



**Liverpool
Public Health
Observatory**

**The Public Health contribution to capacity planning and
demand management in Cheshire and Merseyside,
Phase 3: Preventing falls in older people**

Nigel Fleeman

Observatory Report Series No. 55

PROVIDING INTELLIGENCE FOR THE PUBLIC HEALTH

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Executive Summary

Aim

The aim of this report is to estimate the potential impact of interventions to prevent falls in older people on hospital admissions for hip fracture in Cheshire and Merseyside.

Method

Evidence on effectiveness and quantification was obtained from the literature and from key informants and was applied to hospital data (2000/2001-2002/2003) provided by Cheshire and Merseyside Primary Care Trusts (PCTs).

Findings

Interventions found to be effective are individually prescribed exercise and walking plans and multidisciplinary, multifactorial interventions. These could have a significant impact, reducing hospital admissions by between 20% and 27%.

The implications for ten of the Cheshire and Merseyside PCTs who provided data are summarised in the Appendix to the Executive Summary.

Discussion

It is noticeable that multidisciplinary, multifactorial interventions aimed at the general population achieve a greater impact than those aimed at those most at risk (27% reduction compared to 21%), although common sense suggests that these interventions are likely to be less cost-effective. However, the findings must be interpreted with caution because of:

1. Differences exist in the types of interventions in terms of their specific components.
2. Findings on falls prevention have been directly applied to admissions for hip fractures.
3. The estimates assume that there are currently no similar interventions for preventing falls already in place.
4. Difficulties in applying research findings to local situations must be borne in mind.

Conclusions

Notwithstanding the limitations highlighted in applying data from a number of studies to hospital admission data, it is estimated that around a fifth of emergency admissions for hip fractures may be averted by multidisciplinary, multifactorial interventions aimed at preventing falls in those most at risk, and a muscle training programme accompanied by a walking plan. Just over a quarter of admissions may be averted by multidisciplinary, multifactorial interventions aimed at the general population.

The launch of the second phase of the Older People's Services Collaborative provides potential opportunities for all PCTs for providing interventions to prevent falls.

Appendix to the Executive Summary

Table 1: Estimated reductions in emergency hip fracture admissions by PCT, aged 75 and over

Intervention	Estimated reduction in admissions after a year of the service being fully functional	Resource implications: basis for assessment	Mean number of annual admissions for hip fractures 2000/2001-2002/2003		Estimated number of annual admissions post-intervention
Muscle strengthening programme accompanied by a walking plan	20% of 90% of all admissions could be avoided	This may typically include four home visits from a physiotherapist or district nurse to prescribe home based individualised exercises within the first two months and further visits at six months. "Regular" phone contact from the health professional may be needed to maintain motivation.	Central Liverpool PCT	219	179
			North Liverpool PCT	82	67
			South Liverpool PCT	126	104
			St Helens PCT	144	118
			Knowsley PCT	108	89
			South Sefton PCT	144	118
			Southport and Formby PCT	147	121
			Ellesmere Port and Neston PCT	71	58
			Cheshire West PCT	144	118
			Central Cheshire PCT	235	193
Multidisciplinary multifactorial interventions for the general population	27% of 90% of all admissions could be avoided	There is no model intervention so it is difficult to state what a falls prevention initiative will require. However, this may typically include up to five home visits a year from a nurse, occupational therapist (or non-health professional) who would assess all risks and refer to relevant health professionals and social services as appropriate.	Central Liverpool PCT	219	166
			North Liverpool PCT	82	62
			South Liverpool PCT	126	96
			St Helens PCT	144	109
			Knowsley PCT	108	82
			South Sefton PCT	144	109
			Southport and Formby PCT	147	112
			Ellesmere Port and Neston PCT	71	53
			Cheshire West PCT	144	109
			Central Cheshire PCT	235	178
Multidisciplinary multifactorial interventions for the population at risk	21% of 90% of all admissions could be avoided	There is no model intervention so it is difficult to state what a falls prevention initiative will require. However, this may typically include up to three home visits a year from a nurse (or non-health professional) who would assess all risks and refer to relevant health professionals and social services as appropriate.	Central Liverpool PCT	219	177
			North Liverpool PCT	82	66
			South Liverpool PCT	126	102
			St Helens PCT	144	117
			Knowsley PCT	108	88
			South Sefton PCT	144	117
			Southport and Formby PCT	147	119
			Ellesmere Port and Neston PCT	71	57
			Cheshire West PCT	144	117
			Central Cheshire PCT	235	191

Source: Gillespie *et al* (2003) and Inpatient CDS

Please see the full text of this report for a full explanation of assumptions and caveats in applying the findings to hospital data.

Table 2: Estimated reductions in bed days from admissions for hip fracture by PCT, aged 75 and over

Intervention	Estimated reduction in bed days after a year of the service being fully functional	Resource implications: basis for assessment	Mean number of annual bed days for hip fractures 2000/2001-2002/2003		Estimated number of annual bed days post-intervention
Muscle strengthening programme accompanied by a walking plan	20% of 90% of all bed days could be avoided	This may typically include four home visits from a physiotherapist or district nurse to prescribe home based individualised exercises within the first two months and further visits at six months. "Regular" phone contact from the health professional may be needed to maintain motivation.	Central Liverpool PCT	8280	6790
			North Liverpool PCT	2100	1722
			South Liverpool PCT	4600	3772
			St Helens PCT	4394	3603
			Knowsley PCT	2620	2149
			South Sefton PCT	3095	2538
			Southport and Formby PCT	3152	2584
			Ellesmere Port and Neston PCT	1556	1276
			Cheshire West PCT	2804	2299
			Central Cheshire PCT	5055	4145
Multidisciplinary multifactorial interventions for the general population	27% of 90% of all bed days could be avoided	There is no model intervention so it is difficult to state what a falls prevention initiative will require. However, this may typically include up to three home visits a year from a nurse (or non-health professional) who would assess all risks and refer to relevant health professionals and social services as appropriate.	Central Liverpool PCT	8280	6268
			North Liverpool PCT	2100	1590
			South Liverpool PCT	4600	3482
			St Helens PCT	4394	3326
			Knowsley PCT	2620	1984
			South Sefton PCT	3095	2343
			Southport and Formby PCT	3152	2386
			Ellesmere Port and Neston PCT	1556	1178
			Cheshire West PCT	2804	2123
			Central Cheshire PCT	5055	3827
Multidisciplinary multifactorial interventions for the population at risk	21% of 90% of all bed days	There is no model intervention so it is difficult to state what a falls prevention initiative will require. However, this may typically include up to three home visits a year from a nurse (or non-health professional) who would assess all risks and refer to relevant health professionals and social services as appropriate.	Central Liverpool PCT	8280	6715
			North Liverpool PCT	2100	1703
			South Liverpool PCT	4600	3731
			St Helens PCT	4394	3563
			Knowsley PCT	2620	2125
			South Sefton PCT	3095	2510
			Southport and Formby PCT	3152	2556
			Ellesmere Port and Neston PCT	1556	1262
			Cheshire West PCT	2804	2274
			Central Cheshire PCT	5055	4100

Source: Gillespie *et al* (2003) and Inpatient CDS

Please see the full text of this report for a full explanation of assumptions and caveats in applying the findings to hospital data.

Background

Introduction

The main reasons for emergency admissions/readmissions to Aintree and the Royal Liverpool and Broadgreen University Hospital NHS Trust for the period 1998-2001 were identified from a report produced for the North Mersey Future Healthcare Project (Gandy, 2002). The report concluded that the group most likely to be readmitted to hospital were elderly patients over the age of 75. Older people¹ were also found to be the biggest users of beds.

Primary, secondary and tertiary preventive public health interventions that would impact upon those admissions have been determined and the evidence for effectiveness summarised in Fleeman (2003a). Following this, three areas were examined in more depth. These were managing heart failure, pulmonary rehabilitation and preventing falls in older people.

This report focuses on preventing falls in older people. Separate reports have been produced for the other two topic areas (Fleeman 2003b; 2003c).

The epidemiology and burden of falls

Around 30% of people aged over 65 years old and living in the community and over 60% living in nursing homes fall each year (Cryer and Patel, 2001). The proportions of people who fall increases with age and so around 50% of those aged 85 years and over fall every year (Research into Ageing, 2000).

Around 20% of all falls require medical attention (Gillespie *et al*, 2003) and around 6% result in a fracture (Province *et al*, 1995), after which less than a third of older people are likely to regain their independence. Some degree of permanent disability is not uncommon and up to 20% of people who have fallen may later die as a result (Laxton *et al*, 1997; Todd *et al*, 1995).

Half of the people who fall will do so more than once (Department of Trade and Industry, 1999).

Over 400,000 people in England attend Accident and Emergency departments following an accident (Department of Health, 2001) and falls account for 20% of all occupied orthopaedic beds, with an average bed-stay of 30 days (Todd *et al*, 1995).

Amongst fractures, hip fractures place the greatest demand on resources and have the greatest impact on patients because of increased mortality, long term disability, and loss of independence (Woolf and Åkesson, 2003). As Salkeld *et al* (2000) note: "About 20% of people who fracture their hips are dead within a year, and many of those who recover from hip fracture require additional assistance in daily living. Population data tend to obscure the personal impact of falls and hip fracture." Indeed, the hip (femur) is perhaps

¹ The term "older people" is a common term for people aged 65 years and over. This report is aimed primarily at those aged 75 and over.

the most susceptible bone to fracture, with around 1% of all falls in women aged 65 and over resulting in a hip fracture (Province *et al*, 1995).

In 2001-2002 there were 64,115 admissions and 78,588 finished consultant episodes for hip fracture in England, with nearly twice as many women as men falling. The mean age of patients was 77 years but three times as many people aged 75 and over were hospitalised for hip fractures as those aged under 75, accounting for three quarters of all episodes (Department of Health, 2003a).

In Cheshire and Merseyside the number of admissions for hip fracture varies by PCT (Table 3 and Table 4) as one would expect given they are all of varying population size. However, it is clearly evident that the average length of stay is typically a long one of being at best around three weeks and at worst, in excess of five weeks.

Table 3: Emergency admissions and bed days for hip fractures by PCT, aged 75 and over

	2000/01			2001/02			2002/03			Annual mean activity (2001-2003)		
	Average length of stay (days)			Average length of stay (days)			Average length of stay (days)			Average length of stay (days)		
	Number of admissions	Number of bed days		Number of admissions	Number of bed days		Number of admissions	Number of bed days		Number of admissions	Number of bed days	
Central Liverpool PCT	218	8245	37.8	225	8121	36.1	213	8474	39.8	219	8280	37.9
North Liverpool PCT	89	2467	27.7	81	1947	24.0	75	1887	25.2	82	2100	25.7
South Liverpool PCT	120	4177	34.8	124	4431	35.7	135	5192	38.5	126	4600	36.4
St Helens PCT	143	4211	29.4	158	4657	29.5	131	4315	32.9	144	4394	30.5
Knowsley PCT	106	2878	27.1	110	2636	24.0	108	2348	21.7	108	2620	24.3
South Sefton PCT	158	4017	25.4	132	2369	17.9	143	2900	20.3	144	3095	21.4
Southport and Formby PCT	158	3702	23.4	149	3081	20.7	135	2672	19.8	147	3152	21.4
Ellesmere Port and Neston PCT	63	1397	22.2	69	1709	24.8	80	1561	19.5	71	1556	22.0
Cheshire West PCT	146	3063	21.0	142	2593	18.3	145	2756	19.0	144	2804	19.4
Central Cheshire PCT	218	4939	22.7	237	4761	20.1	250	5466	21.9	235	5055	21.5

Source: Inpatient CDS

Table 4: Emergency admissions and bed days for hip fractures by PCT, aged 15 and over

	2000/01			2001/02			2002/03			Annual mean activity (2001-2003)		
	Average length of stay (days)			Average length of stay (days)			Average length of stay (days)			Average length of stay (days)		
	Number of admissions	Number of bed days		Number of admissions	Number of bed days		Number of admissions	Number of bed days		Number of admissions	Number of bed days	
Halton PCT	113	2088	18.5	134	2925	21.8	115	2921	25.4	121	2645	21.9
Warrington PCT	189	5321	28.2	212	5714	27.0	194	6196	31.9	198	5744	29.0

Source: Inpatient CDS

It has been estimated that in a Primary Care Trust (PCT) with a population of 100,000, 420 people over 50 are admitted to hospital due to a fall per year and 140 are admitted to hospital with a hip fracture per year (Cryer and Patel, 2001).

Age-sex standardised rates (to the European population) for hip fracture provided for ten Merseyside PCTs show that there were between 816 and 1415 admissions per 100,000 population aged 75 and over in 2002-03 (*Table 5*).

Table 5: Age and sex standardised admission rates (with 95% Confidence intervals) for hip fractures per 100,000 population by PCT, aged 75 and over

	2000/01	2001/02	2002/03
Central Liverpool PCT	1267 (1261-1273)	1289 (1283-1295)	1166 (1160-1171)
North Liverpool PCT	1090 (1083-1098)	956 (949-963)	873 (866-879)
South Liverpool PCT	1327 (1319-1336)	1384 (1376-1392)	1415 (1407-1423)
St Helens PCT	1033 (1027-1039)	1159 (1152-1165)	840 (835-845)
Knowsley PCT	1119 (1111-1126)	1204 (1196-1212)	1068 (1061-1075)
South Sefton PCT	1233 (1226-1240)	974 (968-979)	1094 (1088-1100)
Southport and Formby PCT	970 (964-975)	893 (889-898)	816 (812-821)
Ellesmere Port and Neston PCT	1037 (772-1354)	973 (741-1249)	1188 (921-1503)
Cheshire West PCT	997 (832-1182)	979 (815-1164)	956 (799-1134)
Central Cheshire PCT	1093 (943-1258)	1192 (1036-1364)	1294 (1129-1476)

Source: CDS and 2002 ADS Population (Reconciled to 2001 based mid-2001 LA population estimates)

Around 90% of all hip fractures in older people occur as the result of a fall (WoOLF and Åkesson, 2003) and over 90% of all hip fractures in the over 75's occur in people who have osteoporosis (Cryer and Patel, 2001). So the treatment of osteoporosis can also have an impact on reducing injuries and fractures from falls but this is beyond the scope of this particular project.

Many different definitions of a fall exist (which has to be borne in mind when interpreting the above). For example, in their meta-analysis of interventions aimed at reducing falls, Gillespie *et al* (2003) note that not all the studies have the same definition of a fall, although most conformed to: "unintentionally coming to rest on the ground, floor or other low level; excludes coming to rest against furniture, wall or other structure" (Gillespie *et al*, 2003).

Aim

The aim of this report is to estimate the likely impact of interventions to prevent falls in older people on hospital admissions for hip fracture in Cheshire and Merseyside.

Objectives

1. To review the evidence of effectiveness of interventions relating to preventing falls in older adults.
2. To quantify the potential impact of these interventions on reducing hospital admissions e.g. impact of intervention on bed day usage, number of admissions.

Method

The method built upon earlier work undertaken and summarised in Fleeman (2003a) by seeking out further evidence on effectiveness and quantification from the literature and from key informants and applying this to Cheshire and Merseyside hospital data.

Outcomes

1. Identification of evidence based interventions for preventing falls in older people which the NHS could provide to reduce emergency admissions to hospital.
2. Quantification of the potential impact of interventions for preventing falls in older people on hospital admissions for hip fractures.

Falls prevention

Background

There are a number of risk factors for falls in older adults including intrinsic factors (such as problems with balance, gait, mobility and vision), extrinsic factors (such as personal hazards and medication) and environmental factors (such as physical hazards inside and outside the home); preventive measures will address these (Woolf and Åkesson, 2003).

An important aspect of maintaining function and protecting against falls is physical activity and following identification of high-risk individuals, appropriate intervention can both reduce falls and treat osteoporosis thereby reducing falls and fractures. Hip protectors have also been shown to be effective but as they can be uncomfortable to wear, their efficacy is less clear (Cryer and Patel, 2001).

While treatment of osteoporosis has an important role in reducing injuries and fractures from falls (Cryer and Patel, 2001) it is not within the scope of this particular project.

Evidence based guidelines for preventing falls have been published, most recently the American Geriatric Society, British Geriatric Society and American Academy of Orthopaedic Surgeons Panel on Falls Prevention (2001).

National policies and initiatives have increasingly directed and supported action to support older people's independence and wellbeing as valid goals in their own right. For example, the National Service Framework (NSF) for Older People emphasised that falls are a major cause of disability and the leading cause of mortality due to injury in older people aged 75 and over in the UK (Department of Health, 2001).

To support the NSF for Older People, the National Institute for Clinical Excellence is producing guidelines on falls prevention (which are due at the end of 2003) and osteoporosis (including drug treatments) while the Commission for Health Improvement, the Audit Commission and the Social Services Inspectorate will jointly develop a review of the NSF for older people.

The NSF for Older People states that specialist falls services should be established within specialist multidisciplinary and multi-agency services for older people and work with older people who are at high risk of falling (Department of Health, 2001). As the Scottish Executive (2001) state: "When advising elderly patients on measures to prevent falls the nurse should involve other services e.g. housing department, social work department or occupational therapists to ensure that environmental risk factors are eliminated or reduced."

Risk assessment

It has been stated that a risk assessment can be performed opportunistically or proactively (Woolf and Åkesson, 2003). The American Geriatric Society, British Geriatric Society and American Academy of Orthopaedic Surgeons Panel on Falls Prevention (2001) recommend that all older persons under the care of a health professional should be asked at least once a year about falls. All those at risk (i.e. those who have had a fall and appear to be

unsteady, those who report multiple falls in the last year, those who present for attention because of a fall and those demonstrating abnormalities of gait and/or balance) should receive an assessment.

The American Geriatric Society, British Geriatric Society and American Academy of Orthopaedic Surgeons Panel on Falls Prevention (2001) also recommend that when older people are discharged from hospital, an environmental home assessment should be considered and that those who have fallen should have their medication reviewed.

The recommended elements of an assessment should include collecting details on history, and medication, as well as information on personal physical and environmental circumstances (see *Table 6*).

Table 6: Recommended elements of a falls risk assessment

- | |
|--|
| <ul style="list-style-type: none">• Take a history of falling.• Review the number of medications.• Review use of central nervous system suppressants.• Measure alcohol intake.• Measure postural hypotension.• Test vision.• Test hearing.• Examine walking/gait.• Examine transfers (lack of control when moving between surfaces).• Examine balance.• Examine environmental hazards. |
|--|

Source: Cryer and Patel (2001)

Interventions

There is evidence from a meta-analysis that that multidisciplinary, multifactorial interventions are effective and there is some evidence that programmes of muscle strengthening accompanied by a walking plan may also be effective (Gillespie *et al*, 2003).

Individual studies have suggested that Tai Chi and other interventions may also be effective but these are not recommended based on the evidence and as has been postulated, where interventions such as those delivered by an Occupational Therapist are shown to work, the effect may be due to a whole host of related reasons, thus in effect making the intervention a multifactorial one (Gillespie *et al*, 2003; Cumming *et al*, 1999).²

Although exercise does have proven benefits as part of a tailored programme, the optimal type, duration and intensity remains unclear. Untargeted exercise programmes or education delivered alone are not recommended (Cryer and Patel, 2001; American Geriatric Society, British Geriatric Society and American Academy of Orthopaedic Surgeons Panel on Falls Prevention, 2001).

The only intervention found to have an adverse effect was brisk walking for women with a history of falling and as such, this is not a recommended intervention.

² Cumming *et al* (1999) found a benefit of a home-hazard assessment but as no other similar studies have been conducted and as this appeared to have a multi-factorial effect as just stated, this study's findings are not included in this report.

It should be noted, however, that in the meta-analysis, not all the studies have the same definition of a fall, and that all but one of the recommended effective studies are from outside the UK. The most common definition of a fall is: “unintentionally coming to rest on the ground, floor or other low level; excludes coming to rest against furniture, wall or other structure” (Gillespie *et al*, 2003).

Programmes of muscle strengthening accompanied by a walking plan

The elements of muscle strengthening included are given in *Table 7* based on a number of studies by Campbell *et al* (1997, 1999) and Robertson *et al* (2001). The only real differences in these studies were that in some instances the programme was prescribed by a physiotherapist while in others it was by a nurse.

Participants were encouraged to complete the exercises at least three times a week and also to walk outside the home at least three times a week. Safety was ensured by prescribing each exercise appropriately, by giving participants adequate instructions on each exercise, and by providing an instruction booklet with illustrations.

After the fourth visit, participants were encouraged to continue the exercise programme on their own and to telephone the physiotherapist with any problems. Subjects were telephoned regularly to maintain motivation

Table 7: Elements of a muscle-strengthening programme accompanied by a walking plan

- | |
|---|
| <ul style="list-style-type: none"> • Ankle cuff weights (0.5 kg and 1 kg) for the following muscle groups: hip extensor and abductor muscles, knee flexor and extensor muscles, inner range quadriceps, and ankle plantar and dorsiflexor muscles. • Standing with one foot directly in front of the other. • Walking on the toes and walking on the heels. • Walking backwards, sideways, and turning around. • Stepping over an object. • Bending and picking up an object. • Stair climbing in the home. • Rising from a sitting position to a standing one. • Knee squat. • “Active range of movement” exercises (for example, neck rotations and hip and knee extensions). |
|---|

Source: Campbell *et al* (1997)

Multidisciplinary, multifactorial interventions

As Cryer and Patel (2001) note: “Multiple risk factor assessment and interventions are recommended in older people to reduce falls.... a multi-agency approach is needed to ensure appropriate interventions and referrals.” Such interventions may thus include screening for health and/or environmental risk factors and require input from a whole host of professionals, such as nurses, GPs, occupational therapists and physiotherapists: “In addition, those individuals with complex problems and who have multiple risk factors for falls could be referred to a geriatrician for assessment and management.”

The American Geriatric Society, British Geriatric Society and American Academy of Orthopaedic Surgeons Panel on Falls Prevention (2001) state that multidisciplinary, multifactorial interventions should include advice, education and where necessary training with interventions including exercise, treatment and medication modification as well as a review of environmental hazards (see *Table 8*).

Table 8: Recommended elements of multifactorial interventions for preventing falls

Community:

- Gait training and advice on appropriate use of assistive devices.
- A review and modification of medication.
- Exercise programmes with balance training as one of the components.
- Treatment of postural hypotension.
- Modification of environmental hazards.
- Treatment of cardiovascular disorders, including cardiac arrhythmias.

Long-term care and assisted living settings:

- Staff education programs.
- Gait training and advice on the appropriate use of assistive devices.
- Review and modification of medications, especially psychotropic medications

Source: American Geriatric Society, British Geriatric Society and American Academy of Orthopaedic Surgeons Panel on Falls Prevention (2001)

The current situation regarding falls prevention in Cheshire and Merseyside

Service provision for falls prevention currently varies quite widely in Cheshire and Merseyside which means that not all patients across Primary Care Trusts (PCTs) are receiving the same care. However, Cheshire and Merseyside Health Authority have highlighted falls as a key area that needs addressing.

The Local Implementation Teams (LITs) who are responsible for implementing the NSF for Older People, with help from the Older People's Services Collaborative (OPSC), will be able to play a key role in preventing falls.

Following the launch of the second phase of the OPSC in September 2003, it is hoped that there will be up to 40 pilot sites in the North West. These will target a number of areas within the NSF for Older People including the role of medicines in falls. The following is a very brief summary of the progress to date in Cheshire and Merseyside and lessons learnt from Phase 1 of the OPSC³

Progress by Local Implementation Teams in Cheshire and Merseyside

LITs are required to meet the standards laid out in the NSF for Older People, namely to have risk management procedures for falls in place by April 2003 and to have local plans including the development of an integrated falls service by April 2004. Beyond this, the aim is to have an integrated falls service by April 2005. LITs were asked to self-assess their progress against implementation of the NSF in August and September 2003, adopting a "traffic light" system:

- **Red:** No action has been taken or is so limited that it is unlikely this will be met. Some support and practical help needed to initiate / bolster focused work.
- **Amber:** An action plan is in place to implement and deliver. Focused work is ongoing and some input from OPSC is required.
- **Green:** The target has been achieved and is being monitored and reviewed. No further input from the OPSC is needed.

³ Information reproduced in co-operation with Cheshire and Merseyside Strategic Health Authority following the 2003 review of Local Implementation Teams for Older People.

Self-assessment indicated that in common with other areas of the country, considerable variation existed across Cheshire and Merseyside. Only two localities (Warrington and East Cheshire) reported green status for risk management procedures, with the former being the only LIT self-reporting as green on the development of an integrated falls service. Several LITs highlighted capacity, funding and difficulties with integration whilst initiatives including the appointment of falls prevention co-ordinators were seen to be key to some of the successes highlighted. Links with the single assessment progress may aid integration (see below).

Many LITs are currently progressing through auditing risk management procedures and through establishing a multi-agency, multidisciplinary falls sub group to develop the integrated service. Examples of initiatives that LITs had been able to pilot/implement include:

- Links with medicines management in Central Cheshire and the Medicine Management team in St Helens targeting GP surgeries to raise their awareness of patients who are likely to develop osteoporosis (see also the lessons learnt from the OPSC in Cumbria and Lancashire below).
- The establishment of an intensive programme of assessment and education around falls prevention, operated by Age Concern in partnership with health care providers and the local authority, in West Cheshire (see also the lessons learnt from the OPSC in Cumbria and Lancashire below).
- Balance strength and mobility sessions with older people in primary care and residential/sheltered housing and nursing homes in Central Cheshire.
- Including falls awareness training in the programme of the Nursing Home Training Partnership in West Cheshire.
- The establishment of a falls clinic at the Countess of Chester Hospital in West Cheshire.
- Physiotherapist led falls clinic based at the Victoria Infirmary, Northwich being piloted in Central Cheshire.
- In Liverpool, a programme has been agreed for 2003/04 to support the development of a local falls programme in four local authority wards. A pilot falls programme is about to commence within two local extra care housing sites funded jointly by PCT, Liverpool City Council and the Housing Action Trust.

Some Lessons learnt from the Older People's Services Collaborative in the North West.

Medication review and modification

In Central Lancashire (which covers Preston PCT and Chorley and South Ribble PCT), a falls / medicine management review has been developed. This is a multidisciplinary, multi-agency project which aims (amongst other things) to reduce the risk of falls associated with polypharmacy and to inform LITs of issues relating to medicine use to be included in the single assessment process that will identify patients at risk of falls.

As noted above, a review and modification of medication is recommended as part of a multi-disciplinary multifactorial intervention for preventing falls (American Geriatric Society, British Geriatric Society and American Academy of Orthopaedic Surgeons Panel

on Falls Prevention, 2001) (see *Table 8*) and this is also recommended as good practice in the NSF for Older People.

The Central Lancashire project is aimed at patients aged 65 and over who are taking four or more medicines and have either recently fallen or have been identified as at risk of falling. So far it has been run in a number of settings which include the following staffing groups carrying out assessments: rapid assessment teams, social workers, physiotherapists, domiciliary care providers, day care and two Age Concern organisations, identifying both patients that have fallen and those identified at high risk of a fall. All assessments and follow up medication reviews take place within the patients own home, with their consent.

The tool has been revised as appropriate following its use in different settings and pharmacists attached to PCTs, hospitals and the community meet regularly for training and sharing of ideas and the development of the medication review process.

In the trial areas, a detailed medication review by the pharmacist has resulted in an average of around six interventions per patient, suggesting that medication is often inappropriately prescribed and that medication regimens are not fully understood, both contributing to an increased likelihood of falling for older people. Gillespie *et al* (2003) found that in one trial with 93 participants, the withdrawal of psychotropic medication resulted in a reduced risk of falling (relative hazard=0.34; 95% Confidence Interval: 0.16-0.74).

The single assessment process

Single assessment is a major requirement of both the NHS Plan and the NSF for Older People. This is particularly important for ensuring integration and continuity of care following hospital admission/discharge.

St Helens and Knowsley became a single assessment pilot site in April 2002. Following input from patients, Age Concern, care groups, nurses and other professionals, a multi-disciplinary discharge/assessment form is being developed and piloted that can be used by both health and social services. As a result, there is much greater multidisciplinary working, e.g., social workers attending ward multidisciplinary team meetings and physiotherapist and occupational therapists sharing patient records.

The single assessment process is initiated in the accident and emergency department and by December 2003, it is intended that a summary record will be available for the older person on discharge and copied to the GP and other primary care staff, as required.

This is one of six pilots nationally (and the only one in the North West) currently trailing data sets for the NHS Information Authority.

Findings

Findings from studies examining the impact of interventions for preventing falls

The study findings used in this review come from a meta-analysis by Gillespie *et al*, (2003) of a wide variety of interventions to reduce the number of falls.

Only muscle strengthening and balance retraining programmes and multidisciplinary, multifactorial interventions were evaluated by more than one randomised controlled trial (RCT) and had a positive impact.

Gillespie *et al* (2003) note that not all the studies have the same definition of a fall, although most conformed to: “unintentionally coming to rest on the ground, floor or other low level; excludes coming to rest against furniture, wall or other structure.”

Programmes of muscle strengthening accompanied by a walking plan

Gillespie *et al* (2003) found that from three RCTs (n=566), a programme of muscle strengthening and balance retraining and walking plan, individually prescribed and delivered at home by a trained health professional reduced the risk of falls by 20% (Relative Risk [RR]=0.80; 95% Confidence Interval [CI]: 0.66-0.98). The number of people sustaining a fall resulting in injury was also significantly reduced (pooled RR 0.67, 95%CI 0.51 to 0.89).

Multidisciplinary, multifactorial interventions

From three RCTs (n=1973), multidisciplinary, multifactorial health/environmental risk factor assessment/interventions reduced the risk of falls by 27% (RR=0.73; 95% CI: 0.63-0.86) in unselected community dwellings (Gillespie *et al*, 2003).

From two RCTs (n=713), multidisciplinary, multifactorial health/environmental risk factor assessment/interventions reduced the risk of falls by 21% (RR=0.79; 95% CI: 0.67-0.94) in older people most at risk (those with a history of falling or selected because of known risk factors) (Gillespie *et al*, 2003).

One of these RCTs was conducted in the UK (Close *et al*, 1999). Overall this accounted for over half of the subjects in the meta-analysis (n=397) and achieved more impressive results with the odds of falls being reduced by 61% after a year (OR=0.39; 95% CI: 0.23-0.66).

Arguably of greater importance, this study found that the odds of hospital admission from a fall being reduced by 39% although this was not a statistically significant finding (OR=0.61; 95% CI: 0.35-1.05).

In addition to the meta analysis, the Audit Commission highlight the impact made by a multidisciplinary, multifactorial intervention introduced at a GP practice in Runcorn (Audit Commission, 2002). This found the number of falls-related admissions among older people at the practice fell by 15%. The average length of hospital stay fell by 31% (from 6.2 days to 4.3 days) and total hospital bed days fell by 41%.

Estimating the impact of interventions for falls prevention on hospital activity in Cheshire and Merseyside

Gillespie *et al*'s (2003) percentage reductions in falls have been directly applied to hospital activity data from 2000/01-2002/03 provided by Primary Care Trusts (PCTs). This has been applied to all those aged 75 and over, except where stated. As around 90% of all hip fractures come from falls, the findings are applied to 90% of admissions.

Unfortunately, not all the Cheshire and Merseyside PCTs were able to provide data in the timescale available so not all PCTs are represented in the findings.

Data used for admissions was based on primary and secondary diagnosis.

Programmes of muscle strengthening accompanied by a walking plan

The full findings for each PCT by provider can be found in Appendix 1.

Please note that any small discrepancies between the totals and the sum of their parts are due to the rounding of figures.

Please read the discussion section for the reservations regarding these calculations.

Central Liverpool PCT

On average 39 emergency admissions each year may be avoided, 34 (86%) at Royal Liverpool and Broadgreen University Hospitals NHS Trust. In terms of length of stay, on average 1490 bed days could be saved, 1340 (90%) of these at Royal Liverpool and Broadgreen University Hospitals NHS Trust where the average length of stay for Central Liverpool PCT patients is estimated to be 39.7 days.

North Liverpool PCT

On average 15 emergency admissions each year may be avoided, 13 (87%) at Aintree Hospitals NHS Trust. In terms of length of stay, on average 378 bed days could be saved, 307 (81%) of these at Aintree Hospitals NHS Trust where the average length of stay for North Liverpool PCT patients is estimated to be 24.1 days.

South Liverpool PCT

On average 23 emergency admissions each year may be avoided, 18 (78%) at Royal Liverpool and Broadgreen University Hospitals NHS Trust. In terms of length of stay, on average 828 bed days could be saved, 688 (83%) of these at Royal Liverpool and Broadgreen University Hospitals NHS Trust where the average length of stay for South Liverpool PCT patients is estimated to be 38.7 days.

St Helens PCT

On average 26 emergency admissions each year may be avoided, 22 (83%) at St Helens and Knowsley Hospitals NHS Trust. In terms of length of stay, on average 791 bed days could be saved, 605 (77%) of these at St Helens and Knowsley Hospitals NHS Trust where the average length of stay for St Helens PCT patients is estimated to be 28.0 days.

Knowsley PCT

On average 19 emergency admissions each year may be avoided, 13 (68%) at the Royal Liverpool and Broadgreen University Hospitals NHS Trust. In terms of length of stay, on average 472 bed days could be saved, 301 (64%) of these at the Royal Liverpool and Broadgreen University Hospitals NHS Trust where the average length of stay for Knowsley PCT patients is estimated to be 22.7 days.

South Sefton PCT

On average 26 emergency admissions each year may be avoided, 22 (86%) at Aintree Hospitals NHS Trust. In terms of length of stay, on average 557 bed days could be saved, 448 (80%) of these at Aintree Hospitals NHS Trust where the average length of stay for South Sefton PCT patients is estimated to be 20.1 days.

Southport and Formby PCT

On average 27 emergency admissions each year may be avoided, 26 (98%) at Southport and Ormskirk NHS Trust. In terms of length of stay, on average 567 bed days could be saved, 553 (97%) of these at Southport and Ormskirk NHS Trust where the average length of stay is for Southport and Formby PCT patients estimated to be 21.4 days.

Ellesmere Port and Neston PCT

On average 13 emergency admissions each year may be avoided, 10 (79%) at Countess of Chester NHS Trust. In terms of length of stay, on average 280 bed days could be saved, 181 (65%) of these at Countess of Chester NHS Trust where the average length of stay for Ellesmere Port and Neston PCT patients is estimated to be 17.9 days.

Cheshire West PCT

On average 26 emergency admissions each year may be avoided, 22 (84%) at Countess of Chester NHS Trust. In terms of length of stay, on average 505 bed days could be saved, 405 (80%) of these at Countess of Chester NHS Trust where the average length of stay for Cheshire West PCT patients is estimated to be 18.6 days.

Central Cheshire PCT

On average 42 emergency admissions each year may be avoided, 40 (95%) at Mid Cheshire Hospitals NHS Trust. In terms of length of stay, on average 910 bed days could be saved, 851 (94%) of these at Countess of Chester NHS Trust where the average length of stay for Central Cheshire PCT patients is estimated to be 21.2 days.

Halton PCT

Data was only provided for admissions in the age group aged 15 and over where on average 22 emergency admissions each year may be avoided, 12 (55%) at St Helens and Knowsley Hospitals NHS Trust and 9 (40%) at North Cheshire Hospitals NHS Trust. In terms of length of stay, on average 455 bed days could be saved, 228 (48%) at North Cheshire Hospitals NHS Trust where the average length of stay is for Halton PCT patients

is estimated to be 26.0 days and 227 (48%) at St Helens and Knowsley Hospitals NHS Trust where the average length of stay for Halton PCT patients is estimated to be 18.9 days.

Warrington PCT

Data was only provided for admissions in the age group aged 15 and over where on average 36 emergency admissions each year may be avoided, 34 (94%) at North Cheshire Hospitals NHS Trust. In terms of length of stay, on average 1034 bed days could be saved, 1009 (98%) at North Cheshire Hospitals NHS Trust where the average length of stay for Warrington PCT patients is estimated to be 29.6 days.

Multidisciplinary, multifactorial interventions- general population in the community

The full findings for each PCT by provider can be found in Appendix 2.

Please note that any small discrepancies between the totals and the sum of their parts are due to the rounding of figures.

Please read the discussion section for the reservations regarding these calculations.

Central Liverpool PCT

On average 53 emergency admissions each year may be avoided, 46 (86%) at Royal Liverpool and Broadgreen University Hospitals NHS Trust. In terms of length of stay, on average 2012 bed days could be saved, 1810 (90%) of these at Royal Liverpool and Broadgreen University Hospitals NHS Trust where the average length of stay for Central Liverpool PCT patients is estimated to be 39.7 days.

North Liverpool PCT

On average 20 emergency admissions each year may be avoided, 17 (87%) at Aintree Hospitals NHS Trust. In terms of length of stay, on average 510 bed days could be saved, 414 (81%) of these at Aintree Hospitals NHS Trust where the average length of stay for North Liverpool PCT patients is estimated to be 24.1 days.

South Liverpool PCT

On average 31 emergency admissions each year may be avoided, 24 (78%) at Royal Liverpool and Broadgreen University Hospitals NHS Trust. In terms of length of stay, on average 1118 bed days could be saved, 929 (83%) of these at Royal Liverpool and Broadgreen University Hospitals NHS Trust where the average length of stay for South Liverpool PCT patients is estimated to be 38.8 days.

St Helens PCT

On average 35 emergency admissions each year may be avoided, 29 (83%) at St Helens and Knowsley Hospitals NHS Trust. In terms of length of stay, on average 1068 bed days could be saved, 817 (77%) of these at St Helens and Knowsley Hospitals NHS Trust where the average length of stay for St Helens PCT patients is estimated to be 28.0 days.

Knowsley PCT

On average 26 emergency admissions each year may be avoided, 18 (68%) at the Royal Liverpool and Broadgreen University Hospitals NHS Trust. In terms of length of stay, on average 637 bed days could be saved, 406 (64%) of these at the Royal Liverpool and Broadgreen University Hospitals NHS Trust where the average length of stay for Knowsley PCT patients is estimated to be 22.7 days.

South Sefton PCT

On average 35 emergency admissions each year may be avoided, 30 (86%) at Aintree Hospitals NHS Trust. In terms of length of stay, on average 752 bed days could be saved, 605 (80%) of these at Aintree Hospitals NHS Trust where the average length of stay for South Sefton PCT patients is estimated to be 20.1 days.

Southport and Formby PCT

On average 36 emergency admissions each year may be avoided, 35 (98%) at Southport and Ormskirk NHS Trust. In terms of length of stay, on average 766 bed days could be saved, 746 (97%) of these at Southport and Ormskirk NHS Trust where the average length of stay for Southport and Formby PCT patients is estimated to be 21.4 days.

Ellesmere Port and Neston PCT

On average 17 emergency admissions each year may be avoided, 14 (79%) at Countess of Chester NHS Trust. In terms of length of stay, on average 378 bed days could be saved, 244 (65%) of these at Countess of Chester NHS Trust where the average length of stay for Ellesmere Port and Neston PCT patients is estimated to be 17.9 days.

Cheshire West PCT

On average 35 emergency admissions each year may be avoided, 29 (84%) at Countess of Chester NHS Trust. In terms of length of stay, on average 681 bed days could be saved, 546 (80%) of these at Countess of Chester NHS Trust where the average length of stay for Cheshire West PCT patients is estimated to be 18.6 days.

Central Cheshire PCT

On average 57 emergency admissions each year may be avoided, 54 (95%) at Mid Cheshire Hospitals NHS Trust. In terms of length of stay, on average 1228 bed days could be saved, 1149 (94%) of these at Countess of Chester NHS Trust where the average length of stay for Central Cheshire PCT patients is estimated to be 21.2 days.

Halton PCT

Data was only provided for admissions in the age group aged 15 and over where on average 29 emergency admissions each year may be avoided, 16 (55%) at St Helens and Knowsley Hospitals NHS Trust and 12 (40%) at North Cheshire Hospitals NHS Trust. In terms of length of stay, on average 643 bed days could be saved, 308 (48%) at North Cheshire Hospitals NHS Trust where the average length of stay is for Halton PCT patients

is estimated to be 26.0 days and 306 (48%) at St Helens and Knowsley Hospitals NHS Trust where the average length of stay for Halton PCT patients is estimated to be 18.9 days.

Warrington PCT

Data was only provided for admissions in the age group aged 15 and over where on average 49 emergency admissions each year may be avoided, 46 (94%) at North Cheshire Hospitals NHS Trust. In terms of length of stay, on average 1396 bed days could be saved, 1362 (98%) at North Cheshire Hospitals NHS Trust where the average length of stay for Warrington PCT patients is estimated to be 29.6 days.

Multidisciplinary, multifactorial interventions - at risk population

The full findings for each PCT by provider can be found in Appendix 3.

Please note that any small discrepancies between the totals and the sum of their parts are due to the rounding of figures.

Please read the discussion section for the reservations regarding these calculations.

Central Liverpool PCT

On average 41 emergency admissions each year may be avoided, 35 (86%) at Royal Liverpool and Broadgreen University Hospitals NHS Trust. In terms of length of stay, on average 1565 bed days could be saved, 1408 (90%) of these at Royal Liverpool and Broadgreen University Hospitals NHS Trust where the average length of stay for Central Liverpool PCT patients is estimated to be 39.7 days.

North Liverpool PCT

On average 15 emergency admissions each year may be avoided, 13 (87%) at Aintree Hospitals NHS Trust. In terms of length of stay, on average 397 bed days could be saved, 322 (81%) of these at Aintree Hospitals NHS Trust where the average length of stay for North Liverpool PCT patients is estimated to be 24.1 days.

South Liverpool PCT

On average 24 emergency admissions each year may be avoided, 19 (78%) at Royal Liverpool and Broadgreen University Hospitals NHS Trust. In terms of length of stay, on average 869 bed days could be saved, 722 (83%) of these at Royal Liverpool and Broadgreen University Hospitals NHS Trust where the average length of stay for South Liverpool PCT patients is estimated to be 38.7 days.

St Helens PCT

On average 27 emergency admissions each year may be avoided, 23 (83%) at St Helens and Knowsley Hospitals NHS Trust. In terms of length of stay, on average 830 bed days could be saved, 635 (77%) of these at St Helens and Knowsley Hospitals NHS Trust where the average length of stay for St Helens PCT patients is estimated to be 28.0 days.

Knowsley PCT

On average 20 emergency admissions each year may be avoided, 14 (68%) at the Royal Liverpool and Broadgreen University Hospitals NHS Trust. In terms of length of stay, on average 495 bed days could be saved, 316 (64%) of these at the Royal Liverpool and Broadgreen University Hospitals NHS Trust where the average length of stay for Knowsley PCT patients is estimated to be 22.7 days.

South Sefton PCT

On average 27 emergency admissions each year may be avoided, 23 (86%) at Aintree Hospitals NHS Trust. In terms of length of stay, on average 585 bed days could be saved, 470 (80%) of these at Aintree Hospitals NHS Trust where the average length of stay for South Sefton PCT patients is estimated to be 20.1 days.

Southport and Formby PCT

On average 28 emergency admissions each year may be avoided, 27 (98%) at Southport and Ormskirk NHS Trust. In terms of length of stay, on average 596 bed days could be saved, 580 (97%) of these at Southport and Ormskirk NHS Trust where the average length of stay for Southport and Formby PCT patients is estimated to be 21.4 days.

Ellesmere Port and Neston PCT

On average 13 emergency admissions each year may be avoided, 11 (79%) at Countess of Chester NHS Trust. In terms of length of stay, on average 294 bed days could be saved, 190 (65%) of these at Countess of Chester NHS Trust where the average length of stay for Ellesmere Port and Neston PCT patients is estimated to be 17.9 days.

Cheshire West PCT

On average 27 emergency admissions each year may be avoided, 23 (84%) at Countess of Chester NHS Trust. In terms of length of stay, on average 530 bed days could be saved, 425 (80%) of these at Countess of Chester NHS Trust where the average length of stay for Cheshire West PCT patients is estimated to be 18.6 days.

Central Cheshire PCT

On average 44 emergency admissions each year may be avoided, 42 (95%) at Mid Cheshire Hospitals NHS Trust. In terms of length of stay, on average 955 bed days could be saved, 894 (94%) of these at Countess of Chester NHS Trust where the average length of stay for Central Cheshire PCT patients is estimated to be 21.2 days.

Halton PCT

Data was only provided for admissions in the age group aged 15 and over where on average 23 emergency admissions each year may be avoided, 13 (55%) at St Helens and Knowsley Hospitals NHS Trust and 9 (40%) at North Cheshire Hospitals NHS Trust. In terms of length of stay, on average 500 bed days could be saved, 240 (48%) at North Cheshire Hospitals NHS Trust where the average length of stay is for Halton PCT patients

is estimated to be 26.0 days and 238 (48%) at St Helens and Knowsley Hospitals NHS Trust where the average length of stay for Halton PCT patients is estimated to be 18.9 days.

Warrington PCT

Data was only provided for admissions in the age group aged 15 and over where on average 38 emergency admissions each year may be avoided, 36 (94%) at North Cheshire Hospitals NHS Trust. In terms of length of stay, on average 1086 bed days could be saved, 1060 (98%) at North Cheshire Hospitals NHS Trust where the average length of stay for Warrington PCT patients is estimated to be 29.6 days.

Resource implications in establishing falls prevention initiatives in Cheshire and Merseyside

Gillespie *et al* (2003) argue that targeted programmes to those most at risk are most likely to be cost-effective. This is backed up by the study findings, for example, Cumming *et al* (1999) found that when an Occupational Therapist visited those who had and had not fallen in the previous year (to carry out a home-hazard assessment), those who had fallen were significantly less likely to fall (again) than those who had not fallen.⁴

The Department of Health (2003b) has recently compiled a report on how implementing falls prevention services can be carried out in order to “release resources for re-investment by reducing the number of emergency admissions due to a fall”. This also includes many examples of good practice in the appendix and is aimed at putting commissioning and developing falls prevention services into practice, i.e. this report goes into some detail regarding the practicalities involved which is beyond the scope of the present report.⁵ The Department of Health (2003b) also notes how: “there is remarkably little reliable published information on the cost effectiveness of falls prevention. What there is suggests that certain, targeted interventions are likely to be cost effective.”

Programmes of muscle strengthening accompanied by a walking plan

The interventions evaluated and used to derive the hospital admission estimates had the following resource components:

- In New Zealand, four home visits from a physiotherapist or district nurse were made in the first two months to prescribe home based individualised exercises. These visits lasted about an hour at the initial visit and were half an hour thereafter in the instance of the nurse visits – the nurse also made an additional visit at six months (Campbell *et al*, 1997, 1999; Robertson *et al*, 2001).
- The exercises consisted of muscle strengthening and balance retraining exercises and walking and were of 30 minute duration. Muscles strengthening exercises increased in difficulty and were carried out three times a week and walking was carried out twice to three times a week.

⁴ See footnote 2 as to why this study’s findings are not described above and used for estimating an impact on hospital admissions .

⁵ The Department of Health (2003b) also note how it is important for falls prevention initiatives to demonstrate how they impact on hospital admissions.

- “Regular” phone contact from the health professional was made to maintain motivation – this was monthly in the instance of the nurse contact (Robertson *et al*, 2001).
- The nurse received one week’s training from a physiotherapist prior to the study and a physiotherapist also monitored the quality of care provided by the nurse (Robertson *et al*, 2001).

See also *Table 6* and *Table 7* for the recommended elements of an assessment and a programme of muscle strengthening accompanied by a walking plan.

Multidisciplinary, multifactorial interventions

The untargeted interventions evaluated and used to base the hospital admission estimates had the following resource components:

- In the USA, a home visit by a practice nurse to screen for medical, functional and psychosocial problems, followed by a letter describing findings and recommendations. This was followed up by trained volunteers three times during the next year (at four monthly intervals) (Fabacher *et al*, 1994).
- Also in the USA, a one to one and a half hour interview with a nurse including a review of risk factors, audiometry and blood pressure measurement, development of tailored intervention plan, motivation to increase physical and social activity (Wagner *et al*, 1994).
- In Thailand, three monthly home visits from a non health professional with structured questionnaire (for three years) with referral to a health professional (nurse or geriatrician) if Barthel ADL index and/or Chula ADL index declined two or more points, or if the subject had fallen more than once during previous three months. The nurse/geriatrician would visit, assess, educate, prescribe drugs/aids, provide rehabilitation programme, make referrals to social services, and other agencies (Jitapunkul *et al*, 1998).

The targeted interventions evaluated and used to base the hospital admission estimates had the following components:

- In the only UK study, a home visit by an occupational therapist to carry out a functional assessment and environmental hazard risk assessment and to offer advice, equipment and referrals as required. This was accompanied by a medical assessment at day hospital (for 83% of subjects) by a physician to identify primary cause of fall and other risk factors present (general examination and visual acuity, balance, cognition, affect, medications). Following assessment, the intervention and referral was as required (Close *et al*, 1999).
- In the Netherlands, five home visits from a community nurse were carried out over one year. Subjects were screened for medical, environmental and behavioural risk factors for falls and mobility impairment based on a structured protocol. The protocol was also followed for the intervention which focused on falls, fear of falling, mobility, physical health, drugs, activities of daily living, social functioning, cognitive functioning, and psychosocial functioning and constituted advice, referrals and “other actions aimed at dealing with the observed hazards” (van Haastregt *et al*, 2000).

See also *Table 6* and *Table 8* for the recommended elements of an assessment and a multidisciplinary, multifactorial programme.

In addition, it is worth mentioning the Runcorn intervention (Audit Commission, 2002). This was a joint case management approach with the Social Services Department, targeted (at older people at high risk of hospital admission, or who were already making heavy use of services) and with proactive discharge planning and close working between a practice-based social worker and a nominated district nurse.

Discussion

General findings

The studies reviewed in a meta analysis by Gillespie *et al* (2003) and highlighted in this report have shown how certain interventions may impact on admissions, reducing the number of falls and possibly, therefore, admissions and readmissions by around 20%-27%.

While multidisciplinary, multifactorial interventions aimed at the general population achieve a slightly greater impact than those aimed at people most at risk, common sense suggests that the former are likely to be less cost-effective.

However, for reasons outlined below, the findings must be interpreted with extreme caution.

Types of interventions

As noted by Department of Health (2003b): “We found that there is not one model service, approach or structure for effective work to implement the NSF [National Service Framework] Standard for Falls, but core principles (that can frame local variation in design and implementation) and essential structures to support services – such as effective IT networks and administrative back up – are ingredients and determinants of success.” In addition, it is widely being recognised that the older person’s perspectives in falls prevention initiatives is of utmost importance (e.g. Salkeld *et al*, 2000).

In all, the findings used to estimate the impact on admissions in this report come from eight different studies in a meta-analysis which, while broadly similar (when categorised as a multidisciplinary multifactorial intervention, or a programme of muscle strengthening accompanied by a walking plan), are still different in terms of their precise components. Thus, it is not known which elements of any given programme have the greatest impact which means that interventions may have varying impacts on falls (and thus also on fractures and admissions).

Applying study findings on falls prevention to admissions for hip fractures

It has been assumed that any reduction in falls will be directly reflected in a similar reduction in hip fractures. Thus for example, if 20% of falls are avoided, then there will also be 20% less hip fractures. Given the fact that it has been estimated that around 90% of hip fracture are a result of falls (Woolf and Åkesson, 2003), the study findings regarding the reductions in falls have been applied to 90% of the hospital activity data. The validity of these assumptions are unknown.

Building on initiatives already in place

It should be noted that there are already falls prevention initiatives being provided in Cheshire and Merseyside, although this appears to be rather varied by area at present.

Thus the marginal benefits found from interventions and highlighted in this report may be slightly less dramatic in practice than the studies suggest.

However, with the launch of the second phase of the Older People's Services Collaborative in September this year, there appears to be great opportunity to provide the types of services that could result in the reductions in hospital admissions and readmissions estimated here (as well as improving the overall health and quality of life of older people).

It may well be that interventions aimed at those at risk may be most cost-effective.

Applying study findings to local data

Notwithstanding the limitations already highlighted above, it has also been assumed that findings from randomised controlled trials from outside of Cheshire and Merseyside (and indeed the UK) that were included in a meta analysis can be applied directly to local data.

The only UK study by Close *et al* (1999) which examined a multidisciplinary, multifactorial intervention aimed at those at risk (i.e. previous fallers) found a greater impact on falls (around three times greater) than the meta-analysis (in which this study was also included) and also a reduction in hospital admissions of 39% although this impact on admissions was not statistically significant. The Audit Commission (2002) highlighted a pilot study at one GP practice in Runcorn which achieved a 15% reduction in admissions relating to falls.

In addition, it has been estimated that 90% of fractures result from people with osteoporosis (Cryer and Patel, 2001) and interventions evaluated are not always confined to people aged 75 and over – it is not uncommon for them to be targeted at people aged 65 and over (both UK studies were in fact aimed at people aged 65 and over).

Thus findings may either overestimate or underestimate their impact on the Cheshire and Merseyside population aged 75 and over.

An evaluation of interventions implemented, possibly against the expected outcomes estimated in this report, as well as other outcome measures, should be considered.

Conclusions

Interventions found to be effective are individually prescribed exercise and walking plans and multidisciplinary and multifactorial interventions.

Notwithstanding the limitations highlighted in applying data from research to local hospital admissions, it is estimated that around a fifth of emergency admissions for hip fractures may be averted by multidisciplinary, multifactorial interventions aimed at preventing falls in those most at risk and from a muscle training programme accompanied by a walking plan. Just over a quarter may be averted by multidisciplinary, multifactorial interventions aimed at the general population although it may well be that interventions aimed at those at risk may be most cost-effective.

The launch of the second phase of the Older People's Services Collaborative earlier (September) this year provides potential opportunities for providing interventions to reduce falls (and therefore hospital activity) for all the Primary Care Trusts in Cheshire and Merseyside.

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Appendices: Breakdown of estimated impacts by Primary Care Trust and hospital provider

The following is a breakdown of activity and expected activity within each Primary Care Trust (PCT) by provider Trust.

For each PCT the historical data is presented first. An average (mean) is calculated so that the expected impact of providing pulmonary rehabilitation (calculated by applying the findings from the Gillespie *et al* [2003] review) can then be applied to each PCT.

Data was only made available by provider in the 75 and over age group for ten PCTs. Data for the 15 and over age group is presented for the other two PCTs. The source of all data in this appendix is CDC.

Please note that data is rounded up or down to whole numbers for admissions and bed days and this means that totals may not always appear to equal the sum of their parts.

Similarly, the average length of stay (LOS) may not always equal the number of bed days divided by the number of admissions because data has been rounded up or down.

E.g. in Appendix 1, Ellesmere Port and Neston PCT's estimated new activity at other providers ("others") is just one admission but estimated new bed days are four. However, the average length of stay exceeds four. This is because the new estimates are actually 0.55 admissions and 4.10 bed days but the figures are rounded up and down accordingly.

Data for "others" also has to be interpreted with caution because activity at these providers is least likely to be affected by interventions (if indeed at all).

Central Liverpool PCT

Emergency hip fracture admissions and bed days by provider, aged 75+

	2000/01			2001/02			2002/03			Average		
	No	Bed days	LOS	No	Bed days	LOS	No	Bed days	LOS	No	Bed days	LOS
Royal Liverpool and Broadgreen University Hospitals Trust	192	7543	39.3	187	7095	37.9	184	7704	41.9	188	7447	39.7
Aintree Hospitals Trust	15	263	17.6	19	385	20.3	13	243	18.7	16	297	19.0
St Helens and Knowsley Hospitals Trust	9	176	19.6	12	326	27.2	9	356	39.6	10	286	28.6
Others	2	262	131.0	7	314	44.8	7	172	24.6	5	249	46.7
Total	218	8245	37.8	225	8120	36.1	213	8475	39.8	219	8280	37.9

Central Liverpool PCT

Estimated annual reductions and estimated new annual activity in emergency hip fracture admissions and bed days by provider, aged 75+

	Reductions			New admissions		
	No	Bed days	LOS	No	Bed days	LOS
Royal Liverpool and Broadgreen University Hospitals Trust	34	1340	-	154	6107	39.7
Aintree Hospitals Trust	3	54	-	13	244	19.0
St Helens and Knowsley Hospitals Trust	2	52	-	8	235	28.6
Others	1	45	-	4	204	46.7
Total	39	1490	-	179	6790	37.9

North Liverpool PCT

Emergency hip fracture admissions and bed days by provider, aged 75+

	2000/01			2001/02			2002/03			Average		
	No	Bed days	LOS	No	Bed days	LOS	No	Bed days	LOS	No	Bed days	LOS
Aintree Hospitals Trust	76	2182	28.7	68	1325	19.5	68	1609	23.7	71	1705	24.1
Royal Liverpool and Broadgreen University Hospitals Trust	7	204	29.1	9	340	37.8	6	195	32.5	7	246	33.6
Others	6	81	13.5	4	282	70.5	1	82	81.9	4	148	40.5
Total	89	2467	27.7	81	1946	24.0	75	1886	25.2	82	2100	25.7

North Liverpool PCT

Estimated annual reductions and estimated new annual activity in emergency hip fracture admissions and bed days by provider, aged 75+

	Reductions			New admissions		
	No	Bed days	LOS	No	Bed days	LOS
Aintree Hospitals Trust	13	307	-	58	1398	24.1
Royal Liverpool and Broadgreen University Hospitals Trust	1	44	-	6	202	33.6
Others	1	27	-	3	122	40.5
Total	15	378	-	67	1722	25.7

South Liverpool PCT

Emergency hip fracture admissions and bed days by provider, aged 75+

	2000/01			2001/02			2002/03			Average		
	No	Bed days	LOS	No	Bed days	LOS	No	Bed days	LOS	No	Bed days	LOS
Royal Liverpool and Broadgreen University Hospitals Trust	97	3562	36.7	92	3602	39.2	107	4302	40.2	99	3822	38.7
St Helens and Knowsley Hospitals Trust	19	482	25.4	29	688	23.7	24	670	27.9	24	613	25.5
Others	4	134	33.4	3	142	47.2	4	220	55.1	4	165	45.1
Total	120	4177	34.8	124	4432	35.7	135	5192	38.5	126	4600	36.4

South Liverpool PCT

Estimated annual reductions and estimated new annual activity in emergency hip fracture admissions and bed days by provider, aged 75+

	Reductions			New admissions		
	No	Bed days	LOS	No	Bed days	LOS
Royal Liverpool and Broadgreen University Hospitals Trust	18	688	-	81	3134	38.7
St Helens and Knowsley Hospitals Trust	4	110	-	20	503	25.5
Others	1	30	-	3	135	45.1
Total	23	828	-	104	3772	36.4

St Helens PCT

Emergency hip fracture admissions and bed days by provider, aged 75+

	2000/01			2001/02			2002/03			Average		
	No	Bed days	LOS	No	Bed days	LOS	No	Bed days	LOS	No	Bed days	LOS
St Helens and Knowsley Hospitals Trust	113	2925	25.9	136	3812	28.0	111	3348	30.2	120	3361	28.0
Others	30	1285	42.8	22	845	38.4	20	967	48.4	24	1032	43.0
Total	143	4210	29.4	158	4656	29.5	131	4315	32.9	144	4394	30.5

St Helens PCT

Estimated annual reductions and estimated new annual activity in emergency hip fracture admissions and bed days by provider, aged 75+

	Reductions			New admissions		
	No	Bed days	LOS	No	Bed days	LOS
St Helens and Knowsley Hospitals Trust	22	605	-	98	2756	28.0
Others	4	186	-	20	847	43.0
Total	26	791	-	118	3603	30.5

Knowsley PCT

Emergency hip fracture admissions and bed days by provider, aged 75+

	2000/01			2001/02			2002/03			Average		
	No	Bed days	LOS	No	Bed days	LOS	No	Bed days	LOS	No	Bed days	LOS
St Helens and Knowsley Hospitals Trust	69	1932	28.0	76	1560	20.5	76	1526	20.1	74	1672	22.7
Aintree Hospitals Trust	29	808	27.9	22	485	22.1	20	511	25.5	24	601	25.4
Royal Liverpool and Broadgreen University Hospitals Trust	6	130	21.7	12	481	40.1	5	123	24.6	8	245	31.9
Others	2	8	4.1	0	110	-	7	188	26.9	3	102	34.0
Total	106	2878	27.2	110	2636	24.0	108	2348	21.7	108	2620	24.3

Knowsley PCT

Estimated annual reductions and estimated new annual activity in emergency hip fracture admissions and bed days by provider, aged 75+

	Reductions			New admissions		
	No	Bed days	LOS	No	Bed days	LOS
St Helens and Knowsley Hospitals Trust	13	301	-	60	1371	22.7
Aintree Hospitals Trust	4	108	-	19	493	25.4
Royal Liverpool and Broadgreen University Hospitals Trust	1	44	-	6	201	31.9
Others	1	18	-	2	84	34.0
Total	19	472	-	89	2149	24.3

South Sefton PCT

Emergency hip fracture admissions and bed days by provider, aged 75+

	2000/01			2001/02			2002/03			Average		
	No	Bed days	LOS	No	Bed days	LOS	No	Bed days	LOS	No	Bed days	LOS
Aintree Hospitals Trust	139	3193	23.0	108	1849	17.1	125	2422	19.4	124	2488	20.1
Southport and Ormskirk Hospital Trust	16	633	39.6	20	404	20.2	14	297	21.2	17	445	26.7
Others	3	192	64.0	4	115	28.8	4	181	45.2	4	163	44.3
Total	158	4018	25.4	132	2368	17.9	143	2900	20.3	144	3095	21.4

South Sefton PCT

Estimated annual reductions and estimated new annual activity in emergency hip fracture admissions and bed days by provider, aged 75+

	Reductions			New admissions		
	No	Bed days	LOS	No	Bed days	LOS
Aintree Hospitals Trust	22	448	-	102	2040	20.1
Southport and Ormskirk Hospital Trust	3	80	-	14	365	26.7
Others	1	29	-	3	133	44.3
Total	26	557	-	118	2538	21.4

Southport and Formby PCT

Emergency hip fracture admissions and bed days by provider, aged 75+

	2000/01			2001/02			2002/03			Average		
	No	Bed days	LOS	No	Bed days	LOS	No	Bed days	LOS	No	Bed days	LOS
Southport and Ormskirk Hospital Trust	155	3569	23.0	146	3045	20.9	130	2597	20.0	144	3070	21.4
Others	3	133	44.3	3	36	12.1	5	75	14.9	4	81	22.2
Total	158	3702	23.4	149	3081	20.7	135	2672	19.8	147	3152	21.4

Southport and Formby PCT

Estimated annual reductions and estimated new annual activity in emergency hip fracture admissions and bed days by provider, aged 75+

	Reductions			New admissions		
	No	Bed days	LOS	No	Bed days	LOS
Southport and Ormskirk Hospital Trust	26	553	-	118	2518	21.4
Others	1	15	-	3	67	22.2
Total	27	567	-	121	2584	21.4

Ellesmere Port and Neston PCT

Emergency hip fracture admissions and bed days by provider, aged 75+

	2000/01			2001/02			2002/03			Average		
	No	Bed days	LOS	No	Bed days	LOS	No	Bed days	LOS	No	Bed days	LOS
Countess of Chester Hospital Trust	47	799	17.0	53	1027	19.4	68	1187	17.5	56	1004	17.9
Wirral Hospital Trust	15	591	39.4	16	682	42.6	11	366	33.3	14	546	39.0
Others	1	7	7.0	0	0	-	1	8	8.0	1	5	7.5
Total	63	1397	22.2	69	1709	24.8	80	1561	19.5	71	1556	22.0

Ellesmere Port and Neston PCT

Estimated annual reductions and estimated new annual activity in emergency hip fracture admissions and bed days by provider, aged 75+

	Reductions			New admissions		
	No	Bed days	LOS	No	Bed days	LOS
Countess of Chester Hospital Trust	10	181	-	46	824	17.9
Wirral Hospital Trust	3	98	-	11	448	39.0
Others	0	1	-	1	4	7.5
Total	13	280	-	58	1276	22.0

Cheshire West PCT

Emergency hip fracture admissions and bed days by provider, aged 75+

	2000/01			2001/02			2002/03			Average		
	No	Bed days	LOS	No	Bed days	LOS	No	Bed days	LOS	No	Bed days	LOS
Countess of Chester Hospital Trust	119	2391	20.1	118	1921	16.3	126	2433	19.3	121	2248	18.6
Mid Cheshire Hospitals Trust	16	363	22.7	12	250	20.8	10	169	16.9	13	261	20.6
North Cheshire Hospitals Trust	9	274	30.4	6	313	52.2	4	89	22.3	6	225	35.6
Others	2	35	17.5	6	109	18.2	5	65	13.0	4	70	16.1
Total	146	3063	21.0	142	2593	18.3	145	2756	19.0	144	2804	19.4

Cheshire West PCT

Estimated annual reductions and estimated new annual activity in emergency hip fracture admissions and bed days by provider, aged 75+

	Reductions			New admissions		
	No	Bed days	LOS	No	Bed days	LOS
Countess of Chester Hospital Trust	22	405	-	99	1844	18.6
Mid Cheshire Hospitals Trust	2	47	-	10	214	20.6
North Cheshire Hospitals Trust	1	41	-	5	185	35.6
Others	1	13	-	4	57	16.1
Total	26	505	-	118	2299	19.4

Central Cheshire PCT

Emergency hip fracture admissions and bed days by provider, aged 75+

	2000/01			2001/02			2002/03			Average		
	No	Bed days	LOS	No	Bed days	LOS	No	Bed days	LOS	No	Bed days	LOS
Mid Cheshire Hospitals Trust	206	4536	22.0	220	4358	19.8	243	5292	21.8	223	4729	21.2
North Cheshire Hospitals Trust	4	115	28.8	3	46	15.3	2	74	37.0	3	78	26.1
Others	8	288	36.0	14	357	25.5	5	100	20.0	9	248	27.6
Total	218	4939	22.7	237	4761	20.1	250	5466	21.9	235	5055	21.5

Central Cheshire PCT

Estimated annual reductions and estimated new annual activity in emergency hip fracture admissions and bed days by provider, aged 75+

	Reductions			New admissions		
	No	Bed days	LOS	No	Bed days	LOS
Mid Cheshire Hospitals Trust	40	851	-	183	3878	21.2
North Cheshire Hospitals Trust	1	14	-	2	64	26.1
Others	2	45	-	7	204	27.6
Total	42	910	-	193	4145	21.5

Halton PCT

Emergency hip fracture admissions and bed days by provider, aged 15+

	2000/01			2001/02			2002/03			Average		
	No	Bed days	LOS	No	Bed days	LOS	No	Bed days	LOS	No	Bed days	LOS
North Cheshire Hospitals Trust	41	767	18.7	57	1436	25.2	48	1600	33.3	49	1268	26.0
St Helens and Knowsley Hospitals Trust	71	1290	18.2	69	1252	18.1	60	1241	20.7	67	1261	18.9
Others	1	31	31.0	8	237	29.6	7	80	11.4	5	116	21.8
Total	113	2057	18.2	134	2688	20.1	115	2841	24.7	121	2529	21.9

Halton PCT

Estimated annual reductions and estimated new annual activity in emergency hip fracture admissions and bed days by provider, aged 15+

	Reductions			New admissions		
	No	Bed days	LOS	No	Bed days	LOS
North Cheshire Hospitals Trust	9	228	-	40	1039	26.0
St Helens and Knowsley Hospitals Trust	12	227	-	55	1034	18.9
Others	1	21	-	4	95	21.8
Total	22	455	-	99	2074	21.9

Warrington PCT

Emergency hip fracture admissions and bed days by provider, aged 15+

	2000/01			2001/02			2002/03			Average		
	No	Bed days	LOS	No	Bed days	LOS	No	Bed days	LOS	No	Bed days	LOS
North Cheshire Hospitals Trust	184	5264	28.6	199	5575	28.0	185	5980	32.3	189	5606	29.6
Others	5	57	11.4	13	139	10.7	19	216	11.4	12	137	11.1
Total	189	5321	28.2	212	5714	27.0	204	6196	30.4	202	5744	28.5

Warrington PCT

Estimated annual reductions and estimated new annual activity in emergency hip fracture admissions and bed days by provider, aged 15+

	Reductions			New admissions		
	No	Bed days	LOS	No	Bed days	LOS
North Cheshire Hospitals Trust	34	1009	-	155	4597	29.6
Others	2	25	-	10	113	11.1
Total	36	1034	-	165	4710	28.5

Central Liverpool PCT

Emergency hip fracture admissions and bed days by provider, aged 75+

	2000/01			2001/02			2002/03			Average		
	No	Bed days	LOS	No	Bed days	LOS	No	Bed days	LOS	No	Bed days	LOS
Royal Liverpool and Broadgreen University Hospitals Trust	192	7543	39.3	187	7095	37.9	184	7704	41.9	188	7447	39.7
Aintree Hospitals Trust	15	263	17.6	19	385	20.3	13	243	18.7	16	297	19.0
St Helens and Knowsley Hospitals Trust	9	176	19.6	12	326	27.2	9	356	39.6	10	286	28.6
Others	2	262	131.0	7	314	44.8	7	172	24.6	5	249	46.7
Total	218	8245	37.8	225	8120	36.1	213	8475	39.8	219	8280	37.9

Central Liverpool PCT

Estimated annual reductions and estimated new annual activity in emergency hip fracture admissions and bed days by provider, aged 75+

	Reductions			New admissions		
	No	Bed days	LOS	No	Bed days	LOS
Royal Liverpool and Broadgreen University Hospitals Trust	46	1810	-	142	5638	39.7
Aintree Hospitals Trust	4	72	-	12	225	19.0
St Helens and Knowsley Hospitals Trust	2	70	-	8	217	28.6
Others	1	61	-	4	189	46.7
Total	53	2012	-	166	6268	37.9

North Liverpool PCT

Emergency hip fracture admissions and bed days by provider, aged 75+

	2000/01			2001/02			2002/03			Average		
	No	Bed days	LOS	No	Bed days	LOS	No	Bed days	LOS	No	Bed days	LOS
Aintree Hospitals Trust	76	2182	28.7	68	1325	19.5	68	1609	23.7	71	1705	24.1
Royal Liverpool and Broadgreen University Hospitals Trust	7	204	29.1	9	340	37.8	6	195	32.5	7	246	33.6
Others	6	81	13.5	4	282	70.5	1	82	81.9	4	148	40.5
Total	89	2467	27.7	81	1946	24.0	75	1886	25.2	82	2100	25.7

North Liverpool PCT

Estimated annual reductions and estimated new annual activity in emergency hip fracture admissions and bed days by provider, aged 75+

	Reductions			New admissions		
	No	Bed days	LOS	No	Bed days	LOS
Aintree Hospitals Trust	17	414	-	53	1291	24.1
Royal Liverpool and Broadgreen University Hospitals Trust	2	60	-	6	186	33.6
Others	1	36	-	3	112	40.5
Total	20	510	-	62	1590	25.7

South Liverpool PCT

Emergency hip fracture admissions and bed days by provider, aged 75+

	2000/01			2001/02			2002/03			Average		
	No	Bed days	LOS	No	Bed days	LOS	No	Bed days	LOS	No	Bed days	LOS
Royal Liverpool and Broadgreen University Hospitals Trust	97	3562	36.7	92	3602	39.2	107	4309	40.3	99	3824	38.8
St Helens and Knowsley Hospitals Trust	19	482	25.4	29	688	23.7	24	670	27.9	24	613	25.5
Others	4	134	33.4	3	142	47.2	4	213	53.3	4	163	44.4
Total	120	4177	34.8	124	4432	35.7	135	5192	38.5	126	4600	36.4

South Liverpool PCT

Estimated annual reductions and estimated new annual activity in emergency hip fracture admissions and bed days by provider, aged 75+

	Reductions			New admissions		
	No	Bed days	LOS	No	Bed days	LOS
Royal Liverpool and Broadgreen University Hospitals Trust	24	929	-	75	2895	38.8
St Helens and Knowsley Hospitals Trust	6	149	-	18	464	25.5
Others	1	40	-	3	123	44.4
Total	31	1118	-	96	3482	36.4

St Helens PCT

Emergency hip fracture admissions and bed days by provider, aged 75+

	2000/01			2001/02			2002/03			Average		
	No	Bed days	LOS	No	Bed days	LOS	No	Bed days	LOS	No	Bed days	LOS
St Helens and Knowsley Hospitals Trust	113	2925	25.9	136	3812	28.0	111	3348	30.2	120	3361	28.0
Others	30	1285	42.8	22	845	38.4	20	967	48.4	24	1032	43.0
Total	143	4210	29.4	158	4656	29.5	131	4315	32.9	144	4394	30.5

St Helens PCT

Estimated annual reductions and estimated new annual activity in emergency hip fracture admissions and bed days by provider, aged 75+

	Reductions			New admissions		
	No	Bed days	LOS	No	Bed days	LOS
St Helens and Knowsley Hospitals Trust	29	817	-	91	2545	28.0
Others	6	251	-	18	781	43.0
Total	35	1068	-	109	3326	30.5

Knowsley PCT

Emergency hip fracture admissions and bed days by provider, aged 75+

	2000/01			2001/02			2002/03			Average		
	No	Bed days	LOS	No	Bed days	LOS	No	Bed days	LOS	No	Bed days	LOS
St Helens and Knowsley Hospitals Trust	69	1932	28.0	76	1560	20.5	76	1526	20.1	74	1672	22.7
Aintree Hospitals Trust	29	808	27.9	22	485	22.1	20	511	25.5	24	601	25.4
Royal Liverpool and Broadgreen University Hospitals Trust	6	130	21.7	12	481	40.1	5	123	24.6	8	245	31.9
Others	2	8	4.1	0	110	-	7	188	26.9	3	102	34.0
Total	106	2878	27.2	110	2636	24.0	108	2348	21.7	108	2620	24.3

Knowsley PCT

Estimated annual reductions and estimated new annual activity in emergency hip fracture admissions and bed days by provider, aged 75+

	Reductions			New admissions		
	No	Bed days	LOS	No	Bed days	LOS
St Helens and Knowsley Hospitals Trust	18	406	-	56	1266	22.7
Aintree Hospitals Trust	6	146	-	18	455	25.4
Royal Liverpool and Broadgreen University Hospitals Trust	2	59	-	6	185	31.9
Others	1	25	-	2	77	34.0
Total	26	637	-	82	1984	24.3

South Sefton PCT

Emergency hip fracture admissions and bed days by provider, aged 75+

	2000/01			2001/02			2002/03			Average		
	No	Bed days	LOS	No	Bed days	LOS	No	Bed days	LOS	No	Bed days	LOS
Aintree Hospitals Trust	139	3193	23.0	108	1849	17.1	125	2422	19.4	124	2488	20.1
Southport and Ormskirk Hospital Trust	16	633	39.6	20	404	20.2	14	297	21.2	17	445	26.7
Others	3	192	64.0	4	115	28.8	4	181	45.2	4	163	44.3
Total	158	4018	25.4	132	2368	17.9	143	2900	20.3	144	3095	21.4

South Sefton PCT

Estimated annual reductions and estimated new annual activity in emergency hip fracture admissions and bed days by provider, aged 75+

	Reductions			New admissions		
	No	Bed days	LOS	No	Bed days	LOS
Aintree Hospitals Trust	22	448	-	102	2040	20.1
Southport and Ormskirk Hospital Trust	3	80	-	14	365	26.7
Others	1	29	-	3	133	44.3
Total	26	557	-	118	2538	21.4

Southport and Formby PCT

Emergency hip fracture admissions and bed days by provider, aged 75+

	2000/01			2001/02			2002/03			Average		
	No	Bed days	LOS	No	Bed days	LOS	No	Bed days	LOS	No	Bed days	LOS
Southport and Ormskirk Hospital Trust	155	3569	23.0	146	3045	20.9	130	2597	20.0	144	3070	21.4
Others	3	133	44.3	3	36	12.1	5	75	14.9	4	81	22.2
Total	158	3702	23.4	149	3081	20.7	135	2672	19.8	147	3152	21.4

Southport and Formby PCT

Estimated annual reductions and estimated new annual activity in emergency hip fracture admissions and bed days by provider, aged 75+

	Reductions			New admissions		
	No	Bed days	LOS	No	Bed days	LOS
Southport and Ormskirk Hospital Trust	35	746	-	109	2324	21.4
Others	1	20	-	3	62	22.2
Total	36	766	-	112	2386	21.4

Ellesmere Port and Neston PCT

Emergency hip fracture admissions and bed days by provider, aged 75+

	2000/01			2001/02			2002/03			Average		
	No	Bed days	LOS	No	Bed days	LOS	No	Bed days	LOS	No	Bed days	LOS
Countess of Chester Hospital Trust	47	799	17.0	53	1027	19.4	68	1187	17.5	56	1004	17.9
Wirral Hospital Trust	15	591	39.4	16	682	42.6	11	366	33.3	14	546	39.0
Others	1	7	7.0	0	0	-	1	8	8.0	1	5	7.5
Total	63	1397	22.2	69	1709	24.8	80	1561	19.5	71	1556	22.0

Ellesmere Port and Neston PCT

Estimated annual reductions and estimated new annual activity in emergency hip fracture admissions and bed days by provider, aged 75+

	Reductions			New admissions		
	No	Bed days	LOS	No	Bed days	LOS
Countess of Chester Hospital Trust	14	244	-	42	760	17.9
Wirral Hospital Trust	3	133	-	11	414	39.0
Others	0	1	-	1	4	7.5
Total	17	378	-	53	1178	22.0

Cheshire West PCT

Emergency hip fracture admissions and bed days by provider, aged 75+

	2000/01			2001/02			2002/03			Average		
	No	Bed days	LOS	No	Bed days	LOS	No	Bed days	LOS	No	Bed days	LOS
Countess of Chester Hospital Trust	119	2391	20.1	118	1921	16.3	126	2433	19.3	121	2248	18.6
Mid Cheshire Hospitals Trust	16	363	22.7	12	250	20.8	10	169	16.9	13	261	20.6
North Cheshire Hospitals Trust	9	274	30.4	6	313	52.2	4	89	22.3	6	225	35.6
Others	2	35	17.5	6	109	18.2	5	65	13.0	4	70	16.1
Total	146	3063	21.0	142	2593	18.3	145	2756	19.0	144	2804	19.4

Cheshire West PCT

Estimated annual reductions and estimated new annual activity in emergency hip fracture admissions and bed days by provider, aged 75+

	Reductions			New admissions		
	No	Bed days	LOS	No	Bed days	LOS
Countess of Chester Hospital Trust	29	546	-	92	1702	18.6
Mid Cheshire Hospitals Trust	3	63	-	10	197	20.6
North Cheshire Hospitals Trust	2	55	-	5	171	35.6
Others	1	17	-	3	53	16.1
Total	35	681	-	109	2123	19.4

Central Cheshire PCT

Emergency hip fracture admissions and bed days by provider, aged 75+

	2000/01			2001/02			2002/03			Average		
	No	Bed days	LOS	No	Bed days	LOS	No	Bed days	LOS	No	Bed days	LOS
Mid Cheshire Hospitals Trust	206	4536	22.0	220	4358	19.8	243	5292	21.8	223	4729	21.2
North Cheshire Hospitals Trust	4	115	28.8	3	46	15.3	2	74	37.0	3	78	26.1
Others	8	288	36.0	14	357	25.5	5	100	20.0	9	248	27.6
Total	218	4939	22.7	237	4761	20.1	250	5466	21.9	235	5055	21.5

Central Cheshire PCT

Estimated annual reductions and estimated new annual activity in emergency hip fracture admissions and bed days by provider, aged 75+

	Reductions			New admissions		
	No	Bed days	LOS	No	Bed days	LOS
Mid Cheshire Hospitals Trust	54	1149	-	169	3580	21.2
North Cheshire Hospitals Trust	1	19	-	2	59	26.1
Others	2	60	-	7	188	27.6
Total	57	1228	-	178	3827	21.5

Halton PCT

Emergency hip fracture admissions and bed days by provider, aged 15+

	2000/01			2001/02			2002/03			Average		
	No	Bed days	LOS	No	Bed days	LOS	No	Bed days	LOS	No	Bed days	LOS
North Cheshire Hospitals	41	767	18.7	57	1436	25.2	48	1600	33.3	49	1268	26.0
St Helens and Knowsley Hospitals	71	1290	18.2	69	1252	18.1	60	1241	20.7	67	1261	18.9
Other	1	31	31.0	8	237	29.6	7	80	11.4	5	116	21.8
Total	113	2088	18.5	134	2925	21.8	115	2921	25.4	121	2645	21.9

Halton PCT

Estimated annual reductions and estimated new annual activity in emergency hip fracture admissions and bed days by provider, aged 15+

	Reductions			New admissions		
	No	Bed days	LOS	No	Bed days	LOS
North Cheshire Hospitals	12	308	-	37	960	26.0
St Helens and Knowsley Hospitals	16	306	-	50	955	18.9
Other	1	28	-	4	88	21.8
Total	29	643	-	91	2002	21.9

Warrington PCT

Emergency hip fracture admissions and bed days by provider, aged 15+

	2000/01			2001/02			2002/03			Average		
	No	Bed days	LOS	No	Bed days	LOS	No	Bed days	LOS	No	Bed days	LOS
North Cheshire Hospitals	184	5264	28.6	199	5575	28.0	185	5980	32.3	189	5606	29.6
Other	5	57	11.4	13	139	10.7	19	216	11.4	12	137	11.1
Total	189	5321	28.2	212	5714	27.0	204	6196	30.4	202	5744	28.5

Warrington PCT

Estimated annual reductions and estimated new annual activity in emergency hip fracture admissions and bed days by provider, aged 15+

	Reductions			New admissions		
	No	Bed days	LOS	No	Bed days	LOS
North Cheshire Hospitals	46	1362	-	143	4244	29.6
Other	3	33	-	9	104	11.1
Total	49	1396	-	153	4348	28.5

Central Liverpool PCT

Emergency hip fracture admissions and bed days by provider, aged 75+

	2000/01			2001/02			2002/03			Average		
	No	Bed days	LOS	No	Bed days	LOS	No	Bed days	LOS	No	Bed days	LOS
Royal Liverpool and Broadgreen University Hospitals Trust	192	7543	39.3	187	7095	37.9	184	7704	41.9	188	7447	39.7
Aintree Hospitals Trust	15	263	17.6	19	384	20.2	13	243	18.7	16	297	19.0
St Helens and Knowsley Hospitals Trust	9	176	19.6	12	326	27.2	9	356	39.6	10	286	28.6
Others	2	262	131.0	7	315	45.0	7	172	24.6	5	250	46.8
Total	218	8245	37.8	225	8120	36.1	213	8475	39.8	219	8280	37.9

Central Liverpool PCT

Estimated annual reductions and estimated new annual activity in emergency hip fracture admissions and bed days by provider, aged 75+

	Reductions			New admissions		
	No	Bed days	LOS	No	Bed days	LOS
Royal Liverpool and Broadgreen University Hospitals Trust	35	1408	-	152	6040	39.7
Aintree Hospitals Trust	3	56	-	13	241	19.0
St Helens and Knowsley Hospitals Trust	2	54	-	8	232	28.6
Others	1	47	-	4	202	46.8
Total	41	1565	-	177	6715	37.9

North Liverpool PCT

Emergency hip fracture admissions and bed days by provider, aged 75+

	2000/01			2001/02			2002/03			Average		
	No	Bed days	LOS	No	Bed days	LOS	No	Bed days	LOS	No	Bed days	LOS
Aintree Hospitals Trust	76	2182	28.7	68	1325	19.5	68	1609	23.7	71	1705	24.1
Royal Liverpool and Broadgreen University Hospitals Trust	7	204	29.1	9	340	37.8	6	195	32.5	7	246	33.6
Others	6	81	13.5	4	282	70.5	1	82	81.9	4	148	40.5
Total	89	2467	27.7	81	1946	24.0	75	1886	25.2	82	2100	25.7

North Liverpool PCT

Estimated annual reductions and estimated new annual activity in emergency hip fracture admissions and bed days by provider, aged 75+

	Reductions			New admissions		
	No	Bed days	LOS	No	Bed days	LOS
Aintree Hospitals Trust	13	322	-	57	1383	24.1
Royal Liverpool and Broadgreen University Hospitals Trust	1	47	-	6	200	33.6
Others	1	28	-	3	120	40.5
Total	15	397	-	66	1703	25.7

South Liverpool PCT

Emergency hip fracture admissions and bed days by provider, aged 75+

	2000/01			2001/02			2002/03			Average		
	No	Bed days	LOS	No	Bed days	LOS	No	Bed days	LOS	No	Bed days	LOS
Royal Liverpool and Broadgreen University Hospitals Trust	97	3562	36.7	92	3602	39.2	107	4303	40.2	99	3822	38.7
St Helens and Knowsley Hospitals Trust	19	482	25.4	29	688	23.7	24	670	27.9	24	613	25.5
Others	4	134	33.4	3	142	47.2	4	220	54.9	4	165	45.0
Total	120	4177	34.8	124	4432	35.7	135	5192	38.5	126	4600	36.4

South Liverpool PCT

Estimated annual reductions and estimated new annual activity in emergency hip fracture admissions and bed days by provider, aged 75+

	Reductions			New admissions		
	No	Bed days	LOS	No	Bed days	LOS
Royal Liverpool and Broadgreen University Hospitals Trust	19	722	-	80	3100	38.7
St Helens and Knowsley Hospitals Trust	5	116	-	19	497	25.5
Others	1	31	-	3	134	45.0
Total	24	869	-	102	3731	36.4

St Helens PCT

Emergency hip fracture admissions and bed days by provider, aged 75+

	2000/01			2001/02			2002/03			Average		
	No	Bed days	LOS	No	Bed days	LOS	No	Bed days	LOS	No	Bed days	LOS
St Helens and Knowsley Hospitals Trust	113	2925	25.9	136	3812	28.0	111	3348	30.2	120	3361	28.0
Others	30	1285	42.8	22	845	38.4	20	967	48.4	24	1032	43.0
Total	143	4210	29.4	158	4656	29.5	131	4315	32.9	144	4394	30.5

St Helens PCT

Estimated annual reductions and estimated new annual activity in emergency hip fracture admissions and bed days by provider, aged 75+

	Reductions			New admissions		
	No	Bed days	LOS	No	Bed days	LOS
St Helens and Knowsley Hospitals Trust	23	635	-	97	2726	28.0
Others	5	195	-	19	837	43.0
Total	27	830	-	117	3563	30.5

Knowsley PCT

Emergency hip fracture admissions and bed days by provider, aged 75+

	2000/01			2001/02			2002/03			Average		
	No	Bed days	LOS	No	Bed days	LOS	No	Bed days	LOS	No	Bed days	LOS
St Helens and Knowsley Hospitals Trust	69	1932	28.0	76	1560	20.5	76	1526	20.1	74	1672	22.7
Aintree Hospitals Trust	29	808	27.9	22	485	22.1	20	511	25.5	24	601	25.4
Royal Liverpool and Broadgreen University Hospitals Trust	6	130	21.7	12	481	40.1	5	123	24.6	8	245	31.9
Others	2	8	4.1	0	110	-	7	188	26.9	3	102	34.0
Total	106	2878	27.2	110	2636	24.0	108	2348	21.7	108	2620	24.3

Knowsley PCT

Estimated annual reductions and estimated new annual activity in emergency hip fracture admissions and bed days by provider, aged 75+

	Reductions			New admissions		
	No	Bed days	LOS	No	Bed days	LOS
St Helens and Knowsley Hospitals Trust	14	316	-	60	1356	22.7
Aintree Hospitals Trust	4	114	-	19	488	25.4
Royal Liverpool and Broadgreen University Hospitals Trust	1	46	-	6	198	31.9
Others	1	19	-	2	83	34.0
Total	20	495	-	88	2125	24.3

South Sefton PCT

Emergency hip fracture admissions and bed days by provider, aged 75+

	2000/01			2001/02			2002/03			Average		
	No	Bed days	LOS	No	Bed days	LOS	No	Bed days	LOS	No	Bed days	LOS
Aintree Hospitals Trust	139	3193	23.0	108	1849	17.1	125	2422	19.4	124	2488	20.1
Southport and Ormskirk Hospital Trust	16	633	39.6	20	404	20.2	14	297	21.2	17	445	26.7
Others	3	192	64.0	4	115	28.8	4	181	45.2	4	163	44.3
Total	158	4018	25.4	132	2368	17.9	143	2900	20.3	144	3095	21.4

South Sefton PCT

Estimated annual reductions and estimated new annual activity in emergency hip fracture admissions and bed days by provider, aged 75+

	Reductions			New admissions		
	No	Bed days	LOS	No	Bed days	LOS
Aintree Hospitals Trust	23	470	-	101	2018	20.1
Southport and Ormskirk Hospital Trust	3	84	-	14	361	26.7
Others	1	31	-	3	132	44.3
Total	27	585	-	117	2510	21.4

Southport and Formby PCT

Emergency hip fracture admissions and bed days by provider, aged 75+

	2000/01			2001/02			2002/03			Average		
	No	Bed days	LOS	No	Bed days	LOS	No	Bed days	LOS	No	Bed days	LOS
Southport and Ormskirk Hospital Trust	155	3569	23.0	146	3045	20.9	130	2597	20.0	144	3070	21.4
Others	3	133	44.3	3	36	12.1	5	75	14.9	4	81	22.2
Total	158	3702	23.4	149	3081	20.7	135	2672	19.8	147	3152	21.4

Southport and Formby PCT

Estimated annual reductions and estimated new annual activity in emergency hip fracture admissions and bed days by provider, aged 75+

	Reductions			New admissions		
	No	Bed days	LOS	No	Bed days	LOS
Southport and Ormskirk Hospital Trust	27	580	-	117	2490	21.4
Others	1	15	-	3	66	22.2
Total	28	596	-	119	2556	21.4

Ellesmere Port and Neston PCT

Emergency hip fracture admissions and bed days by provider, aged 75+

	2000/01			2001/02			2002/03			Average		
	No	Bed days	LOS	No	Bed days	LOS	No	Bed days	LOS	No	Bed days	LOS
Countess of Chester Hospital Trust	47	799	17.0	53	1027	19.4	68	1187	17.5	56	1004	17.9
Wirral Hospital Trust	15	591	39.4	16	682	42.6	11	366	33.3	14	546	39.0
Others	1	7	7.0	0	0	-	1	8	8.0	1	5	7.5
Total	63	1397	22.2	69	1709	24.8	80	1561	19.5	71	1556	22.0

Ellesmere Port and Neston PCT

Estimated annual reductions and estimated new annual activity in emergency hip fracture admissions and bed days by provider, aged 75+

	Reductions			New admissions		
	No	Bed days	LOS	No	Bed days	LOS
Countess of Chester Hospital Trust	11	190	-	45	815	17.9
Wirral Hospital Trust	3	103	-	11	443	39.0
Others	0	1	-	1	4	7.5
Total	13	294	-	57	1262	22.0

Cheshire West PCT

Emergency hip fracture admissions and bed days by provider, aged 75+

	2000/01			2001/02			2002/03			Average		
	No	Bed days	LOS	No	Bed days	LOS	No	Bed days	LOS	No	Bed days	LOS
Countess of Chester Hospital Trust	119	2391	20.1	118	1921	16.3	126	2433	19.3	121	2248	18.6
Mid Cheshire Hospitals Trust	16	363	22.7	12	250	20.8	10	169	16.9	13	261	20.6
North Cheshire Hospitals Trust	9	274	30.4	6	313	52.2	4	89	22.3	6	225	35.6
Others	2	35	17.5	6	109	18.2	5	65	13.0	4	70	16.1
Total	146	3063	21.0	142	2593	18.3	145	2756	19.0	144	2804	19.4

Cheshire West PCT

Estimated annual reductions and estimated new annual activity in emergency hip fracture admissions and bed days by provider, aged 75+

	Reductions			New admissions		
	No	Bed days	LOS	No	Bed days	LOS
Countess of Chester Hospital Trust	23	425	-	98	1823	18.6
Mid Cheshire Hospitals Trust	2	49	-	10	211	20.6
North Cheshire Hospitals Trust	1	43	-	5	183	35.6
Others	1	13	-	4	56	16.1
Total	27	530	-	117	2274	19.4

Central Cheshire PCT

Emergency hip fracture admissions and bed days by provider, aged 75+

	2000/01			2001/02			2002/03			Average		
	No	Bed days	LOS	No	Bed days	LOS	No	Bed days	LOS	No	Bed days	LOS
Mid Cheshire Hospitals Trust	206	4536	22.0	220	4358	19.8	243	5292	21.8	223	4729	21.2
North Cheshire Hospitals Trust	4	115	28.8	3	46	15.3	2	74	37.0	3	78	26.1
Others	8	288	36.0	14	357	25.5	5	100	20.0	9	248	27.6
Total	218	4939	22.7	237	4761	20.1	250	5466	21.9	235	5055	21.5

Central Cheshire PCT

Estimated annual reductions and estimated new annual activity in emergency hip fracture admissions and bed days by provider, aged 75+

	Reductions			New admissions		
	No	Bed days	LOS	No	Bed days	LOS
Mid Cheshire Hospitals Trust	42	894	-	181	3835	21.2
North Cheshire Hospitals Trust	1	15	-	2	64	26.1
Others	2	47	-	7	201	27.6
Total	44	955	-	191	4100	21.5

Halton PCT

Emergency hip fracture admissions and bed days by provider, aged 15+

	2000/01			2001/02			2002/03			Average		
	No	Bed days	LOS	No	Bed days	LOS	No	Bed days	LOS	No	Bed days	LOS
North Cheshire Hospitals	41	767	18.7	57	1436	25.2	48	1600	33.3	49	1268	26.0
St Helens and Knowsley Hospitals	71	1290	18.2	69	1252	18.1	60	1241	20.7	67	1261	18.9
Other	1	31	31	8	237	29.6	7	80	11.4	5	116	21.8
Total	113	2088	18.5	134	2925	21.8	115	2921	25.4	121	2645	21.9

Halton PCT

Estimated annual reductions and estimated new annual activity in emergency hip fracture admissions and bed days by provider, aged 15+

	Reductions			New admissions		
	No	Bed days	LOS	No	Bed days	LOS
North Cheshire Hospitals	9	240	-	39	1028	26.0
St Helens and Knowsley Hospitals	13	238	-	54	1023	18.9
Other	1	22	-	4	94	21.8
Total	23	500	-	98	2145	21.9

Warrington PCT

Emergency hip fracture admissions and bed days by provider, aged 15+

	2000/01			2001/02			2002/03			Average		
	No	Bed days	LOS	No	Bed days	LOS	No	Bed days	LOS	No	Bed days	LOS
North Cheshire Hospitals	184	5264	28.6	199	5575	28	185	5980	32.3	189	5606	29.6
Other	5	57	11.4	13	139	10.7	19	216	11.4	12	137	11.1
Total	189	5321	28.2	212	5714	27	204	6196	30.4	202	5744	28.5

Warrington PCT

Estimated annual reductions and estimated new annual activity in emergency hip fracture admissions and bed days by provider, aged 15+

	Reductions			New admissions		
	No	Bed days	LOS	No	Bed days	LOS
North Cheshire Hospitals	36	1060	-	153	4546	29.6
Other	2	26	-	10	111	11.4
Total	38	1085	-	163	4658	28.6

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