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Data Gap Analysis for AFFINITY National Falls & Bone Health Project

October 2019

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1. Introduction

This document is a **data gap analysis** for the AFFINITY Project. The purpose of this gap analysis is to present and interpret the existing national data assets and gaps relevant to the AFFINITY Project, with a focus on the overarching aims of bone health and fall and fracture prevention strategy in Ireland. This data gap analysis focuses on the overarching aims of the AFFINITY Project, takes into account the Project's logic model and considers the data collected in other jurisdictions.

The data gap analysis is one of three documents prepared by the Centre for Effective Services in partnership with the AFFINITY Project team and other AFFINITY stakeholders, intended to inform the approach taken to any future evaluation of the Project. The three documents are:

1. A literature review on implementing complex system change initiatives and evaluating systems change
2. An evaluation framework to inform any future evaluation(s) of the AFFINITY Project
3. A review of data collection and monitoring systems and associated **gap analysis**.

The following methods were used to conduct the data gap analysis, including:

- Consultation with key stakeholders
- Review of Irish health datasets, with a particular focus on falls and bone health datasets
- Review of population-level approaches to collecting falls and bone health data from several other jurisdictions.

This data gap analysis found that there is Irish data available on outcomes, therefore, selecting and agreeing, in consultation with Project stakeholders, which of the Irish data should be used in an evaluation(s) to evidence the achievement of outcomes for the AFFINITY Project is an important next step. The availability of existing Irish outcomes data does not rule out the possibility that additional data specifically collected for the purposes of the evaluation may also need to be identified and captured.

This data gap analysis also found that there is limited existing process and/or implementation data available to be used in an evaluation of the AFFINITY Project. This is not unusual for a project at this stage of implementation. Therefore, identifying and agreeing relevant process measures and developing methods and mechanisms to capture these data for the evaluation, in consultation with relevant stakeholders, is also an important next step for the AFFINITY Project.

1.2 Background to the development of the gap analysis

The HSE is committed to conducting an evaluation of the AFFINITY Project. As part of this commitment, the HSE conducted a market sounding exercise in February 2019 to secure support to inform the evaluation procurement process for the evaluation of the project at a later date. The key needs identified were as follows:

- To prepare an evaluation framework
- Data collection and monitoring systems
- To support the drafting of evaluation procurement documentation.

In response to this market sounding exercise, the Centre for Effective Services (CES) was contracted to work with and support the AFFINITY Project team to address these needs.

This data gap analysis[1] was undertaken to identify:

- Existing secondary data collated and reported on at a national level that might be relevant to an evaluation(s) of the AFFINITY Project
- Data, including primary data, that could be beneficial to an evaluation of AFFINITY Project but is not yet collected or is not yet collected in a standardised manner.

1.3 Background to the AFFINITY Project

In 2008 the HSE launched the Strategy to Prevent Falls and Fractures in Ireland's Ageing Population. The AFFINITY Project was initially launched in 2013. It was agreed in 2016 that the Project needed to be refocused to take account of various structural changes in the HSE. In 2017 the AFFINITY National Falls and Bone Health Project (2018-2023) was established. HSE is leading the project, in collaboration with the State Claims Agency (SCA).

Falls are the leading cause of injury in people over 65 and can result in fractures, including hip fractures, loss of confidence and independence, and in some cases death. The estimated cost of falls related injuries to the economy is projected to reach €1.07 billion in 2020 rising to €2.04 billion by 2030 based on a scenario of a constant increase in the number of people with falls and fractures (Gannon et al., 2007). The aim of the AFFINITY National Falls and Bone Health Project[2] (2018-2023) is to coordinate the development of a comprehensive, nationwide evidence-informed approach to reducing harm from falls for older persons in Ireland. This involves all parties focusing on a common

[1] For brevity, this element of the contract and the document produced is referred to as the 'gap analysis' throughout.
[2] For the remainder of this document the term 'AFFINITY Project' or 'Project' is used for brevity.

agenda of reducing falls and fractures by integrating primary prevention, secondary prevention and rehabilitation, as well as measuring outcomes collectively.

The aim of the Project is (1) to increase awareness of the preventable nature of falls (2) to empower older persons, communities and health and social care providers to reduce the risk and rate of falling where possible, (3) to reduce the severity of injuries and (4) to promote the best possible outcomes for people who have suffered a falls-related injury. It seeks to bring renewed focus, coordination and clear direction to the spectrum of falls and fracture prevention service improvement initiatives currently underway across the country.

The AFFINITY Project intends to achieve its aims by providing an overarching framework for the implementation of a system-wide approach to prevention of falls and harm from falls in Ireland. This implementation framework seeks to: respond to the significant variations in content, governance and reach of programmes to prevent harm from falls around Ireland; implement a standardised approach to evaluating impact and outcomes; introduce a standardised suite of data that captures process and outcomes across the system; and shift efforts to prevention of, rather than reaction to, falls.

Work under the AFFINITY Project focuses on:

- Promotion of falls prevention activities in well older persons, e.g. evidence-informed community-based exercise programmes that address balance and strength.
- Building community capacity for identifying and responding to those people within or moving into the at-risk group for falls.
- Supporting local areas to develop integrated clinical care pathways for assessment and treatment of those who have fallen.
- Evidence of prevention in high risk settings such as in continuing care residential and acute services.
- Lifelong optimisation of bone health and fracture liaison services for secondary fracture prevention.

The following principles underpin the AFFINITY project and implementation framework:

- Person-centred approach
- Aligned with the Integrated Care Framework for Older Persons
- System-wide population health approach

- Informed by implementation science
- Evidence (in multiple forms)
- Evaluation
- Co-design
- Continuous improvement supported by data

To date, the following progress has been made under the AFFINITY project:

- Governance structures have been established under the Integrated Care Programme for Older Persons (ICPOP)
- A working group including representation from Social Care, Primary Care, Health & Well Being, Quality Improvement Division, National Clinical Programme for Older Persons and Age Friendly Ireland was established, and the group has developed a project plan including deliverables, work break down structure, timelines, etc.
- The programme of work is being progressed through AFFINITY work streams
- A Stakeholder Analysis & Communication Plan has been developed
- Links and collaborations have been established both nationally and internationally, e.g. Age Friendly Ireland; clinical programmes, including NCPOP; trauma & orthopaedics; emergency medicine; rheumatology, and falls prevention initiatives in New Zealand and Scotland
- A logic model for the Project has been developed (see Appendix 1).
- A Service User panel has been established to enable co-design.

1.3 The process used to conduct the gap analysis

Working in partnership with the AFFINITY Project, the CES team undertook a range of activities to carry out the data gap analysis, including:

- Consultation with key stakeholders
- Review of Irish health datasets, with a particular focus on falls and bone health datasets
- Review of population-level approaches to collecting falls and bone health data from several other jurisdictions.

The data gap analysis followed four main steps:

1. Understand the aims of the AFFINITY Project
2. Understand what similar initiatives elsewhere are doing
3. Search existing data systems and sources that may have the necessary data elements
4. Identify and analyse data assets and gaps.

Further to our analysis, a range of illustrative indicators that could be developed for an evaluation of the AFFINITY Project have been proposed.

2. Gap analysis

The following sections describe the process of conducting the gap analysis, using the four steps outlined in section 1.3. Each step is discussed in turn.

2.1 Understanding the aims of the AFFINITY Project

An understanding of the AFFINITY Project was developed through a review of the logic model and other relevant Project documentation. The AFFINITY Project seeks to **coordinate** the development of a comprehensive, nationwide evidence-informed approach to reducing harm from falls for older people in Ireland. The intent is to **increase awareness** of the preventable nature of falls and to empower older people, communities and health and social care providers to **reduce the risk and rate of falling** where possible, **to reduce the severity of injuries** and to promote the best possible **outcomes** for people who have suffered a falls-related injury. This suggests four thematic areas for which data relevant to the AFFINITY Project may be required:

- Data on **co-ordination of efforts**
- Data on **awareness**, including among health professionals and in the community
- Data on the **risk** and **rates** of falling
- Data on **outcomes** and **impacts** for people who have suffered a falls-related injury.

The logic model developed for the AFFINITY Project provides a map of the thematic areas for which relevant data could be gathered on the process and outcomes of the AFFINITY Project and it is included below. Later in the document, Table 5 and Table 6 provide examples of current and available Irish data mapped against the main components of the AFFINITY Project logic model.

Figure 1: AFFINITY Project Logic Model

Situation Analysis	Inputs	Activities/Outputs	Short-term Outcomes	Long-term Outcomes
• The risk of falls increases with age • Est. 60,000 people in Ireland require medical attention for falls each year. • Falls leading cause of injury in older people, resulting in fractures head injuries and death- 193 people over 65 died in falls in 2015. • Falls account for 77% major trauma presentations in this age group. • Economic cost of falls predicted to be €1b by 2020 and €2b by 2030 in the absence of implementation of National Falls & Bone Health Strategy. • Harm from falls is a major cost driver for ED attendances, hospital and continuing care admissions. • Accumulation of research evidence that falls can be prevented but implementation gap.	• National Working Group & Work streams to coordinate development of necessary enablers to reduce harm from falls (including guidance framework, evaluation framework and resources for service users and clinicians). • ICPOP National Steering Group for high level sponsorship. • Advisory group - subject matter and other relevant experts. • Service user input for co-design. • Evidence including the experience of service users, the wisdom of people on the front line, good quality data and the learning emerging from research and international implementation. • Clinical Champions/Leaders.	• Develop a stakeholder analysis and engagement plan. • Engage with stakeholders including service users to ensure co-design. • Coordinate a high-level scoping / gap analysis of existing services. • Facilitate partnerships and integration within and between health and social care services and across the wider system. • Develop the Framework for Prevention of falls and harm from falls for CHO's and Hospital Groups. • Identify key development priorities for falls and bone health nationally for 2019-2023 incorporating: analysis of cost effectiveness of proposed models.	**Implementation Outcomes** • Increased awareness across the board that preventing harm from falls is a key aspect of healthy ageing. • Collective vision on falls & fracture prevention system for Ireland achieved through partnership in co-design. • National framework/ Guidance on integrated falls and fracture prevention system for CHO & Hospital level cross sectorial partnerships. • National evaluation framework/ dashboard & KPIs for integrated falls & fracture systems. • Awareness raising & technical guidance on Age Friendly Housing & Public Realm Design Principles (Including Safety). **Service Outcomes** • Integrated Governance structures at local partnership level. • Local implementation groups to develop CHO & Hospital level plans in line with the national framework.	**Implementation Outcomes** • Reducing falls & harm from falls embedded in all health and social care services and wider community. • A falls and fracture prevention system that integrates primary & secondary prevention and rehabilitation through sustainable partnerships at national and CHO/Hospital/Local community partnership levels. • Reduced variation in access to quality evidence based and sustainable services to reduce harm from falls. • Improved access to Fracture Liaison Services. • Value for money through increased focus to prevention. **Service Outcomes** • Reduced rates of ED attendances with falls related injuries. • Reduced prevalence of hip fractures across settings. • Primary and Secondary fragility fracture prevention. • Clarity on points of access to required services. • Equity of access regardless of geographical location.

Situation Analysis	Inputs	Activities/Outputs	Short-term Outcomes	Long-term Outcomes
• Lack of awareness among the public and service providers that many falls are preventable. • Missed opportunities for prevention. • Pockets of good practice but significant, geographic variation in terms of availability, content, quality and levels of integration of services for reducing harm from falls in Ireland- a geographic lottery. • Nationally very limited access to Fracture Liaison services across the country for secondary fracture prevention. • Demographic trend will drive increased demand for unscheduled care if we do not act now in a coordinated, collaborative and systematic way to prevent falls and harm from falls.	• Existing exemplar sites already providing services to reduce harm from falls. • Existing cross sectorial collaborations to provide community-based exercise opportunities. • Partnerships with Age Friendly Ireland and SCA. • HSE Strategies -Falls, Healthy Ageing, Frameworks for Quality Improvement & Integrated Care (ICPOP), Sláintecare. • Existing data e.g. Irish Hip fracture database & National Trauma Audit, NIMS. TILDA etc. • International collaboration - New Zealand, Scotland, European Innovation Partnership Around Active & Healthy Ageing (EIPAHA). • HSE Communications & IT.	• Budgetary impact of national prioritised plan. • Recommend an evaluation framework to include a recommended dashboard / data set for measuring and monitoring processes, outcomes and impacts of falls and bone health services. • Engage Service Users in the design of information resources that are acceptable and attractive to the intended target group. • Support service providers through access to high quality summaries of current evidence, webinars, toolkits and educational resources.	• Investment in clinical coordinator roles for development of community exercise opportunities/development of integrated falls prevention pathways & fracture liaison pathways. • Integrated pathways at CHO/Hospital Group level which are evidence & data-informed including clinical pathways & pathways for community supports e.g. exercise opportunities. **<u>Client Outcomes</u>** • Consultation and involvement in co-design of services to reduce harm from falls. • People well informed & engaged in remaining healthy, independent & active as they age. • Awareness that many falls & fractures can be prevented. • Awareness of bone health and how to optimise this through the life span. • Awareness of need for follow-up of possible fragility fractures to reduce the risk of subsequent fracture. • Awareness of how to access pathways when required.	• Increased staff capability and capacity to prevent and manage harmful falls (a) to make every contact count and (b) to optimise their own health in this area. • Systems integration at all levels. • Continuous service improvement cycles. **<u>Client Outcomes</u>** • Health promotion & exercise opportunity information to enable lifelong optimisation of bone health. • Access community-based exercise opportunities for strength and balance across range of functional ability. • Timely access to falls and bone health assessment & interventions, post fall rehabilitation & fracture liaison services as required. • Improved quality of life for service users and carers. • People enabled and supported to age in place. • Experience of seamless integration of care as required.

2.2 Understand what similar initiatives elsewhere are doing

Falls prevention, amelioration of harm from falls, and the maintenance of bone health are concerns internationally. A desk-based review was undertaken of initiatives in English-speaking countries including Canada, the United States of America, Australia, New Zealand, England, Scotland and Wales. Two jurisdictions were identified as implementing initiatives most like the AFFINITY Project: New Zealand and Scotland. New Zealand offers a good example of collecting and reporting outcomes data; whereas the Scottish example provides insight on how to gather process data. However, relevant monitoring and evaluation activities also take place in other jurisdictions, and examples from Canada and New South Wales are included in the following sections.

2.2.1 Canada – focus on prevalence and incidence

In Canada the first *Report on Seniors' Falls in Canada* in 2005 and the second report in 2014, from the Public Health Agency of Canada (PHAC), provide policy makers, researchers, community programmers and practitioners with current Canadian information on falls among older people. Chapter 2 of the reports, *"The scope of the problem"*, offer a comprehensive overview of data on fall-related injuries, hospitalisations and deaths among Canadians aged 65 and over. The chapter is divided into four sections: (1) what seniors report about falls and related injuries; (2) what hospitalisation data tell us about seniors' falls; (3) what hospitalisation data tell us about falls among seniors in residential care; and what mortality data tell us about deaths due to falls. Each of the four sections of the Canadian reports are discussed below.

2.2.1.1 What seniors report about falls and related injuries

This section of the reports uses epidemiological evidence on falls and seniors' self-reported data from the **Canadian Community Health Survey (CCHS).** Also included are national estimates based on data from the CCHS from seniors aged 65 and over who indicated that they had had at least one injury in the previous 12 months that was both serious enough to limit normal activities the day after the injury occurred and was the result of a fall. The report also includes estimates of the number of cases and rates of injurious falls, types of injury, types of activity and places where treatment was sought.

The CCHS is a cross-sectional survey that collects information about health status, health care utilization and health determinants, representing approximately 98 per cent of the population aged 12 years and older. The CCHS collects data from household residents in Canada's provinces and territories. People living on Indian reserves or Crown lands, residents of institutions, full-time

members of the Canadian Armed Forces and residents of certain remote regions are excluded. Coverage is lower in the north where the population is more likely to be living in remote regions not captured by the CCHS. The exclusion of institutional residents should be noted as particularly pertinent for this gap analysis. Data are collected from a complex, multi-stage stratified sample of approximately 65,000 individuals annually from across Canada (Statistics Canada, 2010). The data for this report are based on three cycles of CCHS data – cycle 2.1 (2003), cycle 3.1 (2005) and data for the period 2009/2010. ***The Irish Longitudinal Study on Ageing (TILDA) is the closest Irish approximation to this data set and records data on falls from a sample of the Irish older population, although the sample represented is much lower.***

2.2.1.2 What hospitalisation data tell us about seniors' falls

Data in this section of the PHAC reports are based on Canada's **Hospital Morbidity Database (HMDB)** at the Canadian Institute for Health Information (CIHI)[3]. This includes fall-related hospitalisation cases and rates, length of hospital stay, injury type, place of occurrence of fall, and differences by age group and sex for seniors aged 65 and over, for the fiscal years 2006/2007 through 2010/2011, i.e., five years.

The HMDB is a national dataset that houses administrative, clinical and demographic information on inpatient separations from acute care hospitals (a separation occurs anytime a service user, or resident, leaves following death, discharge, sign-out against medical advice or transfer). Discharge data are received from all acute care facilities across Canada. Responsibility for the HMDB was taken on by CIHI from Statistics Canada in 1995, during a transfer of several databases.

Fall-related hospitalisations were characterised as hospitalisations in acute care hospitals in Canada involving an unintentional fall, as defined by select International Classifications of Disease (ICD) 10 CA codes. The variable was calculated by examining all diagnosis codes in the discharge records associated with a given episode of care. *'External Cause of Injury'* codes used to identify unintentional falls were ICD-10-CA codes W00-W19. ***The Irish Hospital In-Patient Enquiry (HIPE) system is the closest Irish equivalent of this data set.***

[3] The Canadian Institute for Health Information is an independent, not-for-profit organisation that provides essential information on Canada's health systems and the health of Canadians.

2.2.1.3 What hospitalisation data tell us about falls among seniors in residential care

The information in this section of the PHAC reports is based on the data from the **HMDB** pertaining to acute care hospitalisations for falls among adults aged 65 years and older living in residential care facilities in Canada. The analyses provided in this section of the Canadian reports includes fall related hospitalisation cases and rates, length of hospital stay, injury type, place of occurrence of fall, and differences by age group and sex for seniors aged 65 and over, for the fiscal years 2006/2007 through 2010/2011.

This section includes hospitalisation data for persons for whom *"place of occurrence"* of the fall was designated as *"Residential Institution"* and the place they were *"transferred from"* to hospital was *"Chronic Care Facility", "Nursing Home"* or *"Home for the Aged"*. Only residents of care facilities who were aged 65 years and over were included. ***HIPE and the National Incident Management System (NIMS) are the closest Irish equivalent data sources.***

2.2.1.4 What mortality data tell us about deaths due to falls

The analyses provided in this section of the PHAC reports present data from **Canadian Vital Statistics** on all direct deaths due to falls among those aged 65 and over. These analyses include differences by place of injury, sex and age groups, as well as trends over time. This section:

- Includes data on direct deaths, equivalent to the *"underlying cause of death"* as indicated on the medical certificate of death
- Excludes indirect deaths, in which a fall may have eventually led to death but was not the underlying cause of death
- Excludes deaths of non-residents of Canada, deaths of residents of Canada with unknown province or territory of residence, and deaths for which the age of the deceased was unknown

In Ireland, Vital Statistics report by the Central Statistics Office (CSO), reports equivalent Irish data.

2.2.2 New South Wales (Australia) – focus on prevalence and incidence

The New South Wales (NSW) Government in Australia, offers HealthStats NSW, a *'one-stop-shop'* public website that brings together data from many sources to produce statistical information about the health of the NSW population. Users can view and download data and select indicators to produce tailored reports. The reports can provide insights into a wide range of health determinants and outcomes, including statistics on fall-related hospitalisations, for those over the age of 65, and the prevalence of falls in the elderly. For fall-related hospitalisations, the following fall-related

hospitalisations trend reports can be generated, disaggregated by year, including graphs and data tables by:

- Age
- Aboriginality
- Local Health District
- Primary Health Network
- Local Government Area
- Remoteness
- Socioeconomic status.

For the prevalence of falls in older people, the following reports can be generated, disaggregated by year, including graphs and data tables by:

- Age
- Aboriginality
- Country of birth
- Primary Health Network
- Local Health District
- Remoteness
- Socioeconomic status.

Reports and graphs on falls-related deaths by age and on falls-related hip fractures by year and age can also be generated. **A similar Irish website does not currently exist, however comparable data is collected and reported on in various sources** (see Table 5 and Table 6 for relevant Irish data sources). It is important to note that unlike the NSW data, Irish data cannot currently be easily disaggregated by sociodemographic indicators, such as socioeconomic status, ethnicity or country of birth.

2.2.3 New Zealand – Focus on Outcomes

Live Stronger for Longer Prevent Falls and Fractures is a New Zealand (NZ) collaborative initiative by the Accident Compensation Corporation (ACC); the Ministry of Health; the Health Quality & Safety Commission (HQSCNZ), District Health Boards (DHBs), GPs, health professionals, home carers and community groups who deliver services to older people. The aim is to better coordinate efforts, create a system that is easy to use, and helps to reduce the incidence and severity of falls and fractures. Data in New Zealand is reported via a specially designed *'falls & fractures outcomes dashboard'* that defines and measures outcomes. The falls and fractures outcomes framework and data dashboard support this work by bringing together information on four domains:

- Domain 1: Reduction in ACC claims for falls
- Domain 2: Fewer serious-harm falls
- Domain 3: Improved recovery
- Domain 4: Integrated care

The rationale for and type of data collected for each domain is described in turn, in the following sections.

Domain 1: ACC claims for falls

1a: ACC new falls claims

Rationale: This indicator shows the number and rate of older people who had ACC claims accepted for an injury caused by a fall. This indicator includes minor injuries through to more serious injuries like fractures, some of which may result in a hospital admission. ACC claims are made across a range of health care settings, so this indicator is the broadest available measure of the number of falls among older people. This measure also shows claims for falls that either did or did not result in a fracture separately. It is assumed that fractures cause more serious harm, and are more likely to lead to hospital admission, than non-fractures.

1b: ACC new falls claims by fracture type

Rationale: This indicator replicates Indicator 1a but separates claims for falls by whether they did or did not result in a fracture. It is assumed that fractures cause more serious harm, and are more likely to lead to hospital admission, than non-fractures.

1c: ACC active falls claims cost

Rationale: This indicator shows the cost of ACC claims due to a fall. This is a complementary measure to show impact of a fall when viewed alongside outcome data. For ACC it is also a measure of benefit and contribution to sustaining the wider ACC scheme.

Domain 2: Fewer serious harm falls and fractures

2a: Acute falls hospital admissions by fracture type

Rationale: This indicator shows the number of hospital admissions for fractured neck of femur (NOF), other fractures, and non-fractures. This indicator provides further insight into the relative levels of harm. It should be noted that elective admissions and falls that occurred in hospital are excluded from this analysis.

2b: Acute falls hospital admissions by place of residence

Rationale: The falls that result in the most serious harm may require a hospital admission, especially for older people. It is important to know where these falls occur to guide service development and quality improvement. People in aged residential care will tend to be frailer and more vulnerable than those not, and the potential approaches to reducing falls in different settings vary.

Domain 3: Improved recovery

3a: Falls hospital bed days, by fracture type

Rationale: This indicator replicates 2a, but shows bed days, i.e., the total amount of time spent in hospital, instead of admissions. It is a proxy for the hospital resources that are used by different types of fall admissions. Improving the rehabilitation process inside hospital can reduce the time spent in a hospital bed. This indicator aligns closely with the System Level Measure Framework contributory measure for Acute Hospital Bed Days.

3b: Acute Average Length of Stay (ALOS) for falls hospital admissions by fracture type

Rationale: This measure shows the average length of time that a person spent in hospital after an out-of-hospital fall. It is calculated by dividing the total number of bed days (indicator 3a) by the number of admissions (indicator 2a). Improving the rehabilitation process inside hospital can reduce the time spent in a hospital bed.

3c: Percentage of service users with fractured neck of femur operated on the same or next day of admission

Rationale: Pain is a significant factor in a hip fracture and surgery is one of the best ways to address the root cause of the pain. The postponement of surgery prolongs pain and increases the risk of complications and the need for repeated pre-operative fasting. The Hip Fracture Care Clinical Care Standard recommends that surgery is performed within 48 hours of the service user presenting to hospital, if no clinical contraindication exists and the service user prefers surgery. The goal is to report within 48 hours. However, due to a lack of complete and accurate time being captured in the National Minimum Dataset (NMDS), only *'same or next day'* can be reported at present. When interpreting this indicator, it should be noted that there may be a number of reasons why surgery was delayed, such as medical instability, or a need for further investigation.

3d: Number of new starts on bisphosphonates

Rationale: Bisphosphonates are a class of drugs that reduce bone density loss. Bisphosphonates should be considered for older people who have fallen and fractured, to reduce their future risk of fracture. 'New starts' identifies people who were not covered by bisphosphonates in the previous two years.

3e: Percentage of ARC residents on vitamin D

Rationale: Internationally, Vitamin D is widely recommended for reducing falls and fall-related injuries in older people. Vitamin D supplements are thought to prevent falls by improving muscle strength and psychomotor performance in older people at risk of Vitamin D deficiency. In New Zealand there has been a long-established programme to increase the uptake of prescribed Vitamin D supplements to older people in aged residential care (ARC).

Domain 4: Integrated care

The measures in Domain 4 come from quarterly reporting provided by District Health Boards (DHBs) and community organisations.

Community group strength & balance places: Number of places offered

Rationale: To gauge whether sufficient opportunities are being provided for older people to gain benefits, with an aspiration that the majority of the at-risk population will be served by the end of year three. Places are counted per quarter, i.e. continuously offered places can be recounted in the subsequent quarter.

Reach: Number of individual people participating in the classes

Rationale: To gauge whether NZ is seeing *"at population level"* numbers of older people coming through the strength and balance programme(s). This measure is counted per annum, it indicates how many unique people have participated in Community Group Strength and Balance classes in one year. This measure is the 'individual' count equivalent to the number of places measure. Given classes are offered for a 10 to 12-week period per quarter, participating people are only counted once a year (rather than re-counted each quarter).

Super-reach: Number of people who participated for 10 weeks

Rationale: The number of people involved in community-based programme for 10 weeks or longer is directly linked to positive benefits for older people. Someone who has achieved 10 weeks and does not stay on the programme will likely lose the gained benefit quickly, unless they graduate to some other form of appropriate continuous exercise. Someone who stays on the programme will sustain the benefit, relative to someone who doesn't stay on the programme. The data is therefore collected to: (1) help identify reasons to celebrate success; (2) provide a link between the planned outcomes and benefits; and (3) better understand the challenges of keeping people on the programme. Participants are counted per quarter; everyone who does 10 consecutive weeks in a subsequent quarter, can be re-counted within each subsequent quarter.

Other services, such as in-home strength & balance, and fracture liaison services:

Participated in Home Strength and Balance Service

Rationale: To ensure the appropriate exercises are provided, with additional support, to reduce the risk of falling or prevent the next fall.

Fracture Liaison Service: Seen by the fracture liaison service (or similar).

Rationale: To ensure the assessment of bone health and referral to appropriate falls prevention programme.

2.3.3.1 Other New Zealand data

The *New Zealand Atlas of Healthcare Variation* is a further useful source of relevant data in New Zealand. This web resource displays easy-to-use maps, graphs, tables and commentaries that highlight variations by geographic area in the provision and use of specific health services and health outcomes. The Atlas is organised by domains, which cover specific clinical areas. Some domains also have analysis available at a primary health organisation (PHO) level. For example, the Falls Domain of the Atlas gives clinicians, service users and providers an overview on the prevalence of falls in people aged 50 and over, including those treated in the community and in hospital.

2.3.3.2 Learning for the AFFINITY Project from NZ

Data reported on the NZ falls and fractures outcomes data dashboard on domains one, two and three closely approximates data that is currently collected by the Irish Hospital In-Patient Enquiry (HIPE) system and the Irish Hip Fracture Database (IHFD). Some similar Irish data is also collected via the Primary Care Reimbursement Scheme (PCRS). The NZ dashboard also reports on attendance at community classes or in-home programmes as a proxy for data on integration. The dashboard focuses on a range of outcome measures. Table 1 maps the closest Irish equivalent data and alternative available data, which gives similar but not identical information, against the outcomes included in the NZ data dashboard.

In Ireland, Health Atlas Ireland (https://www.healthatlasireland.ie/) is an application that gives access to certain health-related datasets depending on the role of the user. It enables ad-hoc queries, area profiling, quality of care, and/or geo-spatial analyses and displays of a range of datasets gathered by government departments and agencies including: demography, e.g. census, etc.; hospital activity; prescribing; mortality; human resources; service location; along with a range of mapping functions. HSE staff and associated agencies can use the system to find patient addresses, locate services, create customised maps, and to review Central Statistics Office demographic data for their areas. The 'Services near you' option on the HSE website allows members of the public to locate services on a map and to obtain service contact information. In general, access to the modules is managed and requests for access are made on a person-by-person basis through a controlled process. All persons with access to the HSE internal network can access a part of the 'collection', e.g. access the relevant module to use census data, and service location data and/or maps.

Table 1: Outcome Measures Used in New Zealand Mapped against Irish Data

NZ Indicator	Irish Equivalent (if available)	Irish Alternative(s)
Domain 1: ACC claims for falls		
ACC new falls claims	SCA NIMS administrative data for care settings	HIPE data: Diagnoses IHFD: Covers service users admitted with hip fractures only
ACC active falls claims cost	SCA NIMS administrative data	
Domain 2: Fewer serious harm falls and fractures		
Acute falls hospital admissions by fracture type	HIPE Data: Diagnosis SCA NIMS administrative data	IHFD
Acute falls hospital admissions by place of residence	HIPE Data: Source of admission SCA NIMS administrative data	HIPE Data: Discharge Destination
Domain 3: Improved recovery		
Falls hospital bed days, by fracture type	HIPE – for all fractures SCA NIMS administrative data	IHFD – for hip fractures
Percentage of service users with fractured neck of femur operated on the same or next day of admission	HIPE – for all fractures	IHFD – for hip fractures
Number of new starts on bisphosphonates	Not available	PCRS
Percentage of ARC residents on vitamin D	Not available	PCRS (not available by care setting)
Domain 4: Integrated care		
Community group strength & balance		
Places: Number of places offered	No standardised equivalent	
Reach: Number of individual people participating in the classes	No standardised equivalent	
Super-reach: Number of people who participated for 10 weeks (this is directly linked to positive benefits for older people)	No standardised equivalent	
Other services (In-home strength & balance, and fracture liaison services)		
Participated in Home Strength and Balance Service	No standardised equivalent	
Fracture Liaison Service: Seen by the fracture liaison service (or similar)	No standardised equivalent	

With regard to the *New Zealand Atlas of Healthcare Variation*, much of the data, or similar data, collected in the Atlas is reported in Irish data sets. Table 2 maps the New Zealand Atlas of Healthcare Variation falls data against Irish data sources.

Table 2: *New Zealand Atlas of Healthcare Variation* falls data mapped against Irish data sources

New Zealand Atlas of Healthcare Variation falls data	Irish Equivalent Source
People with one or more ACC claims for a fall	SCA NIMS Data
People with one or more hospital admissions due to a fall	HIPE Data
People admitted to hospital with a fall with a LOS ≥ 1 day	HIPE Data
Average bed days for people admitted with a fall | DHB of domicile	HIPE Data SCA NIMS Data (hospital)
Fractured neck of femur due to a fall | DHB of domicile	HIPE Data IHFD
Percent of fractured neck of femur operated on the same or next day of admission | DHB of service	HIPE Data IHFD (within 48 hours of first presentation and within normal working hours)
Bisphosphonate medication on discharge following an operation for fractured neck of femur | DHB of service	Primary Care Reimbursement Service (PCRS) IHFD
Vitamin D medication on discharge following an operation for fractured neck of femur | DHB of service	Primary Care Reimbursement Service (PCRS) Irish Hip Fracture Database records any 'bone protection medication'.

2.2.4 Scotland – Focus on Process

The aim of the *Prevention and Management of Falls in the Community: A Framework for Action for Scotland 2014/15* was to support a more consistent approach to falls prevention and management. The Framework was intended to improve experiences and outcomes for older people, their families and carers; and to accelerate the pace of implementing integrated falls and fragility fracture pathways. Falls prevention within secondary care was outside the scope of the Framework.

2.2.4.1 Measuring process

The Framework was comprised of 16 actions across four stages[4] covers the four stages of the *Up and About* pathway. A set of core measures were developed to help service providers understand their local systems and the steps required to improve processes, effectiveness and outcomes of care and support; these continue to be monitored be today. The four process measures proposed to be recorded by Health and Social Care Partnerships, included the number of:

1. Level 1 conversations completed - a simple initial risk identification process which aims to identify people who have fallen and/or are at high risk of falling and may benefit from further support and/or intervention.
2. Referrals made for level 2 screen - a multifactorial falls risk screening process, which aims to (a) identity risk factors for falling and for sustaining a fragility fracture, and (b) guide tailored management.
3. Level 2 screens completed.
4. Individualised Falls and Fracture Prevention Action Plans agreed.

These measures were integrated into an Excel tool: *'Self-Assessment of Spreadsheet Tool for Teams and Services'*, to help Scottish services or teams identify where they stand in terms of delivering the 16 actions in the Framework for Action. The self-assessment tool includes a data collection spreadsheet and scorecards for the key process measures. For each action within the Framework, there are between one and 18 related *Action Steps*. For each statement, users of the spreadsheet indicate YES, NO or N/A as to whether the *Action Step* describes the current state of the users' team or service. There is also a 'Scoping Required' option. Under each *Action Step* there is a comment box to note comments, risks, barriers and best practices. Guidance is available within the spreadsheet on how to complete the self-assessment tool. The spreadsheet captures information on the following for teams and services working in Partnerships.

Figure 2 lists all 16 actions.

[4] Stage one: Supporting health improvement and self-management to reduce the risk of falls and fragility fractures; stage two: Identifying individuals at high risk of falls and/or fragility fractures; stage three: Responding to an individual who has just fallen and requires immediate assistance; and stage four: Co-ordinated management including specialist assessment.

Figure 2: Actions in the *Prevention and Management of Falls in the Community: A Framework for Action for Scotland 2014/15*

Stage One: Supporting health improvement and self-management to reduce the risk of falls and fragility fractures **Action 1.1** Up-to-date information on the prevention of falls and the prevention of harm from falls (including fractures) is made available to older people (and others at risk of falls), their carers' and relatives.
Stage Two: Identifying individuals at high risk of falls and/or fragility fractures **Action 2.1** Health and social care services have a level 1 conversation with an older person who reports a fall, *or* an injury or functional decline caused by a fall. **Action 2.2** Everyone identified at risk of further falls through a level 1 conversation is offered intervention to identify and address possible contributory factors, i.e. at least a level 2 screen.
Stage 3: Responding to an individual who has just fallen and requires immediate assistance **Action 3.1** Responding services have a standard operating procedure for responding to an older person who has fallen and has or has not sustained injuries. **Action 3.2** A responding service attends an older person who has fallen within one hour of being alerted to the fall, or as close to this timescale as possible given geographical and other constraints. **Action 3.3** Responding services have a standard operating procedure for identifying and meeting the immediate needs of an older person who has fallen. **Action 3.4** Health and social care services working with older people in their own homes (including care homes) and day care facilities have a standard operating procedure to identify and meet the immediate needs of a person who falls in their presence or is found on the floor. **Action 3.5** Responding services have a level 1 conversation with an older person presenting following a fall who is not conveyed to hospital. **Action 3.6** Services have a level 1 conversation with an older person they assist in the event of a fall who is not conveyed to hospital.
Stage 4: Co-ordinated management including specialist assessment **Action 4.1** An older person identified at risk of further falls is offered a level 2 screen. **Action 4.2** Health and social care services providing level 2 screen have a governance infrastructure to ensure suitable staff undertake the screen. **Action 4.3** Following level 2 screen the person is provided with a personalised Fall and Fracture Prevention Action Plan.

Action 4.4 Following a level 2 screen there are referral pathways into services that provide specialist assessment (level 3) and intervention.

Action 4.5 Services providing a level 2 screen can refer directly into services that provide specialist assessment (level 3) and intervention.

Action 4.6 Level 3 assessment and interventions offered are in line with current and emerging evidence.

Action 4.7 There is a quality assurance process which monitors whether Fall and Fracture Prevention Action Plans are implemented.

Figure 3 to Figure 5 contain screenshots from the *'Self-Assessment of Spreadsheet Tool for Teams and Services'*.

Figure 3: *Self-Assessment Spreadsheet Tool for Teams and Services* Introduction

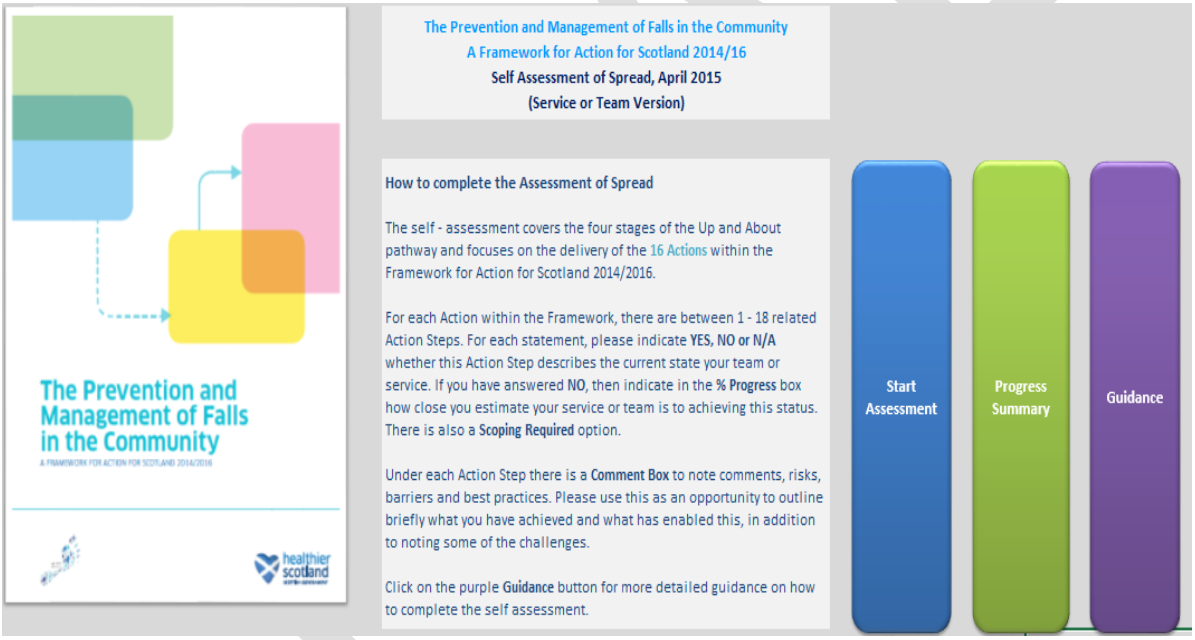
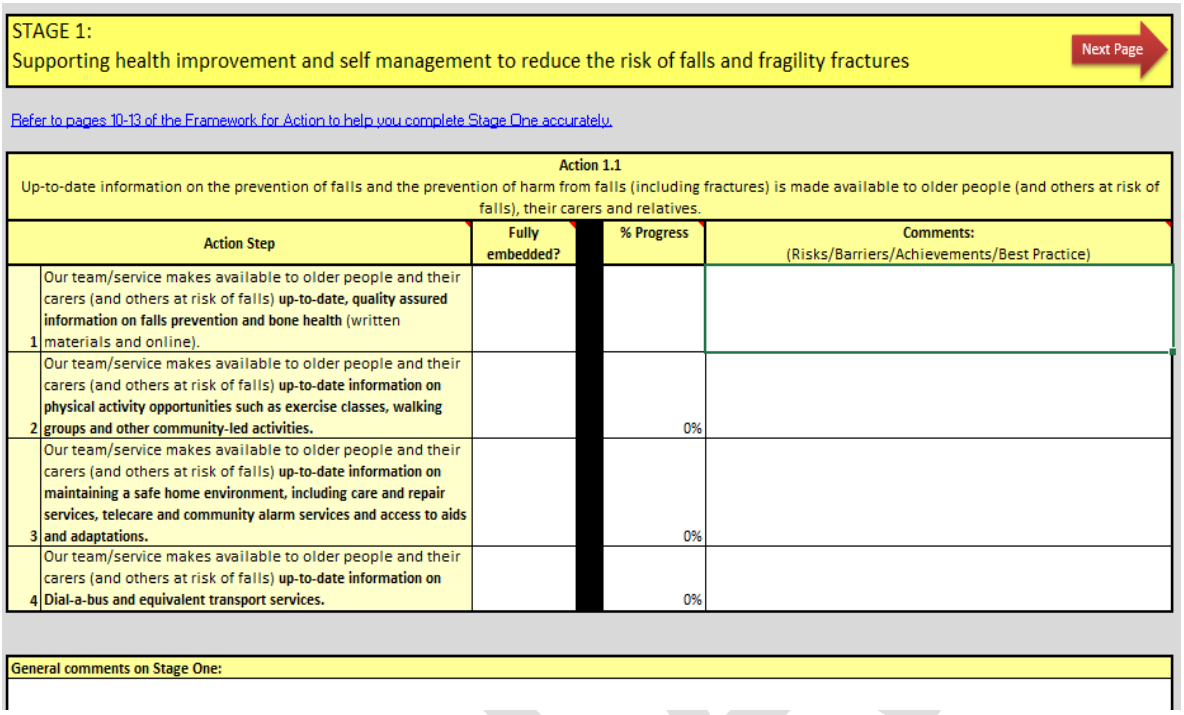


Figure 4: *Self-Assessment of Spreadsheet Tool for Teams and Services:* Stage 1 Self-Assessment



STAGE 1:
Supporting health improvement and self management to reduce the risk of falls and fragility fractures

Next Page

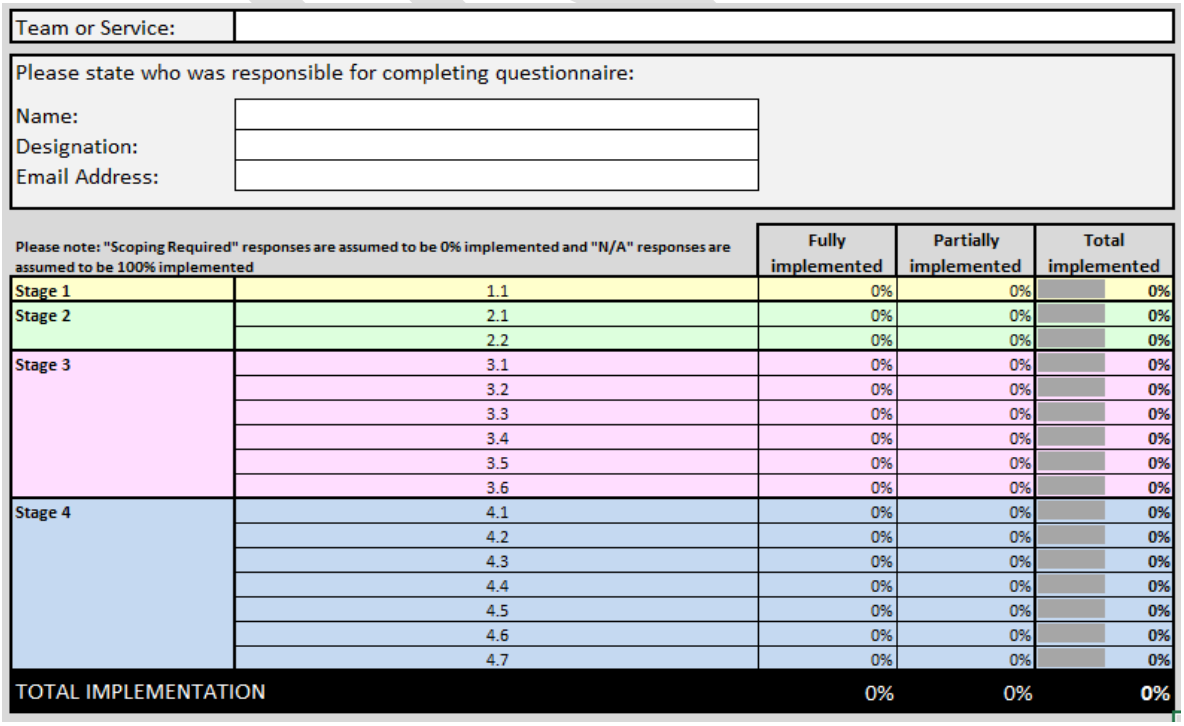
Refer to pages 10-13 of the Framework for Action to help you complete Stage One accurately.

Action 1.1
Up-to-date information on the prevention of falls and the prevention of harm from falls (including fractures) is made available to older people (and others at risk of falls), their carers and relatives.

	Action Step	Fully embedded?	% Progress	Comments: (Risks/Barriers/Achievements/Best Practice)
1	Our team/service makes available to older people and their carers (and others at risk of falls) **up-to-date, quality assured information on falls prevention and bone health** (written materials and online).			
2	Our team/service makes available to older people and their carers (and others at risk of falls) **up-to-date information on physical activity opportunities such as exercise classes, walking groups and other community-led activities.**		0%	
3	Our team/service makes available to older people and their carers (and others at risk of falls) **up-to-date information on maintaining a safe home environment, including care and repair services, telecare and community alarm services and access to aids and adaptations.**		0%	
4	Our team/service makes available to older people and their carers (and others at risk of falls) **up-to-date information on Dial-a-bus and equivalent transport services.**		0%	

General comments on Stage One:

Figure 5: *Self-Assessment of Spreadsheet Tool for Teams and Services Summary*



Team or Service:

Please state who was responsible for completing questionnaire:

Name:
Designation:
Email Address:

Please note: "Scoping Required" responses are assumed to be 0% implemented and "N/A" responses are assumed to be 100% implemented		Fully implemented	Partially implemented	Total implemented
Stage 1	1.1	0%	0%	0%
Stage 2	2.1	0%	0%	0%
	2.2	0%	0%	0%
Stage 3	3.1	0%	0%	0%
	3.2	0%	0%	0%
	3.3	0%	0%	0%
	3.4	0%	0%	0%
	3.5	0%	0%	0%
	3.6	0%	0%	0%
Stage 4	4.1	0%	0%	0%
	4.2	0%	0%	0%
	4.3	0%	0%	0%
	4.4	0%	0%	0%
	4.5	0%	0%	0%
	4.6	0%	0%	0%
	4.7	0%	0%	0%
TOTAL IMPLEMENTATION		0%	0%	0%

Adopting a similar approach to Scotland in terms of measuring process would require the design of a simple data collection form in an accessible format.

2.2.4.2 Measuring outcomes

Three outcomes measures were also proposed in Scotland's framework, with data available at national, NHS board area and Community Health (and Care) Partnerships (CH(C)P) level. These are mapped in Table 3 against the closest available Irish equivalent data source.

Table 3: Scottish Outcome Measures

Scottish Data	Irish Equivalent Data
Conveyances to hospital by the Scottish Ambulance Service (SAS) following a fall (people aged 65-74, 75-84, 85+).	National Ambulance Service will collect comparable data on the electronic patient care record. The National Ambulance Service (NAS) is introducing an electronic Patient Care Record (ePCR) to support service user care. This new technology will enable clinical audit practices in line with HIQA requirements and is part of the NAS National Programme for Information Technology.
Emergency admissions following a fall (people aged 65-74, 75-84, 85+)	Comparable data is collected via HIPE
Admissions with a hip fracture (people aged 65-74, 75-84, 85+)	Similar data is collected via HIPE and collated in the IHFD

2.2.5 Other Useful Approaches: England's Everyday Interactions

An additional data collection tool worthy of consideration is one implemented in England.

The *'Everyday Interactions'* toolkit is used by healthcare professionals in England to record and measure their public health impact in a uniform and comparable way. The toolkit focuses on the public health impact of four of the key healthcare professions within the wider workforce: (1) nurses and midwives, (2) dentists, (3) allied health professionals and (4) pharmacists. It is hoped that the toolkit will also have wider appeal. The toolkit aims to support these key healthcare professional groups as they record and measure their public health impact. The impact pathways produced from the toolkit cover ten public health priorities that healthcare professionals can help to support, one of which is falls.

The toolkit helps healthcare professionals to measure:

- What they do in their interactions with service users
- What data can be collated
- Possible impacts from these interactions.

For example, when using the falls prevention pathway (see Table 4), a health care professional can record that an individual who has been identified as being at low to moderate risk of falls has been offered a strength and balance exercise programme. Over time, these records can be collated to demonstrate the number of individuals who have been offered the exercise programme over the previous 12 months. The impacts in the models link to national indicators, and for falls include: (1) reduced hospital admissions from falls at 65 and over; (2) reduced incidence of hip fractures in people 65 and over; (3) reduced mortality rates from accidental falls; (4) increased life expectancy at 65 in men and women; (5) improved mental health and reduced prevalence of depression due to social isolation; and (6) improved quality of life for older people. Under the falls pathway, health professionals record the relevant information under four headings: **Do, Record, Collate, Impact**.

Table 4: Everyday Interactions Falls Prevention Pathway

Do	Record	Collate	Impact	
Identify individuals at risk of falling				Reduced hospital admissions from falls at 65 and over; 65-79; and 80 and over Reduced incidence of hip fractures in people 65 and over; 65-79; 80 and over Reduced mortality rates from accidental falls [search: falls] Increased life expectancy at 65 in men and women Improved mental health and reduced prevalence of depression due to social isolation Improved quality of life for older people
Using MECC principles, ask older individuals whether they have fallen in the past year, including frequency, context and characteristics of the fall(s)	Record fall history	No. of falls' histories taken		
Older individuals reporting a fall or considered at risk of falling should be observed for balance and gait deficits. Tests for balance and gait could be administered if appropriate	Record details of the observation and the outcomes of the test	No. of individuals whose balance/ gait have been observed. No. of tests administered		
		The no. of individuals with balance/gait deficits identified		
Older individuals at low to moderate risk of falls should be offered a strength and balance exercise programme	Record details of the exercise programme referral	No. of individuals referred to a strength and balance exercise programme If followed-up, no. of individuals who attended a strength and balance exercise programme	Reduction in number and severity of falls Improved balance and mobility	
Older individuals at high risk of falls (those who present for medical attention because of a fall, or report recurrent falls in the past year, or demonstrate abnormalities of gait and/or balance) should be offered a multifactorial falls risk assessment. This assessment should be performed by a healthcare professional with appropriate skills and experience, normally in the setting of a specialist falls service.	Record that individual has been referred to a specialist falls service	No. of individuals referred to a specialist falls service If followed-up, no. of individuals who have accessed a specialist falls service		

2.3 Search existing Irish data systems and sources that may have the necessary data elements

Engagement with stakeholders formed a key aspect of conducting the gap analysis for the AFFINITY Project. Participants in the workshops, telephone interviews and surveys were asked for their thoughts on what data was available and relevant to the Affinity Project, and what data was currently not collected or was challenging to collect. A range of available data sources were identified, through the consultation process and the desk-based research; these are described in Table 5. See Appendix 1 for a more detailed description of each data source and a list of all potentially relevant information gathered in each[5]. Each data source has its strengths and limitations and the following limitations should be taken into account:

- HIPE includes service user s who attended the Emergency Department (ED) and were subsequently admitted to hospital. As a proportion of those attending the ED will subsequently be admitted to hospital, it is not possible to use emergency admissions reported to HIPE to draw conclusions about the total volume of activity in EDs. Data recorded in HIPE can be disaggregated by 'fallers', however this is neither routinely done or reported on. A special annex to the 2016 HIPE report explored the profile of emergency in-patient discharges with any listed diagnosis of a fall.
- The Irish Hip Fracture Database (IHFD) focuses on hip fractures, and so limits what can be analysed about harm from falls.
- The National Incident Management System (NIMS) does not usually cover private providers, an exception being where an HSE contract for service(s) exists
- HSE Performance Reports are compiled from a variety of sources and much of the data reported cannot be disaggregated by 'fallers'.
- The Vital Statistics report from CSO may not reliably capture the type of falls, as one of the largest completed categories is typically 'other'.
- The Irish Longitudinal Study on Ageing (TILDA) reports on a sample of the population, with a relatively large interval between reports.
- The National Integrated Medical Imaging System (NIMIS) is designed to store diagnostic images and additional work would be required to make data useful to the AFFINITY Project.
- The Major Trauma Audit (MTA) works only with public hospitals.
- The Primary Care Reimbursement Service (PCRS) cannot be disaggregated by 'fallers' or setting.

[5] Please note details of the Health Atlas Ireland database are not included in the appendix as the database is not accessible to the general public.

- The Nursing and Midwifery Quality Care Metrics are not gathered by all Directors of Nursing/Midwifery.
- The Healthy and Positive Ageing Initiative (HaPAI) National Indicators cannot be disaggregated by 'fallers'; for example, it is currently not possible to compare the 'cultural and social participation' of older people who have fallen, to those who have not, or to explore whether the percentage of adults aged 50-65 with "low proficiency" in literacy, numeracy and ICT skills differs according to whether they have fallen or not.

Table 5: Existing Irish National Data Relevant to the AFFINITY Project

Source	Coverage	Data Collection Methods
Hospital In-Patient Enquiry (HIPE), HSE, Healthcare Pricing Office	All acute public hospitals.	Data from medical charts or records is coded by trained clinical coders before inputting to the HIPE Portal. Discharges are coded using the standard international conventions.
Irish Hip Fracture Database (IHFD), National Office of Clinical Audit	All acute hospitals that operate on service users with hip fracture.	Data is taken from the medical record by clinical staff with permitted access and inputted into the HIPE portal.
National Incident Management System (NIMS), State Claims Agency & Department of Health	Multiple Delegated State authorities (DSAs), e.g. 52 acute hospitals, 2,600+ community healthcare locations across mental health, National Ambulance Service, social care, Primary Care and Health and Wellbeing Division, 350+ Tusla locations.	NIMS web-based IT system that links hospitals and other health and social care enterprises to a core database. Information is entered to the system locally either by paper-based National Incident Report Forms (NIRF) or electronic point of occurrence reporting (ePofO) and reviewed and investigated by the risk manager using NIMS.
HSE Performance Reports: Acute Hospitals including Clinical Programmes; National Ambulance Service; National Cancer Control Programme, HSE	All acute hospitals.	Primary data is submitted from all hospitals to the Business Information Unit on a monthly basis via email. Data is inputted into an Excel workbook. Data is also sourced from national data collections such as the Delayed Discharges Web browser directly from hospitals, National Treatment Purchase Fund, NCCP, HPSC, National Stroke Register, HIPE and Pre-Hospital Emergency Care Council (PHECC).
HSE Performance Reports: Social Care; Older Person's Services, HSE	National.	National data is received from one source from the relevant Older Peoples' Specialist Office via Business Information Unit. Local data is provided by the 32 LHOs to the Business Information Unit. All data is submitted on a Corporate Information Facility Template which is in Microsoft Excel format.
HSE Performance Reports: Primary Care; Social Inclusion; Palliative Care, HSE	National.	Primary data and data from national data collections. Primary data is submitted from all hospitals to the Business Information Unit on a monthly basis via email.

Source	Coverage	Data Collection Methods
Vital Statistics, CSO	Population.	Review of cause of death recorded on Death Registration.
The Irish Longitudinal Study on Ageing (TILDA)	Approximately 8,000 adults aged 50+.	Survey and Interview.
National Integrated Medical Imaging System (NIMIS)	Currently operating in 55 of 66 hospitals nationwide / 68 hospitals and imaging centres.	Captures and stores Radiology, Cardiology and other diagnostic images electronically.
Major Trauma Audit (MTA), National Office of Clinical Audit	All trauma receiving public hospitals participate in this audit (26 hospitals).	Hospital-level MTA coordinators submit data on a web-based data collection and reporting system.
Primary Care Reimbursement Service (PCRS), HSE, National Health Schemes Data	In 2016, PCRS carried out between €70m-80m business transactions which corresponded to items of service reimbursed.	Claim data is processed and payments are made by the Primary Care Reimbursement Service (PCRS) under a range of schemes/payment arrangements, such as the General Medical Services (GMS); Drugs Payment Scheme (DPS); Long-Term Illness Scheme (LTI); Health Service Executive Community Ophthalmic Services Scheme (HSE-COS); General Practitioner Visit Card (GPVC). Data is collected both electronically and manually. Data is captured record-by-record in real time as it is generated and in batches from various parts of the health system, e.g. HSE offices and pharmacies.
Nursing and Midwifery Quality Care-Metrics	Available to all Directors of Nursing/Midwifery who wish to embed Quality Care Metrics within their local quality governance frameworks.	The data is entered electronically using hand-held tablet computers provided to assist with implementation of the QC-M project.
The Healthy and Positive Ageing Initiative (HaPAI) National Indicators	Indicator-dependent.	56 indicators focus primarily on adults aged 50+ living in Ireland, using multiple data sources such as: Census of the Population; European Quality of Life Survey (EQLS); Programme for the International Assessment of Adult Competencies (PIAAC); Quarterly National Household Survey (QNHS); European Survey of Income and Living Conditions (EU-SILC); European Labour Force Survey (EU-LFS); TILDA; HSE Elder Abuse Services; HSE National Screening Service.
HaPAI and Age Friendly Ireland "Positive Aging in age friendly cities and	20 local authority areas in Ireland.	A survey of 20 local authority areas in Ireland.

Source	Coverage	Data Collection Methods
counties local indicators for Ireland"		
Health Atlas Ireland, HSE	Health Atlas Ireland enables controlled access to a suite of datasets collected by other departments and agencies, including: Health Protection Surveillance Centre, HSE Information and Communication Technology, Department of Health, Royal College of Physicians of Ireland, Royal College of Surgeons in Ireland, Central Statistics Office (CSO), Ordnance Survey Ireland GeoDirectory University College Dublin, National University Ireland Maynooth, Dublin City University Primary Care Reimbursement Service — HSE, Economic and Social Research Institute, Road Safety Authority, An Garda Síochána, Irish Air Corps, Irish Coast Guard.	Data is made available to Health Atlas Ireland, Health and Wellbeing Directorate, HSE from the primary data collections. The frequency of data updates is determined by the primary data sources.

The range of data sources identified were investigated to determine what, if any, of the data captured might be relevant to the AFFINITY Project.

Table 6 maps the outcomes questions, suggested by participants in the consultation process, against potentially relevant and currently available Irish data. There are three important points to note with regard to Table 6:

1. The evaluation questions identified in Table 6 emerged from the consultation process with stakeholders and are not exhaustive of the types of questions that could be answered by an evaluation(s) of the AFFINITY Project. Further discussion is required to prioritise and agree the evaluation questions for AFFINITY.

2. While the data described below are currently collected, further analysis of the suggested datasets and associated data will be required to establish if the data is amenable to further sub-group analysis, e.g. by age, by type of fall, by type of injury, etc.

3. Irrespective of whether these indicators are used, the AFFINITY project are likely to need resources to collect data over and above the standard reports routinely generated by these data systems.

Table 6: AFFINITY Project Evaluation Questions as Suggested by Consultation Participants Mapped Against Potentially Relevant Existing Data and Indicators

Outcomes Evaluation Question	Data Source	Potentially Relevant Indicator(s)/Data
Has the quality of care for clients improved?	Nursing and Midwifery QCM	• A falls risk assessment was recorded as completed on admission/transfer if applicable • If the patient is identified as at risk of falling, nursing interventions are in place to minimise the risk of falling • The patient, if identified at risk of falling, has been offered information about falls • If a patient has fallen, the relevant post-falls documentation has been completed.
	HSE Performance Reports: Social Care, Older Person's Services	As Primary Care, Social Inclusion and Palliative Care Performance Reports
	HSE Performance Reports: Acute Hospitals including Clinical Programmes; National Ambulance Service; & National Cancer Control Programme	• Percentage of acute hospitals which have completed and published monthly hospital patient safety indicator report.
Has patient /service user safety improved?	NIMS	For service users **already** in hospital/residential care/home care settings : • Injury sustained from fall • Risk assessments and interventions that were in place to address each fall risk factor. • Service user related risk factors that, at the time of fall, were i) identified but did NOT have an appropriate intervention or ii) present but were NOT identified and therefore did NOT have an appropriate intervention. • Environmental or equipment related risk factors at the time of the fall. • Staffing issues • Was a falls risk assessment completed prior to the fall as per the falls prevention policy of the hospital? • Was the service user's falls risk communicated to the patient, their families and all relevant staff? • Was the service user's falls risk communicated at handover / shift reports?
	HIPE	Incidence and type of fall, in acute hospital settings only

Outcomes Evaluation Question	Data Source	Potentially Relevant Indicator(s)/Data
Has there been a change in the number of falls?	NIMS	Includes demographic details, locations, incident type, division, specialties, procedures/medications, injuries, outcomes, severity ratings, contributory factors, actions taken/planned and values.
	IHFD	For hip fractures only: • Type of trauma • Did service user fall during an existing inpatient admission in operating hospital? • Pre-fracture mobility score • Type of fracture • History of previous fragility fracture(s) • Pre-op medical assessment
Has there been a reduction in falls in health and other settings? (potentially via NIMS)	HIPE	• Source of admission
	IHFD	• Where was the service user discharged to following the acute hospital spell?
Has there been a reduction in harm from falls?	HIPE	• Type of fall • Treatment
	NIMS	• Injuries, outcomes, and severity ratings.
	MTA & IHFD	• Mechanism of injury • Injuries sustained • Injury severity score • Mortality by mechanism of injury
What is the contribution of the AFFINITY Project to the achievement of client outcomes?		NOT CURRENTLY AVAILABLE
Has awareness been raised among older people and the wider population about key		NOT CURRENTLY AVAILABLE

Outcomes Evaluation Question	Data Source	Potentially Relevant Indicator(s)/Data
messages to reduce harm from falls?		
Is the general public more empowered to maintain their health and wellbeing?		NOT CURRENTLY AVAILABLE

2.3.1 Other data sources

It was also noted during the consultation activities that the Single Assessment Tool has a section for falls. It is focused on people who are frail, and in time national and local reports will be available. The Single Assessment Tool is a comprehensive IT-based standardised assessment used to assess the health and social care needs of people (primarily those over the age of 65 years) who may be looking for support under one the following Nursing Home Support Scheme (NHSS) (also known as A Fair Deal) or Home Support Services. This may be useful for assessing population trends.

2.4 Identify and analyse data assets and gaps

Currently there is Irish data available about outcomes for persons who sustain falls-related injuries requiring admission to hospital, and these data could be utilised in any evaluation of the AFFINITY Project. When compared to New Zealand's dashboard, comparable Irish data is available for three of the four outcomes. Comparable Irish data is also currently collected on the three outcome measures in the Scottish example: *Prevention and Management of Falls in the Community: A Framework for Action for Scotland 2014/15*. The consultation activities with the AFFINITY Project stakeholders and our desk-review of the sources included in Table 6 indicates that there are data available from the IHFD on persons who enter the hospital system with a hip fracture, including data about:

- Patient demographics
- Types of falls
- Procedures received
- Timing of procedures
- Length of stay in hospital
- Access to physiotherapy and occupational therapy
- Falls assessments
- Prescriptions, however, due to a lack of a single patient identifier, prescription data may not be linked to information on 'fallers'.

Notwithstanding the type of data that is available, the consultation activities with AFFINITY Project stakeholders identified a number of data gaps and challenges to gathering relevant data. From the consultation process and desk-based review, it is understood that data is not currently available in a standardised way in six broad areas, including:

1. Data on older persons who fall in the community, who are not receiving HSE services and are not hospitalised or do not attend an ED for other types of fractures, beyond hip fractures
2. Awareness, including at the individual, community, or health professional levels

3. Service integration
4. Access to assessment & intervention for modifiable risk factors
5. Participation in community prevention or community rehabilitation activities
6. Costs.

More specifically, **patient information** data gaps that were identified as part of the gap analysis, include:

- High quality data on all fragility fractures or major fractures, beyond hip fractures
- High quality / standardised emergency department data on patients, who have had a fall, and are **not** admitted to hospital
- GP data on falls and fractures
- Rates of falls in the community.

Gaps in the ***'awareness'*** domain include data on awareness across the board that preventing harms from falls is a key aspect of healthy ageing.

More specifically, data gaps on **service integration** and access to **timely assessment** include:

- Data on integration of services
- Complete data on service user pathways
- Data on access to fracture liaison services, where the aim of the fracture liaison service is to identify those people who have had a fracture due to osteoporosis, and to reduce future risks, this data could be relevant to prevention, outcomes and integration

It is useful to note that in NZ the outcome relating to integrated care is captured using proxy measures, which could be developed with little difficulty in Ireland, for example collecting data on attendance at and reach of prevention and rehabilitation services.

It was noted by participants in the consultations that while participation in **community prevention and rehabilitation services** was likely recorded locally, it is done in a variety of ways, to a variety of standards and not collated centrally.

Finally, it was noted there was a paucity of data on **costings** for the provision of community-based falls prevention and rehabilitation as there is no specific financial database within social care that captures falls and rehab activity.

The lack of availability of these types of data makes efforts to assess costs and benefits of implementing projects like the AFFINITY Project more difficult.

In addition, the data gaps participants in the consultation process also identified a number of challenges to collecting data; these include:

- The absence of a single service user record
- The lack of service capacity in some areas, either in hospital or community settings, which makes integration difficult, and therefore precludes data collection
- Lack of consistency in what and how data is collected locally and between areas
- Lack of resources for data collection, analysis and review, such as, IT supports, particularly IT systems and supports in the community.

A particular challenge identified for understanding what activities are occurring in the community is the lack of consistent data captured and fed up the system for regional or national collation and review. For example:

- Local data on falls incidents is collected in residential centres and is available through NIMS for HSE funded sites, however, it is not standardised for private providers
- Lack of standardised data on access and uptake of community strength and balance exercise classes
- Healthy City Initiatives have individual plans at the local level, but these are not aggregated, and do not necessarily report on the same issues in the same way.

Accessibility of data also emerged as an issue. The New Zealand Health Atlas, for example is a publicly visible database down to individual District Health Boards & Hospitals. The HSE's Health Atlas Ireland is for the most part restricted to HSE staff and requires special permission to access the majority of the data held.

The results of the analysis of the consultation findings and the desk-based review indicate that while there are a number of relevant data sets currently available, there are also some significant data gaps when it comes to the interests of the AFFINITY Project.

Available and relevant datasets tend to provide data on outcomes and are primarily concerned with the hospital setting. The data gaps can be broadly categorised under two themes:

- Community settings, including prevention and rehabilitation services

- Process measures.

Two key reasons exist for these gaps. First, some data are simply not collected. Second, some of the needed data are likely gathered at a local level but are not connected or *'fed up through the system'*.

3. Next steps for the AFFINITY Project

Irish data is available on outcomes, therefore, selecting and agreeing, in consultation with Project stakeholders, which of the Irish data should be used in the evaluation to evidence the achievement of outcomes for the AFFINITY Project is an important next step. The availability of existing Irish data does not rule out the possibility that additional data specifically collected for the purposes of the evaluation may also need to be identified and captured.

This data gap analysis has found that for process data, there are limited existing data to draw from for an evaluation. This is not unusual for a project at this stage of implementation. Therefore, identifying and agreeing relevant process measures and developing methods and mechanisms to capture these data for the evaluation, in consultation with relevant stakeholders, is also an important next step for the AFFINITY Project. The approach used in Scotland to track the progress of its framework, the *Prevention and Management of Falls in the Community: A Framework for Action for Scotland 2014/15* and England's *'Everyday Interactions'* toolkit provide some ideas on ways forward.

Table 7 to Table 9 map the available Irish data against the activities and outputs, short-term and long-term outcomes respectively, described in the AFFINITY Project logic model. These types of data and indicators could be used to evidence progress towards achieving or achievement of the AFFINITY Project's aims and objectives. This is a useful starting point for the AFFINITY Project to begin identifying indicators of progress, and for developing them where necessary.

Table 7: Illustrative Types of Data to Evidence Progress Towards Achieving AFFINITY Project Logic Model Activities and Outputs

Logic Model Element: Activities and Outputs	Illustrative Indicator(s)
Develop a stakeholder analysis and engagement plan.	Engagement Plan Complete? Yes/No
Engage with stakeholders including service users to ensure co-design.	• Documented stakeholder engagement activities • Service user input is evident in design • Service user engagement mechanism is established

Logic Model Element: Activities and Outputs	Illustrative Indicator(s)
Coordinate a high-level scoping / gap analysis of existing services.	• Scoping / gap analysis complete? Yes/No
Facilitate partnerships and integration within and between health and social care services and across the wider system.	• Record of relevant activities • Evidence of partnership and integration
Develop the framework for prevention of falls and harm from falls for CHO's and Hospital Groups.	• Framework developed? Yes/No
Identify key development priorities for falls and bone health nationally for 2019-2023 incorporating: analysis of cost effectiveness of proposed models.	• Key priorities identified? Yes/No
Budgetary impact of national prioritised plan.	• Budgetary impact established? Yes/No
Recommend an evaluation framework to inform the evaluation of the AFFINITY Project.	• Evaluation framework recommended? Yes/No
Recommend a dashboard/data set for measuring and monitoring processes, outcomes and impacts of falls and bone health services.	• Recommended dashboard data set for ongoing monitoring of the AFFINITY Project, Yes/No
Engage Service Users in the design of information resources that are acceptable and attractive to the intended target group.	• Service user engagement mechanism established • Process for service users sign-off on resources developed • Level of service user satisfaction with the resources developed
Support service providers through access to high quality summaries of current evidence, webinars, toolkits and educational resources.	• Resources signposted or developed? Yes/No • Percentage of service providers that access resources • Level of service provider satisfaction with resources

Table 8: Illustrative Types of Data to Evidence Progress Towards Achieving Project Logic Model Short-term Outcomes

Logic Model Element: Short-term Outcomes	Illustrative Indicator
Implementation Outcomes	
Increased awareness across the board that preventing harm from falls is a key aspect of healthy ageing.	• Attitudes, behaviours and practices.

Logic Model Element: Short-term Outcomes	Illustrative Indicator
Collective vision on falls & fracture prevention system for Ireland achieved through partnership in co-design.	• Evidenced in policy and procedures across services and organisations.
National framework/ Guidance on integrated falls and fracture prevention system for CHO & Hospital level cross sectorial partnerships.	• Is there a national framework and guidance for CHO and Hospital level cross sectoral partnerships? Yes/No
Recommend an evaluation framework to inform the evaluation of the AFFINITY Project.	• Evaluation framework recommended? Yes/No
Recommend a dashboard/data set for measuring and monitoring processes, outcomes and impacts of falls and bone health services.	• Recommended dashboard data set for ongoing monitoring of the AFFINITY Project, Yes/No
Awareness raising & technical guidance on Age Friendly Housing & Public Realm Design Principles (Including Safety).	• Awareness raising activities carried out • Attendance at awareness raising activities • Number of downloads of guidance • Dissemination plan implemented • Level of implementation of principles.
Service Outcomes	
Integrated Governance structures at local partnership level.	• Are there integrated Governance structures at local partnership level? Yes/No (Would need to reflect numbers here)
Local implementation groups to develop CHO & Hospital level plans in line with the national framework.	• Proportion of local implementation groups that have developed CHO & Hospital level plans in line with the national framework.
Investment in clinical coordinator roles for development of community exercise opportunities/development of integrated falls prevention pathways & fracture liaison pathways.	• Value of investment on clinical coordinator roles • Number of clinical coordinators in post.
Integrated pathways at CHO/Hospital Group level which are evidence & data-informed including clinical pathways & pathways for community supports e.g. exercise opportunities.	• Evidence base for pathways documented • Percentage of persons who fall and those at risk who follow access the pathway.
Client Outcomes	
Consultation and involvement in co-design of services to reduce harm from falls.	• Engagement mechanism established • Involvement evidence in service design.
People well informed & engaged in remaining healthy, independent & active as they age.	• Measures of knowledge, behaviours and attitudes. • Engagement in health-related behaviours • Measures of independence (including self-report)

Logic Model Element: Short-term Outcomes	Illustrative Indicator
	• Measures of physical activity (including self-report).
Awareness that many falls & fractures can be prevented.	• Measures of knowledge, behaviours and attitudes • Actions taken to prevent falls and improve bone health
Awareness of bone health and how to optimise this through the life span.	• Measures of knowledge, behaviours and attitudes.
Awareness of need for follow-up of possible fragility fractures to reduce the risk of subsequent fracture.	• Measures of knowledge, behaviours and attitudes.
Awareness of how to access pathways when required.	• Measures of knowledge • Number of people appropriately accessing pathways.

Table 9: Illustrative Types of Data to Evidence Progress Towards Achieving AFFINITY Project Logic Model Long-term Outcomes

Logic Model Element: Long-term Outcomes	Illustrative Indicator
Implementation Outcomes	
Reducing falls & harm from falls embedded in all health and social care services and wider community.	• Evidence in policy and procedure documents.
A falls and fracture prevention system that integrates primary & secondary prevention and rehabilitation through sustainable partnerships at national and CHO/Hospital/Local community partnership levels.	• Evidence of integration • Evidence of partnerships • Source of referrals.
Reduced variation in access to quality evidence-informed and sustainable services to reduce harm from falls.	• Equitable access • Evidence- informed • Sustainability.
Improved access to Fracture Liaison Services.	• Proportion of the country where there is access to fracture liaison services (More specific indicators required e.g. Percentage of people later than 50, screened for bone health post fracture)) • Proportion of the population with access to fracture liaison services.
Value for money through increased focus on prevention.	• Costs of secondary treatment due to falls.
Service Outcomes	

Logic Model Element: Long-term Outcomes	Illustrative Indicator
Reduced rates of ED attendances with falls related injuries.	• HIPE data on admittance to hospital following a fall
Reduced prevalence of hip fractures across settings.	• IHFD
Primary and Secondary fragility fracture prevention.	• Primary prevention activities • Secondary prevention activities
Increased staff capability and capacity to prevent and manage harmful falls (a) to make every contact count and (b) to optimise their own health in this area.	• Staff attitudes and knowledge.
Systems integration at all levels.	• Referrals.
Continuous service improvement cycles.	• To be determined
Client Outcomes	
Health promotion & exercise opportunity information to enable lifelong optimisation of bone health.	• Availability • Dissemination • Awareness.
Access community-based exercise opportunities for strength and balance across range of functional ability.	• Proportion of the population with access to / referred to community-based services/ uptake/ compliance
Timely access to falls and bone health assessment & interventions, post fall rehabilitation & fracture liaison services as required.	• Access within a specified timeframe.
Improved quality of life for service users and carers.	• Health related quality of life measure.
People enabled and supported to age in place.	• Proportion of older people who must relocate following a fall/due to risk of falling • Wellbeing indicators for older people.
Experience of seamless integration of care as required.	• Referral pathways.
Clarity on points of access to required services.	• Documented statement on points of access.
Equity of access regardless of geographical location.	• Proportion of population with access • Proportion of country / CHOs with access.

Issues to reflect on

Comparing data availability to the core elements of the logic model for the AFFINITY Project illustrates a number of key issues:

- Some once-off actions are listed in the logic model which are either complete or incomplete; therefore, ***no new data sources are required for these actions***.

- Some ongoing activities are included in the logic model which ***will require indicators to be developed*.**
- Some activities have multiple components, and agreement will need to be developed on whether indicators are required on all elements, or whether some need to be prioritised due to constraints. For example, *"Engage Service users in the design of information resources that are acceptable and attractive to the intended target group"*; clarification and agreement is needed on whether it is the engagement that is the important element, the satisfaction of the target group with the resources that are developed or both, in order to develop an appropriate and relevant indicator for this activity. It is not always possible to measure everything of interest and there may be a need to prioritise.

4. Conclusions

There is Irish data available on outcomes, therefore, selecting and agreeing, in consultation with Project stakeholders, which of the Irish data should be used in an evaluation(s) to evidence the achievement of outcomes for the AFFINITY Project is an important next step. The availability of existing Irish outcomes data does not rule out the possibility that additional data specifically collected for the purposes of the evaluation may also need to be identified and captured.

This data gap analysis found that there is limited existing process and/or implementation data available to be used in an evaluation of the AFFINITY Project. This is not unusual for a project at this stage of implementation. Therefore, identifying and agreeing relevant process measures and developing methods and mechanisms to capture these data for the evaluation, in consultation with relevant stakeholders, is also an important next step for the AFFINITY Project.

Appendix 1: Details of Irish data sources referenced

Data Source	Hospital In-Patient Enquiry (HIPE), HSE, Healthcare Pricing Office
Overview	National database of hospital discharge activity. HIPE collects demographic, clinical and administrative data on discharges from, and deaths in, acute public hospitals nationally.
Data Collection Frequency	Real Time
Publication Frequency	Activity in Acute Public Hospitals in Ireland annual reports are available on the HPO website.
Coverage	All acute public hospitals participate in Hospital In-Patient Enquiry (HIPE).
Method of data collection	Data is taken from medical charts or records and coded by trained clinical coders before entering into HIPE system (HIPE Portal). Discharges are coded using the International Statistical Classification of Diseases and Related Health Problems, Tenth Revision, Australian Modification (ICD-10-AM), Australian Classification of Health interventions (ACHI), Australian Coding Standards (ACS), 8th Edition.
Relevant Indicators	• Dates of Admission and Discharge • Day case indicator • Admission Type: booked or emergency • Discharge Destination: home, transfer, self-discharge or death • Sex • Marital / Civil Status • Area of Residence by county • General Medical services status (i.e. Medical Card) • Diagnoses: Principal and up to 29 additional secondary diagnoses • Procedures: Principal and up to 19 additional secondary procedures
Link	http://www.hpo.ie/
Sample Size	Approximately 1.6 million records created on average annually.

Data Source	Irish Hip Fracture Database (IHFD), National Office of Clinical Audit
Overview	The Irish Hip Fracture Database (IHFD) is a web-based system that uses the Hospital In-Patient Enquiry (HIPE) portal infrastructure. It audits care standards and outcomes for service users with hip fractures. It captures details of time/date of injury, type of injury, time to surgery, surgeon grade, anaesthetic grade, type of fracture, surgery, anaesthetic, input from geriatrician, falls assessment, secondary prevention, physiotherapy initiation and multidisciplinary rehabilitation.
Data Collection Frequency	Real Time
Publication Frequency	Annual
Coverage	National — all acute hospitals that operate on hip fracture patients (16 Hospitals in total)

Data Source	Irish Hip Fracture Database (IHFD), National Office of Clinical Audit
Method of data collection	Data is taken from the medical record by clinical staff with permitted access and inputted into the HIPE portal.
Relevant Indicators	• Date of trauma causing hip fracture • Time of trauma causing hip fracture • Type of trauma • Date of arrival at first presenting hospital • Time of arrival at first presenting hospital • Admission via ED in operating hospital • Date of arrival in ED of operating hospital • Time of arrival in ED of operating hospital • Date left ED in operating hospital • Time left ED in operating hospital • Did service user go directly to theatre from ED? • Date seen by orthopaedic team in operating hospital (if not admitted via ED) • Time seen by orthopaedic team in operating hospital (if not admitted via ED) • Did service user fall during an existing inpatient admission in operating hospital? • Type of ward admitted to in operating hospital • Date of admission to orthopaedic ward • Time of admission to orthopaedic ward • Pre-fracture indoor walking • Pre-fracture outdoor walking • Pre-fracture shopping • Pre-fracture new mobility score (sum A+B+C) • AMT Performed • AMTS • Side of fracture • Type of fracture • Type of fracture (Other, please specify) • Type of fracture (right) • Type of fracture (right, other, please specify) • Pathological • History of previous fragility fracture(s) • Pre-op medical assessment • Assessed by geriatrician during this • acute admission • Geriatrician assessment date • Geriatrician assessment time • Geriatrician grade • Nutritional risk assessment performed on admission

Data Source	Irish Hip Fracture Database (IHFD), National Office of Clinical Audit
	• Nerve block in ED or ward before arrival in theatre suite • Operation • Type of implant (fx type = intracapsular) • Type of implant (fx type = intertrochanter) • Type of implant (fx type = periprosthetic) • ASA grade • Type of anaesthesia • Surgeon Grade • Was consultant orthopaedic surgeon present in the operating room? • Anaesthetist grade • Was consultant anaesthetist present in the operating room? • Date of primary surgery • Time of primary surgery • Reason if delay >48 hours • Other reason if delay >48 hours • Mobilised on day of or day after surgery • Mobilised by • Physiotherapy assessment on day of or day after surgery • Cumulative Ambulatory Score – day after surgery (0–6) • Re-operation within 30 days • Operation (Right) • Pressure ulcers • Specialist falls assessment • Bone protection medication • If medication type changed during admission, please document • Multidisciplinary rehabilitation team assessment • Cumulative Ambulatory Score – day of acute hospital discharge (0–6) • Where was the service user discharged to following the acute hospital spell? • Discharged to (other, please specify) • Is admission data entry complete?
Link	https://www.noca.ie/audits/irish-hip-fracture-database
Sample Size	Approximately 3,000 records created on average annually

Data Source	National Incident Management System (NIMS), State Claims Agency, Department of Health
Overview	National database of incident and claim activity. NIMS is the principal source of national data on incident and claim activity for the Irish health service. It has been designated as the primary system for end-to-end risk management of all incidents (capture, investigations and reporting) both by the Department of Health and the HSE. It is an end-to-end risk management web-based system and its purpose is as follows:

Data Source	National Incident Management System (NIMS), State Claims Agency, Department of Health
	• Capture of incidents (including Serious Reportable Events); involving staff members, service user s (clinical and general), members of the public, property, dangerous occurrences and complaints • Management of investigations • Recording of investigation conclusions • Recording of recommendations • Tracking recommendations to closure • Management of the claims and litigation processes • Multiple reporting and analytical tools which could be pointed at all captured data • Facilitates reporting and analysis of patient safety, staff safety, members of public, property damage, dangerous occurrences and complaints • Facilitates reporting and analysis of investigative conclusions and contributory factors • Facilitates reporting and analysis of key performance indicators (KPIs) as set out in the HSE National Service Plan • Facilitates the analysis of safety performance to inform risk initiatives. Includes demographic details, locations, incident type, division, specialties, procedures/medications, injuries, outcomes, severity ratings, contributory factors, actions taken/planned and values. Anatomical Therapeutic Chemical (ATC) Classification System and aligned to the World Health Organization (WHO) Conceptual Framework for the International Classification for Patient Safety.
Data Collection Frequency	Real Time
Publication Frequency	Monthly, quarterly, annually and as per request.
Coverage	In excess of 1,500 users to date across multiple Delegated State authorities (DSAs), including: • Fifty-two acute hospitals • Over 2,600 community healthcare locations across Mental Health, National Ambulance Service, Social Care, Primary Care and Health and Wellbeing Division • Over 350 Tusla locations.
Method of data collection	NIMS is a confidential, highly secure web-based IT system that links hospitals and other health and social care enterprises to a core database. Information is entered to the system locally either by paper-based National Incident Report Forms (NIRF) or electronic point of occurrence reporting (ePofO) and subsequently reviewed and investigated by the risk manager using NIMS.
Relevant Indicators	• Date of Fall • Ward

Data Source	National Incident Management System (NIMS), State Claims Agency, Department of Health

	• Exact Location
	• Description of Fall
	• Actions Taken by the Service in the Period Following the Fall in Respect of the Service User's Care and Prior to this Review
	• Injury Sustained
	• Involvement of the Service User/Family
	• Did the service user have any of the following falls risk factors present at the time of the fall? (select all that apply).
	  ○ Identify interventions that were in place to address each fall risk factor.
	  ○ Age 65+
	  ○ Use of Walking Aid
	  ○ Hearing Impairment
	  ○ Incontinence
	  ○ Inappropriate Footwear
	  ○ Pain
	  ○ Impaired Vision
	  ○ Depression / Low Mood
	  ○ Fear of Falling
	  ○ Impaired Transfers
	  ○ Impaired ADLs
	  ○ Postural Instability, Mobility Problems, and / or Balance Problems
	  ○ Medication e.g. Polypharmacy, Drugs with Sedative Effect
	  ○ Cog. Impairment
	  ○ Dizzy / Lightheaded
	  ○ Loss of Consciousness
	  ○ Syncope Syndrome
	  ○ Delirium
	  ○ Dementia
	  ○ Fracture Risk, such as Previous Fragility Fractures Alcohol Use (≥21u/week) Rheumatoid Arthritis, Smoker, Recent Steroid Use, Low BMI (≤19)
	• Health Condition that Increases Falls Risk e.g. neurological or musculoskeletal
	• List any service user related risk factors that, at the time of fall, were i) identified but did NOT have an appropriate intervention or ii) present but were NOT identified and therefore did NOT have an appropriate intervention.
	• Were there any environmental or equipment related risk factors at the time of the fall? (tick all that apply). Identify any control(s) in place prior to the fall to reduce this risk.
	  ○ Lighting

Data Source	National Incident Management System (NIMS), State Claims Agency, Department of Health
	○ Floors ○ Furniture ○ Fittings ○ Wheelchairs ○ Walking Aids ○ Bed / Bedrails ○ Call Bells • List any environmental or equipment related risk factors that, at the time of fall, were i) present but NO control(s) in place or ii) absent and should have been in place: • What was the staffing and skill mix on the shift that the service user fell? • Were all rostered staff on the ward at the time of service user fall? (e.g. not off ward/on break/in handover) • Have all staff on the shift that the service user fell been trained in the falls prevention policies of the service? • List any staffing related issues at the time of fall as they relate to the above questions • Was a falls risk assessment completed prior to the fall as per the falls prevention policy of the hospital? • Was the service user's falls risk communicated to the service user, their families and all relevant staff? • Was the service user's falls risk communicated at handover / shift reports? • List any task and team related factors at the time of the fall as they relate to the above questions • Key causal factors, contributory factors, incidental findings, notable practice, other issues of note, review outcome, recommendations.
Link	https://www.hse.ie/eng/about/qavd/incident-management/
Sample Size	Approximately 160,000 records created on average annually.

Data Source	HSE Performance Reports — Acute Hospitals including Clinical Programmes, National Ambulance Service and National Cancer Control Programme, HSE
Overview	The Planning and Business Information Unit collates the HSE's Performance Reports (PR), which provide an overall analysis of key performance data from Finance, Human Resources (HR), Hospital and Primary and Community Services. The activity data reported is based on performance activity and key performance indicators (KPIs) outlined in the National Service Plan (NSP) 2017 and the Acute Divisional Operational Plan 2017. The PR is overseen by the National Planning Oversight Group (NPOG), led by the Deputy Director General on behalf of the Director General to monitor performance against planned activity, as outlined in the National Service Plan, and to highlight areas for improvement. A Management Data Report is

Data Source	HSE Performance Reports — Acute Hospitals including Clinical Programmes, National Ambulance Service and National Cancer Control Programme, HSE
	also produced each month which provides more detailed data on the metrics covered in the PR. The HSE has agreed a number of metrics/indicators for acute hospitals including clinical programmes, National Ambulance Service and National Cancer Control Programme (NCCP). The full list of these metrics/indicators can be found on the HSE website: http://www.hse.ie/eng/services/publications/KPIs/ Items such as acute care in medicine and surgery, average length of stay, inpatient and day-case waiting time are included as indicators. Examples of an indicator include: • Percentage of adults waiting <15 months for an elective procedure (inpatient) • Percentage of emergency re-admissions for acute medical conditions to the same hospital within 30 days of discharge. Includes data from all acute hospital activity, Hospital In-Patient Enquiry (HIPE), Health Protection Surveillance Centre (HPSC), clinical programmes, NCCP, finance, HR.
Data Collection Frequency	Source dependent
Publication Frequency	Information is published in performance assurance reports and management data reports each month. This is based on KPIs as set out in the NSP.
Coverage	All acute hospitals.
Method of data collection	Data collected to support these indicators is a combination of collecting primary data and data from national data collections. Primary data is submitted from all hospitals to the Business Information Unit on a monthly basis via email. Data is inputted on an Excel workbook. Data is also sourced from national data collections such as the Delayed Discharges Web browser directly from hospitals, National Treatment Purchase Fund, NCCP, HPSC, National Stroke Register, HIPE and Pre-Hospital Emergency Care Council (PHECC).
Relevant Indicators	• Percentage hip fracture surgery carried out within 48 hours of initial assessment (Hip fracture database) • Percentage of hospitals that have completed a self-assessment against all 53 essential elements of the National Standards for Safer, Better Healthcare • Percentage of acute hospitals which have completed and published monthly hospital patient safety indicator report
Link	http://www.hse.ie/eng/services/publications/KPIs/

Data Source	HSE Performance Reports — Acute Hospitals including Clinical Programmes, National Ambulance Service and National Cancer Control Programme, HSE
Sample Size	All acute hospitals.

Data Source	HSE Performance Reports — Social Care — Older Person's Services
Overview	Data to monitor and measure provision of services for older people and report on activity against the National Service Plan (NSP). Data on Home Help activity in the community; Home Care Package activity in the community; NHSS activity, safeguarding activity, public bed activity. See metadata; http://www.hse.ie/eng/services/publications/KPIs/
Data Collection Frequency	Source Dependent
Publication Frequency	PR and management data reports are published monthly, and data is presented in these reports. The reporting frequency of the individual KPIs informs the scheduling of publication of the data. For example, monthly data is published monthly, and quarterly data is published each quarter. The frequency of reporting of individual KPIs is set out in the NSP.
Coverage	National
Method of data collection	Methods of data collection to support these indicators comprise both national and local collection: • National collection: national data is received from one source from the relevant Older Peoples' Specialist Office via Business Information Unit. • Local collection: data is provided by the 32 LHOs to the Business Information Unit. • All data is submitted on a Corporate Information Facility Template which is in Microsoft Excel format.
Relevant Indicators	• OP46 - No. of Persons in acute hospitals approved for Transitional Care to move to alternative care settings
Link	http://www.hse.ie/eng/services/Publications/corporate/
Sample Size	All 32 Local Health Offices (LHO).

Data Source	Vital Statistics, CSO
Overview	Provides information on mortality in Ireland. Used in mortality analysis, population estimates and life expectancy. Collects information on Date of death, Address of residence of deceased, Place of death, Cause of death, Occupation of deceased, Age of deceased, Sex of deceased, Marital Status of deceased.
Data Collection Frequency	
Publication Frequency	Annual
Coverage	All deaths in Ireland
Method of data collection	Death Registration

Data Source	Vital Statistics, CSO
Relevant Indicators	Causes of death by falling: • 00 Fall on same level involving ice and snow • W01 Fall on same level from slipping, tripping and stumbling • W02 Fall involving ice-skates, skis, roller-skates or skateboards • W03 Other fall on same level due to collision with, or pushing by, another person • W04 Fall while being carried or supported by other persons • W05 Fall involving wheelchair • W06 Fall involving bed • W07 Fall involving chair • W08 Fall involving other furniture • W09 Fall involving playground equipment • W10 Fall on and from stairs and steps • W11 Fall on and from ladder • W12 Fall on and from scaffolding • W13 Fall from, out of or through building or structure • W14 Fall from tree • W15 Fall from cliff • W16 Diving or jumping into water causing injury other than drowning or submersion • W17 Other fall from one level to another • W18 Other fall on same level • W19 Unspecified fall • W20 Struck by thrown, projected or falling object • W21 Striking against or struck by sports equipment • W22 Striking against or struck by other objects
Link	https://www.cso.ie/en/methods/birthsdeathsandmarriages/
Sample Size	Population

Data Source	The Irish Longitudinal Study on Ageing (TILDA)
Overview	The Irish Longitudinal Study on Ageing (TILDA) is a large-scale, nationally representative, longitudinal study on ageing in Ireland, the overarching aim of which is to make Ireland the best place in the world to grow old. Data is collected on: • The health status and health needs of older people • The social and economic status and needs of older people • The health, economic and social needs of families and carers of older people • The biological and environmental components of "successful ageing" • The contributions that older people are making to society and the economy TILDA is concerned with how each of the key components of health, wealth and, happiness interacts, such that we can ensure that Ireland meets the needs and choices of its citizens in a personalised and positive environment and with due dignity and respect.

Data Source	The Irish Longitudinal Study on Ageing (TILDA)
Data Collection Frequency	Every 2 years
Publication Frequency	Report dependent
Coverage	Sample of approximately 8,000 adults aged 50+
Method of data collection	Survey and Interview
Relevant Indicators	Data on frailty, including: • Falls in past year • Falls since last interview • Type of fall • Need for medical treatment • Medical treatment received • Experience of blackout or fainting • Fear of falling • Steadiness when walking, standing or getting up from a chair • Fractures • Cause of fall • Circumstances of fall • Family history of hip or wrist fracture • Joint replacements • Cardiovascular conditions • Non-cardiovascular conditions • Polypharmacy • Walking speed • Grip strength (kg) • Orthostatic Hypotension • Bone health Normal • Osteopenia • Osteoporosis • Body Mass Index • Physical activity level Low, Moderate, High • Fall in 12 months prior to Wave 1 • Sensory function in non-recurrent fallers and recurrent fallers • Self-rated vision • Self-rated hearing • Visual acuity score • Contrast sensitivity (no glare) • Contrast sensitivity (glare) • Cognitive Function • Mental Health
Link	https://tilda.tcd.ie/

Data Source	The Irish Longitudinal Study on Ageing (TILDA)
Sample Size	Approximately 8,000

Data Source	National Integrated Medical Imaging System (NIMIS)
Overview	In 2008, the HSE initiated a programme called NIMIS: National Integrated Medical Imaging System, to capture and store Radiology, Cardiology and other diagnostic images electronically. All public hospitals using NIMIS are connected on a single imaging platform to enable closer collaboration between clinicians, particularly those in more remote locations. It allows the secure, electronic sharing of images between specialists for faster and improved diagnosis and therefore improves patient experience and care for all. When fully live, NIMIS will support 36,000 medical users at over 60 locations; will store over 3.5 million studies per year on an infrastructure with over 1,000 medical device workstations. All contracted hospitals are connected through the National Health Network (NHN). The deployment includes medical device imaging workstations, Radiology Information System (RIS), Picture Archiving Communication System (PACS), Voice Recognition Systems, and other third party systems.
Coverage	Currently operating in 55 of 66 Hospitals nationwide / 68 Hospitals and imaging centres
Link	https://www.hse.ie/eng/services/news/newsfeatures/nimis/
Sample Size	As of April 2019, 40 sites are live and using the system; 63 if you consider satellite sites and facilities, whilst new sites continue to go live at a rate of one per month. There are 39,000+ active users, 21 million studies held on archive, with over 7,000 additional studies added each day.

Data Source	Major Trauma Audit (MTA), National Office of Clinical Audit
Overview	Major Trauma Audit (MTA) is a patient safety initiative that aims to increase quality assurance and improvement initiatives in the area of patient trauma care, through the delivery of high-quality data. MTA collects information on seriously injured service user s treated in trauma receiving hospitals throughout Ireland. Data is collected from various sources, including: • Pre-hospital care records • Hospital clinical records (including laboratory and radiology) • The hospital-in-patient-enquiry (HIPE) system • The integrated patient management system (IPMS) • Coroners' reports • Other data systems. Data collection is carried out by local MTA coordinators, with guidance and support from an MTA Clinical Lead with a trauma-related specialty.

Data Source	Major Trauma Audit (MTA), National Office of Clinical Audit
	Once gathered, data is verified, triangulated and anonymised by the MTA coordinators in the hospitals and directly entered onto the secure Trauma Audit and Research Network (TARN) portal for injury coding and analysis. TARN focuses on more severely injured trauma service user s with potential life-changing or life-threatening injury. Injured patients who die in advance of reaching hospital are not included. Each injury is coded using an internationally agreed standardised coding system for trauma — the Abbreviated Injury Scale (AIS) dictionary, produced by the Association for the Advancement of Automotive Medicine (AAAM, 2005). Each injury is scored between one and six based on its severity to calculate the probability of survival (PS) for each injured service user. This data includes: patient demographics, type and cause of injury, injury severity, pre-hospital data, and service user's hospital journey e.g. time to treatment, length of stay, and outcomes based on mortality.
Publication Frequency	Annual report
Coverage	All trauma receiving public hospitals participate in this audit (26 Hospitals).
Method of data collection	Hospital-level MTA coordinators submit data on a web-based data collection and reporting system. International Classification of Disease, Tenth Revision (ICD–10) injury codes (S and T) are used to identify reports for inclusion in MTA.
Relevant Indicators	• Age and gender • Pre-existing medical conditions • Mechanism of injury • Injuries sustained • Injury severity score • Place of injury • Injuries sustained at home • Type of road trauma • Head injuries • Mode of arrival • Most senior pre-hospital healthcare professional • Traumatic brain injury and admissions to a neurosurgical unit • Transfers by hospital • Gender and transfers • Age and transfers • ISS and transfers • Mechanism of injury and transfers • Body region injured and transfers • Location of injury and transfers

Data Source	Major Trauma Audit (MTA), National Office of Clinical Audit
	• Reason for transfer • Presentation by time of day • Pre alert • Reception by a trauma team • Grade of most senior doctor treating service user on arrival • Time to see service user s on arrival at hospitals • Surgery • Hospital systems performance • Mortality • Mortality and age • Mortality by gender • Mortality by mechanism of injury • Mortality by ISS • Mortality by body region injured • Discharge destination • Risk-adjusted benchmarking
Link	http://www.noca.ie/
Sample Size	Approximately between 5,000 and 6,000 records created on average annually.

Data Source	Primary Care Reimbursement Service (PCRS), HSE, National Health Schemes Data
Overview	The HSE supports the delivery of primary healthcare by operating contracts with primary care contractors for the provision of health services to members of the public in their own community. The data contains information on the number of people in use of the services; details of health services provided, and medicine products prescribed and dispensed.
Publication Frequency	Data is published annually in the PCRS report. Data is also published in the Key Trends report and the Health Statistics reports issued by the Information Unit. The Central Statistics Office (CSO) also publishes summary data on its website.
Method of data collection	Claim data is processed and payments are made by the Primary Care Reimbursement Service (PCRS) under the following schemes/payment arrangements: • Drugs Payment Scheme (DPS) Data is collected via both electronic and manual data capture approaches. Data is captured record by record in real time as it is generated and in batches from various parts of the health system, e.g. HSE offices and Pharmacies etc.
Relevant Indicators	Data on prescriptions

Data Source	Primary Care Reimbursement Service (PCRS), HSE, National Health Schemes Data
Sample Size	In 2016, PCRS carried out between 70 and 80 million business transactions which corresponded to items of service reimbursed. There are 12 community health schemes and the PCRS data model including core and supporting data structures comprises approximately 1,400 entities. The count of rows added in 2016 ranges up to 60 million per entity. The total number of additional data rows added across the data model is not available.

Data Source	Nursing and Midwifery Quality Care-Metrics
Overview	Nursing and Midwifery Quality Care-Metrics (QC-M) currently consist of a core suite of quality indicators across seven care groups; Acute Care, Older Persons, Mental Health, Intellectual Disability, Midwifery, Public Health Nursing and Children's services. QC-M provide a structure and framework to enable measurement of the quality of nursing and midwifery care processes. It enables identification of areas where practice is good which must be recognised and celebrated, as well as those areas that require improvement. Benefits of the system include: • Delivery of a standard of care that is safe, evidenced based and congruent with legislative and national policies • Establishment of good nursing and midwifery processes will improve the standard of care and create good outcomes for service user s • Provision of timely information on quality allows meaningful corrective action to be undertaken • Identification of areas of good practice which must be celebrated, as well as areas where improvement is required • Provision of valuable information to managers in understanding how well their individual area/organisation are managing the delivery of safe, quality care • Promotion of staff engagement and accountability to care providers for the quality of their services and promotion of culture of continuous improvement among staff. The QC-M process is a cyclical process and takes place monthly. A random sample of 25% of the service user complement in the ward/unit or ten charts from services with significant caseloads such as the Public Health Nursing Service network areas are selected for evaluation. Data from these service user(s) records are entered on the electronic system TYC. Data from an area can be entered at any time over the month in order to be included in the results for that month.
Data Collection Frequency	Monthly

Data Source	Nursing and Midwifery Quality Care-Metrics
Coverage	Available to all Directors of Nursing/Midwifery who wish to embed QC-M within their local quality governance frameworks
Method of data collection	Uses a web-based tool entitled Test Your Care (TYC) to monitor patient safety and promote care quality following an increase in complaints, falls, pressure ulcers and medication management errors The data is entered electronically using hand held tablet computers provided to assist with implementation of the QC-M project. Once data collection is complete for that month, reports can be run and printed. Action plans are then devised by service managers for indicators that have scored poorly and require improvement. Management and staff within the service then work together to implement the changes needed. Trends from the previous months' scores are analysed and data collection begins again for the next month as the cycle continues.
Relevant Indicators	Falls assessment: • A falls risk assessment was recorded on admission/transfer if applicable • If the service user is identified as at risk of falling, nursing interventions are in place to minimise the risk of falling • The service user, if identified at risk of falling, has been offered information about falls • If a service user has fallen, the relevant post falls documentation have been completed
Link	https://www.hse.ie/eng/services/publications/nursingmidwifery%20services/national-guideline-qcm-acute.pdf