Information Services
A division of NHS National Services Scotland

Older People Services: Measuring Relative Need

Statistical Report 2008

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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 eleventh edition of a statistical publication formerly known as *Scottish Health Resource Utilisation Groups (SHRUGs) and Scottish Care Resource Utilisation Group (SCRUGs).* This is the fifth 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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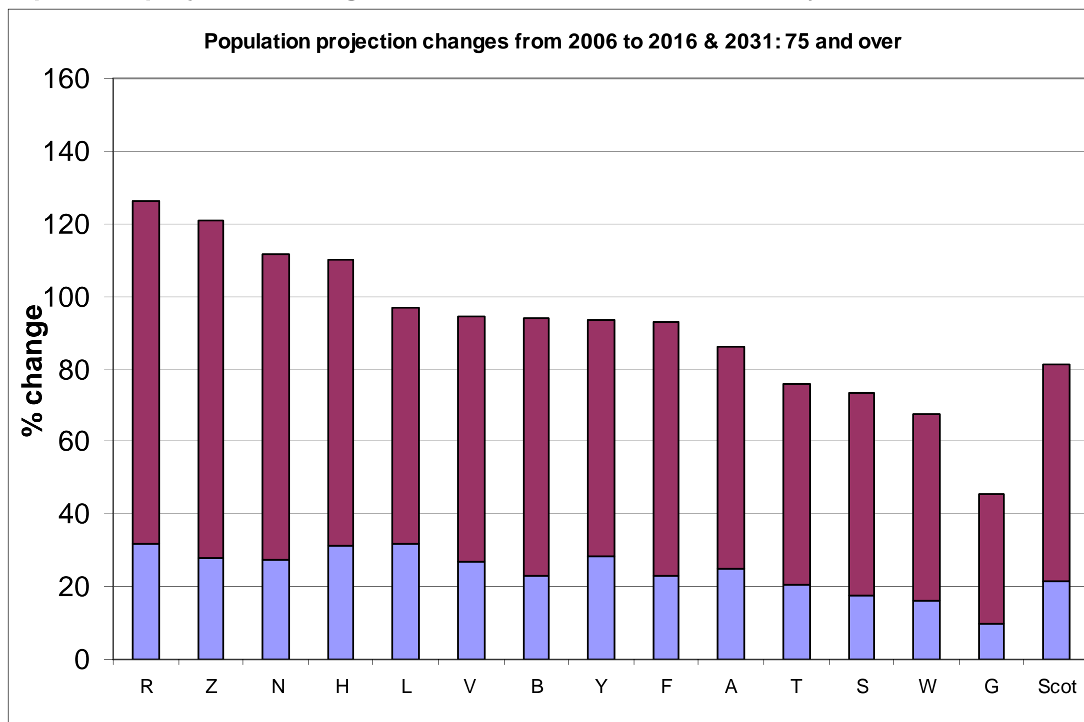
1.2 Context: The Ageing of the Scottish Population

The office of The Register General for Scotland has projected that the number of people in Scotland aged 75 and over will increase by 21% from 2006 to 2016 and a further 60% by 2031. This equates to around 382,200 people aged 75 and over in 2006, increasing to around 691,900 people by 2031.

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 2006 to 2016 & 2031, 75+, by NHS Board



Source: GRO population estimates (2006)

Orkney NHS Board area is expected to have the greatest percentage rise (126%) in the population aged 75 and over from around 1,600 people in 2006 to approximately 3,600 people in 2031. Greater Glasgow & Clyde NHS Board area will have the lowest percentage increase of 46% changing the population aged 75 and over from around 84,900 in 2006 to around 123,500 in 2031.

Figure 2

Population projection changes from 2006 to 2016 & 2031, 75+, by Local Authority

Population projection changes from 2006 to 2016 & 2031: 75 and over

% change

180 160 140 120 100 80 60 40 20 0 -20

Aberdeenshire, West Lothian, Orkney Islands, Shetland Islands, Highland, Clackmannanshire, Moray, Perth & Kinross, North Ayrshire, South Lanarkshire, Angus, Scottish Borders, Dumfries & Galloway, Fife, Stirling, North Lanarkshire, Argyll & Bute, Falkirk, Midlothian, East Dunbartonshire, East Lothian, East Ayrshire, East Renfrewshire, South Ayrshire, Eilean Siar, Aberdeen City, Renfrewshire, Inverclyde, West Dunbartonshire, Edinburgh, City of, Dundee City, Glasgow City, Scot

Source: GRO population estimates (2006)

If we look at data broken down by local authority areas Aberdeenshire is expected to have the greatest percentage rise (156%) in the population, from around 16,500 people in 2006 to approximately 42,300 people in 2031. Glasgow City is estimated to have the smallest increase rise (19%), changing the population from approximately 39,400 people in 2006 to an estimated 46,700 people in 2031.

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 31st August 2008.

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 83% of patients in long stay care of the elderly wards and 35% 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 August 2004 and August 2008 covering 15 local authorities and nine NHS Board areas, approximately 19% of the care home population across Scotland. These results are detailed in Section 6.

The Indicator of Relative Need (IoRN)

The 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 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

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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 52% 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 nine 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 21% 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 44% of older people in hospital wards had a need for special care as defined by the SHRUGs questionnaire; for care homes the figure was 16%. *(Chapter 4, Table 7, p16; Chapter 6, Figure 20, p26)*

- The proportion of hospital patients classified within the highest dependency group has increased from 28% in the year ending March 2003 to 36% in the period between August 2007 and August 2008. *(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 39% in the year ending March 2003 to 49% in the period between August 2007 and August 2008. *(Chapter 4, Table 7, p16)*

3 The SHRUGs/SCRUGs and 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.

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.

Table 2
SCRUGs resource grouping

SCRUGs Group	Description	Weight*
A	Low dependency; **Neither** Behaviour nor Special Care Needs	0.50
B	Low dependency; **Either** Behaviour or Special Care Needs	0.69
C	Low to moderate dependency; **Neither** Behaviour nor Special Care Needs	0.59
D	Low to moderate dependency; **Either** Behaviour or Special Care Needs	0.77
E	Moderate dependency; **Neither** Behaviour nor Special Care Needs	0.87
F	Moderate dependency; **Either** Behaviour or Special Care Needs **OR** High dependency; **Neither** Behaviour nor Special Care Needs	1.07
G	Moderate dependency; **Both** Behaviour and Special Care Needs **OR** High dependency; **Either** Behaviour or Special Care Needs	1.27
H	High dependency; **Both** 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 Indicator of Relative Need (IoRN)

The Indicator of Relative Need (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.

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 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 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 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 August 2007 and August 2008. 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

Eleven NHS Boards across Scotland participated in the collection of SHRUGs data. ISD were unable to collect information in 3 NHS Boards within the above time period, due to circumstances out with ISD's control. Within some NHS boards information was not collected in all continuing care hospitals. In the period between August 2007 and August 2008, SHRUGs data were collected on 1,452 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 83% 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 2003	March 2004	April 2005	May 2006	July 2007	August 2008
Average daily number of patients in Scotland[1]	2915	2568	2416	2157	1982	1745
Number for whom SHRUGs data are available[2]	2634	2415	2090	2053	1684	1452
SHRUGs coverage	90%	94%	87%	95%	85%	83%

[1]Average daily occupied beds during period

Includes patients receiving respite care

[1] Source: ISD(S)1 - for average number of occupied beds during data collection period. Please note this is provisional for the 2008 figures.

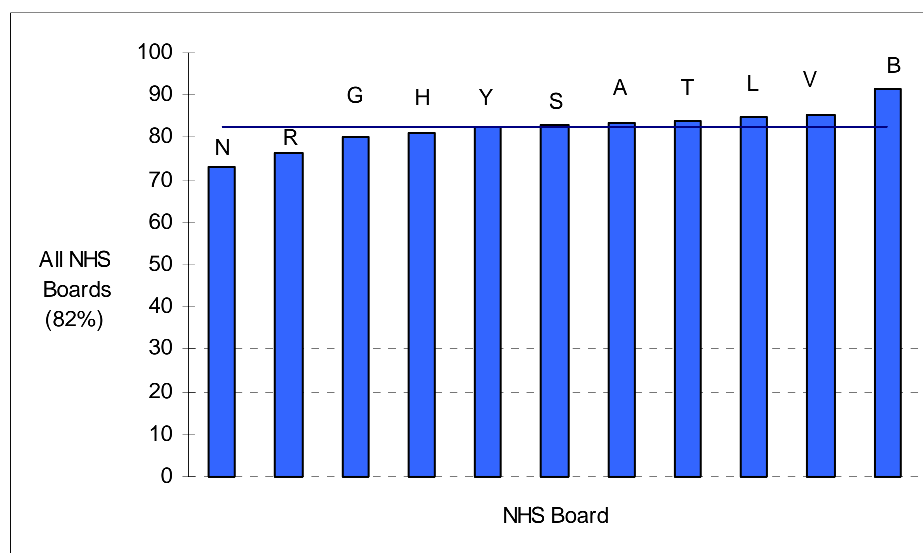
Figures for 2003 - 2008 include joint user and contractual hospitals for NHS Greater Glasgow & Clyde

[2] 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 2003 until the period between August 2007 and August 2008 estimated coverage of SHRUGs data collection has fluctuated between 83% 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 participating NHS Boards; data collected between August 2007 and August 2008



In the period between August 2007 and August 2008 the percentage of patients aged 75 years and over was 82%. The percentages ranged from 73% in NHS Grampian to 91% in NHS Borders. The majority of patients were female (68%), ranging from 55% in NHS Dumfries & Galloway to 78% in NHS Borders. It is important to note that some of the percentages are based on small numbers.

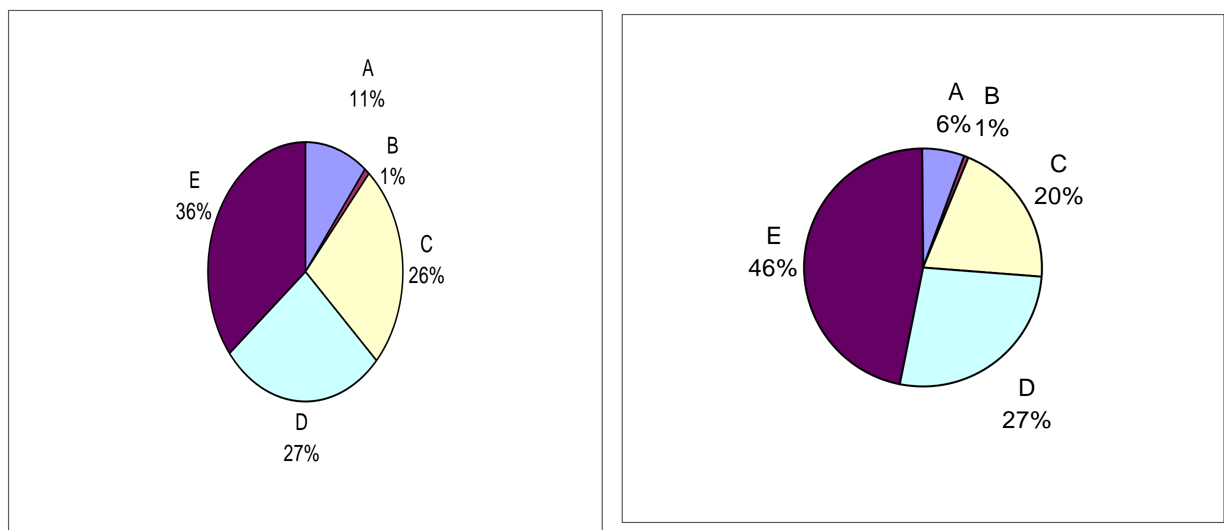
4.3 Proportions of patients in each SHRUGs group

Table 4
Patients in each SHRUGs group
Percentages; by data collection period

	March 2003	March 2004	April 2005	May 2006	July 2007	August 2008
Number of residents	2634	2415	2090	2053	1684	1452
% of residents in resource use group						
A	10	9	9	9	8	11
B	1	1	1	1	1	1
C	28	28	24	25	25	26
D	32	32	31	30	31	27
E	28	29	36	34	35	36

The proportion of SHRUGs patients allocated to SHRUGs group A has remained relatively stable between March 2003 and August 2008. However, in the past six data collection periods the proportion in group E (those of high dependency with a need for special care and/or clinically complex treatment) has increased substantially from 28% to 36%.

Figure 4
Patients in each SHRUGs group and estimated resources utilised in each SHRUGs group
Percentages; data collected between August 2007 and August 2008

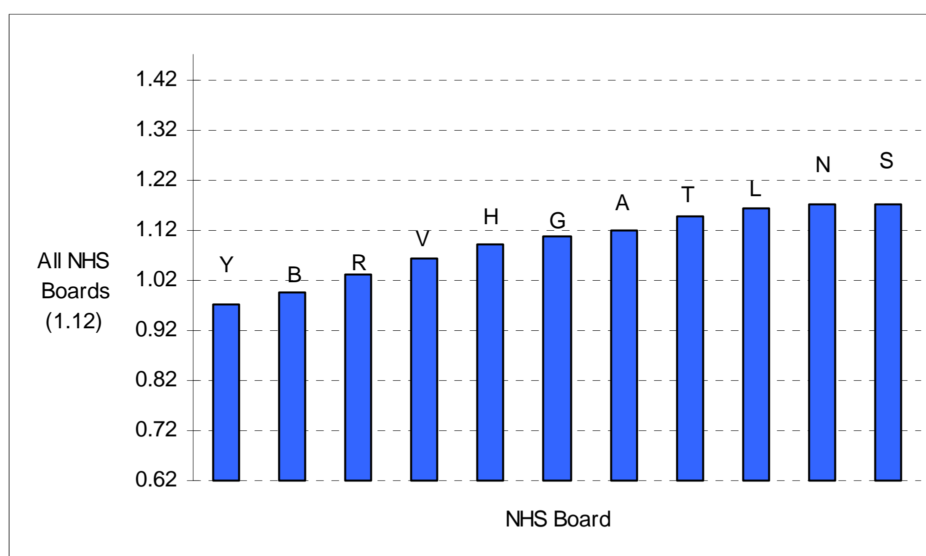


The relative amount of staffing resources can be estimated by applying the SHRUGs 'weights' to each of the SHRUGs groups (see section 2 - 'The SHRUGs Method' for a more detailed explanation). When the SHRUGs weight was applied to the 36% of patients who were assigned to group E, it was estimated that they would utilise 46% of the total available staffing resource. In contrast, the 11% of patients in group A would utilise only an estimated 6% (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.

Figure 5
Casemix complexity factor[1] for SHRUGs patients
In individual NHS Boards and for all participating NHS Boards; data collected between August 2007 and August 2008



[1] The CCF can only range between 0.62 and 1.47.

In the period between August 2007 and August 2008, the CCF among participating NHS Boards ranged from 0.97 in NHS Dumfries & Galloway to 1.17 in NHS Lothian and NHS Grampian 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 2003	March 2004	April 2005	May 2006	July 2007	August 2008
Case complexity factor (ccf)	1.09	1.10	1.13	1.12	1.12	1.12

The CCF has increased from 1.09 for the year ending March 2003 to 1.12 in the period between August 2007 and August 2008.

4.5 Distribution of patients within SHRUGs dependency variables

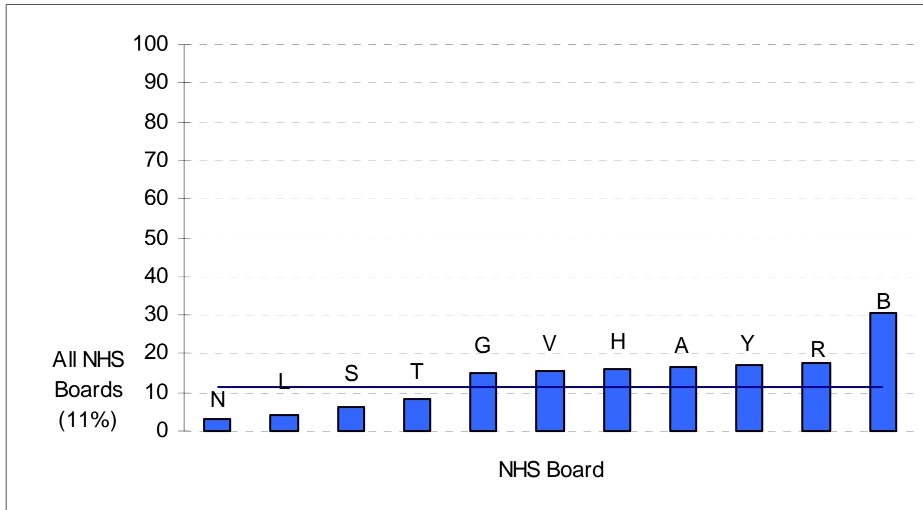
An activity of daily living score (ADL) is derived from SHRUGs data collected on patients in relation to eating, transferring position and use of the lavatory. The ADL score is calculated by adding together the individual scores that are recorded for each question that is asked in relation to eating, 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 2003	March 2004	April 2005	May 2006	July 2007	August 2008
Eating						
	%	%	%	%	%	%
eats unaided	38	38	32	37	34	41
eats with help	25	24	25	25	26	20
requires feeding	37	38	43	38	40	39
Transferring Position						
copes independently	11	10	9	11	10	11
needs the supervision or assistance of one person	23	22	21	23	23	20
needs the supervision or assistance of two or more persons	66	68	70	67	66	69
Use of the lavatory						
copes independently	8	8	7	8	7	8
needs help/direction/prompting	24	27	25	26	26	23
is completely dependent or does not use the toilet	68	65	68	66	67	69
Activities of Daily Living						
low dependency (ADL = 3,4)	11	10	10	11	10	11
moderate dependency (ADL = 5,6,7)	38	39	33	36	37	36
high dependency (ADL = 8,9)	51	51	57	53	53	52

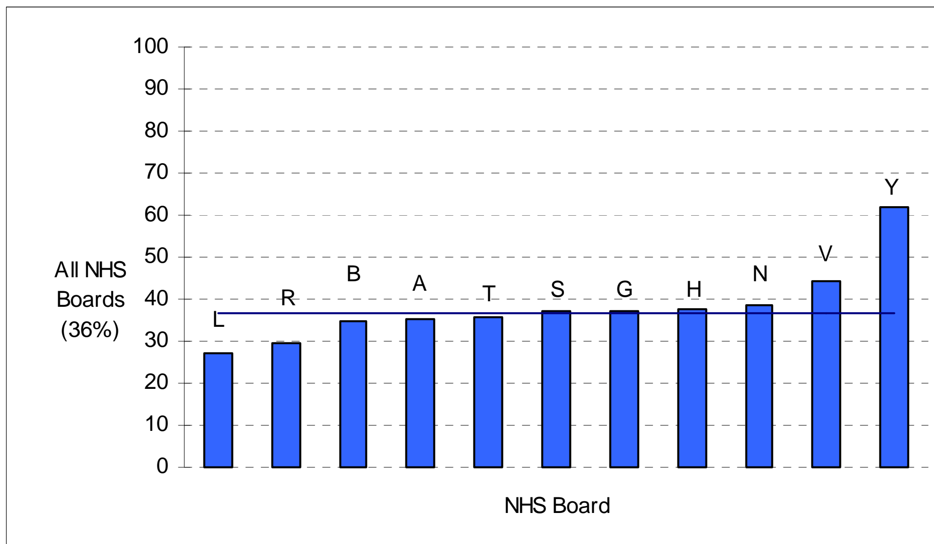
In the period between August 2007 and August 2008, 52% of all SHRUGs patients were classed as being of high dependency, the same as in the previous data collection period. (Table 6).

Figure 6
SHRUGs patients with ADL scores of 3 or 4 (low dependency)
Percentages of all patients; by individual NHS Boards and for all participating NHS Boards; data collected between August 2007 and August 2008



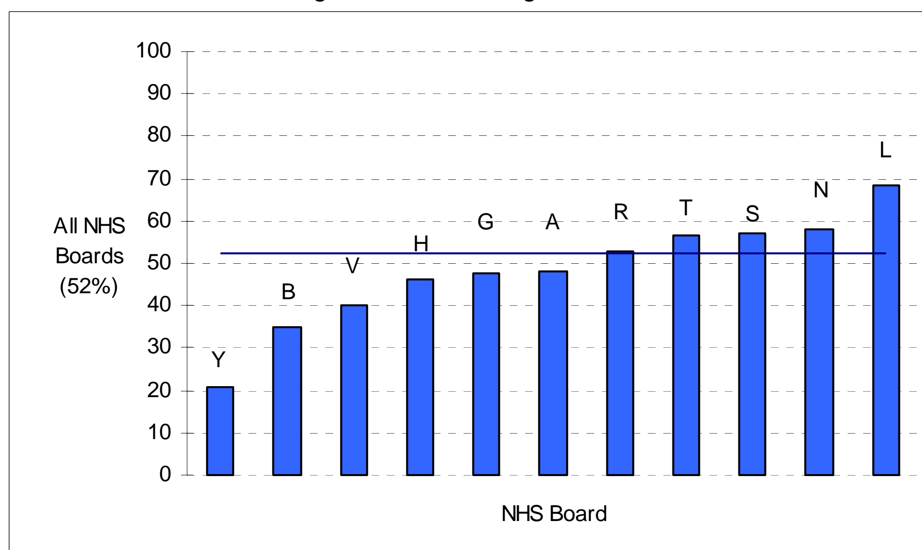
Amongst individual NHS Boards, the proportions of patients classed as being of low dependency ranged from 3% in NHS Grampian to 30% in NHS Borders (Figure 6; Appendix 1: Table 3), and was 11% for all participating hospitals in the period between August 2007 and August 2008.

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 participating NHS Boards; data collected between August 2007 and August 2008



36% of all SHRUGs patients were classed as being of moderate dependency. The proportions among individual NHS Boards ranged from 27% in NHS Lanarkshire to 62% in NHS Dumfries & Galloway (Figure 7; Appendix 1: Table 3).

Figure 8
SHRUGs patients with ADL scores of 8 or 9 (high dependency)
Percentages of all patients; by individual NHS Boards and for all participating NHS Boards; data collected between August 2007 and August 2008



There was considerable variation among individual NHS Boards in the proportion of patients classed as being of high dependency, in the period between August 2007 and August 2008. This varied from 21% in NHS Dumfries & Galloway to 69% in NHS Lanarkshire (Figure 8; Appendix 1: Table3), giving a figure of 52% for all participating hospitals within NHS Boards.

4.6 Distribution of patients within SHRUGs care need variables

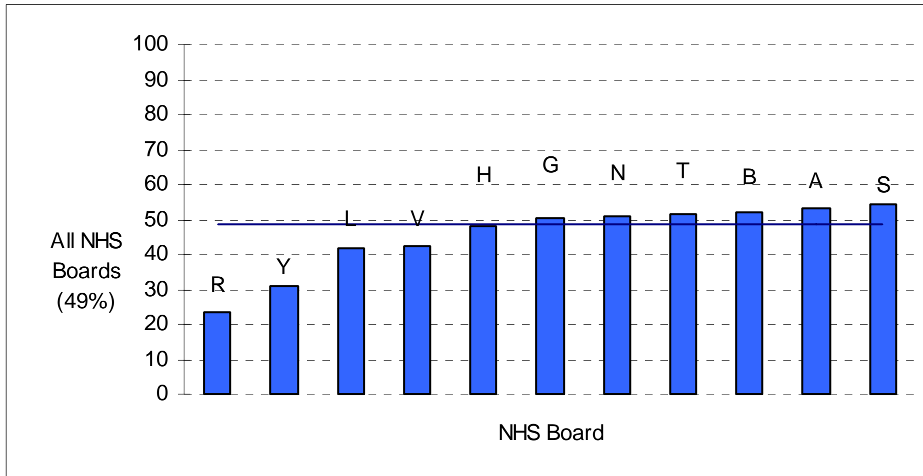
Nearly half (49%) of patients across Scotland had a need for special care or clinically complex treatments. (Table 7; Appendix 1: Table 4).

Table 7
Percentage of patients with SHRUGs special needs;

	March 2003 %	March 2004 %	April 2005 %	May 2006 %	July 2007 %	August 2008 %
Need for special care	39	36	44	42	45	44
Clinically complex treatment	7	9	10	12	11	11
Need for special care and / or clinically complex treatment	39	41	47	46	49	49
Behavioural difficulties requiring immediate intervention on more than one occasion each week	15	13	13	12	16	9

When comparing information from the previous data collection period, it can be seen that the percentage of patients with needs for special care and/or clinically complex treatments has remained the same at 49%. The proportion of patients with behavioural difficulties requiring immediate intervention on more than one occasion each week, has fallen from 16% to 9%.

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 participating NHS Boards; data collected between August 2007 and August 2008

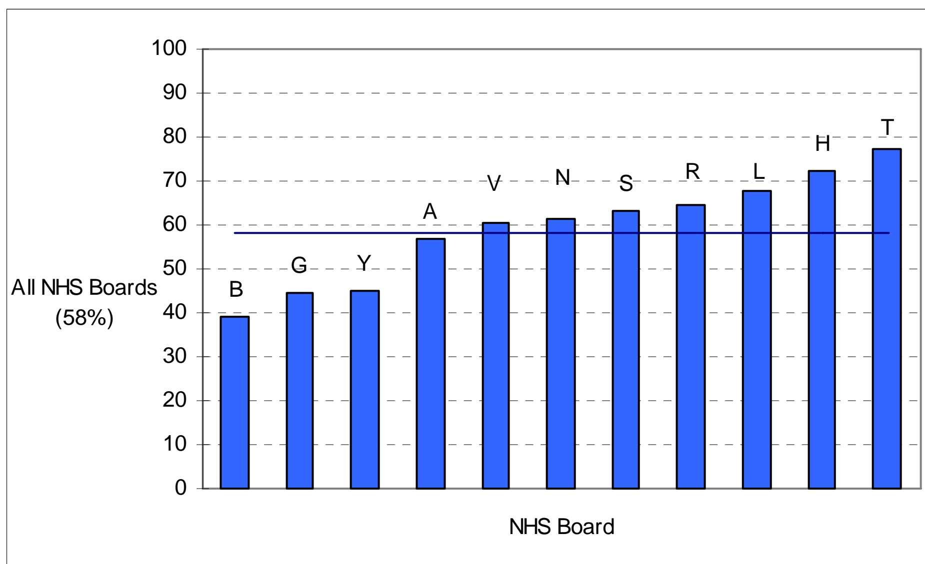


Among individual NHS Boards the proportions of patients with needs for special care and/or clinically complex treatments varied considerably, from 24% in NHS Orkney to 54% in NHS Lothian (Figure 9).

4.7 Distribution of patients with mental health problems

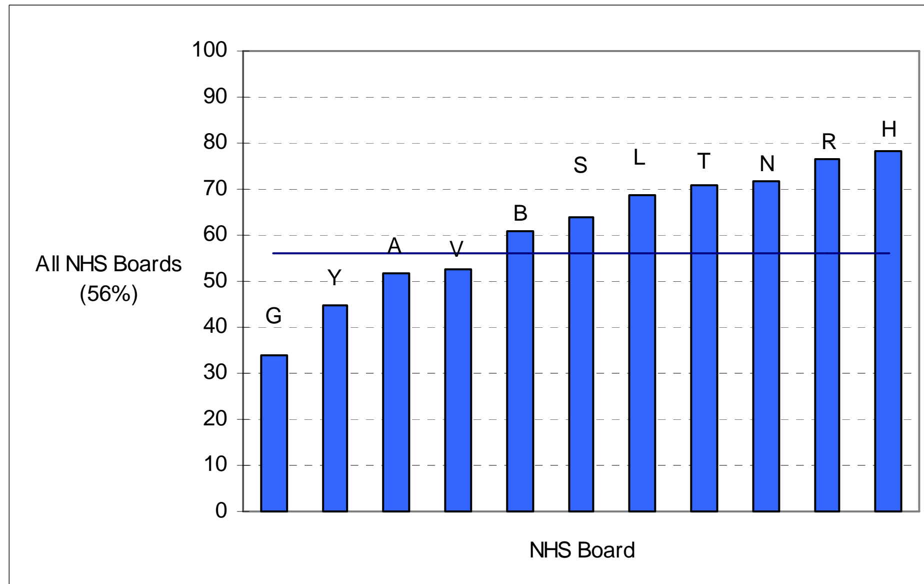
In response to feedback from participants in SHRUG/SCRUGs interviews, new mental health questions have been developed. These questions have been piloted over the past three years and this section presents preliminary analysis of selected mental health questions.

Figure 10
SHRUGs patients with problems with depression
Percentages of all patients; by individual NHS Boards and for all participating NHS Boards; data collected between August 2007 and August 2008



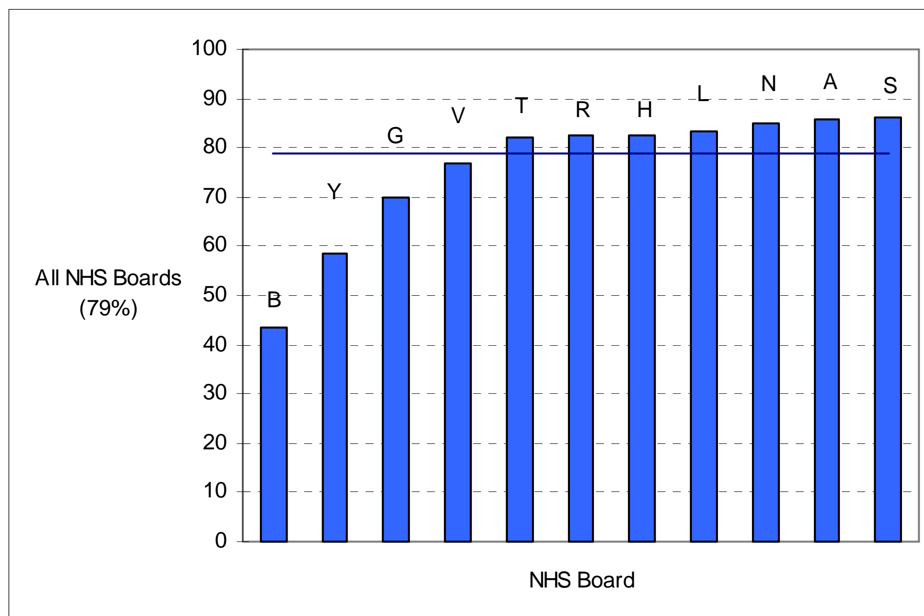
Among individual NHS Boards the proportions of patients with problems with depression varied, from 39% in NHS Borders to 77% in NHS Tayside (Figure 10), giving a figure of 58% for all participating hospitals within NHS Boards.

Figure 11
SHRUGs patients with problems with anxiety
Percentages of all patients; by individual NHS Boards and for all participating NHS Boards; data collected between August 2007 and August 2008



56% of all SHRUGs patients were recorded as having problems with anxiety. The proportions among individual NHS Boards ranged from 34% in NHS Greater Glasgow & Clyde to 78% in NHS Highland (Figure 11).

Figure 12
SHRUGs patients with problems with cognitive function
Percentages of all patients; by individual NHS Boards and for all participating NHS Boards; data collected between August 2007 and August 2008



Amongst individual NHS Boards, the proportions of patients classed as having problems with cognitive function ranged from 43% in NHS Borders to 86% in NHS Lothian, and was 79% for all participating hospitals within NHS Boards in the period between August 2007 and August 2008 (Figure 12).

4.8 SHRUGs and Psychiatry of Old Age

In the period between August 2007 and August 2008 SHRUGs data were collected on 674 patients from Psychiatry of Old Age (POA) facilities in 8 NHS Boards, equivalent to approximately 35% 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 August 2007 and August 2008

	All	**G**	**H**	**L**	**N**	**S**	**T**	**V**	**W**
A	**18**	27	27	18	17	10	16	4	7
B	**7**	7	7	6	11	8	3	10	
C	**27**	23	36	19	20	35	32	32	27
D	**27**	32	17	30	24	23	47	20	33
E	**20**	11	13	27	28	24	3	34	33

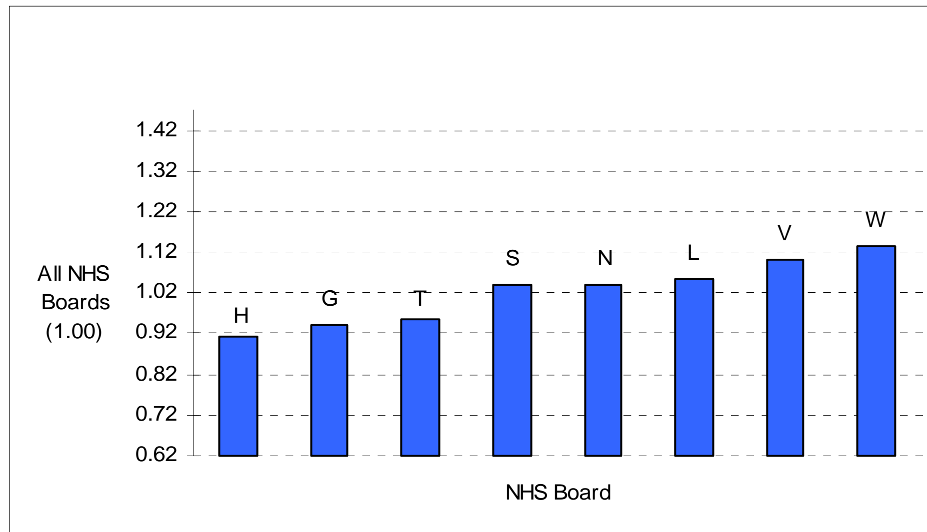
The proportion of patients falling into group E, the highest dependency group, ranged from 3% in NHS Tayside to 34% in NHS Forth Valley. 27% of patients were in SHRUGs group D (Moderate dependency; with needs for special care and/or clinically complex treatments *or* High dependency; no needs for special 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[1] for SHRUGs – POA patients

In individual NHS Boards and all participating NHS Boards; data collected between August 2007 and August 2008



[1] The CCF can only range between 0.62 and 1.47.

In the year ending August 2008, the CCF among participating NHS Boards ranged from 0.91 in NHS Highland to 1.13 in NHS Western Isles with a figure of 1.00 for all participating NHS Boards. (Figure 13).

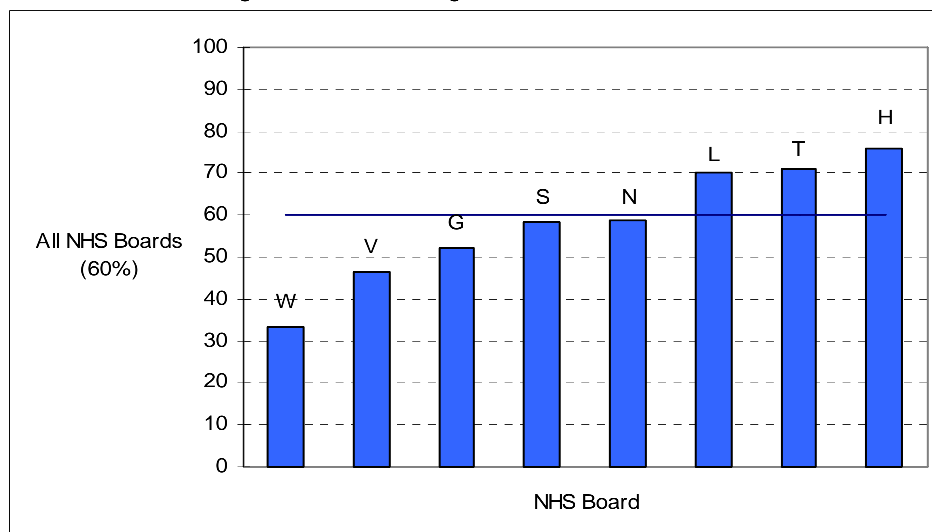
4.8.3 Distribution of patients with mental health problems (POA)

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

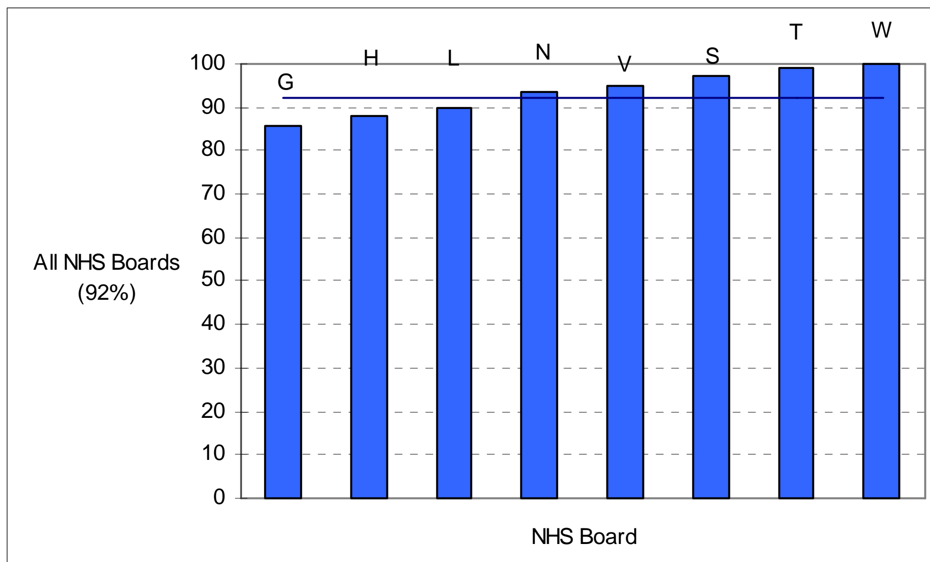
SHRUGs patients with problems with anxiety - POA

Percentages of all patients; by individual NHS Boards and for all participating NHS Boards data collected between August 2007 and August 2008



Amongst individual NHS Boards, the proportions of patients classed as having problems with anxiety ranged from 33% in NHS Western Isles to 76% in NHS Highland, and was 60% for all participating NHS Boards in the period between August 2007 and August 2008 (Figure 14).

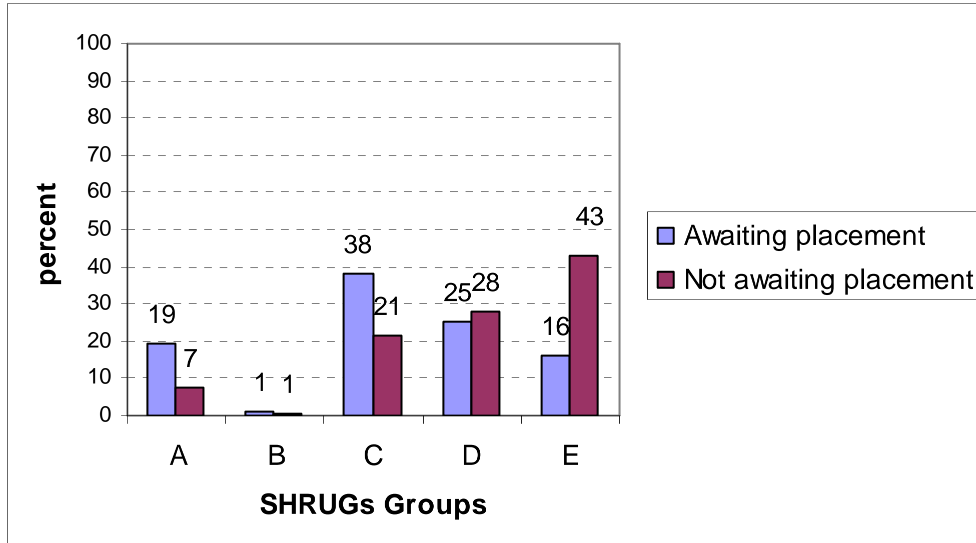
Figure 15
SHRUGs patients with problems with cognitive function - POA
Percentages of all patients; by individual NHS Boards and for all participating NHS Boards data collected between August 2007 and August 2008



92% of all POA SHRUGs patients were recorded as having problems with cognitive function. The proportions among individual NHS Boards ranged from 86% in NHS Greater Glasgow & Clyde to 100% in 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 August 2007 and August 2008



The highest proportion of patients (38%) 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)

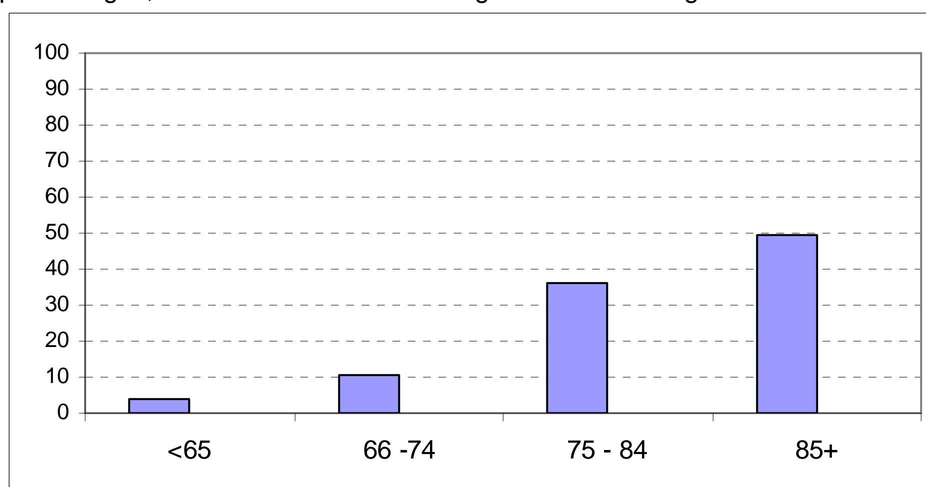
According to the latest Scottish Care Home Census, March 2007 http://www.scotland.gov.uk/Publications/2007/11/26142330/0, there were approximately 37,301 places in homes intended for older people occupied by approximately 33,173 residents. Section 6 of the report presents information on SCRUGs data collected in care homes.

6.1 Coverage of SCRUGs data collection

In the period between August 2004 and August 2008 data were collected in relation to 6,214 people in care homes. This covers 15 local authority areas (See appendix 2) and approximately 19% 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

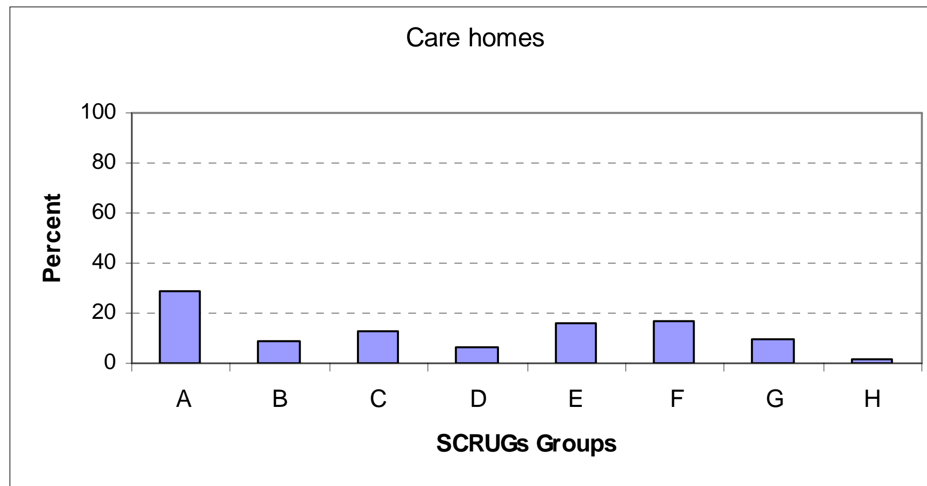
Figure 17
Age breakdown of residents in care homes
percentages; data collected between August 2004 and August 2008



The largest proportion of residents in care homes (50%) were in the age group 85 years and older and 72% 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 August 2004 and August 2008

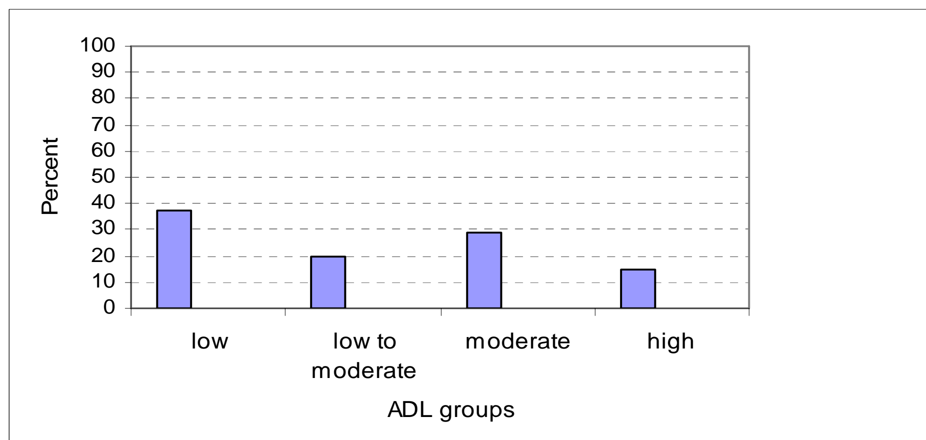


The percentage of residents in care homes falling into group A (the lowest dependency group) was 28% (Figure 18). The percentage falling into the three highest dependency groups (F, G and H) was 27%.

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 August 2004 and August 2008

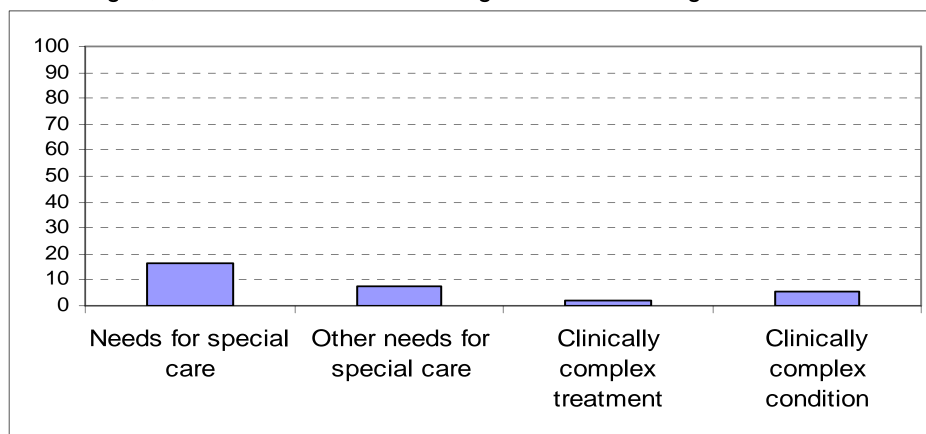


The proportions of residents classed as being of low dependency was 37% and 20% were classified as being of low to moderate dependency (Figure 19). 15% of residents were classed as being of high dependency.

6.5 Distribution of residents within SCRUGs care need variables

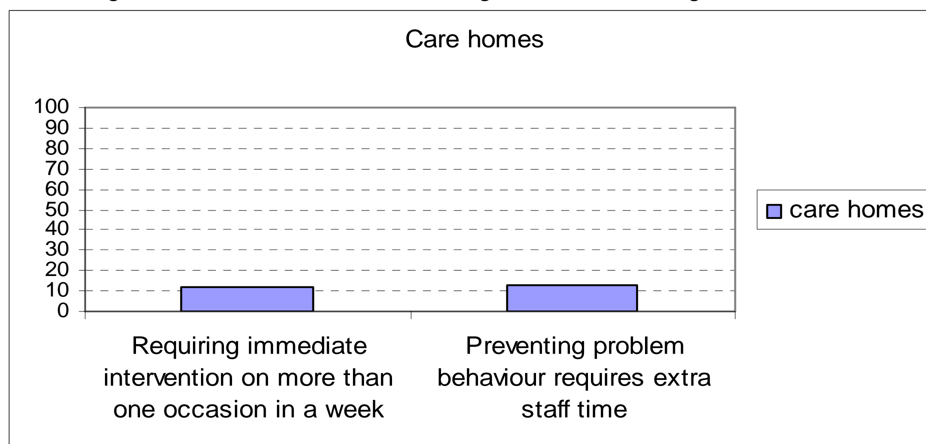
The majority of residents in participating homes did not have needs for special care or clinically complex treatments, nor did they exhibit behavioural difficulties as defined in SCRUGs (Figure 20; Figure 21).

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 August 2004 and August 2008



16% 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 August 2004 and August 2008



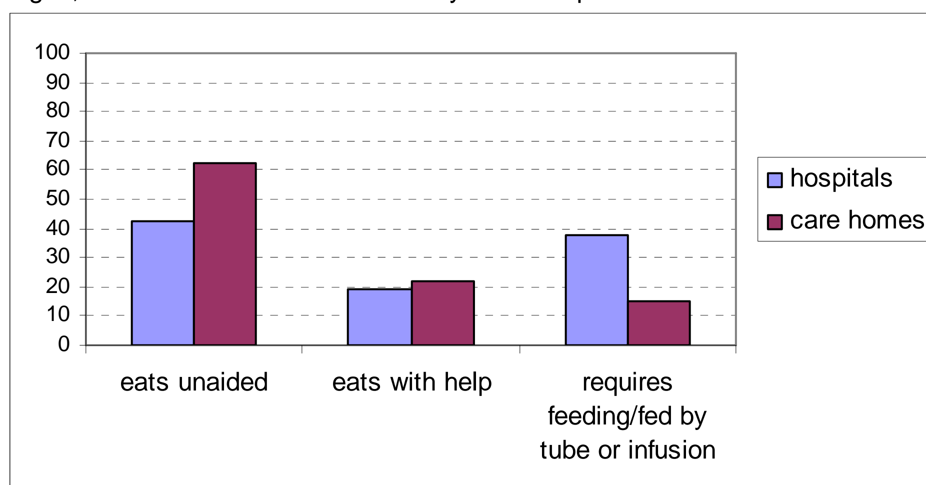
12% of residents in care homes had a behavioural difficulty which required immediate intervention by a member of staff on more than one occasion in the week preceding the interview. The percentage of residents requiring extra staff time in preventing the occurrence of problem behaviour at time of interview 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 six NHS Board areas and nine partnership areas. The SCRUGs data collected on 2,207 residents from within care homes was compared with SHRUGs data collected on 970 patients in long stay care for the elderly wards. The data was collected between January 2006 and April 2008. The data contained in this section is not representative of all SCRUGs and SHRUGs data collected.

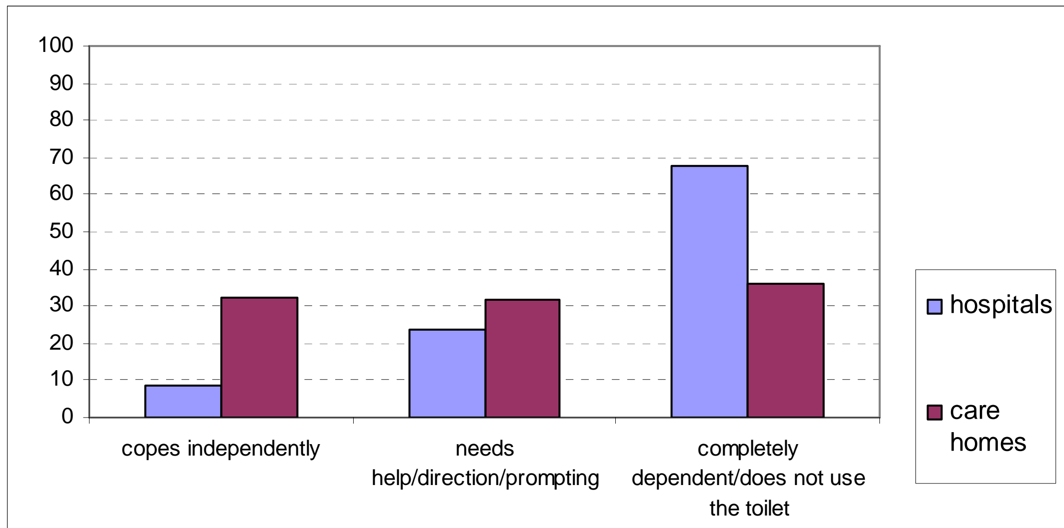
7.1 Distribution of residents within SHRUGs/SCRUGs dependency variables

Figure 22
Comparison of residents for SHRUGs/SCRUGs dependency variable: 'eating'
Percentages; data collected between January 2006 – April 2008



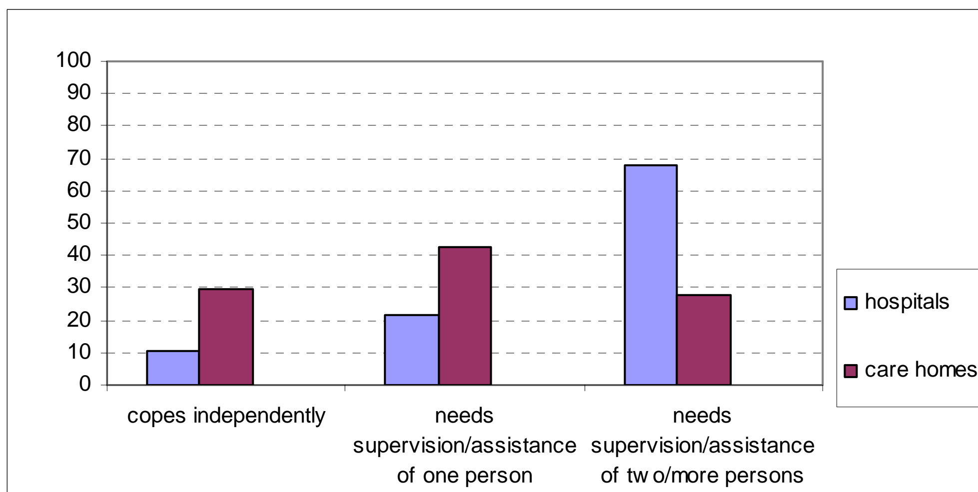
When residents in care homes were compared with those in hospitals, proportionally more residents (63%) were able to eat unaided, while proportionally more patients in hospitals (38%) required complete assistance with eating (Figure 22).

Figure 23
Comparison of residents for SHRUGs/SCRUGs dependency variable: 'use of lavatory'
Percentages; data collected between January 2006 – April 2008



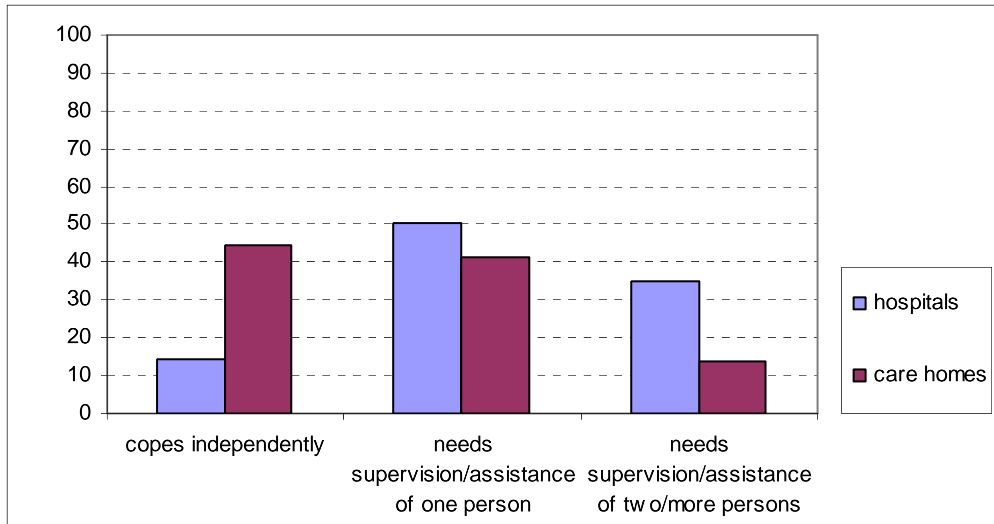
A relatively small percentage of patients (9%) in hospitals coped independently when using the lavatory compared to 32% in care homes (Figure 23). 68% of patients in hospitals and 36% of residents in care homes, were completely dependent on staff or did not use the toilet.

Figure 24
Comparison of residents for SHRUGs/SCRUGs dependency variable: 'transferring position'
Percentages; data collected between January 2006 – April 2008



30% of residents in care homes coped independently when transferring position, whilst only 11% of hospital patients did so (Figure 24). 68% of hospital patients and 28% of residents in care homes needed the assistance or supervision of two or more persons.

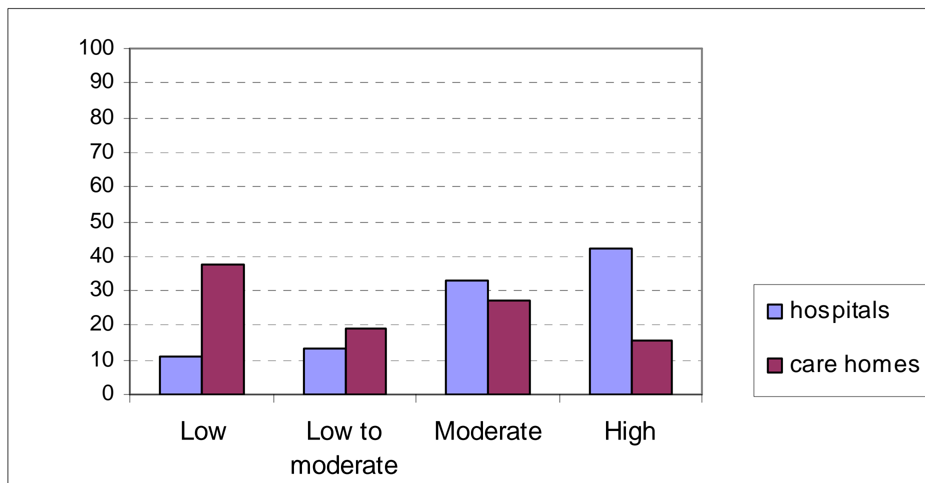
Figure 25
Comparison of residents for SHRUGs/SCRUGs dependency variable: 'moving location'
Percentages; data collected between January 2006 – April 2008



45% of residents in care homes coped independently when moving location, whilst 14% of hospital patients did so (Figure 25). 35% of hospital patients and 14% 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 January 2006 – April 2008



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 (11%) were found to have a low dependency in terms of ADL characteristics.

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8 Indicator of Relative Need (IoRN)

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

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

The IoRN enables clients receiving services in the community to be classified into groups with similar levels of relative need. The 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 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 IoRN was adjusted where required. The Indicator of Relative Need (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 Single Shared Assessment's (SSA) of people aged 65 and over in Scotland will have an IoRN grouping assigned.

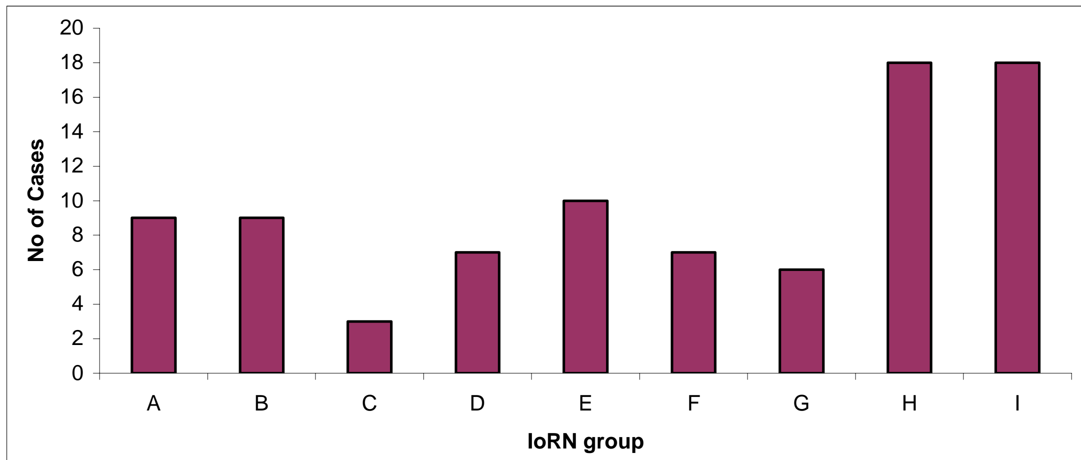
The main aims of the IoRN are to support service delivery at an individual, local and national level by providing information to:

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 IoRN has been collected and analysed to illustrate how the data could potentially be used to inform planning at a local level. Examples of some of the analyses are presented below.

Figure 28

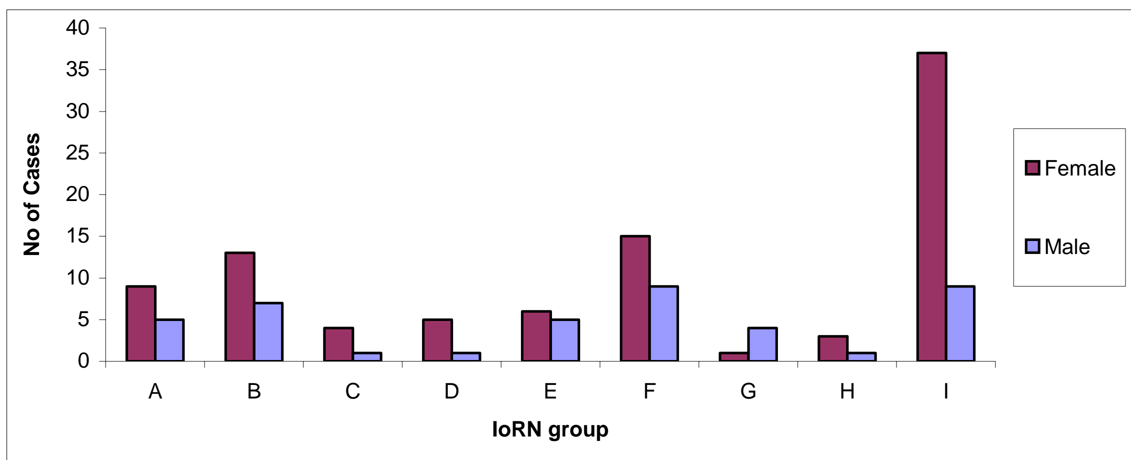
Number of clients in each IoRN group, Site A



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

Figure 29

Number of clients in each IoRN group, by gender



Other data gathered in the 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 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.

The CADS would compile the core data, including the IoRN 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 IoRN 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 IoRN group, Site C

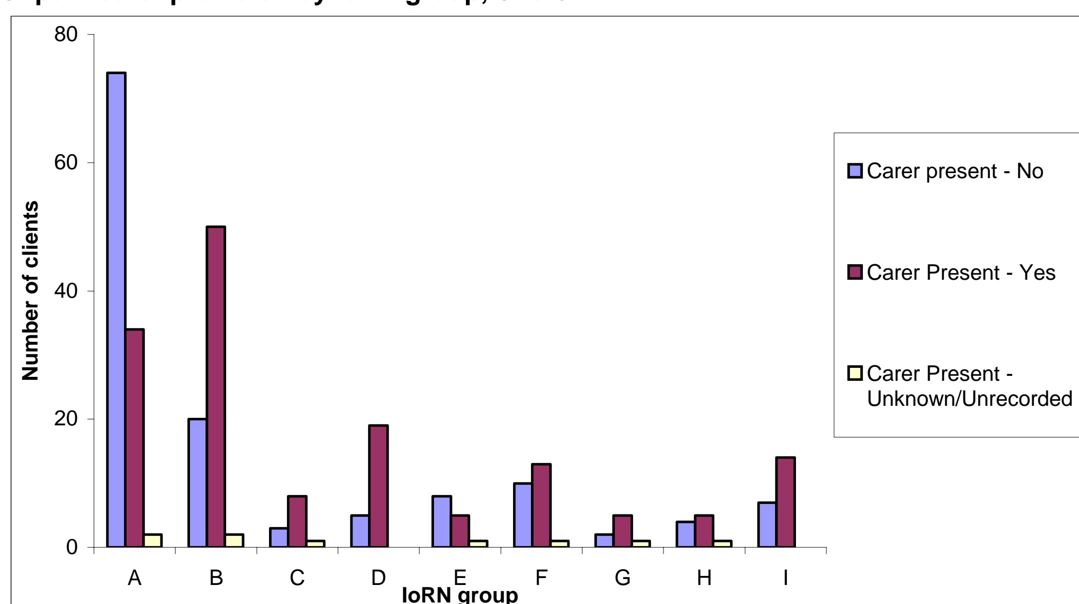


Figure 30 shows the unpaid carers provision by the IoRN group and can be used to help build a picture of what support is available to older people in a particular IoRN group.

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

Service Provided	IoRN 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
Total	4	13	2	6	6	5	12	3	3	76

Table 9 shows an example of the type of services being provided to those in particular IoRN 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: margaret.quinn@nhs.net

8.2 Care Homes Staffing Project

The Care Home Staffing Project was set up to investigate whether or how the Indicator of Relative Need (IoRN) might be used in future to inform staffing levels within care homes for older people in Scotland; it recently concluded that this was possible and a briefing document was sent to the Health Minister for approval to proceed to develop the project further in order to bring the prototype to routine use.

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 with further development in 2007/08, 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.
- Data were collected using the augmented IoRN 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 augmented IoRN 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 staff at Information Services Division used regression techniques and data envelopment analysis methods to examine how existing levels of staff were related to the number and characteristics of the residents in homes.
- A literature review was also carried out to identify, 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.
- A prototype staffing model has now been produced using excel on a CD that can be used by any care home for older people in Scotland. A

staff member that knows the residents well simply needs to place the CD into their PC, and go through the electronic questionnaire as prompted by a series of questions on the CD (a set of guidance notes have also been produced to assist with the process).

- The output will produce a graph that shows the care homes' staffing for their number of residents (adjusted according to their relative dependency). The position of the home on the graph is shown in relation to a line with a boundary above and below it to illustrate the results for care homes collected in the project – this is to indicate what may be interpreted as a reasonable range of staffing for the given number of residents (adjusted according to their relative dependency values).
- Early testing of the model has been met with enthusiasm from care homes that have tried it out, however, further more extensive testing is needed prior to extensive roll-out of this product.
- It is also recognised that a more sophisticated version of the model needs to be developed for routine use.

9 NHS Continuing Health Care Census

ISD are currently involved in a project linked to the new guidance on NHS continuing health care issued in March 2008: http://www.sehd.scot.nhs.uk/mels/CEL2008_06.pdf .This replaces previous guidance contained in MEL (1996) 22 http://www.sehd.scot.nhs.uk/mels/1996_22.pdf

The overall objectives of the guidance are to:

- Promote a consistent basis for the assessment of, and provision of, NHS continuing health care.
- Ensure care provision is based on robust assessment and decision making processes.
- Ensure that patients and their carers have access to relevant and understandable information.
- Agree a basis for the development of effective local agreements on inter-agency and multi-disciplinary working in relation to NHS continuing care.

In order to ensure that there is sufficient information to monitor changes in the balance and provision of care resulting from the revised guidance, the Scottish Government have asked ISD to undertake a census of those patients considered to be receiving long stay continuing care in NHS facilities.

The following information will be collected for all patients receiving NHS continuing care: location, patient name, patient identifier, ethnicity, date of birth, date of admission, specialty, and postcode of residence.

Although NHS continuing health care is likely to be provided in a hospital ward it may also be provided in a hospice or care home. Information on patients in these settings will also be included in the census.

It is planned to undertake the census at the end of **September 2008** and both the Scottish Government and ISD have written to all NHS Boards detailing the information to be collected.

Further details on the NHS Continuing Health Care Census can be obtained by contacting Margaret Quinn at: margaret.quinn@nhs.net

Appendix 1

NHS Board Tables

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 August 2008

NHS Board	Board	Number of Patients
NHS Ayrshire and Arran	A	139
NHS Borders	B	23
NHS Dumfries & Galloway	Y	29
NHS Forth Valley	V	142
NHS Grampian	N	67
NHS Greater Glasgow & Clyde	G	383
NHS Highland	H	69
NHS Lanarkshire	L	229
NHS Lothian	S	292
NHS Orkney	R	17
NHS Tayside	T	62

Appendix 2.2

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

NHS Boards participating in SHRUGs data collection in the year ending August 2008

NHS Board	Board	Number of Patients
NHS Forth Valley	V	71
NHS Grampian	N	46
NHS Greater Glasgow & Clyde	G	182
NHS Highland	H	75
NHS Lanarkshire	L	117
NHS Lothian	S	130
NHS Tayside	T	38
NHS Western Isles	W	15

Appendix 2.3

Participation of NHS Boards/Local Authorities in SCRUGs data collection - in the period August 2004 – August 2008

NHS Boards/Local authorities	No of residents
NHS Greater Glasgow & Clyde	
Renfrewshire	760
West Dunbartonshire	459
Total	1219
NHS Highland	
Argyll & Bute	456
NHS Forth Valley	
Falkirk	110
NHS Grampian	
Aberdeenshire	434
Aberdeen City	456
Moray	145
Total	1035
NHS Lanarkshire	
North Lanarkshire	565
South Lanarkshire	414
Total	979
NHS Lothian	
East Lothian	97
City of Edinburgh	1702
West Lothian	334
Total	2133
NHS Shetland	128
NHS Orkney	95
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

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

Other clinical conditions
Does the patient have one or more of the following clinical conditions …

Dementia
Hip fracture
Chronic Obstructive Pulmonary Disease
Stroke
Heart Disease
Problems with mobility
Cancer

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

Dressing
When dressing 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

Urinary incontinence
The resident is incontinent of urine/faeces:

1 never
2 once this week
3 more than once this week but not daily
4 one or two times in each 24 hour period
5 three or more times in each 24 hour period

Recreational activities
In your professional opinion is the patient able to take part in recreational activities

1 can independently initiate and take part in recreational activities OR choose not to participate
2 can participate independently in a range of activities provided the activity is initially set up for them
3 needs physical assistance and/or prompt, supervision or encouragement to participate in any recreational activity but does not require one to one assistance throughout the activity
4 needs complete and individual assistance throughout to participate in any recreational activity
5 unable to participate in any activity

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

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

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;
Dressing
Behaviour - co-operation
Urinary and faecal incontinence
Communication skills
Recreational activities
Other clinical conditions
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 ($p<0.0001$).

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

Variable	Percentage consistency
Eating	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
Monitoring problem behaviour	56.8
Urinary incontinence through the night	71.6
Urinary incontinence during the day	65.5
Faecal incontinence through the night	85.8
Faecal incontinence during the day	79.1
Communication skills	75.0
Hearing impairment	92.6
Visual impairment	86.5
Encouraging independence	56.8
Emotional support - Spending time with the patient	48.6
Emotional support - Engaging in activities	34.5
SCRUGs group	**58.1**

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.

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.