infection of the Foot:

e.g. cellulitis, purulent drainage – only if evident in the last 7 days.

M1040B Diabetic Foot Ulcer(s):

Ulcers caused by the neuropathic and small blood vessel complications of diabetes. Diabetic foot ulcers typically occur over the plantar (bottom) surface of the foot on load bearing areas such as the ball of the foot. Ulcers are usually deep, with necrotic tissue, moderate amounts of exudate, and callused wound edges. The wounds are very regular in shape and the wound edges are even with a punched-out appearance. These wounds are typically not painful.

Coding Tips:

- Diabetic neuropathy affects the lower extremities of individuals with diabetes. Individuals with diabetic neuropathy can have decreased awareness of pain in their feet. This means they are at high risk for foot injury, such as burns from hot water or heating pads, cuts or scrapes from stepping on foreign objects, and blisters from inappropriate or tight-fitting shoes. Because of decreased circulation and sensation, the resident may not be aware of the wound.
- Neuropathy can also cause changes in the structure of the bones and tissue in the foot. This means the individual with diabetes experiences pressure on the foot in areas not meant to bear pressure. Neuropathy can also cause changes in normal sweating, which means the individual with diabetes can have dry, cracked skin on his other foot.
- Do not include pressure ulcers/injuries that occur on residents with diabetes mellitus here. For example, an ulcer caused by pressure on the heel of a diabetic resident is a pressure ulcer and not a diabetic foot ulcer.

M1040C Other Open Lesion(s) on the Foot:

Most typically skin lesions that develop as a result of diseases and conditions such as syphilis and cancer.

M1200I Application of Dressing to Feet (with or without topical medications):

Coding Tips:

- Includes interventions to treat any foot wound or ulcer other than a pressure ulcer/injury.
- Do not code application of dressings to pressure ulcers/injuries on the foot; use M1200E, Pressure ulcer/injury care.
- Do not code application of dressings to the ankle. The ankle is not considered part of the foot.

O0100B2 Radiation:

Code intermittent radiation therapy, as well as radiation administered via radiation implant in this item.

O0100J2 Dialysis:

Coding Tips:

- Code peritoneal or renal dialysis which occurs at the nursing home or at another facility, record treatments of hemofiltration, Slow Continuous Ultrafiltration (SCUF), Continuous Arteriovenous Hemofiltration (CAVH), and Continuous Ambulatory Peritoneal Dialysis (CAPD) in this item.
- IVs, IV medication, and blood transfusions administered during dialysis are considered part of the dialysis procedure and are not to be coded under items K0510A (Parenteral/IV), O0100H (IV medications), or O0100I (transfusions). This item may be coded if the resident performs his/her own dialysis.

CATEGORY 4 – CLINICALLY COMPLEX

I2000 Pneumonia**:**

active diagnosis in the last 7 days

I4900, ADL Hemiplegia or Hemiparesis:

active diagnosis in the last 7 days

M1040D Open Lesion(s) other than Ulcers, Rashes, Cuts:

Most typically skin lesions that develop as a result of diseases and conditions such as syphilis and cancer

Coding Tips:

- Open lesions that develop as part of a disease or condition and are not coded elsewhere on the MDS, such as wounds, boils, cysts, and vesicles, should be coded in this item.
- Do **not** code rashes, abrasions, or cuts/lacerations here. Although not recorded on the MDS assessment, these skin conditions should be considered in the plan of care.
- Do **not** code pressure ulcers/injuries, venous or arterial ulcers, diabetic foot ulcers, or skin tears here. These conditions are coded in other items on the MDS.

M1040E surgical wound:

Any healing and non-healing, open or closed surgical incisions, skin grafts or drainage sites.

Coding Tips:

- This category does not include healed surgical sites and healed stomas or lacerations that require suturing or butterfly closure as surgical wounds. PICC sites, central line sites, and peripheral IV sites are not coded as surgical wounds.
- Surgical debridement of a pressure ulcer does not create a surgical wound. Surgical debridement is used to remove necrotic or infected tissue from the pressure ulcer in order to facilitate healing. A pressure ulcer that has been surgically debrided should continue to be coded as a pressure ulcer.
- Code pressure ulcers that require surgical intervention for closure with graft and/or flap procedures in this item (e.g., excision of pressure ulcer with myocutaneous flap). Once a pressure ulcer is excised and a graft and/or flap is applied, it is no longer considered a pressure ulcer, but a surgical wound.

M1040F Burns (Second or third degree):

Skin and tissue injury caused by heat or chemicals and may be in any stage of healing.
Coding Tip: Do not include first degree burns (changes in skin colour only).

O0100A2 Chemotherapy:

Code any type of chemotherapy agent administered as an antineoplastic given by any route in this item. Each medication should be evaluated to determine its reason for use before coding it here. Medications coded here are those actually used for cancer treatment. For example, megestrol acetate is classified as an antineoplastic drug. One of its side effects is appetite stimulation and weight gain. If megestrol acetate is being given only for appetite stimulation, do not code it as chemotherapy in this item, as the resident is not receiving the medication for chemotherapy purposes in this situation. Hormonal and other agents administered to prevent the recurrence or slow the growth of cancer should not be coded in this item, as they are not considered chemotherapy for the purpose of coding the MDS. IVs, IV medication, and blood transfusions administered during

chemotherapy are not recorded under items K0510A (Parenteral/IV), O0100H (IV Medications), or O0100I (Transfusions).

O0100C2 Oxygen Therapy:

Coding Tip:

Code continuous or intermittent oxygen administered via mask, cannula, etc., delivered to a resident to relieve hypoxia in this item. Code oxygen used in Bi-level Positive Airway Pressure/Continuous Positive Airway Pressure (BiPAP/CPAP) here. Do not code hyperbaric oxygen for wound therapy in this item. This item may be coded if the resident places or removes his/her own oxygen mask, cannula.

O0100H2 IV Medications:

Coding Tip:

Code any drug or biological given by intravenous push, epidural pump, or drip through a central or peripheral port in this item. Do not code flushes to keep an IV access port patent, or IV fluids without medication here. Epidural, intrathecal, and baclofen pumps may be coded here, as they are similar to IV medications in that they must be monitored frequently, and they involve continuous administration of a substance. Subcutaneous pumps are not coded in this item. Do not include IV medications of any kind that were administered during dialysis or chemotherapy. Dextrose 50% and/or Lactated Ringers given IV are not considered medications and should not be coded here.

O0100I2 Transfusions:

Coding Tip:

Code transfusions of blood or any blood products (e.g., platelets, synthetic blood products), that are administered directly into the bloodstream in this item. Do not include transfusions that were administered during dialysis or chemotherapy.

CATEGORY 5 – BEHAVIOURAL SYMPTOMS AND COGNITIVE PERFORMANCE

B0100 comatose:

Could not be aroused/ persistent vegetative state – A pathological state in which neither arousal (wakefulness, alertness) nor awareness exists. The person is unresponsive and cannot be aroused; he/she does not open his/her eyes, does not speak and does not move his/her extremities on command or in response to noxious stimuli (e.g., pain).

Persistent vegetative state: Sometimes residents who were comatose after an anoxic-ischemic injury (i.e., not enough oxygen to the brain) from a cardiac arrest, head trauma, or massive stroke, regain wakefulness but do not evidence any purposeful behaviour or cognition. Their eyes are open, and they may grunt, yawn, pick with their fingers, and have random body movements. Neurological exam shows extensive damage to both cerebral hemispheres

Coding Tip:

Only code if a diagnosis of coma or persistent vegetative state has been assigned. For example, some residents in advanced stages of progressive neurologic disorders such as Alzheimer's disease may have severe cognitive impairment, be non-communicative and sleep a great deal of time; however, they are usually not comatose or in a persistent vegetative state, as defined here.

C1000 Cognitive Skills for Daily Decision Making Made decisions regarding tasks of daily life:

– 3 =. Severely impaired - never/rarely made decisions.

DAILY DECISION MAKING Includes: choosing clothing; knowing when to go to meals; using environmental cues to organize and plan (e.g., clocks, calendars, posted event notices); in the absence of environmental cues, seeking information appropriately (i.e. not repetitively) from others in order to plan the day; using awareness of one's own strengths and limitations to regulate the day's events (e.g., asks for help when necessary); acknowledging need to use appropriate assistive equipment such as a walker.

A residents' considered decision to exercise his or her right to decline treatment or recommendations by staff should not be captured as impaired decision making.

B0700 Makes themself understood:

Able to express or communicate requests, needs, opinions, and to conduct social conversation in his or her primary language, whether in speech, writing, sign language, gestures, or a combination of these. Deficits in the ability to make one's self understood (expressive communication deficits) can include reduced voice volume and difficulty in producing sounds, or difficulty in finding the right word, making sentences, writing, and/or gesturing.

Coding Tip:

Code only if the resident has limited ability but is able to express concrete requests regarding at least basic needs (e.g., food, drink, sleep, toilet) **OR** rarely or never understood: if, at best, the resident's understanding is limited to staff interpretation of highly individual, resident-specific sounds or body language (e.g., indicated presence of pain or need to toilet).

C0700 Short-term Memory:

seems or appears to recall information after 5 minutes – yes (memory ok)/no (memory problem)

E0100A Hallucinations:

Perceptual experiences in the absence of real external sensory stimuli – The perception of the presence of something that is not actually there. It may be auditory or visual or involve smells, tastes, or touch. Only if present in the last 7 days.

E0100B Delusions:

Misconceptions or beliefs that are firmly held, contrary to reality – a fixed, false belief not shared by others that the resident holds even in the face of evidence to the contrary. Only if present in the last 7 days.

Coding Tip:

- If a belief cannot be objectively shown to be false, or it is not possible to determine whether it is false, do not code it as a delusion.
- If a resident expresses a false belief but easily accepts a reasonable alternative explanation, do not code it as a delusion. If the resident continues to insist that the belief is correct despite an explanation or direct evidence to the contrary, code as a delusion.

E0200A physical behavioural symptoms:

Directed toward others (e.g., hitting, kicking, pushing, scratching, grabbing, abusing others sexually) – Only code if behaviour occurred 4 to 7 days of a week.

Coding Tip:

- Code based on whether the symptoms occurred and not based on an interpretation of the behaviour's meaning, cause or the assessor's judgment that the behaviour can be explained or should be tolerated.
- Code as present, even if staff have become used to the behaviour or view it as typical or tolerable.
- Behaviours in these categories should be coded as present or not present, whether they might represent a rejection of care.

E0200B Verbal behavioural symptoms:

Directed toward others (e.g., threatening others, screaming at others, cursing at others) – Only code if behaviour occurred 4 to 7 days of a week.

Coding Tip:

- Code based on whether the symptoms occurred and not based on an interpretation of the behaviour's meaning, cause or the assessor's judgment that the behaviour can be explained or should be tolerated.
- Code as present, even if staff have become used to the behaviour or view it as typical or tolerable.
- Behaviours in these categories should be coded as present or not present, whether they might represent a rejection of care.

E0200C other behavioural symptoms:

Not directed towards others (e.g., physical symptoms such as hitting or scratching self, pacing, rummaging, public sexual acts, disrobing in public, throwing or smearing food or bodily wastes, or verbal/vocal symptoms like screaming, disruptive sounds) – Only code if behaviour occurred 4 to 7 days of a week. Item E0200C does not include wandering.

Coding Tip:

- Code based on whether the symptoms occurred and not based on an interpretation of the behaviour's meaning, cause, or the assessor's judgment that the behaviour can be explained or should be tolerated.
- Code as present, even if staff have become used to the behaviour or view it as typical or tolerable.
- Behaviours in these categories should be coded as present or not present, whether they might represent a rejection of care.

E0800 rejection of care:

Behaviour that interrupts or interferes with the delivery or receipt of care. Care rejection may be manifested by verbally declining or statements of refusal or through physical behaviours that convey aversion to or result in avoidance of or interfere with the receipt of care.
Only code if behaviour occurred 4 to 7 days of a week.
Coding Tip:

- The intent of this item is to identify potential behavioural problems, not situations in which care has been rejected based on a choice that is consistent with the resident's preferences or goals for health and well-being or a choice made on behalf of the resident by a family member or other proxy decision maker.
- Do not include behaviours that have already been addressed (e.g., by discussion or care planning with the resident or family) and determined to be consistent with the resident's values, preferences, or goals. Residents who have made an informed choice about not wanting a particular treatment, procedure, etc., should not be identified as "rejecting care."

E0900 wandering:

Only code if behaviour occurred 4 to 7 days of a week.

Coding Tip:

- Pacing (repetitive walking with a driven/pressured quality) within a constrained space is not included in wandering.
- Wandering may occur even if resident is in a locked unit.
- Traveling via a planned course to another specific place (such as going to the dining room to eat a meal or to an activity) is not considered wandering.

H0200C Current Toileting program or trial:

Is a toilet program (e.g., scheduling toileting, prompted voiding, or bladder training) currently being used to manage the resident's urinary continence?
Toileting (or trial toileting) programs refer to a specific approach that is organized, planned, documented, monitored, and evaluated that is consistent with the nursing home's policies and procedures and current standards of practice. A toileting program does not refer to

- simply tracking continence status,
- changing pads or wet garments, and
- random assistance with toileting or hygiene.

Look back period is since most recent admission/re-entry or since urinary incontinence was first noted within the facility.

H0500 bowel Toileting Program:

Is a toileting program currently being used to manage the resident's bowel continence?

Yes – if the resident is currently on a toileting program targeted specifically at managing bowel continence.
No – if resident is not currently on a toileting program targeted specifically at managing bowel continence.

Restorative Nursing Count

***O0500A Range of Motion (Passive)* -** Code provision of passive movements in order to maintain flexibility and useful motion in the joints of the body. These exercises must be individualized to the resident's needs, planned, monitored, evaluated, and documented in the resident's medical record.

O0500B Range of Motion (active) - Code exercises performed by the resident, with cueing, supervision, or physical assist by staff that are individualized to the resident's needs, planned, monitored, evaluated, and documented in the resident's medical record. Include active ROM and active-assisted ROM.

O0500C Splint or Brace Assistant - Code provision of (1) verbal and physical guidance and direction that teaches the resident how to apply, manipulate, and care for a brace or splint; or (2) a scheduled program of applying and removing a splint or brace. These sessions are individualized to the resident's needs, planned, monitored, evaluated, and documented in the resident's medical record.

O0500D Bed Mobility - Code activities provided to improve or maintain the resident's self-performance in moving to and from a lying position, turning side to side and positioning himself or herself in bed. These activities are individualized to the resident's needs, planned, monitored, evaluated, and documented in the resident's medical record.

O0500E Walking - Code activities provided to improve or maintain the resident's self-performance in walking, with or without assistive devices. These activities are individualized to the resident's needs, planned, monitored, evaluated, and documented in the resident's medical record

O0500F Transfer - Code activities provided to improve or maintain the resident's self-performance in moving between surfaces or planes either with or without assistive devices. These activities are individualized to the resident's needs, planned, monitored, evaluated, and documented in the resident's medical record.

O0500G Dressing and/or Grooming - Code activities provided to improve or maintain the resident's self-performance in dressing and undressing, bathing, and washing, and performing other personal hygiene tasks. These activities are individualized to the resident's needs, planned, monitored, evaluated, and documented in the resident's medical record

O0500H Eating and/or Swallowing - Code activities provided to improve or maintain the resident's self-performance in feeding oneself food and fluids, or activities used to improve or maintain the resident's ability to ingest nutrition and hydration by mouth. These activities are individualized to the resident's needs, planned, monitored, evaluated, and documented in the resident's medical record.

O0500I Amputation/Prostheses Care - Code activities provided to improve or maintain the resident's self-performance in putting on and removing a prosthesis, caring for the prosthesis, and providing appropriate hygiene at the site where the prosthesis attaches to the body (e.g., leg stump or eye socket). Dentures are not considered to be prostheses for coding this item. These activities are individualized to the resident's needs, planned, monitored, evaluated, and documented in the resident's medical record.

O0500J Communication - Code activities provided to improve or maintain the resident's self-performance in functional communication skills or assisting the resident in using residual communication skills and adaptive devices. These activities are individualized to the resident's needs, planned, monitored, evaluated, and documented in the resident's medical record

CATEGORY 6 – REDUCED PHYSICAL FUNCTION

H0200C Current Toileting program or trial:

Is a toilet program (e.g., scheduling toileting, prompted voiding, or bladder training) currently being used to manage the resident's urinary continence?
Toileting (or trial toileting) programs refer to a specific approach that is organized, planned, documented, monitored, and evaluated that is consistent with the nursing home's policies and procedures and current standards of practice. A toileting program does not refer to

- simply tracking continence status,
- changing pads or wet garments, and
- random assistance with toileting or hygiene.

Look back period is since most recent admission/re-entry or since urinary incontinence was first noted within the facility.

H0500 bowel Toileting Program:

Is a toileting program currently being used to manage the resident's bowel continence?

Yes – if the resident is currently on a toileting program targeted specifically at managing bowel continence.

No – if resident is not currently on a toileting program targeted specifically at managing bowel continence.

Restorative Nursing Count

O0500A Range of Motion (Passive) ***- Code provision of passive movements in order to maintain flexibility and useful motion in the joints of the body. These exercises must be individualized to the resident's needs, planned, monitored, evaluated and documented in the resident's medical record.***

O0500B Range of Motion (Active) - Code exercises performed by the resident, with cueing, supervision, or physical assist by staff that are individualized to the resident's needs, planned, monitored, evaluated, and documented in the resident's medical record. Include active ROM and active-assisted ROM.

O0500C Splint or Brace Assistant - Code provision of (1) verbal and physical guidance and direction that teaches the resident how to apply, manipulate, and care for a brace or splint; or (2) a scheduled program of applying and removing a splint or brace. These sessions are individualized to the resident's needs, planned, monitored, evaluated, and documented in the resident's medical record.

O0500D Bed Mobility - Code activities provided to improve or maintain the resident's self-performance in moving to and from a lying position, turning side to side and positioning himself or herself in bed. These activities are individualized to the resident's needs, planned, monitored, evaluated, and documented in the resident's medical record.

O0500E Walking - Code activities provided to improve or maintain the resident's self-performance in walking, with or without assistive devices. These activities are individualized to the resident's needs, planned, monitored, evaluated, and documented in the resident's medical record

O0500F Transfer - Code activities provided to improve or maintain the resident's self-performance in moving between surfaces or planes either with or without assistive devices. These activities are individualized to the resident's needs, planned, monitored, evaluated, and documented in the resident's medical record.

O0500G Dressing and/or Grooming - Code activities provided to improve or maintain the resident's self-performance in dressing and undressing, bathing and washing, and performing other personal hygiene tasks. These activities are individualized to the resident's needs, planned, monitored, evaluated, and documented in the resident's medical record

O0500H Eating and/or Swallowing - Code activities provided to improve or maintain the resident's self-performance in feeding oneself food and fluids, or activities used to improve or maintain the resident's ability to ingest nutrition and hydration by mouth. These activities are individualized to the resident's needs, planned, monitored, evaluated, and documented in the resident's medical record.

O0500I Amputation/Prostheses Care - Code activities provided to improve or maintain the resident's self-performance in putting on and removing a prosthesis, caring for the prosthesis, and providing appropriate hygiene at the site where the prosthesis attaches to the body (e.g., leg stump or eye socket). Dentures are not considered to be prostheses for coding this item. These activities are individualized to the resident's needs, planned, monitored, evaluated, and documented in the resident's medical record.

O0500J Communication - Code activities provided to improve or maintain the resident's self-performance in functional communication skills or assisting the resident in using residual communication skills and adaptive devices. These activities are individualized to the resident's needs, planned, monitored, evaluated, and documented in the resident's medical record