

**Information Services**  
A division of NHS National Services Scotland



## **Older People Services: Measuring Relative Need**

**Statistical Report 2007**

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## Acknowledgements

### Acknowledgements

The publication is based upon information collected from hospitals, care homes, and from individuals in their own homes throughout Scotland. ISD Scotland would like to thank the nursing and care staff who continue to provide the information upon which this report is based.

# 1 Introduction and background

## 1.1 Introduction

This is the tenth edition of a statistical publication formerly known as *Scottish Health Resource Utilisation Groups (SHRUGs) and Scottish Care Resource Utilisation Group (SCRUGs)*. This is the fourth edition under the new title. In order to reflect recent developments and interest in dependency measures for older peoples' services, the report has been renamed '**Older People Services: Measuring Relative Need**'.

The data contained in the report is collected by staff working on the Joint Future Programme. The Joint Future Programme promotes awareness of the importance of health and care information that is used by non-health service partner organisations including Local Authorities, the Care Commission, and COSLA. It is expected that the programme will further develop to help with organisations such as Community Health Partnerships.

The information collected under the Joint Future Programme of work has been used in a variety of ways. The following are some examples of this.

- The West Lothian Older People's strategy group commissioned ISD to help produce a capacity plan for West Lothian. The purpose of this work was to assist West Lothian Council and its partners to plan and provide appropriate services for older people by estimating future accommodation, care and support needs.
- NHS Lanarkshire used SHRUGs/SCRUGs data to monitor the impact on the balance of care of the implementation of their Frail Older People Strategy.

It is hoped that the report will be of interest to all those involved in the delivery and management of care for older people in long term residential care and their own homes. Comments and requests for additional information are welcomed and should be addressed to:

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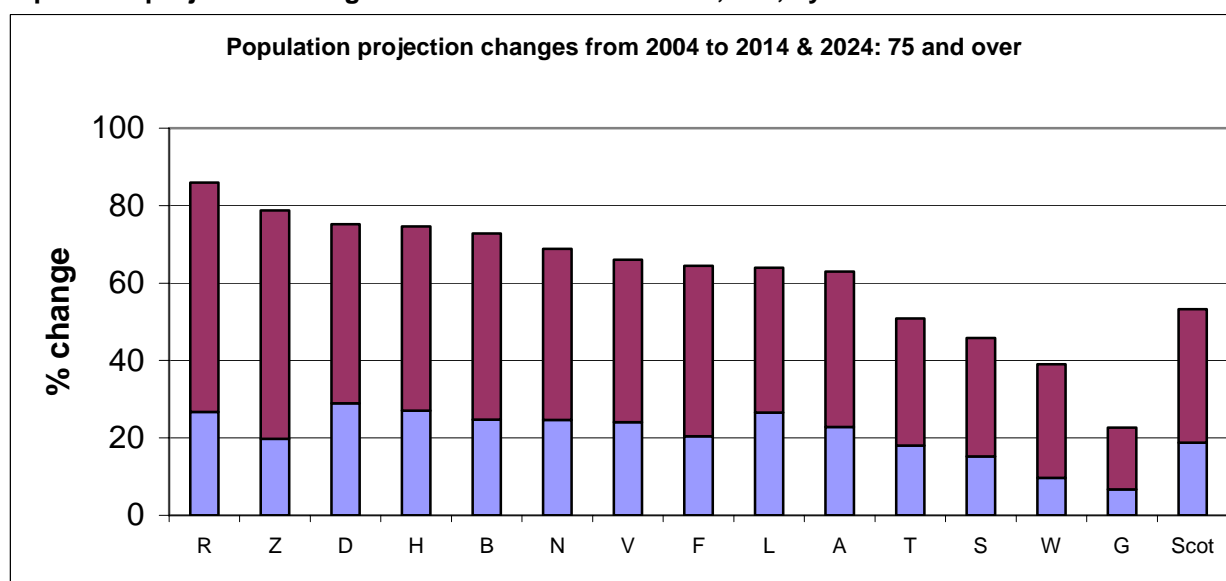
## 1.2 Context: The Ageing of the Scottish Population

The office of The Register General for Scotland has projected that the number of people in Scotland aged 75 and over will increase by 19% from 2004 to 2014 and a further 34% by 2024. This equates to around 371,500 people aged 75 and over in 2004, increasing to around 569,300 people by 2024.

Figures 1 and 2 show the projected percentage change in the population broken down by NHS board and local authority areas.

Figure 1

Population projection changes from 2004 to 2014 & 2024, 75+, by NHS Board



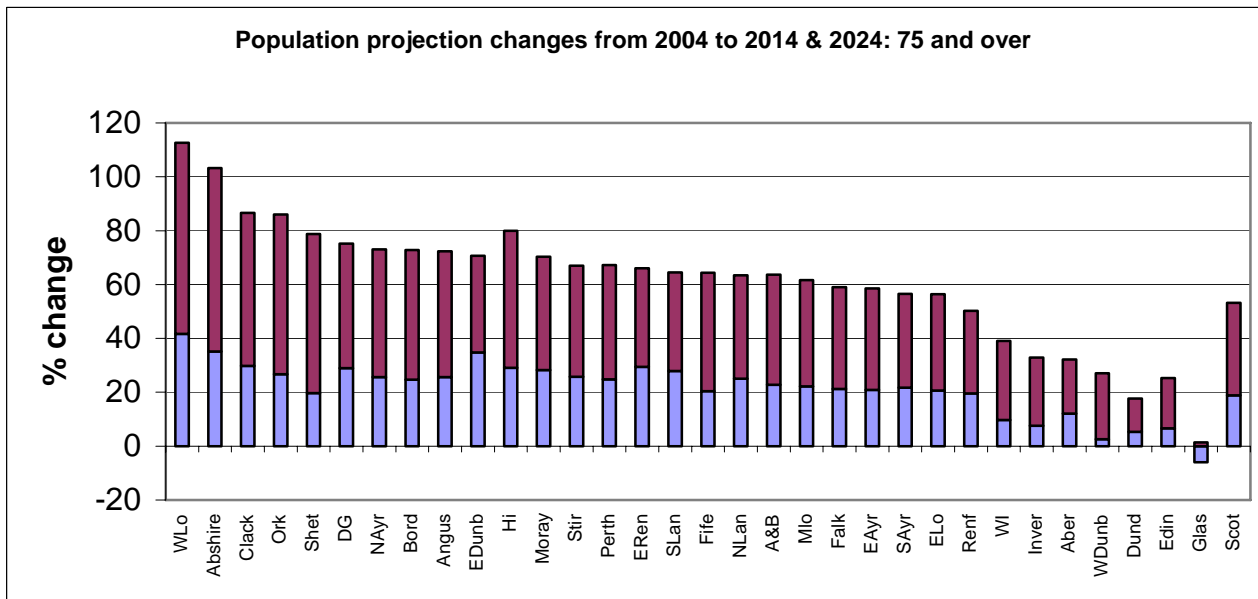
Source: GRO population estimates (2004)

Orkney NHS Board area is expected to have the greatest percentage rise (86%) in the population aged 75 and over from around 1,600 people in 2004 to approximately 2,900 people in 2024. Greater Glasgow & Clyde NHS Board area will have the lowest percentage increase of 23% changing the population aged 75 and over from around 78,400 in 2004 to around 96,300 in 2024.

## Introduction and background

Figure 2

**Population projection changes from 2004 to 2014 & 2024, 75+, by Local Authority**



Source: GRO population estimates (2004)

If we look at data broken down by local authority areas West Lothian is expected to have the greatest percentage rise (113%) in the population, from around 7,900 people in 2004 to approximately 16,700 people in 2024. Glasgow City is estimated to have a decrease of 5%, changing the population from approximately 39,600 people in 2004 to an estimated 37,800 people in 2024.

This significant change in our population will markedly increase our focus on how services for older people are delivered in the future. The need for good informative data to support planning and delivery of services will become increasingly important. The information presented in this report is designed to support service planning and delivery.

### 1.3. Information in this report

Information contained in this report has been collected from a range of settings: long stay care of the elderly hospital wards, from care homes and from individuals in their own homes across Scotland. This report contains information up to 31<sup>st</sup> July 2007.

#### *Scottish Health Resource Utilisation Groups (SHRUGs) data*

SHRUGs data is collected on patients in long stay care of the elderly hospital wards and patients in Psychiatry of Old Age (POA) facilities. Nationally, coverage of SHRUGs data is estimated at 85% of patients in long stay care of the elderly wards and 41% of POA patients. These results are detailed in Section 4.

Throughout this report the participating NHS Boards are each identified in tables and graphs by a unique letter. The NHS Boards to which these letters relate can be found in [Appendix 2](#).

#### *Scottish Care Resource Utilisation Groups (SCRUGs) data*

Information on residents in care homes is collected via SCRUGs surveys that are requested by local agencies. Figures in this report are based on SCRUGs surveys that have been undertaken between January 2004 and July 2007 covering 14 local authorities and eight NHS Board areas, approximately 20% of the care home population across Scotland. These results are detailed in [Section 6](#).

#### *The Single Shared Assessment – Indicator of Relative Need*

The SSA-IoRN is a practitioner-completed data instrument for classifying older people in their own homes, according to their relative need. It is gradually being introduced across Scotland in association with the implementation of Single Shared Assessment. Further information on the SSA-IoRN and some preliminary analyses are presented in [Section 8](#).

#### *Other information on older peoples services*

Other information relating to older people's service provision is available at the following Scottish Government website:

<http://www.scotland.gov.uk/Topics/Statistics/17672/9466>

Other information relating to older people's service provision is also available at the following website:

[http://www.isdscotland.org/isd/info3.jsp?pContentID=2223&p\\_applic=CCC&p\\_service=Content.show&](http://www.isdscotland.org/isd/info3.jsp?pContentID=2223&p_applic=CCC&p_service=Content.show&)

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### 2 Executive Summary

- This report contains information on the care needs and dependency of older people in a range of settings.
- Older people in long stay hospital wards generally had markedly higher care and dependency needs than residents in care homes. Around 53% of the hospital patients surveyed were classed as high dependency in the latest data collection period. 15% of residents in the care homes surveyed in eight NHS board areas in Scotland were classed as having high dependency. ([Chapter 4, Table 6, p14](#); [Chapter 6, Figure 19, p25](#))
- Groupings of care and dependency levels of long stay older people in hospital vary between NHS Boards. The proportion of patients falling into the highest dependency group ranges from 4% to 69%. ([Chapter 4, Figure 8, p16](#))
- A difference in general care needs exists between the NHS long stay care of the elderly and care homes. An illustration of this is that 45% of older people in hospital wards had a need for special care as defined by the SHRUGs questionnaire; for care homes the figure was 15%. ([Chapter 4, Table 7, p16](#); [Chapter 6, Figure 20, p26](#))
- The proportion of hospital patients classified within the highest dependency group has increased from 24% in the year ending March 2002 to 35% in the period between May 2006 and July 2007. ([Chapter 4, Table 4, p11](#))
- A substantially higher percentage of hospital patients *awaiting placement* fell into the lowest dependency group compared to those not awaiting placement. ([Chapter 4, Figure 16, p22](#))
- The percentage of patients with needs for special care/and or clinically complex treatments has increased from 34% in the year ending March 2002 to 49% in the period between May 2006 and July 2007. ([Chapter 4, Table 7, p16](#))

## 3 The SHRUGs/SCRUGs and SSA-IoRN Methods

### 3.1 SHRUGs (Hospital patients)

SHRUGs is a method of allocating hospital patients to resource utilisation groups, and is based upon measurement of need for care and dependency. For the SHRUGs method currently applied in hospitals, care needs are described in terms of needs for special care, clinically complex treatments and behavioural difficulties. Dependency is described in terms of eating, use of the lavatory and transferring position. For details of all the SHRUGs variables see [Appendix 3](#).

A variety of supplementary information is also collected for each individual including data on clinically complex conditions, incontinence, mental health problems and problems of communication.

Data are obtained by interviewing care staff who know the patients well, and are entered directly onto a database held on a laptop computer. Interviewing on average takes approximately 90 minutes for 30 patients. Using trained interviewers to collect data helps to ensure that consistency of SHRUGs information across different data providers is achieved, allowing meaningful comparisons to be made between NHS Boards, as well as producing robust data at a national level.

Inter-rater reliability of SHRUGs data has been evaluated by separately asking two independent members of care staff the same questions about the same patients. In general the reliability of the SHRUGs instrument has been shown to be good ([see Appendix 4](#)).

The SHRUGs measure makes use of hierarchical methods of grouping data to generate five resource utilisation group categories. Each category can be described in terms which aims to be readily understood by care professionals.

It is important to note that the SHRUGs data represent a 'snapshot' of the position at a certain point in time. Because data is recorded at different times during the year in different hospitals, comparisons of data between NHS Boards should be made with caution.

Each patient is placed in a resource utilisation group according to their dependency and needs characteristics. Table 1 provides a summary of the groups.

## The SHRUGs/SCRUGs and SSA-IoRN Methods

*Table 1*  
**SHRUGs resource grouping**

SHRUGs Group	Description	Weight*
A	Low dependency; no behavioural difficulties	0.62
B	Low dependency; with behavioural difficulties	0.77
C	Moderate dependency; no needs for special care or clinically complex treatments	0.88
D	Moderate dependency; with needs for special care and/or clinically complex treatments or High dependency; no needs for special care or clinically complex treatments	1.10
E	High dependency; with needs for special care and/or clinically complex treatments	1.47

\* These weights are derived from a sample of 939 patients for the period June 1994 to June 1995.

The weights shown against each group correspond to the relative amount of staffing resource used during a defined time period (June 1994 to June 1995) where the average for all patients is 1.00. Thus patients of low dependency with no behavioural difficulties (Group A) would utilise, on average, 0.62 of the average staff resource, while patients of high dependency and needs for special care or clinically complex treatments (Group E) would utilise, on average, 1.47 of the average staff resource. The method of arriving at these weightings is set out in [Appendix 5](#).

### 3.2 SCRUGs (Care Home residents)

Through consultation with members of social work departments and care staff from care homes, the SHRUGs system was reviewed during 1998 with a view to being adapted to better describe the dependency and care needs of residents in care homes. The result was SCRUGs (Scottish Care Resource Utilisation Groups). Data is collected in a similar way to that used for SHRUGs.

The SCRUGs algorithm consists of eight groups (see Table 2) showing greater discrimination in the relative use of staff resources than the existing five group SHRUGs algorithm currently used in hospitals. The dependency category is measured in terms of eating, toileting, transferring position and moving location. The scores for these four variables are combined to produce an Activities of Daily Living (ADL) score which are grouped into four dependency categories; low, low to moderate, moderate and high. In addition the behaviour module is applied to all ADL categories.

## The SHRUGs/SCRUGs and SSA-IoRN Methods

*Table 2*  
**SCRUGs resource grouping**

SCRUGs Group	Description	Weight*
A	Low dependency; <b>Neither</b> Behaviour nor Special Care Needs	0.50
B	Low dependency; <b>Either</b> Behaviour or Special Care Needs	0.69
C	Low to moderate dependency; <b>Neither</b> Behaviour nor Special Care Needs	0.59
D	Low to moderate dependency; <b>Either</b> Behaviour or Special Care Needs	0.77
E	Moderate dependency; <b>Neither</b> Behaviour nor Special Care Needs	0.87
F	Moderate dependency; <b>Either</b> Behaviour or Special Care Needs <b>OR</b> High dependency; <b>Neither</b> Behaviour nor Special Care Needs	1.07
G	Moderate dependency; <b>Both</b> Behaviour and Special Care Needs <b>OR</b> High dependency; <b>Either</b> Behaviour or Special Care Needs	1.27
H	High dependency; <b>Both</b> Behaviour and Special Care Needs	1.43

\* These weights are derived from a sample of 592 patients for the period May 1996 to February 1997

The weights shown against each of these groups correspond to the relative amount of staffing resource used during a defined period in time (May 1996 to February 1997) where the average for all residents is 1.00. The weights range from 0.50 in group A (for those residents of low dependency with neither behavioural difficulties nor special care needs) to 1.43 in group H (for those residents of high dependency with both behavioural difficulties and special care needs).

### 3.3 Single Shared Assessment - Indicator of Relative Need (SSA-IoRN)

The Single Shared Assessment - Indicator of Relative Need (SSA-IoRN), formerly known as Resource Use Measure (RUM), enables clients receiving services in the community to be classified into groups according to similar level of relative need. Data collection is designed to be carried out directly by practitioners rather than by the interview method of SHRUGs and SCRUGs.

IoRN was developed building on two measures of need developed for use in different care settings - the SCRUGS measure, and Interval Need developed by Isaacs and Neville. The IoRN development combined an empirical analysis of resource use by clients in community settings with expert input from a range of professionals across Scotland.

## The SHRUGs/SCRUGs and SSA-IoRN Methods

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Data on a number of clients receiving care at home (over 900), including data on services received, was supplied by practitioners and the best predictors of level of relative need identified. Like SCRUGs, the SSA-IoRN classification is a tree type algorithm. The main predictors were identified as follows:

- Activities of Daily Living (ADL) score – eating, transferring position and toileting - split into three groups of low, medium and high dependency
- for the low ADL group the score on personal care items - ability to prepare food, wash and dress - allows further refinement
- the medium ADL group was split by a measure of mental health and behaviour - whether certain problem behaviours were present
- the high ADL group was split according to whether help was required to maintain bowel function.

There are 9 SSA-IoRN groupings which range from A (low need) to I (high need). Unlike SHRUGs and SCRUGS there are no weights currently assigned to these groupings.

Further information on the SSA-IoRN is outlined in Section 8.

A copy of the questionnaire and further information can be found at the following web address:

<http://www.isdscotland.org/isd/files/SSA-IoRN Form 2006.pdf>

## 4 Hospital patients (SHRUGs data)

This section of the report presents information on SHRUGs data collected on patients in long stay care of the elderly hospital wards across Scotland, between May 2006 and July 2007. This section also presents selected information on SHRUGs data that has been collected on patients in Psychiatry of Old Age (POA) facilities.

### 4.1 Coverage of SHRUGs data collection

All NHS Boards across Scotland participated in the collection of SHRUGs data. However, within some NHS boards information was not collected in all continuing care hospitals. In the period between May 2006 and July 2007, SHRUGs data were collected on 1,684 patients from within these NHS Boards. When this information is compared with ISD (S)1 information on the number of occupied bed days this is the equivalent to an estimated 85% of all patients in long stay care of older people hospital wards throughout Scotland ([Appendix 2](#)).

Table 3

**Coverage of SHRUGs data collection;** by data collection period

	March 2002	March 2003	March 2004	April 2005	May 2006	July 2007
Average daily number of patients in Scotland <sup>1</sup>	3180	2915	2568	2416	2157	1982
Number for whom SHRUGs data are available <sup>2</sup>	2846	2634	2415	2090	2053	1684
SHRUGs coverage	89%	90%	94%	87%	95%	85%

<sup>1</sup> Source: ISD(S)1 - for average number of occupied beds during data collection period. Please note this is provisional for the 2007 figures.

Figures for 2002 - 2007 include joint user and contractual hospitals for NHS Greater Glasgow & Clyde

<sup>2</sup> Excludes respite residents

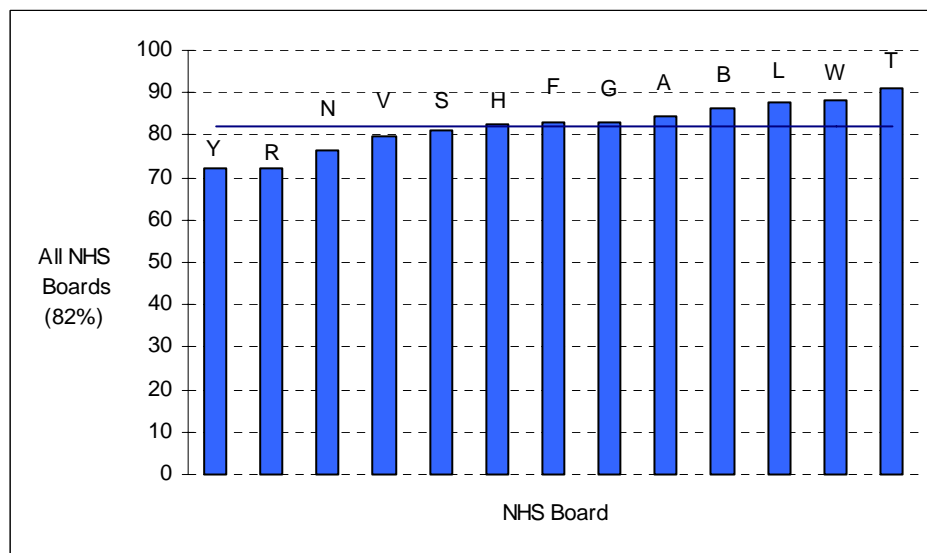
There has been a steady fall in recent years in the number of beds for long stay care of older people in Scotland. From the year ending March 2002 until the period between May 2006 and July 2007 estimated coverage of SHRUGs data collection has fluctuated between 85% and 95% (Table 3).

## 4.2 Age and sex of patients

Figure 3

### Patients aged 75 years and over

Percentages; in individual NHS Boards and all NHS Boards; data collected between May 2006 and July 2007



In the period between May 2006 and July 2007 the percentage of patients aged 75 years and over was 82%. The percentages ranged from 72% in NHS Dumfries & Galloway and NHS Orkney to 91% in NHS Tayside. The majority of patients were female (68%), ranging from 40% in NHS Tayside to 75% in NHS Fife. It is important to note that some of the percentages are based on small numbers and there is no information on age for one of the NHS Boards.

## 4.3 Proportions of patients in each SHRUGs group

Table 4

### Patients in each SHRUGs group

Percentages; by data collection period

	March 2002	March 2003	March 2004	April 2005	May 2006	July 2007
Number of residents	2846	2634	2415	2090	2053	1684
A	9	10	9	9	9	8
B	1	1	1	1	1	1
C	30	28	28	24	25	25
D	35	32	32	31	30	31
E	24	28	29	36	34	35

The proportion of SHRUGs patients allocated to SHRUGs group A has remained relatively stable between March 2002 and July 2007. However, in the past six data collection periods the proportion in group E (those of high

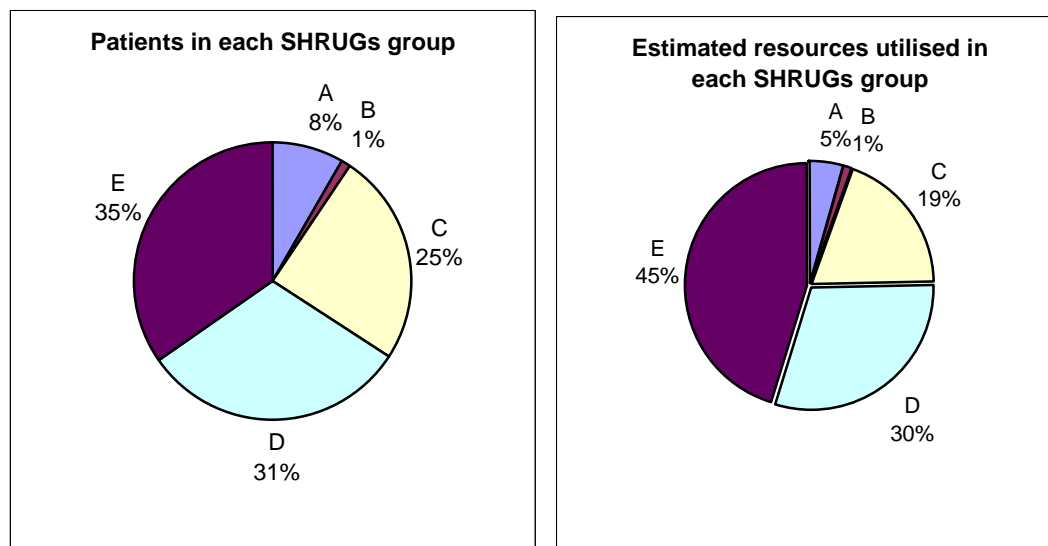
## Hospital patients (SHRUGs data)

dependency with a need for special care and/or clinically complex treatment) has increased substantially from 24% to 35%.

Figure 4

### Patients in each SHRUGs group and estimated resources utilised in each SHRUGs group

Percentages; data collected between May 2006 and July 2007



The relative amount of staffing resources can be estimated by applying the SHRUGs 'weights' to each of the SHRUGs groups (see section 2 - 'The SHRUGs Method' for a more detailed explanation). When the SHRUGs weight was applied to the 35% of patients who were assigned to group E, it was estimated that they would utilise 45% of the total available staffing resource. In contrast, the 8% of patients in group A would utilise only an estimated 5% (Figure 4; [Appendix 1: Table 2](#)).

#### 4.4 Trends in casemix complexity

A summary measure of the overall resource utilisation across all five SHRUGs groups is the casemix complexity factor (CCF). The CCF is a statistical index of resource utilisation for a defined population of patients in long stay care of the elderly wards. It is an approximate indicator of the average amount of nursing staff resource utilised per patient for such a population. The CCF is calculated by multiplying the number of patients in each SHRUGs group by the 'weight' for that group; for example, if a hospital had 45 patients allocated to Group A, then the calculation would be 45 multiplied by 0.62 (i.e. 0.62 being the weighting factor for SHRUGs Group A). The result for each of the five groups is added together and the sum divided by the total number of patients in the population.

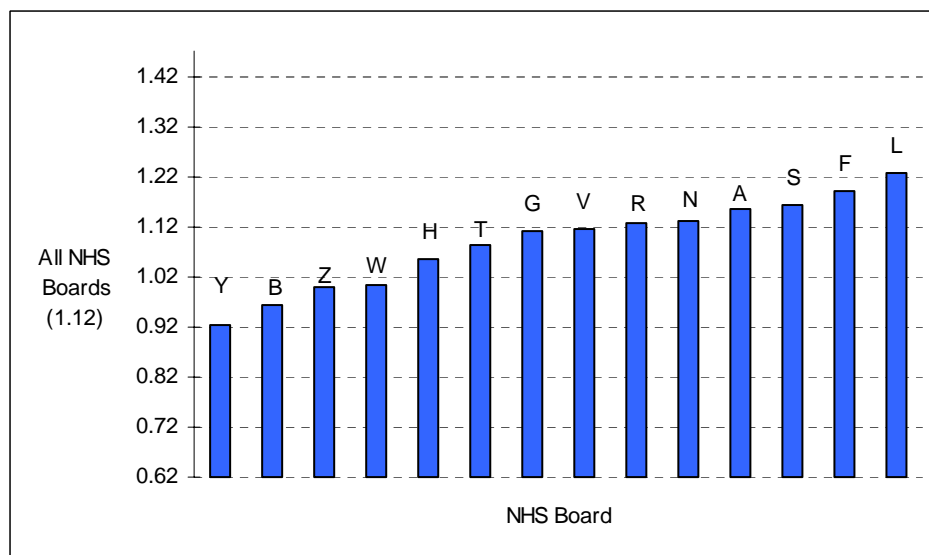
## Hospital patients (SHRUGs data)

Figure 5

### Casemix complexity factor<sup>1</sup> for SHRUGs patients

In individual NHS Boards and for all NHS Boards; data collected between May 2006 and July 2007

<sup>1</sup> The CCF can only range between 0.62 and 1.47.



In the period between May 2006 and July 2007, the CCF among NHS Boards ranged from 0.92 in NHS Dumfries & Galloway to 1.23 in NHS Lanarkshire with a figure of 1.12 for all NHS Boards (Figure 5; [Appendix 1: Table 2](#)).

Table 5

### Casemix complexity factor for all SHRUGs patients; by data collection period

	March 2002	March 2003	March 2004	April 2005	May 2006	July 2007
Case complexity factor (ccf)	1.07	1.09	1.10	1.13	1.12	1.12

The CCF has increased from 1.07 for the year ending March 2002 to 1.12 in the period between May 2006 and July 2007.

## 4.5 Distribution of patients within SHRUGs dependency variables

An activity of daily living score (ADL) is derived from SHRUGs data collected on patients in relation to eating, transferring position and use of the lavatory. The ADL score is calculated by adding together the individual scores that are recorded for each question that is asked in relation to eating, use of the lavatory and transferring position. This ADL score gives an indication of the level of dependency of each patient and is used as part of the SHRUGs grouping algorithm.

Table 6

**Percentage of all patients within SHRUGs dependency variables**  
by data collection period

	March 2002	March 2003	March 2004	April 2005	May 2006	July 2007
<b>Eating</b>						
	%	%	%	%	%	%
eats unaided	38	38	38	32	37	34
eats with help	26	25	24	25	25	26
requires feeding	36	37	38	43	38	40
<b>Transferring Position</b>						
copies independently	10	11	10	9	11	10
needs the supervision or assistance of one person	24	23	22	21	23	23
needs the supervision or assistance of two or more persons	66	66	68	70	67	66
<b>Use of the lavatory</b>						
copies independently	8	8	8	7	8	7
needs help/direction/prompting	25	24	27	25	26	26
is completely dependent or does not use the toilet	68	68	65	68	66	67
<b>Activities of Daily Living</b>						
low dependency (ADL = 3,4)	10	11	10	10	11	10
moderate dependency (ADL = 5,6,7)	39	38	39	33	36	37
high dependency (ADL = 8,9)	51	51	51	57	53	53

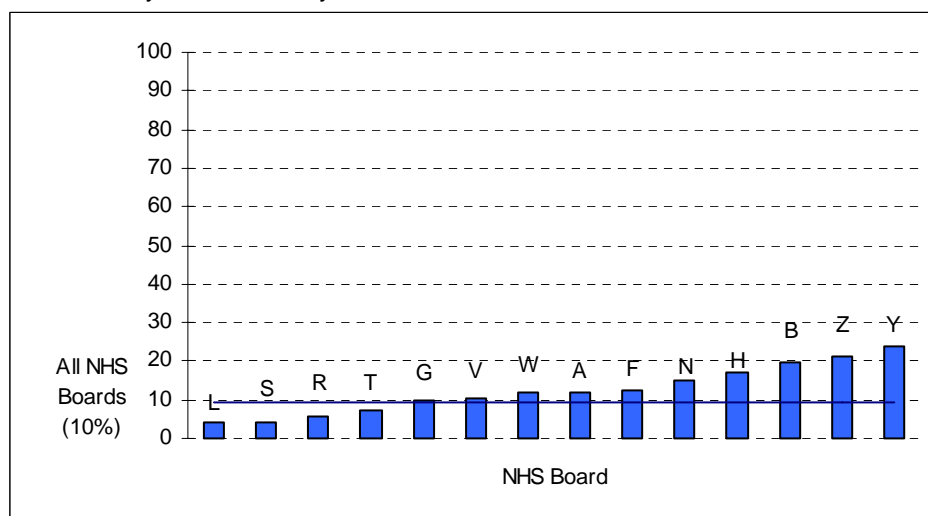
In the period between May 2006 and July 2007, 53% of all SHRUGs patients were classed as being of high dependency, the same as in the previous data collection period. (Table 6).

## Hospital patients (SHRUGs data)

Figure 6

### SHRUGs patients with ADL scores of 3 or 4 (low dependency)

Percentages of all patients; by individual NHS Boards and for all NHS Boards; data collected between May 2006 and July 2007

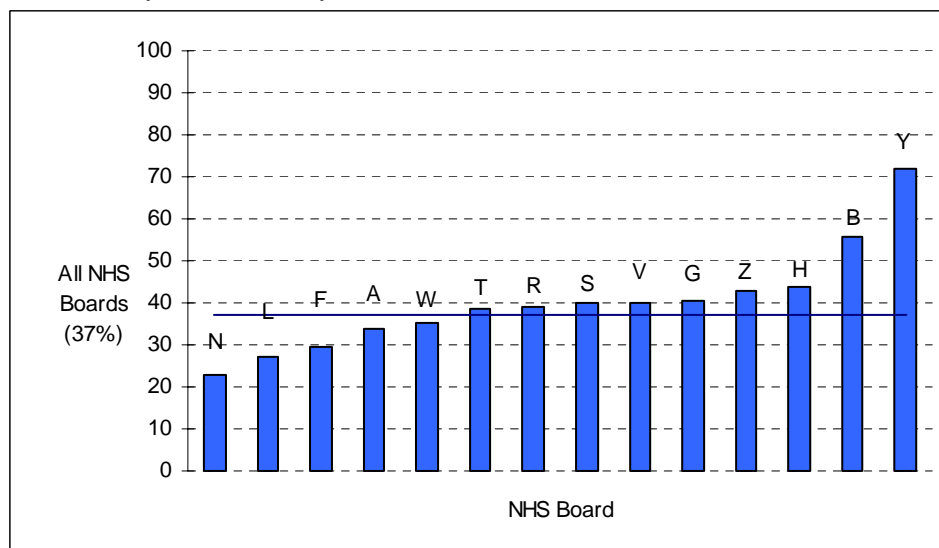


Amongst individual NHS Boards, the proportions of patients classed as being of low dependency ranged from 4% in NHS Lanarkshire to 24% in NHS Dumfries & Galloway (Figure 6; [Appendix 1: Table 3](#)), and was 10% for all participating hospitals in the period between May 2006 and July 2007.

Figure 7

### SHRUGs patients with ADL scores of 5, 6 or 7 (moderate dependency)

Percentages of all patients; by individual NHS Boards and for all NHS Boards; data collected between May 2006 and July 2007



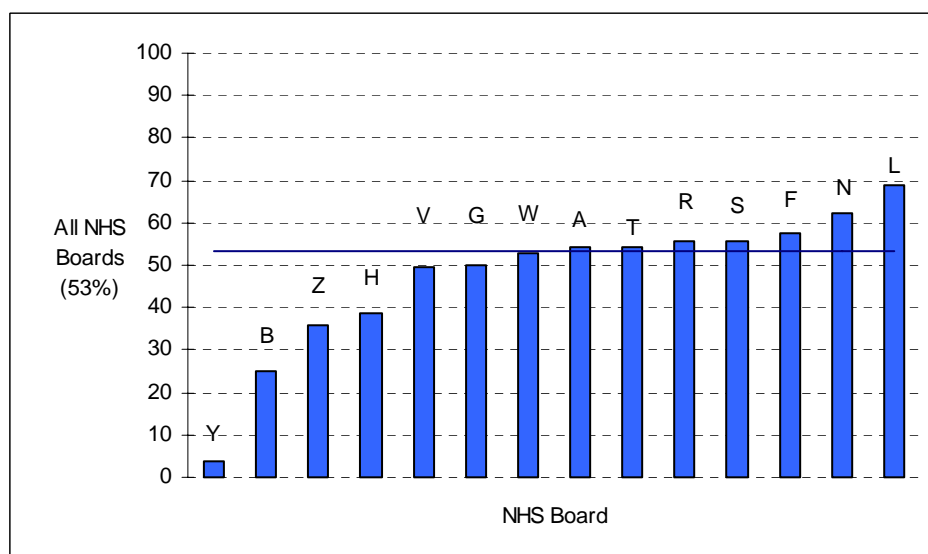
37% of all SHRUGs patients were classed as being of moderate dependency. The proportions among individual NHS Boards ranged from 23% in NHS Grampian to 72% in NHS Dumfries & Galloway (Figure 7; [Appendix 1: Table 3](#)).

## Hospital patients (SHRUGs data)

Figure 8

### SHRUGs patients with ADL scores of 8 or 9 (high dependency)

Percentages of all patients; by individual NHS Boards and for all NHS Boards; data collected between May 2006 and July 2007



There was considerable variation among individual NHS Boards in the proportion of patients classed as being of high dependency, in the period between May 2006 and July 2007. This varied from 4% in NHS Dumfries & Galloway to 69% in NHS Lanarkshire (Figure 8; [Appendix 1: Table 3](#)), giving a figure of 53% for all participating hospitals within NHS Boards.

## 4.6 Distribution of patients within SHRUGs care need variables

Nearly half (49%) of patients across Scotland had a need for special care or clinically complex treatments. (Table 7; [Appendix 1: Table 4](#)).

Table 7

### Percentage of patients with SHRUGs special needs;

	March 2002	March 2003	March 2004	April 2005	May 2006	July 2007
	%	%	%	%	%	%
Need for special care	31	39	36	44	42	45
Clinically complex treatment	6	7	9	10	12	11
Need for special care and / or clinically complex treatment	34	39	41	47	46	49
Behavioural difficulties requiring immediate intervention on more than one occasion each week	13	15	13	13	12	16

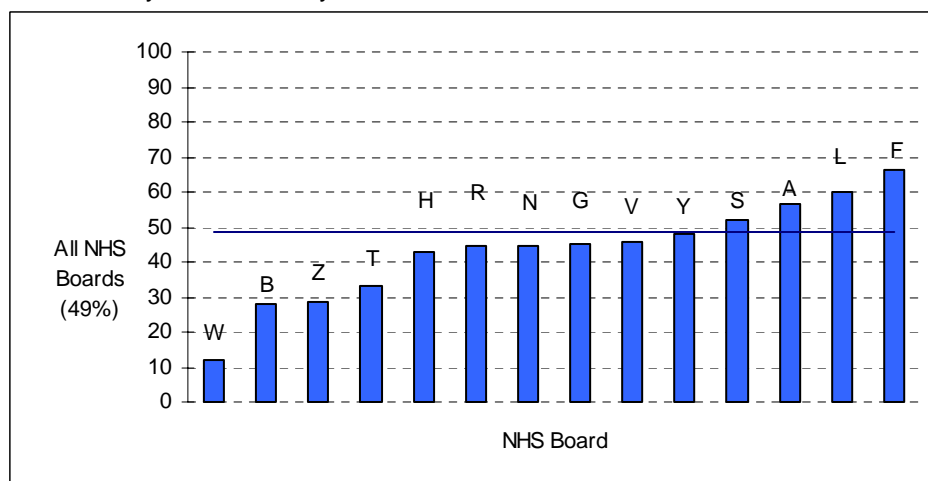
When comparing information from the previous data collection period, it can be seen that the percentage of patients with needs for special care has increased slightly from 42% to 45%. There has also been a slight increase the proportion of patients with behavioural difficulties requiring immediate intervention on more than one occasion each week, from 12% to 16%.

## Hospital patients (SHRUGs data)

Figure 9

### SHRUGs patients with a need for special care and/or clinically complex treatment

Percentages of all patients; by individual NHS Boards and for all NHS Boards; data collected between May 2006 and July 2007



Among individual NHS Boards the proportions of patients with needs for special care and/or clinically complex treatments varied considerably, from 12% in NHS Western Isles to 66% in NHS Fife (Figure 9).

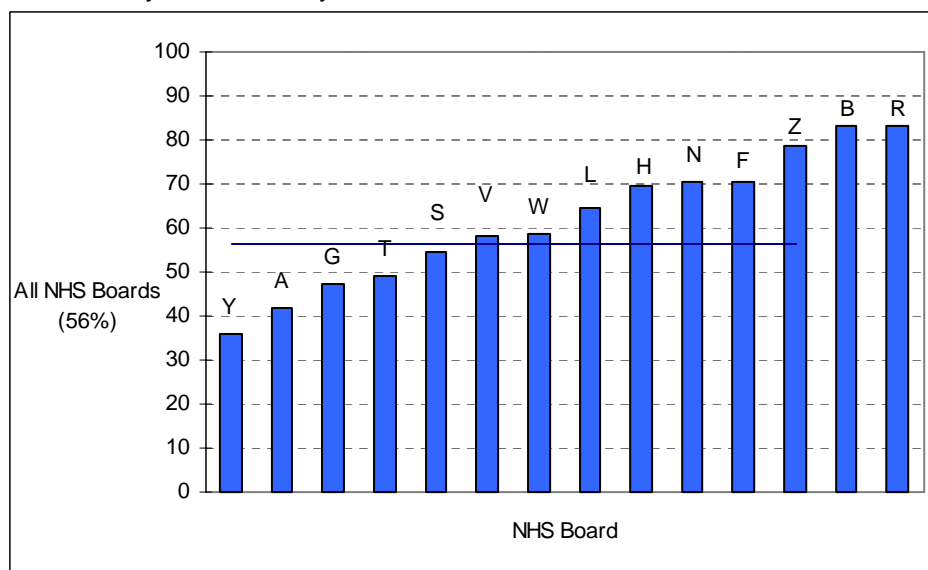
## 4.7 Distribution of patients with mental health problems

In response to feedback from participants in SHRUG/SCRUGs interviews, new mental health questions have been developed. These questions have been piloted over the past two years and this section presents preliminary analysis of selected mental health questions.

Figure 10

### SHRUGs patients with problems with depression

Percentages of all patients; by individual NHS Boards and for all NHS Boards; data collected between May 2006 and July 2007



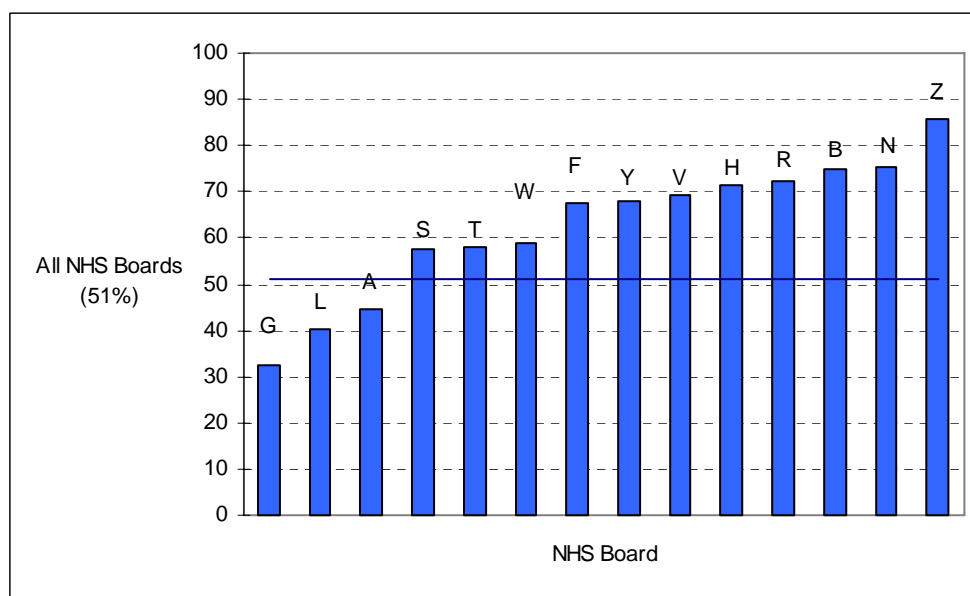
## Hospital patients (SHRUGs data)

Among individual NHS Boards the proportions of patients with problems with depression varied, from 36% in NHS Dumfries & Galloway to 83% in NHS Borders and NHS Orkney (Figure 10), giving a figure of 56% for all participating hospitals within NHS Boards.

Figure 11

### SHRUGs patients with problems with anxiety

Percentages of all patients; by individual NHS Boards and for all NHS Boards; data collected between May 2006 and July 2007

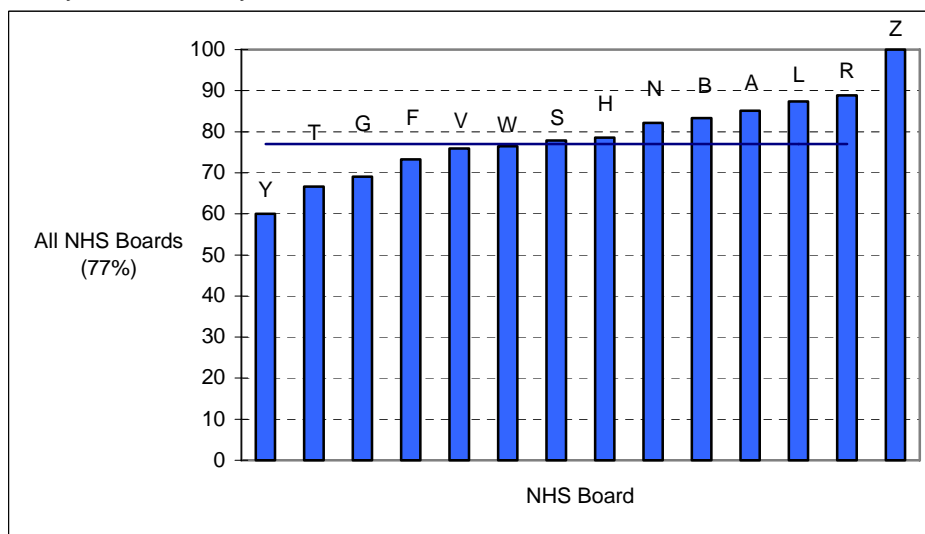


51% of all SHRUGs patients were recorded as having problems with anxiety. The proportions among individual NHS Boards ranged from 33% in NHS Greater Glasgow & Clyde to 86% in NHS Shetland (Figure 11).

Figure 12

### SHRUGs patients with problems with cognitive function

Percentages of all patients; by individual NHS Boards and for all NHS Boards; data collected between May 2006 and July 2007



Amongst individual NHS Boards, the proportions of patients classed as having problems with cognitive function ranged from 60% in NHS Dumfries &

## Hospital patients (SHRUGs data)

Galloway to 100% in NHS Shetland, and was 77% for all participating hospitals within NHS Boards in the period between May 2006 and July 2007 (Figure 12).

### 4.8 SHRUGs and Psychiatry of Old Age

In the period between May 2006 and July 2007 SHRUGs data were collected on 896 patients from Psychiatry of Old Age (POA) facilities in 9 NHS Boards, equivalent to approximately 41% of this population in Scottish hospitals.

#### 4.8.1 Proportions of patients in each SHRUGs group

Table 8

##### Patients in each SHRUGs group – POA patients

In individual NHS Boards and all participating NHS Boards; data collected between May 2006 and July 2007

	NHS Board									
	All	F	G	H	L	N	S	T	V	W
A	17	4	28	31	17	5	12	6	9	6
B	8	1	6	13	12	11	8	9	6	17
C	28	19	29	31	28	21	30	53	31	11
D	30	57	24	15	19	22	38	29	36	44
E	17	18	14	9	24	41	12	3	18	22

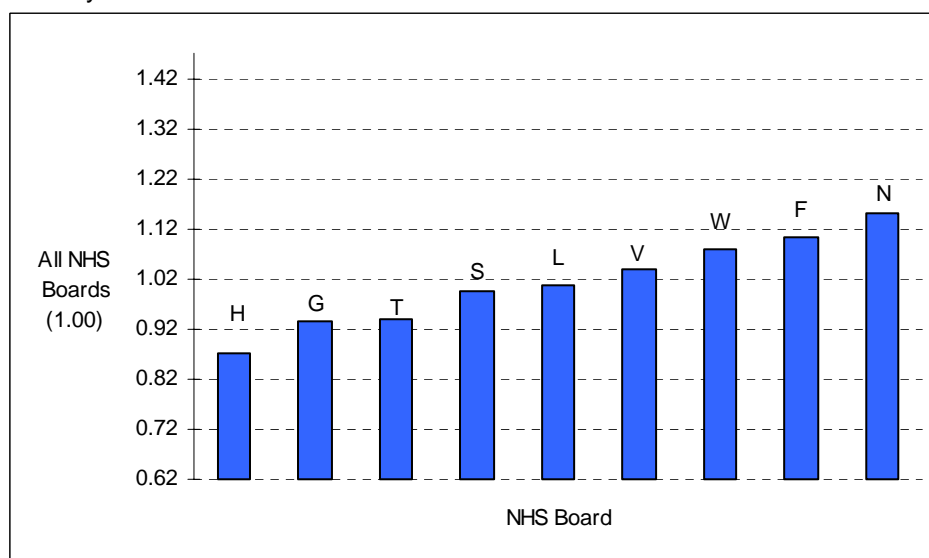
The proportion of patients falling into group E, the highest dependency group, ranged from 3% in NHS Tayside to 41% in NHS Grampian. Just under a third of patients (30%) were in SHRUGs group D (Moderate dependency; with needs for special care and/or clinically complex treatments or High dependency; no needs for special care or clinically complex treatments). The lowest proportion fell into SHRUGs group B (low dependency with behavioural difficulties) (Table 8).

### 4.8.2 Case mix complexity factor

Figure 13

#### Casemix complexity factor<sup>1</sup> for SHRUGs – POA patients

In individual NHS Boards and all participating NHS Boards; data collected between May 2006 and July 2007



<sup>1</sup> The CCF can only range between 0.62 and 1.47.

In the year ending July 2007, the CCF among participating NHS Boards ranged from 0.87 in NHS Highland to 1.15 in NHS Grampian with a figure of 1.00 for all participating NHS Boards. (Figure 13).

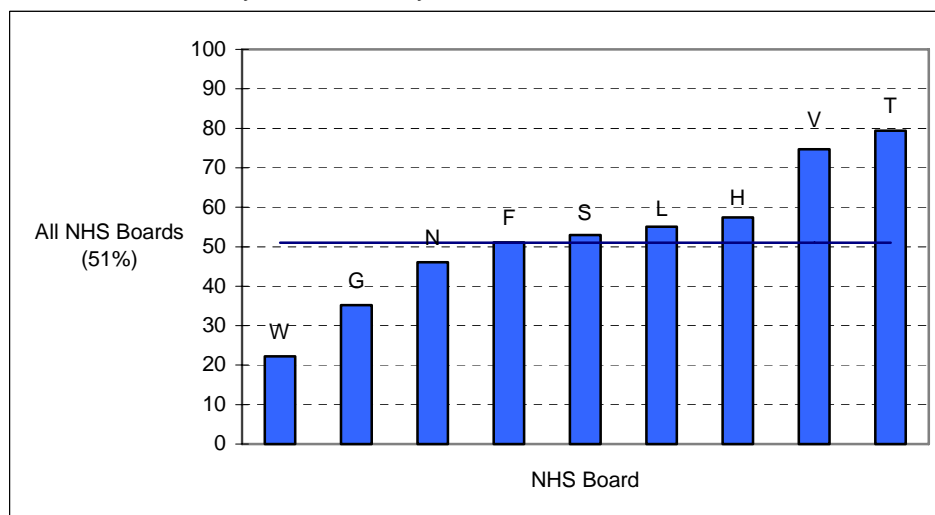
### 4.8.3 Distribution of patients with mental health problems (POA)

The new mental health questions have also been piloted with POA patients. This section presents preliminary analysis of selected pilot mental health questions.

Figure 14

#### SHRUGs patients with problems with anxiety - POA

Percentages of all patients; by individual NHS Boards and for all participating NHS Boards data collected between May 2006 and July 2007



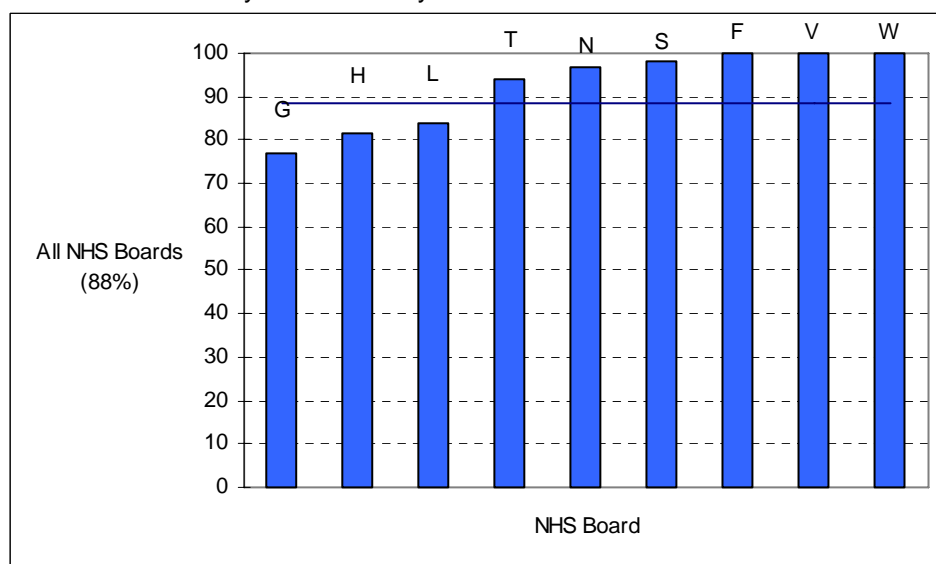
## Hospital patients (SHRUGs data)

Amongst individual NHS Boards, the proportions of patients classed as having problems with anxiety ranged from 22% in NHS Western Isles to 79% in NHS Tayside, and was 51% for all participating NHS Boards in the period between May and July 2007 (Figure 14).

Figure 15

### SHRUGs patients with problems with cognitive function - POA

Percentages of all patients; by individual NHS Boards and for all participating NHS Boards data collected between May 2006 and July 2007



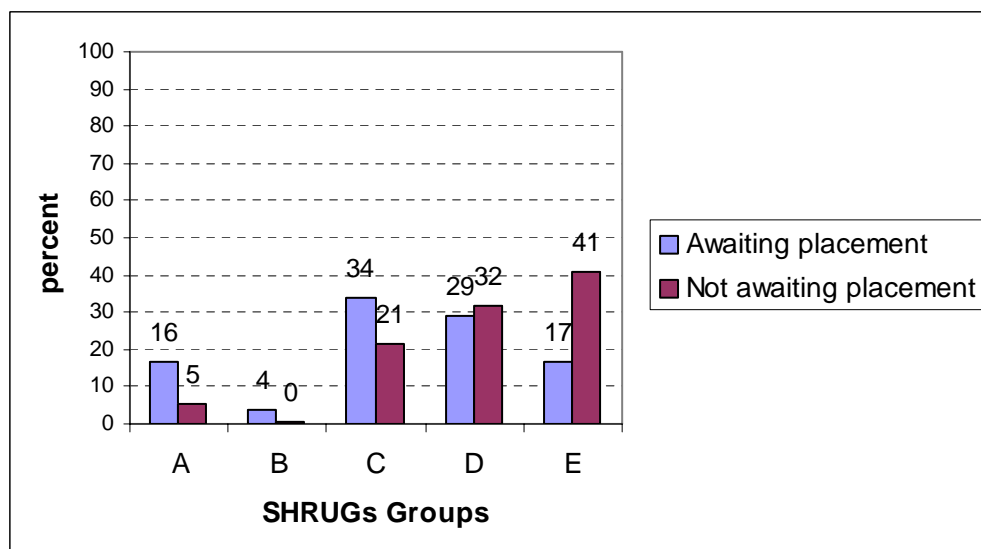
88% of all POA SHRUGs patients were recorded as having problems with cognitive function. The proportions among individual NHS Boards ranged from 77% in NHS Greater Glasgow & Clyde to 100% in NHS Forth Valley, NHS Fife and NHS Western Isles (Figure 15).

#### 4.9 Proportion of long stay care of the elderly patients in each SHRUGs group – awaiting placement

Figure 16

##### Proportion of patients in each SHRUGs groups awaiting placement

Percentages; a data collected between May 2006 and July 2007



The highest proportion of patients (34%) awaiting placement were in group C (patients of moderate dependency with no needs for special care and/or clinically complex treatments). The definition for awaiting placement for SHRUGs over the past few years has been "residents who are awaiting placement to supported accommodation, e.g. care homes".

### 5 SHRUGs data – Trend Analysis

Section 4 of this report presented trend data at a national level. This section provides trend data for NHS Board areas. The trend data is presented for all the SHRUGs variables and for the SHRUGs groups. The information is not available in PDF format but is available in Excel and can be supplied on request. Please contact:

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## 6 Residents in care homes (SCRUGs data)

According to the latest Scottish Care Home Census, March 2006 (<http://www.scotland.gov.uk/Publications/2007/03/23090359/1>), there were approximately 38,100 places in homes intended for older people occupied by approximately 33,360 residents. Section 6 of the report presents information on SCRUGs data collected in care homes.

### 6.1 Coverage of SCRUGs data collection

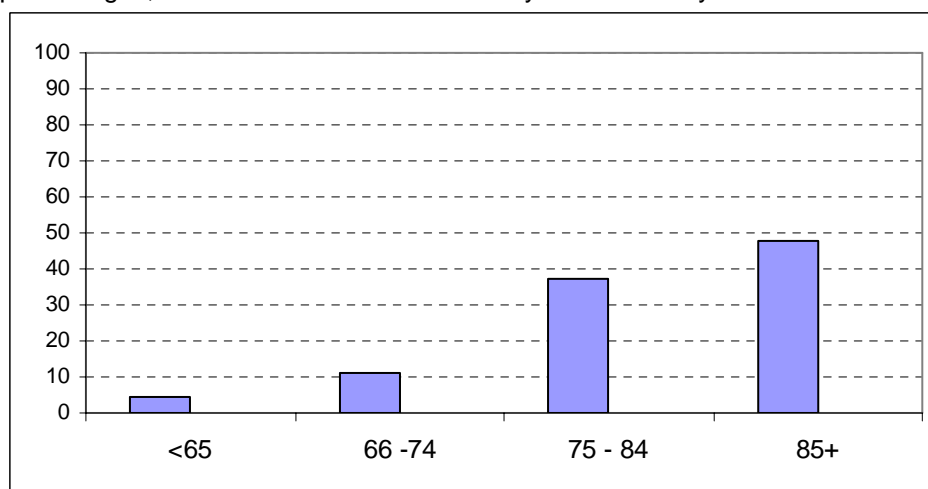
In the period between January 2004 and July 2007 data were collected in relation to 6,837 people in care homes. This covers 14 local authority areas (See appendix 2) and approximately 20% of all residents in care homes. Where there has been more than one SCRUGs survey in any one area in this time period, only data from the most recent survey has been used. SCRUGs surveys are carried out following requests from partnership areas. The coverage of SCRUGs surveys is not as comprehensive as SHRUGs long stay care of the elderly collections.

### 6.2 Age and sex of residents

Figure 17

#### Age breakdown of residents in care homes

percentages; data collected between January 2004 and July 2007



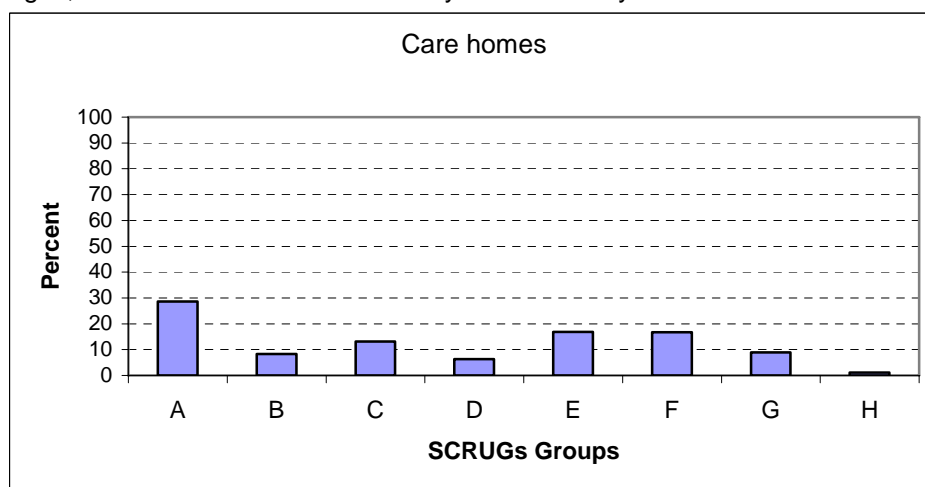
The largest proportion of residents in care homes (48%) were in the age group 85 years and older and 73% of residents in care homes were female.

### 6.3 Proportions of residents in each SCRUGs group

Figure 18

#### Residents in each SCRUGs group: care homes

percentages; data collected between January 2004 and July 2007



The percentage of residents in care homes falling into group A (the lowest dependency group) was 29% (Figure 18). The percentage falling into the three highest dependency groups (F, G and H) was 27%.

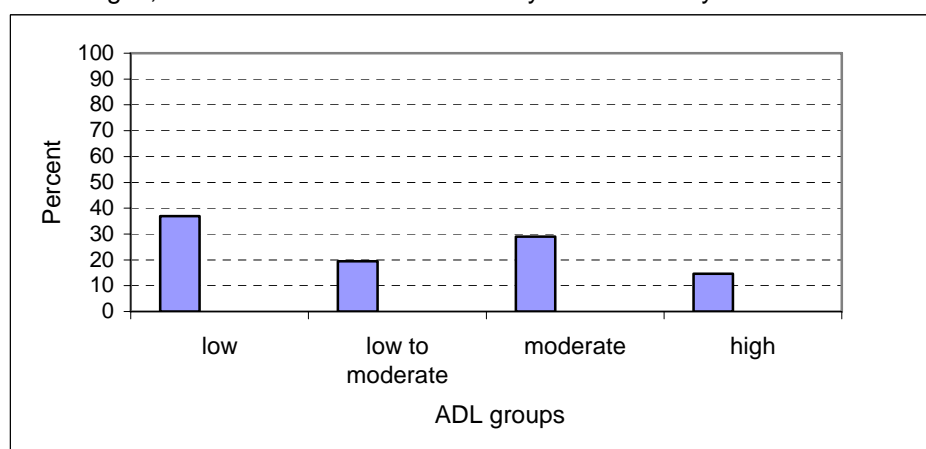
### 6.4 Distribution of residents within SCRUGs dependency variables

For each resident an activity of daily living score (ADL) is derived from SCRUGs scores for eating, transferring position, use of the lavatory and moving location. The ADL score is calculated by adding together the individual scores which are recorded for each of these questions. This ADL score gives an indication of the level of dependency of each patient and is used as part of the SCRUGs grouping algorithm.

Figure 19

#### Proportion of patients within each ADL group, in care homes

Percentages; data collected between January 2004 and July 2007



The proportions of residents classed as being of low dependency was 37% and 19% were classified as being of low to moderate dependency (Figure 19). 15% of residents were classed as being of high dependency.

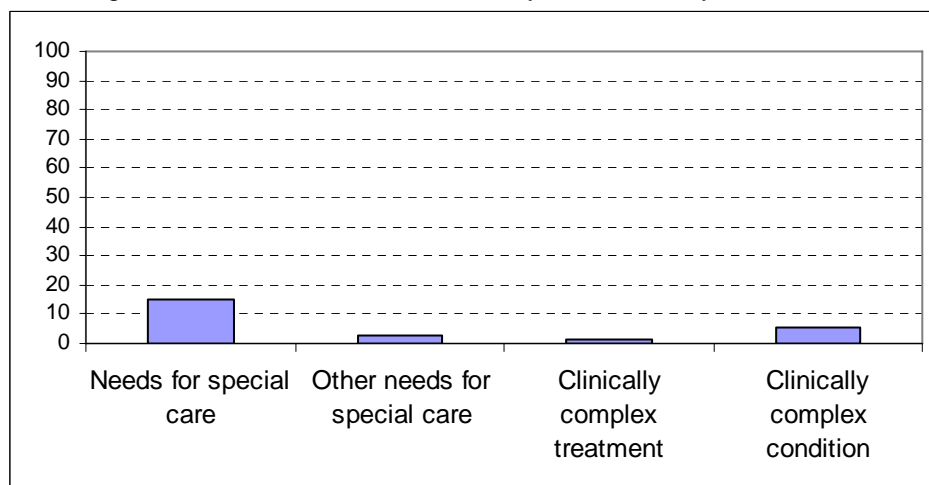
## 6.5 Distribution of residents within SCRUGs care need variables

The majority of residents in participating homes did not have needs for special care or clinically complex treatments, nor did they exhibit behavioural difficulties as defined in SCRUGs (Figure 20; Figure 21).

Figure 20

### Residents with needs for special care and/or clinically complex treatments and/or other special care needs and/or clinically complex conditions

Percentages; data collected between January 2004 and July 2007

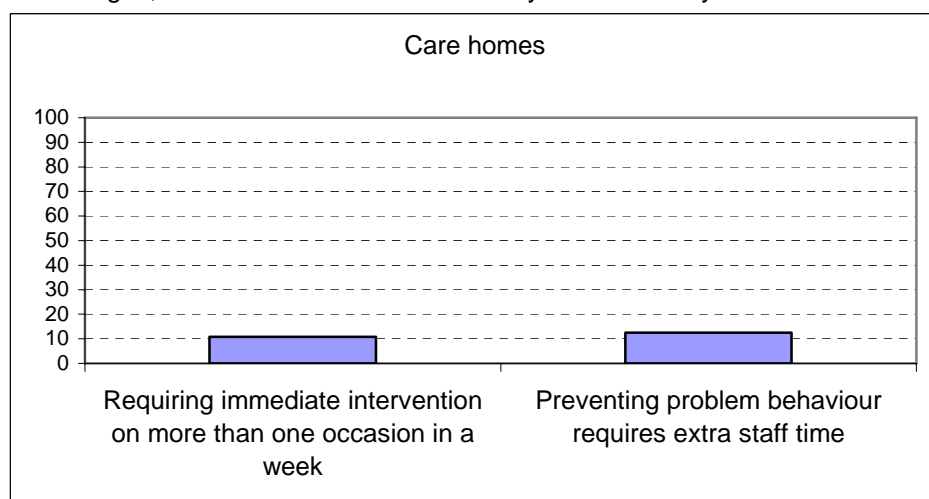


15% of SCRUGS residents had a need for special care, and 2% of the residents had clinically complex treatments.

Figure 21

### Residents in care homes exhibiting behavioural difficulties

Percentages; data collected between January 2004 and July 2007



11% of residents in care homes had a behavioural difficulty which required immediate intervention by a member of staff on more than one occasion in the week preceding the interview. The percentage of residents requiring extra staff time in preventing the occurrence of problem behaviour at time of interview was 13%.

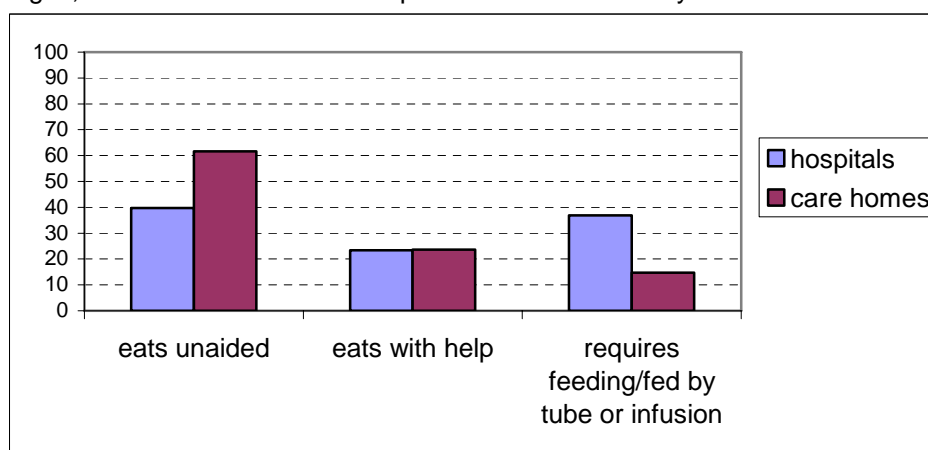
## 7 Comparisons of patients/residents in hospitals and care homes.

The information that is shown in this section is based on hospitals and care homes within one NHS Board area and two partnership areas. The SCRUGs data collected on 1,237 residents from within care homes was compared with SHRUGs data collected on 461 patients in long stay care for the elderly wards. The data was collected between September 2005 and January 2007. The data contained in this section is not representative of all SCRUGs and SHRUGs data collected.

### 7.1 Distribution of residents within SHRUGs/SCRUGs dependency variables

Figure 22

**Comparison of residents for SHRUGs/SCRUGs dependency variable: 'eating'**  
Percentages; data collected between September 2005 – January 2007

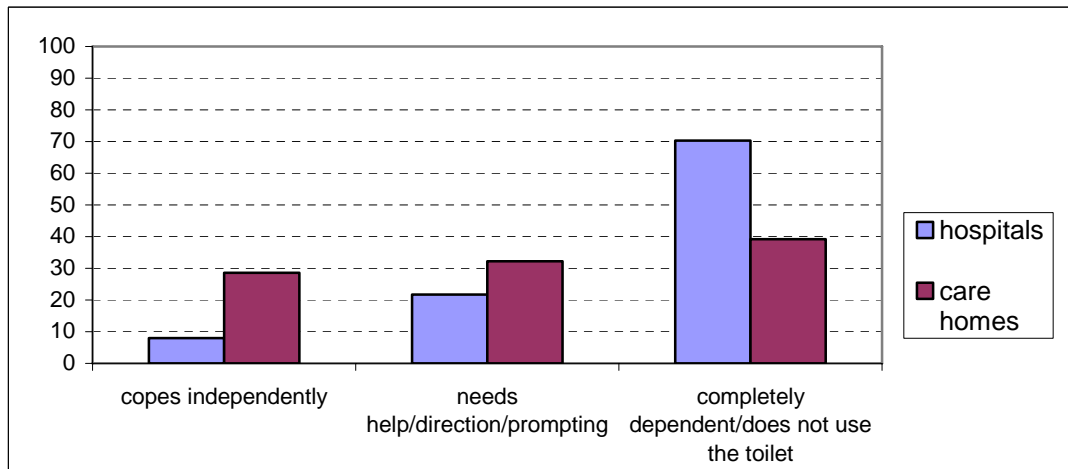


When residents in care homes were compared with those in hospitals, proportionally more residents (62%) were able to eat unaided, while proportionally more patients in hospitals (37%) required complete assistance with eating (Figure 22).

## Comparisons of residents/patients in care homes/hospitals

Figure 23

**Comparison of residents for SHRUGs/SCRUGs dependency variable: 'use of lavatory'**  
 Percentages; data collected between September 2005 – January 2007

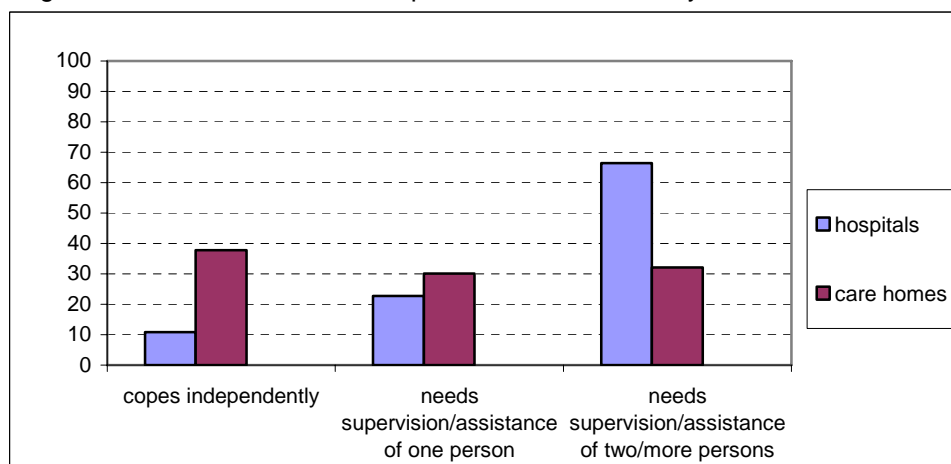


A relatively small percentage of patients (8%) in hospitals coped independently when using the lavatory compared to 29% in care homes (Figure 23). 70% of patients in hospitals and 39% of residents in care homes, were completely dependent on staff or did not use the toilet.

Figure 24

**Comparison of residents for SHRUGs/SCRUGs dependency variable: 'transferring position'**

Percentages; data collected between September 2005 – January 2007



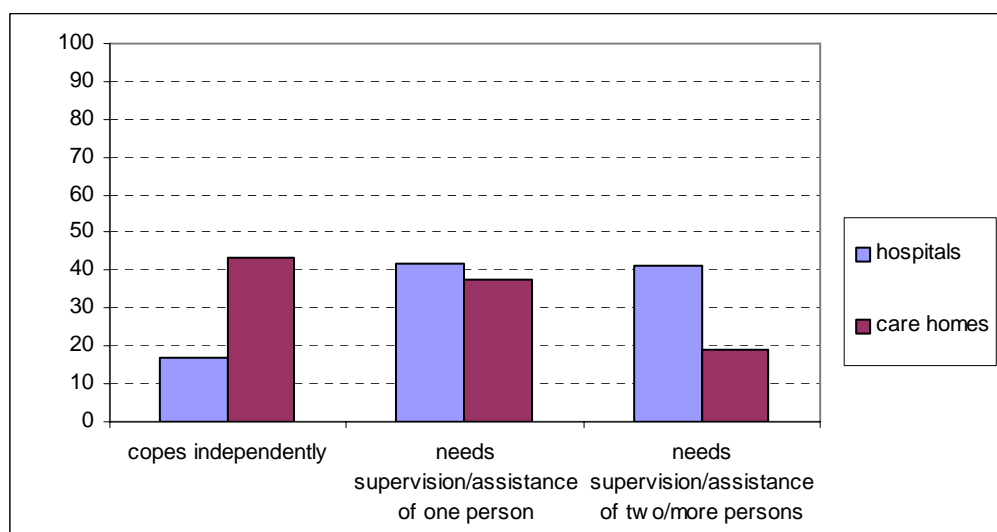
38% of residents in care homes coped independently when transferring position, whilst only 11% of hospital patients did so (Figure 24). 66% of hospital patients and 32% of residents in care homes needed the assistance or supervision of two or more persons.

## Comparisons of residents/patients in care homes/hospitals

Figure 25

### Comparison of residents for SHRUGs/SCRUGs dependency variable: 'moving location'

Percentages; data collected between September 2005 – January 2007



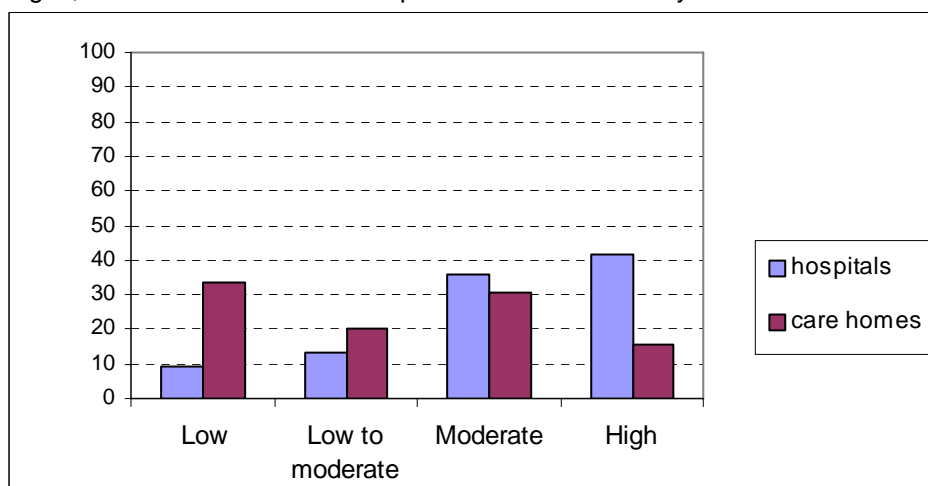
43% of residents in care homes coped independently when moving location, whilst 17% of hospital patients did so (Figure 25). 41% of hospital patients and 19% of residents in care homes needed the assistance or supervision of two or more persons.

## 7.2 Distribution of residents within each Activities of Daily Living (ADL) Group

Figure 26

### Comparison of residents within each ADL group

Percentages; data collected between September 2005 – January 2007



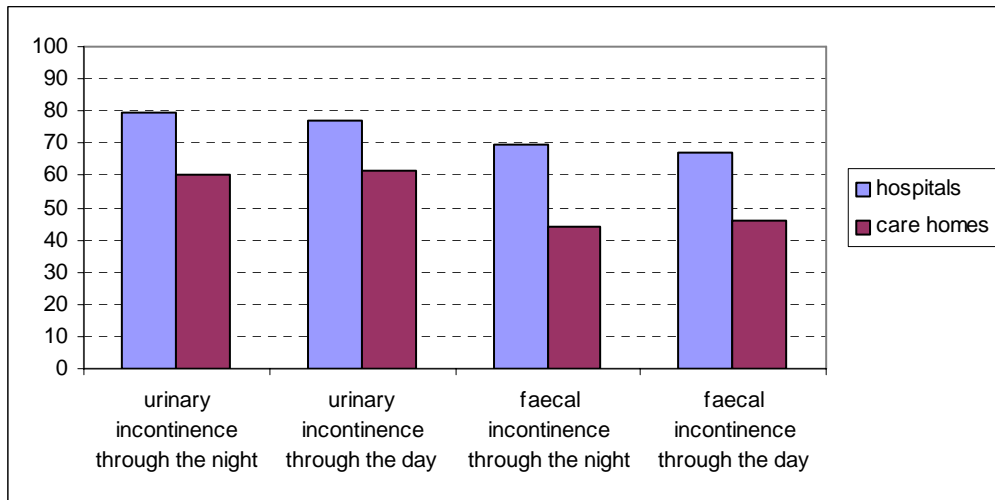
The proportion of residents with a high dependency in terms of ADL characteristics was 42% in hospitals compared to 15% in care homes (Figure 26). A relatively small proportion of patients in hospitals (9%) were found to have a low dependency in terms of ADL characteristics.

### 7.3 Distribution of residents who experience some form of incontinence

Figure 27

#### Comparison of residents who were incontinent during the day and night

Percentages; data collected between September 2005 – January 2007



79% of residents in hospitals were incontinent of urine during the night at least once a week at time of interview, compared to 60% of residents in care homes (Figure 27). The proportion of residents with faecal incontinence during the day was 67% for hospitals compared to 46% for care homes.

## 8 Single Shared Assessment – Indicator of Relative Need (SSA-IoRN)

### 8.1 Development of SSA-IoRN and Care Assessment Data Summary (CADS)

The SSA-IoRN has been developed in partnership with the Scottish Government/ISD and local partnerships (including staff from social work departments and NHSScotland).

The SSA-IoRN enables clients receiving services in the community to be classified into groups with similar levels of relative need. The SSA-IoRN was developed from the SCRUGs measure and the Interval of Need (Isaacs and Neville, 1978) measure. Data on a number of clients receiving care at home (over 900), including data on services received, was supplied by practitioners and the best predictors of level of relative need identified. Like SCRUGs, the SSA-IoRN classification is a tree type algorithm. The main predictors were identified as follows:

- Activities of Daily Living (ADL) score - split into three groups of low, medium and high dependency
- for the low ADL group the score on personal care items - allows further refinement
- the medium ADL group was split by a measure of mental health and behaviour - whether certain problem behaviours were present
- the high ADL group was split according to whether help was required to maintain bowel function.

The practitioners checked the classification of the clients and the SSA-IoRN was adjusted where required. The Single Shared Assessment – Indicator of Relative Need (SSA-IoRN), previously known as the Resource Use Measure (RUM), is now being rolled out and implemented across Scotland. The plan for full implementation assumes that all SSA's of people aged 65 and over in Scotland will have an SSA-IoRN grouping assigned.

The main aims of the SSA-IoRN are to support service delivery at an individual, local and national level by providing information to:

1. Assist individual practitioners in managing their case load
2. Enable local managers to prioritise and allocate workload
3. Aid Council and NHS partnerships in planning and budgeting
4. Allow Scottish Government service monitoring and policy development, including information on access to services and the balance of care.

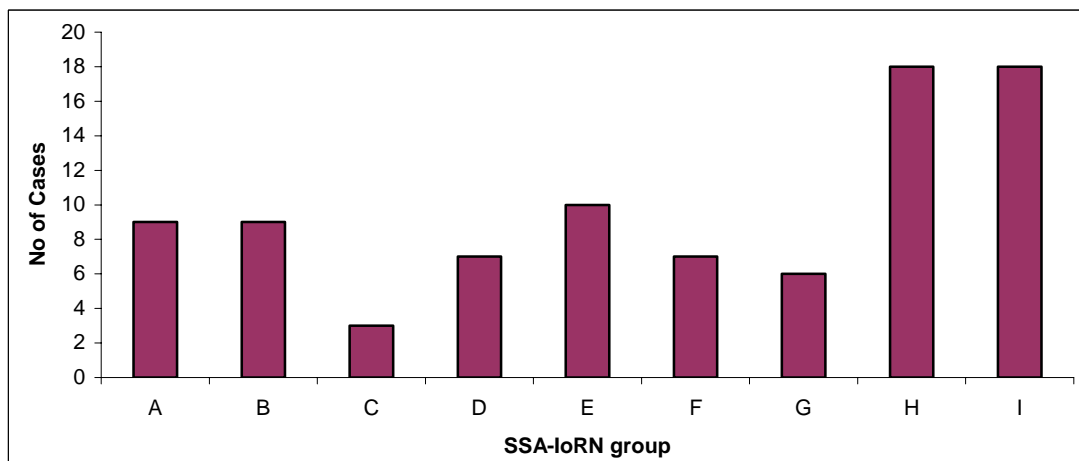
Data from Partnerships who have implemented the SSA-IoRN has been collected and analysed to illustrate how the data could potentially be used to

## Single Shared Assessment – Indicator of Relative Need

inform planning at a local level. Examples of some of the analyses are presented below.

Figure 28

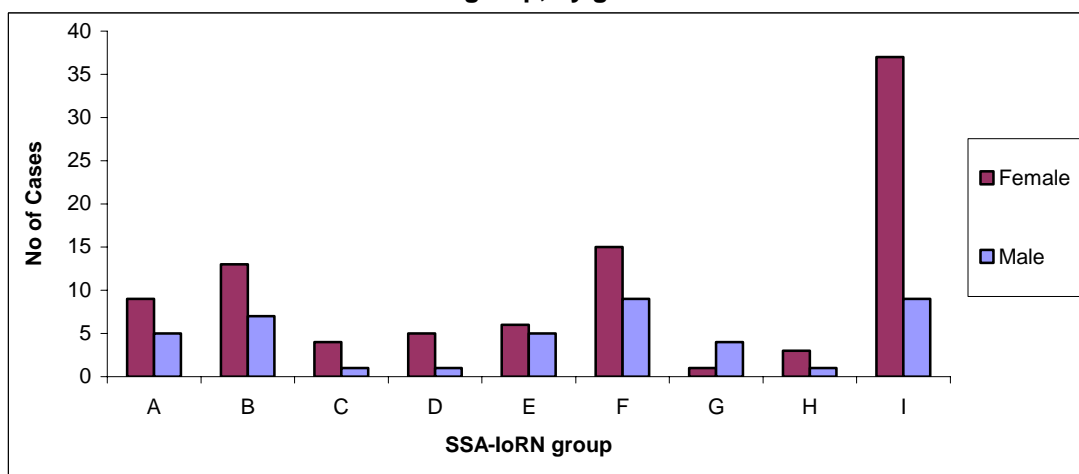
Number of clients in each SSA-IoRN group, Site A



This chart allows managers and practitioners to see the profile of the caseload for their team.

Figure 29

Number of clients in each SSA-IoRN group, by gender



Other data gathered in the SSA-IoRN can be used, over time, to monitor trends and when combined with population data could be used to assess the implications for planning of services in terms of population change.

The analyses shown above simply use the SSA-IoRN score in an elementary way. It has been recognised however that combined with other core information more sophisticated use of the data is possible. The concept of such core information has been discussed in Scotland and a draft dataset for older people services, the Care Assessment Data Summary (CADS) has been designed.

## Single Shared Assessment – Indicator of Relative Need

The CADS would compile the core data, including the SSA-loRN groups, which are essential for a more holistic understanding. The draft CADS dataset includes services delivered, the availability and role of carers and the other demographic characteristics of the older person that are essential to gain the profiles of people requiring services in order to effectively meet their needs now and in the future.

Trial CADS data from Partnerships who have implemented the SSA-loRN has been collected and analysed to illustrate how the data could potentially be used to inform the delivery and planning of services, at local team level, at locality level and at national level. Examples of the possible analyses are presented below.

Figure 30  
Unpaid carer provision by loRN group, Site C

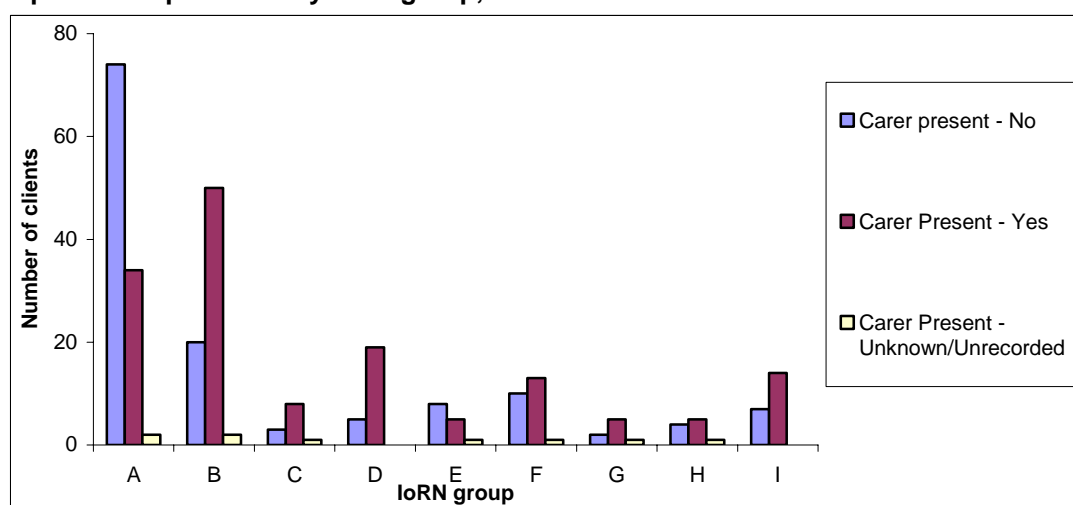


Figure 30 shows the unpaid carers provision by the SSA-loRN group and can be used to help build a picture of what support is available to older people in a particular SSA-loRN group.

Table 9  
Type of services provided by loRN group, Site D

Service Provided	SSA-loRN Group									Total
	A	B	C	D	E	F	G	H	I	
Targeted Rehab	1	4	1	2	3	1	3	0	0	15
Rapid Response	0	1	0	1	1	3	5	2	1	14
Personal Care	3	4	3	3	2	1	4	1	2	23
Intensive Home Care	0	0	0	0	2	4	4	7	6	24
<b>Total</b>	<b>4</b>	<b>13</b>	<b>2</b>	<b>6</b>	<b>6</b>	<b>5</b>	<b>12</b>	<b>3</b>	<b>3</b>	<b>76</b>

Table 9 shows an example of the type of services being provided to those in particular SSA-loRN groups at Site D. Part of the CADS allows for the

practitioner to note the services being used by particular clients and over time it is hoped that patterns of service use in relation to IoRN groupings can be determined.

Further details on the CADS can be obtained by contacting Margaret Quinn at: [mailto: margaret.quinn@isd.csa.scot.nhs.uk](mailto:margaret.quinn@isd.csa.scot.nhs.uk)

### **8.2 Care Homes Staffing Project**

The Care Home Staffing Project is investigating whether or how the Single Shared Assessment - Indicator of Relative Need (SSA-IoRN) might be used in future to inform staffing levels within care homes for older people in Scotland.

The project developed as a partnership initiative between NHS Information Services, the Scottish Government Joint Future Unit, the Care Commission and the Convention of Scottish Local Authorities (COSLA) with involvement from key stakeholders. The terms of reference for the project were agreed by the Joint Future Implementation and Advisory Group.

The main study was carried out during 2006/07 following the successful completion of the pre-pilot and pilot phases of the study during 2004/05 and consisted of the following major developments:

- The further development of the IoRN questionnaire by the addition of questions to permit the better differentiation of the generally more dependent residents found in care homes. The augmented version of the IoRN is termed here the CHIoRN, or Care Homes Indicator of Relative Need.
- Data were collected using the CHIoRN from 124 care homes across Scotland on 3566 residents. These homes formed the sample for the main study and were selected by the Care Commission because they were considered to be providing a satisfactory level of care in that there were no 'requirements' or 'complaints upheld' against them as at the year ending March 2006.
- The CHIoRN was used to place residents into a dependency group according to a newly developed algorithm that could place residents into one of seven groups.
- Analytical work is currently underway using regression and data envelopment analysis methods to see how existing levels are related to the number and characteristics of the residents in homes.
- A literature review has also been carried out to identify and examine and critique the published literature on the subject of methods used in other countries for informing the staffing of care homes for older people.

Further details on the study are contained in the Care Homes Staffing Project Report available at:

[http://www.isdscotland.org/isd/info3.jsp?pContentID=2961&p\\_applic=CCC&p\\_service=Content.show&](http://www.isdscotland.org/isd/info3.jsp?pContentID=2961&p_applic=CCC&p_service=Content.show&)

**Appendix 1**

**NHS Board Tables**

## Appendix 1

### 1 Cumulative age and sex distribution of patients in care of the elderly long stay wards - May 2006 - July 2007

	NHS Boards															
	All	A	B	F	G	H	L	N	R	S	T	V	W	Y	Z	
<b>ALL PATIENTS</b>																
<b>Number</b>	1684	148	36	71	457	98	229	101	18	276	57	137	17	25	14	
<b>% distribution</b>																
under 60 years	2	4	6	-	1	2	0	10	-	3	2	3	-	16	N/A	
under 75 years	19	18	17	21	19	19	14	26	28	21	11	22	12	28	N/A	
under 85 years	61	61	53	63	65	54	56	65	67	66	47	61	53	64	N/A	
<b>MALES</b>																
<b>Number</b>	537	49	16	18	136	34	68	28	5	87	34	48	6	6	2	
<b>% distribution</b>																
under 60 years	3	-	13	-	1	6	1	7	-	1	3	2	-	33	N/A	
under 75 years	28	18	31	28	33	32	21	25	20	29	12	35	33	67	N/A	
under 85 years	73	67	69	72	76	65	72	68	80	82	59	73	67	100	N/A	
<b>FEMALES</b>																
<b>Number</b>	1147	99	20	53	321	64	161	73	13	189	23	89	11	19	12	
<b>% distribution</b>																
under 60 years	2	6	-	-	1	-	-	11	-	3	-	3	-	11	N/A	
under 75 years	15	17	5	19	13	13	11	26	31	17	9	15	-	16	N/A	
under 85 years	56	58	40	60	60	48	50	64	62	59	30	55	45	53	N/A	

1 Age as at date of SHRUGs interview.

## Appendix 1

### 2 Percentage of patients in care of the elderly long stay wards, percentage of resources utilised within each SHRUGs Resource Use Group; and Casemix Complexity Factor - May 2006 - July 2007

	NHS Boards														
	All	A	B	F	G	H	L	N	R	S	T	V	W	Y	Z
<b>Number of patients</b>	1684	148	36	71	457	98	229	101	18	276	57	137	17	25	14
<b>% of patients resource use group</b>															
<b>A</b>	8	10	14	10	9	11	4	13	-	4	7	9	12	24	21
<b>B</b>	1	2	6	3	1	6	-	2	6	-	-	1	-	-	-
<b>C</b>	25	20	39	17	29	32	15	15	17	27	25	25	29	36	36
<b>D</b>	31	26	33	21	29	24	33	35	56	30	49	34	53	36	21
<b>E</b>	35	41	8	49	32	27	48	36	22	38	19	31	6	4	21
<b>% of resource utilised</b>															
<b>A</b>	5	5	9	5	5	7	2	7	0	2	4	5	7	16	13
<b>B</b>	1	1	4	2	1	4	-	1	4	-	-	1	-	-	-
<b>C</b>	19	15	36	13	23	26	11	12	13	21	20	20	26	34	31
<b>D</b>	30	25	38	20	29	26	29	34	54	29	50	34	58	43	24
<b>E</b>	45	53	13	61	43	37	58	46	29	48	26	41	9	6	32
<b>Casemix Complexity Factor<sup>1</sup></b>	1.12	1.15	0.96	1.19	1.11	1.06	1.23	1.13	1.13	1.16	1.08	1.11	1.00	0.92	1.00

1 Calculated using weights (see appendix 5)

## Appendix 1

### 3 Percentage of patients in care of the elderly long stay wards, by dependency variable and dependency category May 2006 - July 2007

	NHS Boards														
	All	A	B	F	G	H	L	N	R	S	T	V	W	Y	Z
<b>Number of patients</b>	1684	148	36	71	457	98	229	101	18	276	57	137	17	25	14
<b>Eating (%)</b>															
eats unaided	34	28	53	31	40	50	22	32	33	30	37	26	41	84	57
eats with help	26	35	31	23	23	19	20	27	22	29	21	39	24	8	14
requires feeding	40	36	17	46	37	31	58	42	44	40	42	35	35	8	29
<b>Use of lavatory (%)</b>															
copes independently	7	7	17	8	8	11	3	11	6	2	5	8	6	24	21
needs help/direction/prompting	26	32	39	28	21	38	21	19	33	23	23	32	29	52	36
is completely dependent or does not use the toilet	67	61	44	63	71	51	76	70	61	75	72	60	65	24	43
<b>Transferring Position (%)</b>															
copes independently	10	12	19	13	11	19	3	12	11	7	7	15	18	24	-
needs the supervision or assistance of one person	23	26	39	18	23	26	17	17	17	23	23	29	12	48	50
needs the supervision or assistance of two or more persons	66	61	42	69	67	55	80	71	72	70	70	56	71	28	50
<b>Activities of Daily Living (%) 1</b>															
low dependency (ADL = 3, 4)	10	12	19	13	10	17	4	15	6	4	7	10	12	24	21
moderate dependency (ADL = 5, 6, 7)	37	34	56	30	40	44	27	23	39	40	39	40	35	72	43
high dependency (ADL = 8, 9)	53	54	25	58	50	39	69	62	56	56	54	50	53	4	36

1 The activities of daily living (ADL) score is calculated by adding together scores from answers to questions about eating, toileting and transferring position.

## Appendix 1

### 4 Percentage of patients in care of the elderly long stay wards, by need for special care, clinically complex treatment and behavioural difficulty - May 2006 - July 2007

	NHS Boards															
	All	A	B	F	G	H	L	N	R	S	T	V	W	Y	Z	
<b>Number of patients</b>	1684	148	36	71	457	98	229	101	18	276	57	137	17	25	14	
<b>Needs for special care (%)</b>																
yes	45	54	25	63	41	41	57	44	28	48	26	43	12	40	29	
no	55	46	75	37	59	59	43	56	72	52	74	57	88	60	71	
<b>Clinically complex treatment (%)</b>																
yes	11	11	14	10	13	6	12	10	17	10	14	9	6	12	-	
no	89	89	86	90	87	94	88	90	83	90	86	91	94	88	100	
<b>Need for special care and/or clinically complex treatment (%)</b>																
yes	49	57	28	66	45	43	60	45	44	52	33	46	12	48	29	
no	51	43	72	34	55	57	40	55	56	48	67	54	88	52	71	
<b>Behaviour-Immediate intervention (%)</b>																
No	81	74	75	76	89	67	84	79	72	78	81	74	100	80	57	
Less than once this week	3	4	8	3	2	5	1	3	-	3	12	7	-	4	-	
More than once this week but not daily	6	4	6	6	2	11	5	8	-	9	5	10	-	12	-	
Once a day on average	4	5	6	11	2	7	3	7	17	5	2	3	-	4	14	
More than once a day	6	12	6	4	5	9	7	3	11	7	-	7	-	-	29	

## Appendix 1

### 5 Percentage of patients in care of the elderly long stay wards, by supplementary variables May 2006 - July 2007

	NHS Boards														
	All	A	B	F	G	H	L	N	R	S	T	V	W	Y	Z
<b>Number of patients</b>	<b>1684</b>	<b>148</b>	<b>36</b>	<b>71</b>	<b>457</b>	<b>98</b>	<b>229</b>	<b>101</b>	<b>18</b>	<b>276</b>	<b>57</b>	<b>137</b>	<b>17</b>	<b>25</b>	<b>14</b>
<b>Communicates needs (%)</b>	46	47	53	31	57	48	41	33	39	29	53	59	41	88	79
yes-verbally-and is understood by most people	26	33	31	34	18	23	31	40	33	26	30	20	29	8	-
yes-verbally-but is understood only by those who know him/her we	4	1	-	3	5	7	2	6	-	5	2	8	6	-	-
yes-non verbally	24	20	17	32	20	21	26	22	28	39	16	12	24	4	21
no															
<b>Mobility around ward (%)</b>															
copes independently (including wheelchair independence)	14	17	22	13	16	26	4	16	11	9	14	18	18	28	-
needs the supervision or assistance of one person	47	44	31	37	42	37	50	32	89	58	70	53	82	44	43
needs the supervision or assistance of two or more persons	39	39	47	51	42	38	46	52	-	33	16	30	-	28	57
<b>Clinically complex condition (%)</b>															
yes	12	11	6	14	11	8	18	10	6	10	19	15	-	16	-
no	88	89	94	86	89	92	82	90	94	90	81	85	100	84	100
<b>Other needs for special care (%)</b>															
yes	12	16	8	13	12	7	17	31	11	6	7	6	-	4	7
no	88	84	92	87	88	93	83	69	89	94	93	94	100	96	93

## Appendix 1

### 6 Percentage of patients in care of the elderly long stay wards, by emotional support and behaviour variables May 2006 - July 2007

	NHS Boards															
	All	A	B	F	G	H	L	N	R	S	T	V	W	Y	Z	
<b>Number of patients</b>	1684	148	36	71	457	98	229	101	18	276	57	137	17	25	14	
<b>Emotional/Psychological Support-Spending Time with the Resident (%)</b>																
no-the resident would not like this	3	1	3	4	4	8	2	-	11	1	-	1	12	-	-	
no-the resident does not require this	7	10	6	6	7	8	8	3	11	4	4	16	12	-	14	
no-the resident would not be aware of this	4	5	-	3	4	7	-	3	17	7	11	3	12	-	-	
no-resident benefit but staff do not have time to do this	12	40	-	59	2	2	4	22	-	20	2	1	12	-	-	
yes-part of routine care	49	24	36	28	64	50	42	53	-	47	56	49	53	92	43	
yes-over and above routine care	25	20	56	-	19	24	44	19	61	21	28	30	-	8	43	
<b>Has one or more of specified behaviours (%)</b>																
yes	49	38	56	45	40	49	69	55	72	43	49	58	41	48	57	
no	51	62	44	55	60	51	31	45	28	57	51	42	59	52	43	
<b>Behaviour - Co-operation (%)</b>																
actively co-operative	30	24	47	21	28	27	28	25	33	33	25	47	47	44	7	
passively co-operative-allows things to be done for them	48	60	47	56	50	52	45	51	28	44	54	36	41	36	57	
actively unco-operative, or, resists help	22	16	6	23	22	21	28	24	39	24	21	18	12	20	36	
<b>Behaviour- Preventing problem behaviour (%)</b>																
no-this is not required	70	76	86	70	65	66	73	87	67	71	56	61	88	68	50	
no-we do not have time to do this	1	-	3	-	-	1	-	-	-	0	-	-	-	24	-	
yes-this requires little or no extra staff time	14	10	11	10	20	13	7	6	6	14	25	23	12	-	-	
yes-this requires extra staff time	15	14	-	20	15	19	20	7	28	15	19	15	-	8	50	

## Appendix 1

### 7 Percentage of patients in care of the elderly long stay wards allocated, and percentage of resources utilised by, SHRUGs resource use group

		March 2002	March 2003	March 2004	April 2005	May 2006	July 2007
<b>Number of NHS Boards</b>		<b>15</b>	<b>15</b>	<b>15</b>	<b>14</b>	<b>15</b>	<b>14</b>
<b>Number of patients</b>		<b>2846</b>	<b>2634</b>	<b>2415</b>	<b>2090</b>	<b>2053</b>	<b>1684</b>
<b>% of patients</b>							
Resource use group:	A	9	10	9	9	9	8
	B	1	1	1	1	1	1
	C	30	28	28	24	26	25
	D	35	32	32	31	30	31
	E	24	28	29	36	34	35
<b>% of resources utilised</b>							
Resource use group:	A	5	6	5	5	5	5
	B	1	1	1	1	1	1
	C	25	23	23	18	20	19
	D	36	33	33	30	30	30
	E	33	38	39	46	44	45

## Appendix 1

### 8 Casemix complexity factor (CCF) - patients in care of the elderly long stay wards

		Data Collection Period	
		May 2006	July 2007
<b>Number of patients</b>		<b>2053</b>	<b>1684</b>
		<b>CCF</b>	<b>CCF</b>
All NHS Boards		1.12	1.12
NHS Board	A	1.15	1.15
	B	1.11	0.96
	F	1.14	1.19
	G	1.04	1.11
	H	0.92	1.06
	L	1.25	1.23
	N	1.14	1.13
	R	1.20	1.13
	S	1.13	1.16
	T	1.16	1.08
	V	1.13	1.11
	W	1.07	1.00
	Y	0.97	0.92
	Z	0.97	1.00

## Appendix 2

### Appendix 2.1

#### Participation of NHS Boards in SHRUGs data collection – Long Stay Care of the Elderly

NHS Boards participating in SHRUGs data collection in the year ending July 2007

<b>NHS Board</b>	<b>Board</b>	<b>Number of Patients</b>
NHS Ayrshire and Arran	A	148
NHS Borders	B	36
NHS Dumfries & Galloway	Y	25
NHS Fife	F	71
NHS Forth Valley	V	137
NHS Grampian	N	101
NHS Greater Glasgow & Clyde	G	457
NHS Highland	H	98
NHS Lanarkshire	L	229
NHS Lothian	S	276
NHS Orkney	R	18
NHS Shetland	Z	14
NHS Tayside	T	57
NHS Western Isles	W	17

### Appendix 2.2

#### Participation of NHS Boards in SHRUGs data collection – Psychiatry of Old Age

NHS Boards participating in SHRUGs data collection in the period year ending July 2007

<b>NHS Board</b>	<b>Board</b>	<b>Number of Patients</b>
NHS Fife	F	94
NHS Forth Valley	V	87
NHS Grampian	N	63
NHS Greater Glasgow & Clyde	G	298
NHS Highland	H	54
NHS Lanarkshire	L	129
NHS Lothian	S	119
NHS Tayside	T	34
NHS Western Isles	W	18

## Appendix 2

### Appendix 2.3

**Participation of NHS Boards/Local Authorities in SCRUGs data collection - in the period January 2004 – July 2007**

NHS Boards/Local authorities	No of residents
NHS Greater Glasgow & Clyde	
East Renfrewshire	122
Inverclyde	221
Renfrewshire	778
West Dunbartonshire	459
Total	1580
NHS Highland	
Argyll & Bute	456
NHS Forth Valley	
Falkirk	110
NHS Lanarkshire	
North Lanarkshire	1011
South Lanarkshire	1268
Total	2279
NHS Lothian	
East Lothian	97
City of Edinburgh	1702
West Lothian	334
Total	2133
NHS Shetland	128
NHS Orkney	92
NHS Western Isles	59

## Appendix 3

### SHRUGs Interview Questions

#### Dependency questions; SHRUGs algorithm

##### Eating

*When eating a meal the patient...*

- 1 eats unaided
- 2 eats with help
- 3 requires feeding
- 4 is fed by tube or infusion

##### Use of the toilet

*When using the toilet the patient...*

- 1 copes independently
- 2 needs help/direction/prompting
- 3 is completely dependent or does not use the toilet

##### Transferring from bed/chair/standing

*When transferring from bed to a chair, or from chair to standing the patient...*

- A copes independently
- B needs the supervision or assistance of one person
- C needs the supervision or assistance of two or more persons

#### Special needs questions; SHRUGs algorithm

##### Needs for special care which have been present over the last 7 days

*Does the patient have one or more of the following special care needs which have been present within the last 7 days...*

Comatose and does not respond to painful stimuli  
Fed by nasogastric tube/gastrostomy  
Intravenous infusion  
Regular suction  
Tracheostomy care  
Swallowing problems requiring speech therapy guidance of a healthcare professional e.g. speech therapist, GP, dietician  
Pressure sores with overt ulceration of the skin requiring a dressing, debridement or application of skin preparation daily  
Ulcers of leg requiring at least a daily dressing or application of skin preparation  
Wound/scald/burn/skin care with infection/complication/necrotic tissue  
Comfort measures for the dying patient

##### Clinically complex treatments

*Has the patient received one or more of the following clinically complex treatments within the last 7 days*

Chest physiotherapy, continuous or intermittent oxygen, nebulised therapy  
Transfusion (blood products)  
Intravenous delivery of medication (excluding insulin)  
Subcutaneous infusion, e.g. by syringe driver

## Appendix 3

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### **Behaviour - Immediate intervention of problem behaviour**

*Are there ever episodes of problem behaviour so severe, risky, or disruptive that staff have to drop what they're doing and intervene immediately?*

- 1 no
- 2 once this week
- 3 more than once this week but not daily
- 4 once a day (on average)
- 5 more than once a day on average

### **Supplementary questions; SHRUGs interview**

#### **Moving location**

*When moving from one location to another the resident*

- A copes independently
- B needs the supervision or assistance of one person
- C needs the supervision or assistance of two or more persons

#### **Other needs for special care**

*Does the patient have one or more of the following special care needs which have been present in the last 7 days ...*

Comfort measures for the post-operative patient, including regular turning, eye care, mouth care and skin care

Comfort measures for the acutely ill patient, including regular turning, eye care, mouth care and skin care

Patient with infestation/infection requiring barrier nursing

#### **Clinically complex conditions**

*Does the patient have one or more of the following clinically complex conditions ...*

- Severe congestive cardiac failure
- Unstable diabetes
- Recurrent fits
- Parkinson's disease with severe on-off fluctuations

#### **Behaviour - Preventing problem behaviour**

*Do staff take action or tailor and adapt the patient's daily routine in order to prevent the occurrence of problem behaviours?*

- 1 no - this is not required
- 2 no - staff do not have time to do this
- 3 yes - this requires little or no extra staff time
- 4 yes - this requires extra staff time

#### **Behaviour – Co-operation**

*This question is about whether the patient is unco-operative or resistant to help to the extent that staff have to spend more time with the physical aspects of care (e.g. feeding, dressing or transferring). Would you describe the patient as:*

- 1 actively co-operative
- 2 passively co-operative - allows things to be done for them
- 3 actively unco-operative, or, resists help

## Appendix 3

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### **Emotional/Psychological Support (spending time with the patient)**

*Do staff spend time with the patient over and above carrying out the essential physical tasks of care? This might be talking with them, or simply being with them, for the purposes of providing stimulation, company or support.*

- 1 no - the resident would not like this
- 2 no - the resident does not require this
- 3 no - the resident would not be aware of this
- 4 no - staff do not have time to do this
- 5 yes - this is part of routine care for the resident
- 6 yes - this resident requires staff time over and above routine care

### **Urinary incontinence**

*Does the patient wet her/himself at night/during the day\**

- 1 no
- 2 once this week
- 3 more than once this week but not nightly/daily
- 4 nightly/daily

*\* Each question on continence is in 2 parts: 1) at night 2) during the day*

### **Faecal incontinence**

*Does the patient soil her/himself at night/during the day\**

- 1 no
- 2 once this week
- 3 more than once this week but not nightly/daily
- 4 nightly/daily

*\* Each question on continence is in 2 parts: 1) at night 2) during the day*

### **Communication skills**

*Does the patient communicate his/her needs*

- 1 yes verbally and understood by most people
- 2 yes verbally and understood only by those who know him/her well
- 3 yes non verbally
- 4 no

### **Mental Health Questions**

**Depressed mood**

*To what extent has the person shown symptoms of low or depressed mood?*

- 1 – No evidence of problem
- 2 – Occasional low mood, or low self-esteem, e.g. loss of interest and/or pleasure and lack of energy but maintains most aspects of daily activity
- 3 – Depressed mood is present more often than not, e.g. tearful causing significant interference in daily functioning OR expressed feelings of guilt, self-blame OR feeling that they are of no use to anyone and would rather be dead
- 4 – Depressed mood is continuous and persistent, e.g. very tearful, with little or no capacity to engage in daily activities, or expression of persistent and intense feelings of guilt, self-blame, hopelessness, inferiority or self-loathing

### **Deliberate self-harm**

## Appendix 3

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*To what extent has the person shown evidence of intentions to harm themselves?*

- 1 – Little or no evidence
- 2 – Thoughts of self-harm expressed, e.g. occasionally or frequently talks of deliberately ending life, injuring self, etc. but no evidence or details of possible methods
- 3 – Serious risk of deliberate self-harm, e.g. frequent talking about self-harm, including details of possible methods or behaviours (e.g. collecting tablets)
- 4 – Suicide attempt OR deliberate self-injury.

### **Anxiety**

*To what extent has the person shown symptoms of anxiety, phobia, panic or other stress-related disorders?*

- 1 – No evidence of problem
- 2 – Occasional bouts of anxiety, e.g. worrying, feelings of tension or fear but do not affect daily activities.
- 3 – Frequent bouts of anxiety e.g. worrying, fear or tension of sufficient intensity to affect daily activities, regularly avoids certain situations and may frequently express distress, or appear to be distressed
- 4 – Continuous bouts of anxiety, e.g. repetitive experiences of intense worrying to the point where the person is unable to engage in ordinary daily activities

### **Cognitive function**

*Does the person show evidence of cognitive impairment?*

- 1 – No evidence of problem OR occasional minor forgetfulness
- 2 – Mild but definite forgetfulness, e.g. definite problems learning new information such as names, recollection of events, or mild problems with orientation, or sometimes confused about simple decisions.
- 3 – Marked forgetfulness to the point that some activities are disrupted, e.g. cannot find objects, newly learned information rapidly lost; occasional failure to recognise familiar individuals; has lost the way in a familiar place
- 4 – Consistent forgetfulness causing restriction or incapacity, e.g. consistently loses way, loses objects, forgets plans or consistent disorientation in time, place and/or person or consistently unable to recognise or to name close friends or relatives

## Appendix 3

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### **Aggression**

*Does the person show evidence of verbal/physical aggression?*

1 – No evidence of problem

2 – Occasional Aggression, e.g. irritability, quarrels, abusiveness but generally calm and not requiring any specific action.

3 – Noticeable aggression, e.g. over-activity, or loss of inhibition, requiring persuasion and encouragement.

4 – Aggressive gestures, e.g. pushing or pestering others or threats or verbal aggression or severe problems relating to verbal/physical aggression

### **Hallucinations OR Delusions**

*Has the person shown evidence of having hallucinations or delusions, including odd or bizarre behaviour associated with hallucinations or delusions?*

1 – No evidence of problem

2 – Delusions or hallucinations are present but cause little or no distress e.g. little or no impact on behaviour.

3 – Marked preoccupation with delusions or hallucinations, e.g. causing significant distress and / or manifested in obviously bizarre behaviour and delusions or hallucinations intrude upon daily functioning to a significant extent

4 – Mental state and behaviour is seriously and adversely affected by delusions or hallucinations, with major impact on the person.

### **SCRUGs Interview Questions**

#### **Dependency questions; SCRUGs algorithm**

Eating  
Use of the toilet  
Transferring from bed/chair/standing  
Moving location

#### **Behavioural questions; SCRUGs algorithm**

Behaviour - immediate intervention of problem behaviour  
Behaviour - preventing problem behaviour

#### **Needs for special care questions; SCRUGs algorithm**

Needs for special care which have been present within the last seven days  
Other needs for special care which have been present within the last seven days  
Clinically complex treatments  
Clinically complex conditions

#### **Supplementary variables;**

Behaviour - co-operation  
Emotional and psychological support (spending time with the resident)  
Emotional and psychological support (engaging in activities)  
Urinary incontinence - day and night  
Faecal incontinence - day and night  
Hearing impairment  
Visual impairment  
Communication skills  
Mental Health Questions

### Appendix 4

#### Validity and reliability of SHRUGs data

##### Validity and reliability of the SHRUGs algorithm

Inter-rater reliability of the SHRUGs data was evaluated by separately asking two independent members of care staff the same questions about the same patients. Testing was carried out at a number of different hospital sites for a total of 1,402 patients, with the second interview carried out within 48 hours of the first. For the individual variables included in SHRUGs the percentage consistency of response between interviewees ranged from 68% to 86%. Overall the level of consistency achieved for the five SHRUGs resource use categories was 67% (weighted kappa = 0.60). When the 606 cases for which full cost information is available were classified into low, medium and high categories of cost, there was a consistency of 62% between the test and retest samples (weighted kappa = 0.52).

Testing for significant differences among the five case mix groupings for 606 patients was completed using the Kruskal-Wallis one-way Analysis of Variance. Based on the overall ranking of costs for each patient, the differences between the five resource use groupings were significant ( $p < 0.0001$ ).

The extent to which variation in cost is explained by SHRUGs data was determined using linear regression methods with transformed patient costs as the dependent variable. Overall, the five categories explain 35% of the variance in costs when linear regression methods were applied. The results obtained for Diagnosis Related Groups typically fall in the range from 30% to 35%.

The SHRUGs weights were confirmed as accurate by testing the calibration on a separate geriatric long stay population of 411 patients.

##### Validity and reliability of the SCRUGs algorithm

The SCRUGs algorithm was developed from a sample of 592 geriatric long stay patients from within two trusts during May 1996 to February 1997.

The SHRUGs weights were validated on a separate geriatric long stay population of 863 patients.

Kruskal-Wallis one-way Analysis of Variance was again applied to test for significant differences among the eight case mix groupings for the 592 patients. The differences between the eight resource groups were found to be significant ( $p < 0.0001$ ).

## Appendix 4

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Linear regression was applied and could explain 37% of the variance in cost over the 8 resource use groups.

### Validity and reliability of SCRUGs

An identical method of testing was used to evaluate the inter-rater reliability of the SCRUGs data. Testing was on 148 residential care residents. For the individual variables included in SCRUGs the percentage consistency of response between interviewees ranged from 34% to 93%. Overall the level of consistency achieved for the SCRUGs resource use categories was 58%.

### Retest analysis: Percentage consistency of response for SCRUGs variables

<b>Variable</b>	<b>Percentage consistency</b>
Feeding	88.5
Toileting	79.7
Transferring position	79.1
Moving location	83.1
Immediate intervention of problem behaviour	60.8
Prevention of problem behaviour	58.1
<i>Monitoring problem behaviour</i>	56.8
<i>Urinary incontinence through the night</i>	71.6
<i>Urinary incontinence during the day</i>	65.5
<i>Faecal incontinence through the night</i>	85.8
<i>Faecal incontinence during the day</i>	79.1
<i>Communication skills</i>	75.0
<i>Hearing impairment</i>	92.6
<i>Visual impairment</i>	86.5
<i>Encouraging independence</i>	56.8
<i>Emotional support - Spending time with the patient</i>	48.6
<i>Emotional support - Engaging in activities</i>	34.5
<b>SCRUGs group</b>	<b>58.1</b>

*Italic type indicates supplementary variables (i.e. these are not used to assign residents to SCRUGs groups)*

### Appendix 5

#### Method of deriving relative weights for SHRUGs

To arrive at the groupings and weights, estimates were made of the level of care resources utilised for each patient by asking a trained member of ward staff to make estimates of relative resource use for each patient. The staff concerned were asked to identify the patient who used the *greatest* amount of qualified nurse time and the patient who used the *least* amount of qualified nurse time during the 7 days preceding the interview. The respondent was then asked to estimate the relative amount of time utilised by these two patients as a ratio. The other patients in the ward were then ranked using an interval scale within this range. The same process was then applied to the use of unqualified staff time. The relative weightings for each patient were then applied to the costs of qualified and unqualified nursing staff attributed to each ward by the management of the hospitals concerned.

Patients with similar resource costs were then grouped together and the characteristics of patients in each group were examined. These groupings ranged from one which described patients with no problems of behaviour and who had low dependency, to one which included patients with high dependency who needed special care. One category included both patients with a need for special care and moderate dependency, and patients with no need for special care and high dependency.

The cost information on each patient was then used to derive a cost weight for each of the five resource use groupings relative to an overall average of 1.00. Where the average resources used by all patients is equivalent to 1.00 unit of cost, patients of low dependency with no behavioural difficulties (Group A) would require on average an estimated 0.62 units, while patients of high dependency and needs for special care or clinically complex treatments (Group E) would require on average an estimated 1.47 units.

#### Development of the SCRUGs algorithm

Identical procedures were applied to arrive at the SCRUGs groupings and weights.

As before, individual dependency and needs characteristics were examined to show those variables which showed the greatest variation in terms of cost and therefore predictive of resource use. These variables were used to develop eight resource utilisation groups. The groupings ranged from one which described residents of low dependency, with no behavioural problems or needs for special care to one which described residents of high dependency, with both behavioural problems and needs for special care.

## Appendix 5

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The cost information on each resident was used to derive a cost weight for each of the eight resource groupings relative to an overall average of 1.00. Where the average resources used by all residents is equivalent to 1.00 unit of cost, those residents of low dependency with no behavioural problems or needs for special care (Group A) would cost on average 0.50 of this, while residents of high dependency, with both behavioural problems and a need for special care (Group H) would cost on average 1.43.