NHS Lothian

Falls Prevention
And
Bone Health Strategy
2011-2016

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1.0 Executive Summary

Across the United Kingdom and Europe, falls account for a significant number of deaths, hospital admissions and fractures in the elderly population.

In 2010 20,635 bed days were utilised in NHS Lothian as a direct result of acute admissions in the 65 and over population from a fracture neck of femur arising from a fall. 30% of the 65 and over population and 50% of those over 80 fall each year. This equates to an estimated 73,943 falls across Lothian.

The publication of the ‘The Framework for the Delivery of Adult Rehabilitation’ (2007) required all Boards to publish a Falls Prevention and Bone Health Strategy. This strategy sets out our vision for service provision to those individuals who are at risk of falling or bone fragility fractures or who have had a fall. The NHS Lothian Strategy aims to:
- Identify individuals at risk of falls and fragility fractures;
- Provide further assessment of those identified at risk;
- Provide targeted, evidence based interventions.

Furthermore, we are committed to reducing the number of falls which result in injury across NHS Lothian.

The scope of the strategy includes those that are predominantly over the age of 50 in relation to falls due to the disproportionate number of falls in those over 65 years. However the strategy does promote public health approaches to improving bone health in all ages. It also covers
- Population based prevention
- Bone Health and Osteoporosis
- Individuals at risk of falling, at home, in care homes and in hospitals

The strategy co-exists with ongoing service redesigns and whole systems work currently being undertaken across NHS Lothian. The success of this strategy lies in the generic models laid out and the spread and sustainability of existing pockets of excellence in this area.
Promoting falls prevention and bone health is everyone’s responsibility. The generic model creates the opportunities for everyday patient pathways to trigger a falls risk assessment and signposting with operating units.

The strategy promotes the implementation of an integrated falls prevention and management pathway that transcends Health, Social Care and Third Sector.

Patient focus and involvement has also provided innovative ideas on how best to utilise volunteers and existing services in the reduction of falls in the community.

Falls Co-ordinators within community play a crucial role in the education, pathway redesign and management of these individuals deemed to be at risk.

There are few healthcare models where the evidence base is so strong. Falls prevention in the community once implemented fully will reduce costs and improve hospital capacity by reducing bed days associated with falls. It is anticipated that targeted evidence based interventions can reduce falls and fracture rate up to 30%.

In writing this strategy the emphasis has been on providing connectivity between Health and Social Care to maximise the potential in reduction in the number of falls across Lothian.

The implementation of this strategy will deliver a competitive, cost efficient quality service that will reduce overall incidence and severity of falls between now and 2016.
### 1.1 Summary of Recommendations

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<tr>
<td>1. NHS Lothian Falls Prevention and Bone Health Strategy will be aligned in its implementation to whole systems work programmes and under the ethos of Shifting the Balance of Care and Reshaping Care frameworks.</td>
<td>NHS Lothian Falls Group</td>
<td>CH(C)P Operational Falls Group</td>
<td>Oct 2011</td>
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<tr>
<td>2. NHS Lothian A&amp;E units and minor injury units record the site/nature of the injury and the reason (e.g. Fall)</td>
<td>LUHD A&amp;E Clinical Lead</td>
<td>LUHD SMT/Informatics</td>
<td>Apr 2012</td>
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<td>3. CHP’s and CHCP to implement evidence based pathway for the prevention and management of falls and osteoporotic fragility fractures in collaboration with local authority partners and 3rd sector which is fit for purpose for their locality.</td>
<td>CH(C)P Operational Falls Group, CH(C)P Falls Lead</td>
<td>Falls Co-ordinators</td>
<td>Oct 2011</td>
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<tr>
<td>4. CHP’s / CHCP collate a Directory of Services across Health / Social Authorities / Voluntary Sector to signpost older people and carers to services and organisations that can support health and self management improvement.</td>
<td>CH(C)P Operational Falls Group</td>
<td>Falls Co-ordinators, Long term conditions Leads, Public Health Local Authorities</td>
<td>December 2011</td>
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<tr>
<td>5. The appointment of 1 substantive Falls co-ordinators for NHS Lothian. Administrative support to manage Falls database. (1.0 w.t.e Band 3)</td>
<td>Corporate Falls Lead</td>
<td>CH(C)P’s</td>
<td>April 2012</td>
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<tr>
<td>6. NHS Lothian in conjunction with collaborative partners in social and community care develop communication links with falls co-ordinators to ensure case finding for those most at risk of falls or fragility fractures</td>
<td>Divisional Falls Leads</td>
<td>Falls Leads</td>
<td>Oct 2011</td>
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<td>Recommendation</td>
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<td>7. CHP/CHCP Falls Leads agree appropriate evidence based tools for falls screening for both community and hospital environments.</td>
<td>Falls Lead AHP Leads</td>
<td>Divisional Falls Leads</td>
<td>June 2012</td>
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<tr>
<td>8. NHS Lothian establishes a single system core data set for Falls to measure improvement</td>
<td>Clinical Governance manager</td>
<td>Falls Board Lead</td>
<td>December 2011</td>
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<td>9. Data collection system is developed to capture core data set and provide a reporting mechanism for each phase of the pathway.</td>
<td>CH(C)P's/ LUHD TRAK</td>
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<td>July 2012</td>
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<td>10. CHP / CHCP work collaboratively with key stakeholders to ensure that individuals who have fallen and are injured receive appropriate assistance. One point of access is created for the fallen uninjured within CHP / CHCP.</td>
<td>CH(C)P's/ LUHD Operational Falls Group</td>
<td>Falls Leads Local Authorities</td>
<td>April 2012</td>
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<tr>
<td>11. Care pathways are developed and formalised to ensure that the individuals are screened and signposted to appropriate services to minimise future risk of falling.</td>
<td>CH(C)Ps/ LUHD Operational Falls Group</td>
<td>Falls Leads Local Authorities</td>
<td>July 2012</td>
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<td>12. Patient pathways are developed across NHS Lothian to maximise the potential of Day Hospital and out-patient facilities to undertake specialised falls and bone health assessments by nurses, medics, AHP’s and Falls Co-ordinators/Leads.</td>
<td>NHS Lothian Single Point of Access</td>
<td>Medicine Of Elderly, Consultants, Bone Health Services, Falls Co-ordinators/Leads</td>
<td>November 2011</td>
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<tr>
<td>13. Tailored intervention programmes are logged and maintained by named key worker for high risk individuals, in a case manager type role.</td>
<td>CH(C)P's Operational Falls Group</td>
<td>Health/social care teams Community Teams</td>
<td>December 2011</td>
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<td>14. LUHD/CHP’s establish an exercise pathway for patients deemed to be at high risk of Falls/Fragility fractures that is evidence based.</td>
<td>CH(C)P Operational Falls Group</td>
<td>Fracture Services AHP's/Falls MOE Consultants</td>
<td>April 2012</td>
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<td>Recommendation</td>
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<td>15. Best utilisation of facilities across health/social care such as leisure</td>
<td>CH(C)P Operational Falls Group</td>
<td>Community Social Services</td>
<td>April 2012</td>
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<td>centres, community centres, GP practices to deliver exercise programmes in</td>
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<td>the community.</td>
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<td>16. Outcome measures on all tailored exercise programmes offered in NHS</td>
<td>NHS Lothian Falls Group</td>
<td>Divisional Falls Group</td>
<td>May 2012</td>
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<td>Lothian are established across single system.</td>
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<td>17. Falls Co-ordinators/Leads within CH(C)P’s should work in collaboration</td>
<td>CH(C)P Operational Falls Group</td>
<td>Falls Co-ordinators/Leads</td>
<td>April 2012</td>
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<td>with local authorities and private care providers to identify training needs</td>
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<td>in their locality.</td>
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<td>18. Care home residents should have an assessment to determine falls and bone</td>
<td>CH(C)P Operational Falls Group</td>
<td>Falls Co-ordinators Care Home providers</td>
<td>April 2012</td>
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<td>health risk and individual intervention care plans documented to help</td>
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<td>minimise risk of fracture.</td>
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<td>19. NHS Lothian Falls Co-ordinators will work collaboratively to provide a</td>
<td>NHS Lothian Falls Group</td>
<td>Divisional Falls Group Falls Co-ordinators</td>
<td>Dec 2011</td>
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<td>single system training package for falls.</td>
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<td>NES</td>
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<td>20. NHS Lothian implements falls care bundles across inpatient sites to</td>
<td>Senior Management Teams</td>
<td>Divisional Falls groups</td>
<td>Apr 2011</td>
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<td>reduce harm from hospital based falls.</td>
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<td>21. Falls data (eg DATIX) is actively used by the quality improvement teams</td>
<td>Divisional Senior Management Teams</td>
<td>Quality improvement teams</td>
<td>October 2011</td>
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<td>to ensure a culture of continuous improvement and consolidated learning from</td>
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<td>falls incidents and a reduce patient harm.</td>
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<td>22. Hospital Falls Leads work in collaboration with Fracture Liaison Nurses</td>
<td>Divisional Operational Falls Groups</td>
<td>Fracture/Bone Health</td>
<td>April 2012</td>
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<td>and Community Falls Co-ordinators or Leads to ensure single system Falls</td>
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<td>pathway development in Lothian (particularly when patients deemed to be at</td>
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<td>risk in hospital environment are transferred into primary or community care).</td>
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<td>23. All patients deemed to be high risk of falls are also assessed for bone health.</td>
<td>Bone Health &amp; Osteoporosis Steering Group</td>
<td>Falls Co-ordinators/Leads</td>
<td>April 2012</td>
</tr>
<tr>
<td>25. NHS Lothian risk assess capacity and demand of existing DXA services and impact of SIGN 71, Nice 87 and the Scottish Hip Fracture Audit and changing demography.</td>
<td>Bone Health &amp; Osteoporosis Steering Group</td>
<td>NHS Lothian Planning</td>
<td>April 2013</td>
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2.0 Background

Falls are a major health problem and falls and fracture (in particular osteoporotic fracture) are intimately linked. Falls and falls-related injury represent a major cause of morbidity and mortality amongst older people. Falls cause 85% of deaths due to home accidents in those over 65 years and 1 million non-fatal accidents each year in the UK. Fear of falling is the most frequent reason given for a decision to move to a care home. There is strong evidence that 6-30% of falls in older people living at home can be prevented through both population and targeted intervention\(^1\). The strategy is predominantly for the over 50 age group in relation to falls prevention, however bone health and its prevention is applicable through public health interventions of all age groups. Maximal benefit is gained if this is combined with the diagnosis and treatment of underlying osteoporosis, as this reduces the risk of fracture in those prone to falling.

**Osteoporosis** is can be described as a thinning of the structures that make up bones in the skeleton which reduces their strength and makes the bone more likely to break (fracture).

**Osteoporotic fracture**, normally bones are strong enough to withstand a fall from standing height, osteoporotic bones are more fragile and a fall can lead to fragility fracture if osteoporosis is present.

As part of the Delivery Framework for Adult Rehabilitation, the Scottish Government asked Health Boards to take the lead in developing a combined Falls Prevention and Bone Health Strategy with all relevant partners by the end of 2007/8 (NHS HDL (2007) 13)\(^2\).

The National Falls Working Group outlined the future direction for falls and bone health services and identified the following key aspects to be developed:

- NHS Boards need to have a combined Falls Prevention and Bone Health Strategy under which CHP’s can develop operational implementation strategies.
- CHP’s need to appoint a Falls Prevention Lead or Co-ordinator, to work alongside the Rehabilitation Co-ordinator (which each health board requires to appoint as part of the Delivery Framework for Adult Rehabilitation).
- CHP’s need to develop an operational combined Falls Prevention and Bone Health Implementation Strategy, working within the NHS Board Strategy and any wider Community Planning Strategy.

2.1 Consequences of Falls

Falls cause a range of adverse effects on individuals, their carers and on health and social care providers. Loss of dignity and confidence may result in activity restriction which in turn is associated with future falls and poorer health. Concern of families or other care providers is understandable and may lead both to helpful hazard avoidance but further limit healthy activity. Frequent falling is associated with anxiety and depression, particularly when individuals have specific activity-related fear of falling.

Falls are the commonest cause of accidental injury in older people and the commonest cause of accidental death in the 75+ population. About 6% of falls in those over 65 result in a fracture, including 1% being of the hip. Having fallen is the commonest reason for older people to attend the A&E and for being admitted to hospital. Injury occurs more commonly in frailer persons and the nature of the fall affects injury risk and type. Falls due to syncope are particularly likely to result in injury including facial bruising. In more active and younger people, wrist fractures are more common whereas after from 75 plus, hip fractures predominate.

The economic costs to the NHS and local government associated with the management of unintentional falls is considerable, about half of which is associated with inpatient fracture management and almost as much with long term care provision. The major determinant of this cost is hospital length of stay\textsuperscript{11} for which there is considerable national variation, suggesting scope for improvement.

2.2 The NHS Lothian position

Falls services across NHS Lothian are presently provided by multiple providers across many agencies throughout CHP’s and CH(C)P and in patient services. In addition these services are managed and accountable in a number of different ways.
The scoping exercise completed in 2008 demonstrated pockets of excellent service provision and a dedication by all Divisions to have falls services included in community plans and service redesign.

In the absence of a NHS Lothian strategy and comprehensive financial plan for falls prevention and Bone Health, these services have been underdeveloped and are in a development phase.

The complexity of the organisation and lack of robust data collection on falls in the community in the past has resulted in the effectiveness of these services being unreported. Both service users and providers are therefore uncertain about the impact that these services have had in their locality.

2.3 Strategy Development

The strategy has been developed through the NHS Lothian Falls Steering group. This group comprises of representatives of medicine of the elderly, partnership, allied health professionals, acute and primary care professionals, public health, planning and pharmacy.

This strategy builds on the opportunities and strategic development created by the establishment of Community Health (and Care) Partnerships. Presently within NHS Lothian there is an almost unique situation whereby the main services which need to be redesigned to accommodate falls prevention and bone health work are currently subject to review or modernisation. These include:

- The Joint Review of the Older People’s Strategy – hospital and community services for older people;
- The Primary Care Modernisation Strategy – with a specific focus long term condition management as a means of creating falls co-ordination;
- The Development of system-wide services for care of older people– especially in support of hospital discharge and readmissions reduction work; and
- The ongoing work associated with the framework for community rehabilitation and the Joint Implementation Team (JIT), Orthopaedic Rehabilitation Unit (ORU) review.
The ability of NHS Lothian to place the Falls Prevention and Bone Health Strategy at the heart of each of these areas is an opportunity which will, over time; help create a model of care that is in line with the Better Health Better Care action plan\textsuperscript{3}.

The developing outputs from the NHS-Quality Improvement Strategy (QIS) Management of Falls Community Practice prevention will continue to inform the implementation of this strategy and the internal professional links NHS Lothian has with this work programme will facilitate this.

The Steering Group sought to harness the personal and professional experience and expertise of those involved and the strategy reflects the available contemporary evidence around falls and bone health.

The NHS Lothian Strategy aims to:

- Identify individuals at risk of falls and fragility fractures;
- Provide further assessment of those identified at risk;
- Provide targeted, evidence based interventions.

Furthermore, we are committed to reducing the number of falls which result in injury across NHS Lothian.

2.4 Public and Patient Involvement

Nationally a Public and Patient involvement initiative to ascertain Older People’s experience of Falls and Bone Health Services in NHS England was commissioned by The Healthcare Commission, Healthcare Quality Improvement Partnership (HQIP) and Help the Aged. The Royal College of Physicians in 2008\textsuperscript{4} conducted nine focus groups each consisting of 40 participants to gain patient’s views and experiences and produce recommendations so that falls service providers could develop best possible services. Key messages from this national initiative were extrapolated and tested at a patient/public focus group event in NHS Lothian (April 2009).
Key Messages from the Patient/Public Focus Event:

- Older people welcome a home safety visit to prevent falls.
- Utilise existing community projects such as ‘Keep Well’ and voluntary organisation to offer basic guidance and prevention of falls.
- Increase the number of home safety rails to aid balance at home.
- Community alarms are very important for older people at home.
- Following a fall, older people felt that it was important that the cause of fall was investigated and that a trained individual assess their home to reduce risk of a further fall.
- The recently commenced enabling programme in Edinburgh offered the opportunity for those carers involved to receive training in falls prevention. This would enable them to offer basic falls prevention advice which was felt by patients to enhance the service.
- Information regarding falls prevention should be widely available in the community for staff and patients.

This group did not object to healthcare professionals recommending them to have a further more detailed assessment to reduce risk of falling and would be keen to participate.

The results obtained from the NHS Lothian focus group are in line with the National Patient Focus Public initiative. Older people are keen to prevent falls and have services that enable them to live safely in their own environments.

The key messages above will be incorporated into the implementation plan of this strategy and facilitated through the development of an agreed whole system service model (Section 6) which covers all aspects of:

- Falls Prevention (including prevention and treatment of osteoporosis);
- Improved identification diagnosis and intervention;
- Coordinated rehabilitation and long term maintenance;
- Service evaluation
And will focus on the following target areas:

- Population Approaches;
- Individuals at risk of falling at home;
- Individuals at risk of falling in care homes;
- Individuals at risk of falling in hospital;
- Individuals at risk of falling in continuing care.

With a model of care that will include:

- Supporting health improvement and self management (identifying those at high risk of falls and fracture);
- Screening;
- Single point of access to assessment and Intervention.

The strategy outlines demographics, the contemporary evidence base, and describes current staffing and services. The future service model and associated planning and development issues are discussed with accompanying financial framework.
3.0 Strategic Context and Link to Performance Targets

Falls and fracture prevention work will support the Health and Social Care in meeting specific Health Improvement Efficiency Access and Treatment (HEAT) and National Community Care Outcomes.

Key themes and measures which may be offered are:

3.1 2011 / 2012 Heat Targets

3.1.1 Access to Services
18 weeks Referral To Treatment – deliver 18 week RTT from 31 December 2011. No

3.1.2 Treatment 2011 / 2012 NHS Boards
By 2011/12 NHS Boards will:
Reduction in emergency bed days for patients 75+ - achieve agree reductions in emergency inpatient bed day rates between 2009/10 and 2011/12
Rate of attendance at A&E – achieve agreed reductions in the rates of attendance between 2009/10 and 2013/14

3.2 National Community Care Outcomes
- Reduce rate per 100,000 population of occupied emergency acute bed days for patients over 65 +
- Reduce number of people aged 65+ who are admitted as emergency inpatients 2 or more times in single year per 100,000 population.
- Increase percentage of people age 65 and over with high level of care needs who are cared for at home.
- Increase number of households receiving telecare.
- Increase carer assessments/satisfaction rates/feeling safe and valued.
- Reported improvement in the healthcare experience
3.3 **Shifting the Balance of Care**

Shifting the Balance of Care (SBC) was the strategic framework for the delivery of Better Health Better Care. Many of the key themes have been included into the Reshaping Care policy which sets the policy directive for older people for many years to come.

Eight high impact changes have been developed which will promote integrated service delivery across health, social care and third sector bodies.

The falls prevention and bone health strategy can be aligned to Shifting the Balance of Care Improvement areas which are:

1. Maximise flexible and responsive care at home with support for carers
2. Integrate health and social care for people in need and at risk
3. Reduce avoidable unscheduled attendances and admissions to hospital
4. Improve capacity and flow management for scheduled care
5. Extend the range of services outside acute hospitals provided by non medical practitioners
6. Improve access to care for remote and rural populations
7. Improve palliative and end of life care
8. Improve joint use of resources (revenue and capital)

The key to the success of this strategy is a system wide implementation of an evidence based improvement.

3.4 **Recommendation**

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<tr>
<td>1. NHS Lothian Falls Prevention and Bone Health Strategy will be aligned in its implementation to whole systems work programmes and under the ethos of Shifting the Balance of Care and Reshaping Care frameworks.</td>
<td>NHS Lothian Falls Group</td>
<td>CH(C)P Operational Falls Group</td>
<td>Oct 2011</td>
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4.0 The Evidence Base

4.1 Summary

There is a strong evidence base of more than 60 randomised controlled trials of interventions to prevent falling\(^1\). The evidence shows that risk assessment and multifactorial intervention programmes can achieve a substantial reduction (6-30\%) in the incidence of falls among older People.\(^1\) Effective interventions are relatively simple and much can be achieved by redesign and coordination of existing services. In addition, fracture risk can be reduced by targeting effective, evidence based drug treatments to patients with osteoporosis.

4.2 Evidence for Interventions to Prevent Falls In Older People Living In the Community

Clear evidenced based guidelines for falls prevention have been produced by the McClure Cochrane Review 2005\(^1\) and, more recently by Gillespie et al (2009)\(^5\). Implementing these guidelines supports the aspirations of Better Health Better Care i.e. supporting people who wish to remain at home, avoiding unnecessary hospital admissions and minimising delayed discharges. The evidence primarily relates to individuals in the community although there is evidence relating to care homes. The strongest evidence in the NICE\(^5\) guidelines states that:

- All older people with recurrent falls or assessed as being at increased risk of falling should be considered for individualised multifactorial intervention.
- Interventions where there is evidence of effectiveness are:
  - Exercise - Multi component group exercise;
    - Tai Chi as a group exercise;
    - Individually prescribed multiple component exercise carried out at home.
  - Medication - Sub group analysis showed that Vitamin D when given to those with low Vitamin D levels was effective in reducing rate of falls and risk of falling. BMJ (2009)\(^7\) paper recommends 20mg Vitamin D per day. Education programmes for primary
Care physicians can significantly reduce risk of falling in older people.

- Gradual withdrawal of psychotropic medication reduces rate of falls but not risk of falling.

- Environment - In individuals with poor vision, home safety interventions.
- Assistive - Appears effective in reducing both rate of falls and risk of failing.
- Post Hip - Vitamin D supplementation was effective in reducing the number of people who fell after a hip fracture.

In addition to the NICE guidelines, research to date suggests that:

- Specific exercise programmes targeting balance and strength reduce the risk of falls in older people by up to 30% by helping maintain good balance and muscle power.
- Home hazard assessment and modification that is professionally prescribed for older people with a history of falling is an effective intervention. The effectiveness of home hazard modification for older people without a history of falling is unknown.
- Population interventions can reduce falls by 6-33%.

4.3 Evidence for Osteoporosis Treatment

4.3.1 Two guidelines inform clinical practice in the management of osteoporosis:

- NICE Technology Appraisal Guidance 161 (2008)

4.3.2 SIGN 71 gave clear guidance on the diagnosis, pharmacological and non-pharmacological management of osteoporosis. The NICE Technology Appraisal guidance provided secondary prevention recommendations in the use of bisphosphonates, raloxifene and teriparatide by post-menopausal women.

4.3.3 The most effective treatment for preventing osteoporosis is the bisphosphonate group of drugs (especially alendronate and risedronate). Their efficacy is summarised in SIGN 71, but essentially, they reduce the relative risk of vertebral and non-vertebral fracture by 50%, with the highest absolute risk reduction in the highest risk groups. Bone
density should be checked through Dual Energy X-ray Absorptiometry (DXA) scanning before commencing therapy as intervention is only effective where density is reduced. A DXA scan is a painless test that measures the density of bones. Generally, the denser your bones are the stronger they are, and the less likely they are to break.

DXA scans help find out whether people have osteoporosis or are at risk of developing it. They can also be used to detect other bone disorders and conditions, and to monitor the relative amounts of body fat and muscle in the body.

A DXA scan is fast and accurate and is preferred over a normal X-ray for detecting bone density because it is more sensitive. For example, normal X-rays can only detect osteoporosis (weakened bones) when around one third of the bone mass has already gone. DXA scans can measure the calcium content in your bones, which cannot be measured in an ordinary X-ray.

4.4 Predicting Fracture Risk:

NHS QIS suggest that, as part of an older person's multifactorial assessment, a fracture screening tool such as the FRAX may be used (an online tool that calculates the 10 year probability of hip fracture or a major osteoporotic fracture: clinical spine, hip, forearm or humerus). The FRAX tool can be accessed via: www.shef.ac.uk/FRAX. The National Osteoporosis Guideline Group (NOGG) have produced a guideline for the diagnosis and management of osteoporosis, which can be accessed via: www.shef.ac.uk/NOGG.
5.0 Falls and Bone Protection NHS Lothian

5.1 Sources of information

Following the publication of HDL 13 (2007)\(^2\) A Delivery Framework for Adult Rehabilitation in Scotland, NHS Lothian Public Health Directorate undertook a review of data to establish the number of emergency admissions relating to falls among individuals 65 years and over.

5.2 Epidemiology of Falls, Fractures and Osteoporosis

In Scotland falls are the most common cause of accidental death at home for older people aged 75 years and older. Each year 30% of older people aged over 65 years and 50% of older people aged over 80 years has a fall; half of these people fall at least twice. 75% of falls related deaths occur in the home, 40% of care home admissions are the result of a fall. In residential facilities approximately 50% older people fall at least once per year; up to 40% more than once. Approximately 10% of ambulance call outs are to people over 65 who have fallen; about 60% of cases are taken to hospital. Older people are hospitalised more for falls related injuries than they are for other causes. At least 95% hip fractures are caused by falls.

Most non-injurious falls (75-80%) are never reported. Approximately 10% of falls result in serious injury of which 5% are fractures. The most common age related falls fractures are wrist, spine, hip, humerus and pelvis. Hip fractures comprise about 25% of fractures resulting from falls in the community. The incidence of hip fractures is higher in residential settings. Approximately 50% of older people who fracture their hip are never functional walkers again and 20% will die within six months. The lifetime risk of fracture in males is approximately half that of females.

Osteoporosis is estimated to affect one in three females over 50 and one in ten males. It is estimated that there are over 3 million people with osteoporosis in the UK\(^{11}\). Over 90% hip fractures occur in people with osteoporosis. One in three females and one in 12 males over the age of 50 will suffer an osteoporotic fracture and almost half of all females experience an osteoporotic fracture by the age of 70. This translates to approximately 200,000 females and 40,000 males in Scotland.
In Scotland there are over 20,000 cases of osteoporotic fractures per year. It has been estimated that a population of 100,000 could expect 420 people over 50 admitted to hospital due to a fall and 140 admitted with a hip fracture per year. The annual number admitted with a hip fracture is predicted to rise to 400 by 2030. The age standardised risk for hip fractures is also rising, between 1982 and 1998 the rate increased from 165 to 205 per 100,000 in males and from 500 to 593 per 100,000 in females (SIGN Guideline 56: Prevention and Management of Hip Fracture in Older People 2002)\textsuperscript{10}.

5.3 NHS Lothian Demographics and Falls

It is known that 30% of people over the age of 65 and 50% of those older than 80 fall each year. In addition to this predicted cohort of the population that are known to fall, it is known that one in three women and one in twelve men over the age of 50 have osteoporosis and therefore at greater risk of fracture (National Osteoporosis Society 2008)\textsuperscript{10}.

Based on this evidence and the population figures for 2009 this equates to a possible 73,943 falls per annum in Lothian.

Individuals who fall in the community are frequently not known to health or local authority services. The risk of falling increases with age and often individuals will not have received assessment or intervention to reduce the risks of falling.
With the expected increase in population over the age of 65 in the next 20 years, it can be estimated that there will be an increase in hip fractures as a result. Investing in the management and prevention of osteoporosis and falls prevention may help to ameliorate this figure.

Current data on emergency admission to hospital as a result of a fall across Lothian is illustrated in Figures 3.0. In financial year 2009/10 there were 505 discharges in patients aged 65+ following an emergency admission to hospital due to a fractured neck of femur.
These admissions utilised 20,635 bed days across the acute and rehabilitation sectors in NHS Lothian and patients had a median stay of 21 days. (Source: SMR01 inpatient records).

![Graph showing number of emergency admissions due to falls in the home in Lothian from 1998 to 2007.](image)

**Figure 3.0 Emergency Admissions to Hospital due to a fall in Lothian**

The increasing numbers of individuals attending A&E with falls may be due to increased recording of the problem as the corresponding increase in population is not evident in the target group for falls. Presently it is very difficult to routinely identify the number of older people presenting to A&E with an injury caused by a fall. Nationally, Public Health Injuries Steering Group is providing guidance and direction on the collection of injuries information in Scotland to help in the long term to improve planning of services and monitoring of injuries across Scotland.

### 5.4 Recommendation

<table>
<thead>
<tr>
<th>Recommendation</th>
<th>Lead Responsibility</th>
<th>Working With</th>
<th>Timescale</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. NHS Lothian A&amp;E units and minor injury units record the site/nature of injury and the reason (e.g. Fall).</td>
<td>Acute Division</td>
<td>National Steering Group</td>
<td>April 2012</td>
</tr>
</tbody>
</table>
5.5 Economic Impact

There is extensive literature about the clinical and cost effectiveness of falls prevention. A recent review of this literature highlighted a Cochrane Review, which reported that the most effective and cost effective falls prevention programmes were those targeted at individuals most at risk.

Hip fracture is estimated to cost £12-15,000 per admission. Based on the predicted rise in population over 65 the anticipated cost of corresponding increase in hip fracture is prohibitive by 2031.

Presently just over half of all emergency admissions can be accounted for by individuals who fell at home and have injuries to the hip and head. In 2009/10, 505 hip fractures were discharged in Lothian. The total annual costs to NHS Lothian based on Lawrence’s 2003 estimations are £6565000. The National Osteoporosis Society states that acute care costs only make up 45% of the total economic impact of a fracture.

The personal cost to an individual following a hip fracture can be loss of independence and higher risk of admission to a care home, loss of confidence, fear of falling and restrictions on the activities of daily living.

5.6 Impact on Capacity

The numbers of occupied acute bed days generated from emergency admission associated with falls at home are substantial. Reducing the risk of falling and fracture offers potential cost savings that is very significant.

This strategy aims to support the shift in care from acute bed activity through fracture to the anticipatory prevention with a whole system approach to the management of falls prevention and bone health.
NHS Lothian is committed to the development and implementation of an evidenced based whole system falls prevention and management pathway.

A clinical model that promotes responsibility by all health professionals and other collaborative partners to identify, assess and signpost people in the community to appropriate services is recommended.

A National framework for service change in NHS Scotland (May 2005)\textsuperscript{17}, Better Health Better Care\textsuperscript{3}, The Rehabilitation Framework (2007)\textsuperscript{2} and Long Term Conditions Action Plan\textsuperscript{18} promotes the adapted Health and Social Care Model.

This model promotes prevention, self-care and enablement and a more targeted need for a small number of complex patients to interface with specialist healthcare practitioners.

In keeping with this ethos the development and implementation of the pathway is illustrated below:

- Self management target population
- Identifying those of high risk of falls and low impact (fragility) fractures
- Responding to an individual who has just fallen and requires assistance
- Co-ordinated management of those requiring specialist assessment

It is an objective of the strategy to develop a clear and simple pathway for all service users that screens and identifies falls risk and signposts to a tiered level of intervention according to the need. There is a requirement to agree, redesign and enhance the falls prevention and bone protection delivery model, with the aim of establishing a single, accessible and equitable Falls Service across Lothian. The pathway will cover all components of care from self management, screening and referral, through to specialist assessment and intervention where required.
Figure 5.0 Pathway for the prevention and management of falls and fragility fractures in the community, articulates an evidenced based pathway adapted from NHS Quality Improvement Scotland’s Pathway for the Prevention and Management of Falls and Fragility Fractures\textsuperscript{33}, based on a model of rehabilitation (SGHD 2007)\textsuperscript{2}.
6.1 Stage I: Population Based Approaches

The Cochrane Systematic Review\textsuperscript{1-5}, as well as the National Service Framework standards\textsuperscript{17} recommend that population based intervention programmes contributes to the overall prevention of falls. While it is essential that a Lothian approach to population based interventions is enhanced and implemented, this requires to be developed in partnership, with NHS Health Scotland, NHS Education Scotland (NES), NHS Health Improvement Scotland (HIS), the Scottish Falls Community, the Prevention of Falls Network Europe and Local Higher Education establishments.

Primarily delivered in community settings through education and training, information will assist people to increase their knowledge and abilities to make health choices and assume more responsibility for their care.

In addition to encouraging older people to participate in health improvement and health promotion activities that reduce the risks of falls and fractures, older people and their carers should have the opportunity to access appropriate services and organisations which aim to support:

- The maintenance of health and well being;
- a safe home environment, and;
- a safe community environment.

6.1.1 Local Health Promotion Strategies

The National Osteoporosis Society in its Primary Care Strategy for Osteoporosis and Falls (2002) suggests a life stage approach to this. There is currently a wide range of health improvement activities in Lothian that contribute to addressing fracture risk factors. The table below describes the life stage, action area and link to local services and initiatives.
Table 1. Lothian health promotion strategies that help improve bone health and falls prevention

<table>
<thead>
<tr>
<th>Life Stage</th>
<th>Area for action</th>
<th>Action being taken</th>
</tr>
</thead>
<tbody>
<tr>
<td>From conception to school age</td>
<td>Maternal well being&lt;br&gt;Healthy diet&lt;br&gt;Adequate safe sunshine exposure&lt;br&gt;Adequate weight bearing physical activity</td>
<td>Food and Health groups and Physical Activity Alliances in four CH(C)P areas taking forward local work with local action plans across age groups. Child Health Weight work in Edinburgh CHP. Sun Safety Campaign in May/June each year – Health Promotion contact in Primary Care and some schools and nurseries.</td>
</tr>
<tr>
<td>School age</td>
<td>Healthy diet&lt;br&gt;Adequate safe sunshine exposure&lt;br&gt;Adequate weight bearing physical activity&lt;br&gt;Avoidance of Smoking&lt;br&gt;Caution about excessive dieting and athletic amenorrhea</td>
<td>As above and Senior Health Promotion specialist working around ‘Scotland's Future is Smoke Free’, 2008 – concentrating on young people and prevention. Support for the smoking cessation services and audit.</td>
</tr>
<tr>
<td>Young adults</td>
<td>Women with amenorrhoea/early menopause&lt;br&gt;Healthy diet&lt;br&gt;Adequate safe sunshine exposure&lt;br&gt;Adequate weight bearing physical activity&lt;br&gt;Avoidance of Smoking&lt;br&gt;Caution about excessive dieting and athletic amenorrhoea&lt;br&gt;Alcohol within recommended safe limits</td>
<td>As above and work with the CHP Alcohol and Drug Teams – also specific post to work around Alcohol Brief Intervention work in Primary Care, Midwifery and A &amp; E.</td>
</tr>
<tr>
<td>Adults at mid-life</td>
<td>Women at menopause&lt;br&gt;Healthy diet&lt;br&gt;Adequate safe sunshine exposure&lt;br&gt;Adequate weight bearing physical activity&lt;br&gt;Avoidance of Smoking&lt;br&gt;Caution about excessive dieting&lt;br&gt;Alcohol within recommended safe limits</td>
<td>As above. Ageing Well projects (50+) in each CHP area</td>
</tr>
<tr>
<td>Life Stage</td>
<td>Area for action</td>
<td>Action being taken</td>
</tr>
<tr>
<td>------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| 65+        | Selective case finding for people at high risk of osteoporosis  
Falls prevention measures  
Healthy diet  
Adequate safe sunshine exposure  
Adequate weight bearing physical activity  
Avoidance of Smoking  
Alcohol within recommended safe limits | As above.  
Lothian’s Tobacco Strategy Project Board  
No Ifs, No Butts, 2007  
Lets Make Scotland More Active, 2008  
Healthy Living, Active Living, 2008  
Changing Scotland’s Relationship with Alcohol: A Framework for Action 2009 |

### 6.2 Stage 2 - Identifying Individuals at Risk of Falls and/or Fragility Fractures

#### 6.2.1 It is an objective of the strategy to develop a clear and simple pathway for all service users that screens and identifies risk of falls and signposts to a tiered level of intervention according to need. There is a requirement to agree, redesign and enhance the falls prevention and bone protection delivery model, with the aim of establishing a single, accessible and equitable Falls Service across Lothian. The pathway will cover all components of care from self management, screening and referral, through to specialist assessment and intervention where required.

Prevention of falls at home forms a crucial element to the successful achievement of this strategy. Developments specific to falls in hospital and care homes are detailed later in the document.

#### 6.2.2 Implementation and evaluation of the service and pathway, will be lead by the Falls Co-ordinator each CHP/CHCP is required to appoint, as announced under NHS HDL13 (2007). These Lead officers will be responsible for the development and delivery of a co-ordinated, integrated falls service, ensuring that risk management and prevention are addressed and that links are developed within primary and secondary care, social work, community alarm services, housing, the emergency services, and the voluntary and private sectors. The falls
co-ordinators will ensure that all interested parties across Lothian are aware of the falls pathway/model, and work in partnership with social, community care and 3rd sector to facilitate its implementation within their localities.

Administrative support will be required to manage NHS Lothian falls data set and to maintain a falls database that will inform the evaluation of the strategy, future actions, and direction.

Community based services for falls prevention/management must be easily and rapidly accessible to hospital staff who are discharging patients into the community, particularly at the front door where patients may be discharged within 24 hours. Staff with a designated role in falls would be usefully based in hospital areas including A&E, Combined Assessment and Acute Receiving Unit with links to Community Falls Co-ordinators.

6.2.3 The implementation of an evidenced based pathway for the prevention and management of Falls and Osteoporotic fragility fractures across Lothian (Figure 5.0) offers many access points to ensure that people 65+ are assessed to identify those at risk.

Figure 6.0 illustrates potential trigger points for the assessment of falls and/or fragility fracture risk.
6.2.4 Identifying those at risk is crucial to signpost those at greatest risk to a further and more detailed assessment and appropriate intervention. The American and British Geriatric Society Guidelines promote all those >65 should be offered a simple screening for falls\textsuperscript{19}.

6.2.5 A simple checklist to be implemented to ensure that Health and Social Care Professionals ask older people routinely whether they have fallen in the past year and determine frequency, context and characteristics of the fall/s.
6.2.6 Utilising the tiered model approach to the identification of those at risk, a more
detailed assessment would follow a basic screen for those deemed to be at risk, or indeed
presenting to acute services with diagnostic osteoporotic fracture.

Falls and Bone Protection Assessment

This assessment would be undertaken by an appropriately trained community nurse, allied
health professional, falls co-ordinator, general practitioner. A screening tool for
osteoporosis should be used in addition to a more detailed falls assessment such as BP
screening, pharmacy compliance with medication.

6.2.7 It is recommended that a suitable database and core data fields are developed to
include multidisciplinary assessment and offer comprehensive intelligence on falls in
Lothian. Current IT work is under development to facilitate completion of home
assessment on palm top computers, with information automatically downloaded. This
system will facilitate transfer of information across hospital and primary care boundaries,
with further work required as part of the implementation plan to investigate opportunities
for social work information sharing e.g., single shared assessment. This will reduce
duplication and support seamless service across transition points.

The implementation of community TRAK will facilitate pathway recording of data and
patient information in health.

6.3 Stage 3 - Responding To an Individual Who Has Just Fallen and Requires
Assistance

6.3.1 The Causes and Management of Falls

Anyone can fall given a difficult enough activity. Likewise, anyone can fall doing something
quite ordinary if their functional ability is severely hampered by illness, medication or
alcohol. The focus of falls services is on those people who are prone to fall and do so, or
fear that they might, whilst doing less demanding activities.
At one end of the spectrum are people who fall suddenly and unexpectedly. This includes syncope (blackouts) which can be associated with cardiac or neurological symptoms but can occur without either. Sometimes the person realizes or was seen to have passed out temporarily but sometimes not, although they may not recall the fall very clearly. Recognition and assessment of syncope is a skilled medical task and frequently requires specialist investigation and treatment. Assessment algorithms and clinical guidelines are available.

Falls without syncope are often associated with impairment of postural instability. This can result from a large range of factors. Often multiple factors act together. These include ageing changes of sensory function, frailty, mental health, and medical illness, plus medication and footwear. They can be detected by systematic multidisciplinary assessment. Environmental factors at home or in public spaces are implicated in some falls, and systematic home hazard assessments have been developed and may be effective.

The effectiveness of multi-component programmes in reducing subsequent falls rates is now well established and is the core of the clinical guidelines. These combine general approaches with targeted interventions. Strength and balance training is an important component for most individuals and some training programmes are effective alone for primary and secondary falls preventions in certain patient groups. There is no evidence to support inclusion of hip protectors in community wide injury prevention strategies.

6.3.2 It is well documented that the older people left lying on a floor without assistance become afraid of falling and have a reduced confidence in resuming day to day activities. The exact number of older people who fall in the community and are injured is presently unknown. Figures can be extrapolated from the general population but as many go unreported it remains an estimate.

6.3.3 NHS Lothian is committed to working in partnership with local authorities the voluntary sector and emergency services to ensure that those that do fall and are injured receive the necessary falls assessments to ascertain risk of future falls and signposting to appropriate services to minimise risk of future falls as outlined in Stages 1 and 2.
NHS Lothian requires to work with partner organisations and other agencies in establishing a pathway for managing the fallen uninjured person.

6.3.4 NHS Lothian and partner organisations across CH(C)P’s are also endeavouring to utilise fully the technology that is available to support falls prevention and management in people at risk of falls. The use of telecare alarms is widespread across the local authorities in Lothian, use of telehealth monitoring to alert people to risk of immediate fall is also an area for further development. JIT reference (2009)20.

6.4 Stage 4 – Co-ordinated Management Including Specialist Assessment

6.4.1 Tier 4 assessment in the identification of those at risk requires those that are in need of a detailed assessment have a comprehensive initial risk assessment. This should be followed by signposting to a more detailed assessment as outlined in NICE (2004) guidelines6 that may include:

- falls history
- medication review
- gait, balance and mobility
- osteoporosis risk
- functional ability
- fear of falling
- visual impairment
- cognitive impairment
- neurological impairment
- urinary incontinence
- cardiovascular assessment

This assessment would require the input of a more specialised team of medics, nurses and AHP’s working in both health and social care.
6.4.2 A single point of access to this type of assessment should be created in the pathway and may be delivered in the following:

- Rapid response teams
- Specialist Falls Clinic (community / or acute environment)
- Diagnostic Day Hospital facility (multidisciplinary)

The outputs for this type of assessment would include a tailored intervention programme across Health and Social care to minimise the risk of falls and fractures in the future.

6.5 Recommendations

<table>
<thead>
<tr>
<th>Recommendation</th>
<th>Lead Responsibility</th>
<th>Working With</th>
<th>Timescale</th>
</tr>
</thead>
<tbody>
<tr>
<td>3. CHP’s and CHCP to implement evidence based pathway for the prevention and management of falls and osteoporotic fragility fractures in collaboration with local authority partners and 3rd sector which is fit for purpose for their locality.</td>
<td>CH(C)P Operational Falls Group, CH(C)P Falls Lead</td>
<td>Falls Co-ordinators</td>
<td>Oct 2011</td>
</tr>
<tr>
<td>4. CHP’s / CHCP collate a Directory of Services across Health / Social Authorities / Voluntary Sector to signpost older people and carers to services and organisations that can support health and self management improvement.</td>
<td>CH(C)P Operational Falls Group</td>
<td>Falls Co-ordinators, Long term conditions Leads, Public Health Local Authorities</td>
<td>Dec 2011</td>
</tr>
<tr>
<td>9. Data collection system is developed to capture core data set and provide a reporting mechanism for each phase of the pathway. Utilising existing assessments such as single shared assessment</td>
<td>CH(C)P’s/ LUHD, TRAK (Community &amp; AHP Board)</td>
<td></td>
<td>July 2012</td>
</tr>
<tr>
<td>10. CHP / CHCP work collaboratively with key stakeholders to ensure that individuals who have fallen and are injured receive appropriate assistance. One point of access is created for the fallen uninjured within CHP / CHCP.</td>
<td>CH(C)P’s/ LUHD, Operational Falls Group</td>
<td>Falls Co-ordinators Local Authorities</td>
<td>Nov 2011</td>
</tr>
<tr>
<td>11. Care pathways are developed and formalised to ensure that the individuals are screened and signposted to appropriate services to minimise future risk of falling.</td>
<td>CH(C)Ps/ LUHD, Operational Falls Group</td>
<td>Falls Co-ordinators Local Authorities</td>
<td>July 2012</td>
</tr>
<tr>
<td>Recommendation</td>
<td>Lead Responsibility</td>
<td>Working With</td>
<td>Timescale</td>
</tr>
<tr>
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<td>--------------</td>
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</tr>
<tr>
<td>12. Patient pathways are developed across NHS Lothian to maximise the potential of Day Hospital and out-patient facilities to undertake specialised falls and bone health assessments by nurses, medics, AHP's and Falls co-ordinators.</td>
<td>NHS Lothian Single Point of Access</td>
<td>Medicine Of Elderly, Consultants, Bone Health Services, Falls Co-ordinators</td>
<td>November 2011</td>
</tr>
<tr>
<td>13. Tailored intervention programmes are logged and maintained by named key worker for high risk individuals, in a case manager type role.</td>
<td>CH(C)P’s Operational Falls Group</td>
<td>Health/social care teams Community Teams</td>
<td>December 2011</td>
</tr>
</tbody>
</table>
7.0 Falls Prevention and Intervention

7.1 Causes and Risk of Falls

A review of 12 studies to review cause of falls and 16 studies to determine risk factors, found the following:

<table>
<thead>
<tr>
<th>Summary of 12 major studies main causes of falls</th>
<th>Individual risk factors-16 controlled studies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accident / environment</td>
<td>Weakness</td>
</tr>
<tr>
<td>Gait / balance / weakness</td>
<td>Balance deficit</td>
</tr>
<tr>
<td>Dizziness / vertigo</td>
<td>Mobility limitation</td>
</tr>
<tr>
<td>Drop attacks</td>
<td>Gait deficit</td>
</tr>
<tr>
<td>Confusion</td>
<td>Visual deficit</td>
</tr>
<tr>
<td>Postural hypotension</td>
<td>Cognitive impairment</td>
</tr>
<tr>
<td>Visual disorder</td>
<td>Impaired HDL</td>
</tr>
<tr>
<td>Syncope</td>
<td>Postural hypertension</td>
</tr>
<tr>
<td>Other</td>
<td></td>
</tr>
<tr>
<td>Unknown</td>
<td></td>
</tr>
</tbody>
</table>

Rubenstein et al 2002

7.2 In the Community

Following assessment and identification of risk from falling, a number of interventions should be offered which are tailored to the individual needs. The following table outlines potential evidence based interventions that should be provided by Health / Social Care and incorporated into the NHS Lothian Integrated Falls Pathway.

<table>
<thead>
<tr>
<th>Environment</th>
<th>Personal High Risk Factors</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Care and repair</td>
<td>Exercise programmes</td>
<td>Pharmacy medication review</td>
</tr>
<tr>
<td>Home safety</td>
<td>Podiatry review</td>
<td>Assistive technology</td>
</tr>
<tr>
<td>Home adaptations</td>
<td>Optometry review</td>
<td>e.g. community alarm, telecare</td>
</tr>
<tr>
<td>e.g. grab rails</td>
<td>DXA Scan</td>
<td>Community rehabilitation</td>
</tr>
<tr>
<td></td>
<td>Occupational therapy</td>
<td>Out-patient falls clinic</td>
</tr>
</tbody>
</table>
The AGS / BGS update released January 2010 makes the following recommendations:

- Adaptation or modification of home environment
- Withdrawal or minimisation of psychoactive medications
- Assessment and treatment of postural hypotension
- Cardiac pacing should be considered for those with cardio inhibitory carotid sinus hypersensitivity
- Vitamin D supplements (20mg per day)
- Exercise, particularly balance, strength and gait training

7.3 Exercise Programmes

Targeted Exercise Intervention can help falls in a variety of ways;

To ensure maximum benefit, it is important that the exercise programmes implemented are targeted and tailored to the client group demography and risk factors.
### Exercise Programme

<table>
<thead>
<tr>
<th>Exercise Programme</th>
<th>Client Group</th>
<th>Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Tai Chi</strong></td>
<td>Community Dwelling Older People</td>
<td>Cut, trip &amp; fall rate by half&lt;sup&gt;22&lt;/sup&gt;</td>
</tr>
<tr>
<td><strong>New Zealand (OTAGO Programme)</strong></td>
<td>Community Dwelling 80+</td>
<td>Delivered by physiotherapist; at 1 year falls reduced by 32%. Injuries reduced by 39%&lt;sup&gt;23&lt;/sup&gt; (OTAGO)</td>
</tr>
<tr>
<td></td>
<td>Community Dwelling 75+</td>
<td>Delivered by District Nurses at home; at 1 year Falls reduced by 46%. Serious injuries and hospital costs reduced. &lt;sup&gt;24&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td>Community Dwelling 80+</td>
<td>Delivered by Nurses at GP Centres; at 1 year, falls reduced by 30%, Injuries reduced by 28%&lt;sup&gt;24&lt;/sup&gt;</td>
</tr>
<tr>
<td><strong>Fame</strong>&lt;br&gt;Managing frequent Fallers</td>
<td>Women aged 65+ with 3 or more previous falls in past 1 year</td>
<td>9 Month community based intervention, group exercise, Home exercise, trained instructions Falls risk deduced by 50%&lt;sup&gt;25&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

Exercise works best when it is within a multi-factorial programme. To be effective it needs to be regular 1-2 episodes per week, specific and progressive over a 3-6 month duration and to be delivered by a trained instructor.

### 7.4 Reducing Falls and Injuries in Care Homes

#### 7.4.1 Repeated falls and instability are very common precipitators of nursing home admission. Many residents of residential and nursing care homes, with predominantly physical or mental health problems, are at high risk. The risk profile and the interplay of individual, staff and institutional factors present a distinct challenge. Approaches used successfully in the community are less effective but several components singly or together
have moderate benefit. Evidence is emerging that a holistic approach encompassing resident, staff and institutional factors can be successful. There is some evidence that targeted use of hip protectors in care homes is worthwhile.

7.4.2 Older people (aged 65 years and older) frequently fall, especially when resident in long-term care: up to 35% of falls here result in serious injury and up to 8% in fractures. A fall is defined as "... an event in which the resident unintentionally came to rest on the ground or floor, regardless of whether an injury was sustained..." and may be "... other than as a consequence of sudden onset of paralysis, epileptic seizure, or overwhelming external force ...."

- 1.5 – 3 falls per long term care home resident annually
- 10% of all falls lead to medical intervention
- 25 – 30% of all hip fractures occur in long term care environments

7.4.3 Falls in care homes may lead to increases in death rates, fall-related injuries (particularly hip fractures), individual physical and psychological damage, loss of independence and health costs. Fall prevention strategies and interventions need to take into account the fact that falls can have a number of causes, such as frailty, confusion and the effect of certain prescribed drugs, that require many different interventions. There are also implications for care staff with likely increases in anxiety, workload and complaints.

7.4.4 Research concentrates on how falls in care homes might be prevented in an active way: in this, individualised falls/risk assessment forms an important part. But there is little agreement between studies on the interventions that work consistently well. The Cochrane review in 2005¹ states that the following interventions are likely to be beneficial:

- An individualised programme of muscle strengthening and balance retraining
- Tai Chi group exercise
- Hazard assessment and modification for older people with a history of falling
- Withdrawal of psychotropic medication
- Multidisciplinary, multi-method and holistic, health/environmental risk factor screening/intervention programmes. There is an increasing consensus that no one intervention can effectively prevent falls or reduce injuries: a multi-interventional approach is needed.
• The Cochrane review in 2005\(^1\) stated that the use of hip protectors for those living in institutional care with a history of hip fracture appeared to reduce the occurrence of hip fractures. However, users may not understand clearly the linkage between falls and hip protectors as a form of prevention. This may help to explain the high drop-out rate in the wearing of hip protectors. Expert knowledge has also indicated that the wearing of hip protectors can lead to incontinence due to difficulties in removing them quickly. It has also been demonstrated that exercise programmes can have a beneficial effect on a person's walking and muscle strength.

7.4.5 Providing education to care home staff regarding risks and interventions to make environments safer and also increase awareness of falls assessment tools is required to be undertaken in partnership with local authorities, and private care providers and the Care Commission’s Rehabilitation Consultant, whose primary responsibility is to implement a falls prevention strategy across care homes in Scotland.

7.4.6 All residents within care homes are entitled to the same prevention and interventions as non care home residents and are implicitly included in the NHS Lothian Integrated Falls Pathway.

7.5 Reducing Falls and Injuries in Hospitals

7.5.1 Falls are common among hospital inpatients, with variable rates reported from 2.9–13 falls per 1,000 bed days. Injury rates are higher than for community falls, up to 30%, and result in distress, death, anxiety and depression, impaired rehabilitation, increased lengths of hospital stay and higher rates of discharge to long-term institutional care, complaints and litigation. The risk factors and how to identify them are well documented. Although there have been several negative clinical trials, evidence is emerging to support the effectiveness of a holistic approach encompassing patient, staff and institutional factors\(^{26, 27}\). Use of hip protectors remains controversial, with no clear evidence to guide an effective strategy for their use in this setting.
7.5.2 NHS Lothian currently operates one of the most sophisticated data capture systems for recording incidence of falls across all hospital settings. Quarterly reported DATIX incidents reveal that Falls remain the top repeated incident across all audit sites in Lothian.

In 2008 a detailed incident form specifically for falls in Medicine of Elderly wards was developed and implemented in LUHD.

The incidence of fractures occurring in inpatient clinical settings remains constant at 1.0%.

7.5.3 NHS Lothian is committed to reducing the risks of falling within inpatient settings. The following existing initiatives are working to achieve this:

- Implement Clinical Quality Indicators associated with falls across all inpatient wards. This will through the leadership of Charge Nurses in NHS Lothian, increase awareness at ward level and provide the opportunity for dashboard reporting, detailed analysis of why patients fall (contributing factors) and outcomes on a regular basis.
- Ratification of the ‘Policy and Protocol for the Assessment and Management of Adult Hospital Patients with Falls’.
- Well established Quality Improvement Programmes across clinical areas.

7.5.4 Recent evidence emerging from patient safety initiatives across United Kingdom indicates that the implementation of a falls bundle in acute settings is demonstrating an impact in reducing incidence and harm from falls.

- The Patient Safety Programme in England has conducted a recent literature review, which suggested the average reduction in incidents from the implementation of an inpatient falls bundle is approximately 30%.
- To reduce the incidence of falls and harm within NHS Lothian a falls bundle will be tested and implemented across high risk areas and rolled out across Lothian.

To raise awareness and enable full implementation of above, Falls Co-ordinators or nominated Leads are required in acute setting covering all areas with a high incidence of falls.
### Recommendations

<table>
<thead>
<tr>
<th>Recommendation</th>
<th>Lead Responsibility</th>
<th>Working With</th>
<th>Timescale</th>
</tr>
</thead>
<tbody>
<tr>
<td>14. LUHD/CHP’s establish an exercise pathway for patients deemed to be at high risk of Falls/Fragility fractures that is evidence based.</td>
<td>CH(C)P Operational Falls Group</td>
<td>Fracture Services AHP’s/Falls MOE Consultants</td>
<td>April 2012</td>
</tr>
<tr>
<td>15. Best utilisation of facilities across health/social care such as leisure centres, community centres, GP practices to deliver exercise programmes in the community.</td>
<td>CH(C)P Operational Falls Group</td>
<td>Community Social Services</td>
<td>April 2012</td>
</tr>
<tr>
<td>16. Outcome measures on all tailored exercise programmes offered in NHS Lothian are established across single system.</td>
<td>NHS Lothian Falls Group</td>
<td>Divisional Falls Group</td>
<td>May 2012</td>
</tr>
<tr>
<td>17. Falls co-ordinators within CH(C)Ps should work in collaboration with local authorities and private care providers to identify training needs in their locality.</td>
<td>CH(C)P Operational Falls Group</td>
<td>Falls Co-ordinators/Leads</td>
<td>April 2012</td>
</tr>
<tr>
<td>18. Care home residents should have an assessment to determine falls and bone health risk and individual intervention care plans documented to help minimise risk of fracture.</td>
<td>CH(C)P Operational Falls Group</td>
<td>Falls Co-ordinators/Leads Care Home providers</td>
<td>April 2012</td>
</tr>
<tr>
<td>19. NHS Lothian Falls Co-ordinators will work collaboratively to provide a single system training package for falls.</td>
<td>NHS Lothian Falls Group</td>
<td>Divisional Falls Group Falls Co-ordinators/Leads NES</td>
<td>Dec 2011</td>
</tr>
<tr>
<td>20. NHS Lothian implements falls care bundles across inpatient sites to reduce harm from hospital based falls</td>
<td>Senior Management Teams</td>
<td>Divisional Falls groups</td>
<td>Apr 2011</td>
</tr>
<tr>
<td>21. Falls data (eg DATIX) is actively used by the quality improvement teams to ensure a culture of continuous improvement and consolidated learning from falls incidents and a reduce patient harm.</td>
<td>Divisional Senior Management Teams</td>
<td>Quality improvement teams</td>
<td>October 2011</td>
</tr>
<tr>
<td>Recommendation</td>
<td>Lead Responsibility</td>
<td>Working With</td>
<td>Timescale</td>
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<tr>
<td>----------------</td>
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</tr>
<tr>
<td>22. Hospital Falls Leads work in collaboration with Fracture Liaison Nurses and Community Falls Co-ordinators or Leads to ensure single system Falls pathway development in Lothian (particularly when patients deemed to be at risk in hospital environment are transferred into primary or community care).</td>
<td>Divisional Operational Falls Groups</td>
<td>Fracture/Bone Health</td>
<td>April 2012</td>
</tr>
</tbody>
</table>
8.0 Osteoporosis and Bone Health

There is presently a service which provides bone densitometry and clinical care for patients who have suffered a fragility fracture within NHS Lothian and an open access bone densitometry service for primary care practitioners within Lothian. The service is based at the Department of Medical Physics at the Western General Hospital. The aims of the service are to reduce the burden of fractures in the community by providing a diagnostic service for patients at high risk of osteoporosis and to ensure the appropriate treatment is given to those who are found to have osteoporosis.

The service has two main components; a fracture liaison service (FLS) and an open access DXA service. Eligible patients with fragility fracture are identified by the FLS nurse and sent a DXA appointment. At the time of the DXA scan patients routinely undergo a “get up and go” test to identify patients who might benefit from a falls assessment referral. The open access DXA service provides support to general practitioners within NHS Lothian.

Patients who fulfil criteria for DXA can be referred direct to the service. In addition to direct patient advice general practitioners receive the hard copy of the DXA results and this includes an estimate of 10-year fracture risk, and a clinical interpretation and a treatment recommendation, based on NHS Lothian Joint Formulary guidelines. Patients with severe osteoporosis those with vertebral fractures and men with osteoporosis under the age of 70 are seen at the osteoporosis clinic.
The following table outlines DXA referrals April 08-March 09 (fracture type coding included)

<table>
<thead>
<tr>
<th>Fracture Type</th>
<th>Normal</th>
<th>Osteopenia</th>
<th>Osteoporosis</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forearm</td>
<td>26</td>
<td>118</td>
<td>83</td>
<td>227</td>
</tr>
<tr>
<td>Upper arm</td>
<td>17</td>
<td>70</td>
<td>44</td>
<td>131</td>
</tr>
<tr>
<td>Hip</td>
<td>8</td>
<td>30</td>
<td>60</td>
<td>98</td>
</tr>
<tr>
<td>Lower leg</td>
<td>24</td>
<td>49</td>
<td>19</td>
<td>92</td>
</tr>
<tr>
<td>Hand</td>
<td>13</td>
<td>19</td>
<td>7</td>
<td>39</td>
</tr>
<tr>
<td>Foot</td>
<td>8</td>
<td>25</td>
<td>6</td>
<td>39</td>
</tr>
<tr>
<td>Spine</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Other</td>
<td>2</td>
<td>12</td>
<td>11</td>
<td>25</td>
</tr>
<tr>
<td>Total</td>
<td>99</td>
<td>324</td>
<td>232</td>
<td>655</td>
</tr>
<tr>
<td>No code</td>
<td>59</td>
<td>181</td>
<td>132</td>
<td>372</td>
</tr>
<tr>
<td>Total*</td>
<td>158</td>
<td>505</td>
<td>364</td>
<td>1027</td>
</tr>
</tbody>
</table>

*Total including studies with no fracture type
Data supplied by Fracture Liaison Service NHS Lothian
8.1 Diagnosis and Treatment of Osteoporosis

The diagnosis of osteoporosis is made by measuring bone mineral density (BMD) at the spine and hip using dual-energy X-ray absorptiometry (DXA). Measurements of BMD by DXA are indicated in those with clinical risk factors for osteoporosis and those with a history of fragility fracture over the age of 55 years. Measurements of BMD play a critical role in targeting patients for anti-osteoporosis treatment because the beneficial effects of most licensed drugs in fracture prevention seem to be restricted to patients with low BMD.

8.1.1 Drug Treatments for Osteoporosis

The aim of drug treatment in patients with osteoporosis is to reduce fracture risk. The Lothian Joint Formulary sets out the agreed approach to such drug treatment using bisphosphonates.

Alendronate is the treatment of first choice because of the lower acquisition cost but risedronate may be preferable in patients with a history of upper gastro-intestinal symptoms or NSAID use. Both of these bisphosphonates have been shown to be effective in the treatment of steroid induced osteoporosis. Strontium Ranelate has been shown to prevent vertebral and non-vertebral fractures and can be used as an alternative to bisphosphonate therapy for those intolerant to oral bisphosphonates.

Once yearly intravenous Zoledronic Acid is another option for patients intolerant to, or unable to take oral bisphosphonates. It has proven efficacy against vertebral, non-vertebral and hip fractures. In a study of elderly hip fracture patients, there was an observed mortality benefit.

Those in institutional care or who are housebound and at high risk of calcium and vitamin D deficiency should be prescribed calcium and vitamin D supplements to reduce the risk of fracture. Calcium and vitamin D supplements should also be prescribed to those on bisphosphonates as these are only effective if the patient is vitamin D replete.
Parathyroid hormone fragments differ from most other osteoporosis treatments in that they act by promoting bone formation. The 1-34 fragment of PTH (Teriparatide) is effective in reducing risk of vertebral and non-vertebral fractures in patients with severe osteoporosis\textsuperscript{31}. In view of the high cost, the SMC recommended that Teriparatide should be used under specialist care only for the treatment of patients with severe osteoporosis. In NHS Lothian Teriparatide treatment is restricted to patients with BMD T-scores below -3.5 who have at least two fragility fractures and those with BMD T-scores below -4.0 even in the absence of fracture. Teriparatide is also used in the treatment of patients who have not responded adequately to other agents.

Other treatments for osteoporosis include bazedronate (orally and intravenously), Calcitonin and Raloxifene, but none of these agents have been convincingly shown to protect against non-vertebral fractures. Hormone replacement treatment prevents vertebral and non-vertebral fractures even in patients who do not have low BMD. HRT is not generally recommended for the routine treatment of osteoporosis because the risks of treatment in predisposing to breast cancer, venous thrombosis, cardiovascular disease and cerebrovascular disease outweigh the benefits in most patients.

\section*{8.1.2 Lifestyle changes}

Patients should be advised to stop smoking. Alcohol consumption should be limited to within recommended limits\textsuperscript{27}. Regular weight-bearing exercise, even if gentle (e.g. walking), has a positive effect on the skeleton and is also likely to reduces the risk of falling by enhancing muscle strength. A diet that is rich in calcium and vitamin D helps to reduce bone loss\textsuperscript{7}. 
## 8.2 Recommendations

<table>
<thead>
<tr>
<th>Recommendation</th>
<th>Lead Responsibility</th>
<th>Working With</th>
<th>Timescale</th>
</tr>
</thead>
<tbody>
<tr>
<td>23. All patients deemed to be high risk of falls are also assessed for bone health</td>
<td>Bone Health &amp; Osteoporosis Steering Group</td>
<td>Falls Co-ordinators/Leads</td>
<td>April 2012</td>
</tr>
<tr>
<td>25. NHS Lothian risk assess capacity and demand of existing DXA services and impact of SIGN 71, Nice 87 and the Scottish Hip Fracture Audit and changing demography.</td>
<td>Bone Health &amp; Osteoporosis Steering Group</td>
<td>NHS Lothian Planning</td>
<td>April 2013</td>
</tr>
</tbody>
</table>
9.0 Strategy Implementation

The success of this strategy, as mentioned previously depends on NHS Lothian ability to imbed the implementation across whole systems working already ongoing within the Divisions. There is a need to maximise the service redesign opportunities that are taking place across older people’s services, rehabilitation, intermediate care and health, social and community care interfaces, and rehabilitation framework.

Implicit in the implementation is the requirement for CH(C)P’s to work in partnership with local authority and community care and 3rd sector in the implementation of the recommendations outlined in the strategy.

To date there has been significant progress made in identifying and improving local falls prevention services, self management and collation of data around falls within NHS Lothian. As we move forward to implement this strategy the expertise and knowledge required is available to us and the NHS Lothian Falls Group has appropriate representation to monitor the implementation of this strategy and report to Healthcare Governance & Risk Management committee (HCGRM) annually. Furthermore Scottish Patient Safety programme is well established and has direct reporting lines to Senior Management Teams within Lothian.

Furthermore training is a key underpinning requirement to ensure appropriate staff across all divisions are properly trained have good awareness and are knowledgeable about the pathways and services available to support individuals at risk across the integrated pathway. NHS Lothian Falls group and local falls steering groups need to address the issues around types of training to meet local training needs and how this will be delivered.

9.1 Communication Strategy

To support the implementation of this strategy a communication strategy is required to maximise impact and awareness for all staff working in health and social care in Lothian. A sub group of the NHS Lothian Falls group will action this in collaboration with local communications teams.
Furthermore part of the consultation phase is with general public and a specific communication plan will be implemented that raises the awareness of this strategy and services that can be accessed by the public in Lothian.

9.2 Evaluation

As part of the implementation action plan a performance management framework needs to be developed between health and social care to ensure single system ability to monitor the impact of this strategy. Also by building the implementation into the core workstreams around whole systems working and existing service redesigns a richer and more robust performance management framework can be developed for each component of the integrated falls pathway. A framework for the osteoporosis and Bone Health recommendations also needs to be developed.

A single system data set is in progress across Lothian relating to falls and is a key short term objective. This in a few months will also inform the performance management framework.

Key elements of the evaluation should mirror the six dimensions of quality and also Performance Targets the Board reports on currently. These should include:

- Patient Experience assessments
- Quality of life indicators
- Activity analysis
- Cost Benefit of interventions
- Equity of access
- Waiting times across pathway
- Falls incidence, harm and outcome
- Fracture outcomes and incidence of osteoporosis

Better information is needed both to understand the frequency and pattern of falling among older people at a population level; and secondly to develop valid and workable indicators of the performance of the falls prevention strategy. The existing data sources could be
developed as the basis for the first of these domains, but would require work to improve their comparability and their relationship to defined denominator populations. In respect of the success of the strategy the capacity to benefit from any of interventions proposed in the strategy will depend on local implementation factors. Selected process and outcome data should be developed from the work associated with the implementation of this strategy.

It is essential that a structured audit and evaluation programme is implemented, to ‘quality assures’ the prevention services and to inform changes and developments in the strategy.
10.0 Financial Framework

The financial spend associated with the impact of falls in NHS Lothian use of acute bed days alone can be estimated at £6.6 million annually, based on number of people admitted with hip fracture alone. Furthermore the total economic impact of fractures in Lothian alone can be estimated at £14.4 million per annum.

Cost analysis relating to incidence and harm of falls within an acute in patient environment which is additional to the costs above have been estimated. Data has emerged about the costs to the service with respect to falls. The National Patient Safety Alliance (2007) have reported the following ward costs:-

- No harm. Total per incident - £41.00
- Low harm. Total per incident - £65.00
- Moderate to Severe Harm. Total per incident - £324.00, (excluding fracture) with fracture £4k per incident

These costs, however, do not include total Length of Stay and Rehabilitation. For example, one UK study (Walsh and Anthony 2009) estimated the costs associated with a patient fall which resulted in a fractured neck of femur to be £11,452, from additional length of stay to rehabilitation care, and orthopaedic and theatre costs.

This strategy aims to increase the identification of individuals at risk of falling, and intervene to reduce the incidence of falls and harm in our population over the next 5 years. A whole systems approach to falls prevention and bone health will also increase the number of people we identify and treat for reduced bone mineral density and in the longer term reduce the number of fractures we see. With the increase in population expected in over 55’s in coming 20 years increasing the allocation of spend to prevention, caring for people in the community and increasing number of people who are identified early as being at risk of a further fracture and treated for osteoporosis will be imperative to reduce the spend on acute bed days from fracture.
The drive to implement evidence based clinical strategies that improve quality and meet the needs of our population will enable us to align funding to achieve the outcomes in this strategy.

Moving forward a single system approach to reduce variance and review initiatives that have developed to date will be undertaken in relation to Falls Prevention & Bone Health strategy and work will be carried out to realign or refocus the money spent on initiatives to ensure we are implementing evidence based interventions that meet our desired outcomes. As with all single system strategies the need to meet the high impact changes and deliver cost effective, person centred, effective and safe services to our population will be measured.

The recurrent cost to provide the manpower to implement this strategy is:

1.0 w.t.e Falls Lead NHS Lothian  £55k
1.0 Data /admin time         £22k

The strategy aims to reduce variance and embed core principles of evidence based practice in the area of falls prevention and bone health across all healthcare professionals who work with people who are at risk.
References


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4. Royal College General Practitioners

5. Gillespie LD, Robertson MC, Gillespie WJ, Lamb SE, Gates S, Cumming RG, Rowe BH. Interventions for preventing falls in older people living in the community. Cochrane Database of Systematic Reviews 2009


9. NICE technology Appraisal (2008); 161 The Prevention and Management of Fragility Fractures in Northern Ireland


14. Lawrence V, Hilsenbeck S, Noveck H. Hip Fracture Management 2003; Cost consequence analysis

15. Scottish Hip Fracture Audit 2007


