A COST COMPARISON OF SUPPORTED LIVING IN WALES: A SWANSEA CASE STUDY

OCTOBER 2013

Authors: Dr Paul Nash, Angela Farr, Professor Ceri Phillips

Centre for Innovative Ageing
College of Human and Health Sciences
Swansea University
Singleton Park
Swansea
SA2 8PP

E-mail for Correspondence: p.nash@swansea.ac.uk

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1.0 Executive Summary

The objectives of this project are to explore the following questions:

- What are the costs of receiving care and support in Extracare sheltered housing in Wales?
- What are the comparable cost differences between receiving care in residential care, Extracare and in the community?
- Is NHS service utilisation different for those living in different care environments?

1.0.1 Purpose

Following the commitment of the Welsh Assembly Government to spend £41million on the development of Extracare services in Wales and its subsequent acknowledgement that it did not know who this supported or what it constituted.

1.0.2 Research Background

Burholt et al. (2011) conducted an analysis of supporting living environments in Wales. While they were successful in establishing the breadth and depth of the services delivered and the expectations of residents and care managers, they were unable to establish the relative cost effectiveness of each environment. They reported difficulties in obtaining data from both care providers and local authorities. This meant that no recent cost data was available in Wales regarding supported living. Baumker et al. (2008) conducted a review of English data, but not only does this differ from Wales in terms of legislative, linguistic, cultural and geographical differences, but also in that NHS utilisation was not taken into consideration.

1.0.3 Current Results

Using the Secure Anonymised Information Linkage (SAIL) databank, this research was able to link data for housing and health care provision through social services and NHS service delivery data.

The key findings from the data are:

- The least expensive environment for delivery of care is in service users' own homes with the most expensive being residential care. Caveats to this are that residential care supports older adults with higher levels of care needs, so type of care needs to be considered. Further, residential care includes housing costs where neither Extracare nor community based care include rent or mortgage payments, as these are not costs incurred by Social Services (Section 4.2).
- The lowest equipment/modification costs were incurred by residents in Extracare with the highest by those receiving care and support in the community. This is reflective of the age of housing stock and support infrastructure, with Extracare having communal aides and ready modified flats, whereas this is not the case for community properties (Section 4.3)

- In-patient costs were significantly higher in residential care than in Extracare, again reflective of the underlying care need of older adults in each environment. The highest costs were associated with those in receipt of care in the community, which is likely because of delays in enacting assessments, re-ablement and new community support care packages (Section 4.4).
- Outpatient admissions and A&E costs were relatively stable across each of the care environments (Section 4.5)
- The most common GP services utilised by residents in each of the care environments were telephone consultations, home visits and GP surgery consultations (Section 4.7).
- Overall, Residential care appears to be the most expensive for all costs relating to GP activity (Section 4.8).

Data limitations and implications are discussed in sections 5.0 and 7.0 respectively.

2.0 Introduction & Policy Context

2.0.1 Demographics

It is well accepted that the UK's population is not only growing but also ageing where it is predicted that the population aged 60+ will reach 29% by 2033 and continue to 31% by 2058 (Office for National Statistics, 2009). The fastest population increase has been in the number of those aged 85 and over, the 'oldest old'. With an ageing population there also comes the growing need to expand care and housing solutions for older adults. There is an established drive towards improving the housing stock for older adults, incorporating health and social care needs under one roof. Where an older person is no longer able to live in their own property due to increased need, the drive is for them to live as independently as possible whilst still being able to utilise the full range of support and services that they require.

2.0.2 Key Legislation

Especially in Wales, there has been a commitment to the improvement of housing and social care provision for older adults through policies developed by the Welsh Government.

*Designed for Life (*WAG 2005) states that,
"Specialist housing where care services are available on site will become a much more widespread alternative to residential homes even for people with quite severe needs" (p.21).

The *NSF for Older People* (Welsh Assembly Government (WAG) 2006) recognises that:
"Home need not be the same house within which they have lived for years; other housing options such as sheltered housing, retirement villages or Extracare housing can enable older people to retain their independence" (p.57).

The *Strategy for Older People in Wales (*WAG 2003) aims to
"Promote an adequate supply of special forms of housing which meet the varying and changing needs of older people and ensure they can remain independent as long as possible"
(p.25)

Fulfilled Lives: Supportive Communities (WAG 2007) suggests that
"Extracare is a model of care that fits well in Wales. There are a range of facilities in extra care that promote participation and well-being" (p.57).

Better Homes for People in Wales - A National Housing Strategy (National Assembly for Wales (NAW) 2001) provides the framework and vision for housing in Wales and is actioned through complementary programmes, detailed in the *Strategy Action Plan*, and cascaded through *Local Housing Strategy Guidance*.

These successive progressive policies have paved the way for developments in Wales and built upon the development of Extracare housing which, established in the 1980's, has developed through the 1990's to become a major national alternative form of housing for

older adults. In order to meet the aims highlighted above and to meet the changing needs of older adults in Wales, the Welsh Assembly Government pledged £41 million for the development of Extracare housing in Wales.

2.0.3 Role of Extracare

Extracare is different from other types of housing as it combines independence with support, enabling residents to maintain their independence for as long as possible in their own contained property whilst utilising on-site care, support and amenities. Despite these over-arching differences, Croucher et al. (2006), concluded that there was no real universal definition or understanding on what Extracare is or should be. In a report entitled "Extracare: Meeting the needs of fit and frail older people?" funded by the Welsh Assembly Government (2011), Burholt et al. drew similar conclusions specifically to Wales. Further, they also concluded that this lack of clarity led to confusion for residents and massive variability in the care that can be provided and the expectations of an ageing resident cohort.

2.0.4 Information Gap

Alongside the lack of uniform definition, there was also a distinct lack of information on the comparative costs of Extracare to similar care environments and community care. Baumker et al. (2008) conducted the most extensive review of Extracare costing information to produce an average cost of housing provision in England, but this finding could not replicated in Wales with any certainty by Burholt et al. (2011) due to limited data availability. Even in the review by Baumker et al. (2008), costs were only really taken in isolation. Although they looked at average health and social care costs associated with residing in Extracare, more complex data for NHS service utilisation was not available. Further to this, comparisons with other types of care environments or community care were not made. Without this information, it is difficult to calculate the relative value of Extracare over other care environments.

2.0.5 Current Research

This research aims to bridge the gaps identified by Burholt et al. (2011) regarding the costs of Extracare. Costs were obtained from the City and County of Swansea local authority social services department for Extracare and residential care provision as well as community care provision. In addition, NHS utilisation data were collated using the Secure Anonymised Information Linkage (SAIL) databank housed at Swansea University. Using a series of analytical techniques the research attempted to compare the profile of older people in Extracare to those receiving home care and those in residential care. The objectives of this project are to explore the following questions:

- What are the costs of receiving care and support in Extracare sheltered housing in Wales?
- What are the comparable cost differences between receiving care in residential care, Extracare and in the community?
- Is NHS service utilisation different for those living in different care environments?

3.0 Methodology

3.1 Sampling

The sample was selected from the Social Services user databases held by Swansea Local Authority. Data was selected for adults aged 50 and over in receipt of social services funded care between the dates of November 2010 and November 2012. The age of 50 years was chosen as the Welsh Government currently classes any person over the age of 50 as an older person and the two year time period is used due to the complete data held for this period. Data related to those in receipt of care living in residential care, Extracare or in their own homes. All data were for adults living in the Swansea area. Whilst it is known that this potentially restricts the diversity of the sample, it is this sample where data can be linked to the SAIL data on NHS service utilisation to ascertain a more complete profile of the cost of health and social care for each of the adults in receipt of care. Where "N" reflects the overall number of people in receipt of care and "n", the number of people in each care environment, the total sample size was N=7071 with n=94 in Extracare (exhaustive for data available), n=2033 in residential care and n=4944 receiving care in their own homes / in the community. The needs of those in receipt of care differed both in diversity and intensity, something that will be reflected on later in the report.

3.2 Method

Working with partners in Swansea Local Authority Social Services, data was extracted from their databases regarding service users in receipt of care packages (that met the inclusion criteria specified above). A two year time frame was selected (Nov 2010-Nov 2012) where the most recent data was complete for each of the care environments. Data was extracted from several different access databases, holding information about the full range of care services provided for older adults within the locality. Separately, cost information was extracted providing information on unit costs, block contracts and care plan provision. These data were cleaned and combined when the requirements for each of the care service users had been ascertained.

Along-side this process, service users' name, date of birth and address were input to SAIL where they were linked to NHS utilisation data. When linked within SAIL, anonymised data were produced giving only a unique identifier and environment in which the service user resided. Although this meant that individual care use could not be tracked (as this would not be anonymised), it did allow for aggregated utilisation information to be collated for the purpose of analysis.

With care provision, cost and NHS data extracted from the respective databanks, costs were rationalised and data analysed by length of residence and environment through which care was delivered.

4.0 Results

4.1 A breakdown of Social Service Clients by Care Environment

Care Environment	Time in Environment	Gender	Number	%
Extracare	<12 Months	Female	14	70
		Male	6	30
	12-18 Months	Female	7	58
		Male	5	42
	19-24 Months	Female	44	71
		Male	18	29
	Total	**Female**	**65**	**69**
		Male	**29**	**31**
		Total	**94**	
Residential Care	<12 Months	Female	560	68
		Male	263	32
	12-18 Months	Female	210	71
		Male	85	29
	19-24 Months	Female	646	71
		Male	269	29
	Total	**Female**	**1416**	**69**
		Male	**617**	**31**
		Total	**2033**	
Community	<12 Months	Female	0	0
		Male	0	0
	12-18 Months	Female	0	0
		Male	0	0
	19-24 Months	Female	3022	61
		Male	1922	39
	Total	**Female**	**3022**	**61**
		Male	**1922**	**39**
		Total	**4944**	

The table highlights the breakdown of residents by gender and the duration of time that they have spent in receipt of care in each of the care environments. Of note is that each time category is mutually exclusive as social care clients would not be double counted.

It is evident from table 4.1 that the majority (66%) of the people within the sample frame were female. This is stable between care environments and relatively consistent over time (within the two years sampled). Of interest is the spread between environments. There are relatively few people resident in Extracare within the sample which is reflective of the few number of social service care clients residing in Extracare. There are more residents in the geographical region living in Extracare, but only those in receipt of additional social services care support were included in the LA databases. Of further note is the fact that at the time

of this research, of those clients in receipt of care in their own homes in the community, all had been receiving care within the 19-24 month band. This could suggest that more long term care needs are met within the community until such point that they require more intensive support. This is a supposition that will be discussed later in the report in light of cost information. As there are differences in the number of clients in each time band within the care environments, suggesting potential differences in levels of care requirement, these bandings will be maintained for reporting purposes throughout. Of further note as illustrated in the appended tables, residents in residential care were significantly older than the other two environments with those in the community being the youngest.

Key Data Considerations

The following should be considered for each of the following costing tables:

- Each of the costs (unless otherwise specified) are given as an average (mean) for the time band to which they refer and not a monthly mean. E.g. a cost for the time band 0-12 months is the average cost for all of the people in that band over the 12 month period where the 19-24 month band will be an average for all of the people in that band over the 24 month period. This has been done to firstly level out the fluctuations in care packages that some individuals have in response to periods of acute care need and further to provide macro level information for comparison, rather than micro month by month data.
- The disparate long-term care needs in each environment will be somewhat levelled out by aggregating the data with larger data sets. This will allow for more accurate comparisons between care environments, removing excessive outliers.
- Extracare only has a small useable dataset.
- When addressing Extracare and community costs, these are only reflective of the care costs and do not include rent / mortgage payments. If these are paid for by the council then they come from a separate housing budget, otherwise are private accommodation payments.
- Costs quoted refer only to the contributions made by social services and do not include any additional top-up costs by individuals privately.
- All figures given are rounded to the nearest whole number
- All " $\bar{x}$ " averages are the arithmetic mean
- All significance values refer to levels of statistical significance where $p \leq 0.01$ illustrates a 1% likelihood that results are due to chance, $p \leq 0.05$ is 5% and $p \leq 0.1$ shows 10%.

4.2 Mean costs of care provision in three care environments

Care Environment	Time in Environment	Cost (Min)	Cost (Max)	Cost ($\bar{x}$ for total length of care)
Extracare	<12 Months	£18	£13,986	£5,311
	12-18 Months	£553	£34,813	£7,036
	19-24 Months	£389	£52,833	£13,229
Residential Care	<12 Months	£144	£39,831	£7,221
	12-18 Months	£1,183	£39,115	£22,348
	19-24 Months	£2,674	£67,076	£35,220
Community	<12 Months	N/A	N/A	N/A
	12-18 Months	N/A	N/A	N/A
	19-24 Months	£9	£129,752	£8,240

Table 4.2 illustrates the cost of care provision in each of the care environments. Cost data for each environment was collected from the Local Authority Social Services costings database.

Of note (as mentioned previously) the costs given for Extracare and community care refer to those incurred by the social services team for the provision of care only and do not cover the cost of housing (rent or mortgage). Those costs associated with residential care are inclusive of housing, food and care. As residential care is a provision where there is little independence (just a room, no separate living and cooking facilities), the complete needs of the service user are met and covered by the charge.

It is of note, however, that those costs reflected above are those charges paid by social services and do not reflect any costs incurred by residents who more top-ups or contributions towards their own care. The fact that some residents in each of the care environments are making personal care contributions will account for some of the variance in the costs displayed.

In Extracare especially, there is increased flexibility in the level of care that is provided to the residents. If there is a period of increased need following an acute incident then there is the ability to react in the short term and address the elevated care need. This is reflected in the costs when looking at the changing minimum and maximum care costs over the different time bands. The flexibility means that there can be fluctuating care costs throughout the tenancy of a resident and it can further mean that reflected costs are skewed by potentially short lived but intensive care requirement episodes. This cannot be reflected with any degree of certainty in the figures obtained due to the anonymised nature of the dataset.

This flexibility is also available to a lesser extent in residential care environments. However, the general level of care need in residential care need is higher, reflected in the comparative lack of independence and autonomy. As the base level need in residential care is generally higher, when an increase in care need is identified it is unlikely to result in re-ablement and result in prolonged increased care package intensity and thus increased costs for the duration of the service users' stay.

Despite this, of note in both of the supported living environments, is the increasing costs of care provision through the time bands. This would seem to indicate an increased level of care requirement for both environments though more markedly so for residential care.

These assertions are supported in that there is a statistically significant ($p \leq 0.01$) difference between the care environments where those in residential care have higher overall costs. Of note is that this does include housing costs. ANOVA results indicated that there was no statistical difference between community and Extracare provision. When expanding on these categories further, there were also significant differences between the time bandings for both Extracare ($p \leq 0.01$) and residential care ($p \leq 0.01$).

The costs associated with community care vary the most in terms of cost to the social services budget. As mentioned, this is likely due in part at least to the contributions made by the older person themselves. It is more likely that the persons receiving care in their own homes have a greater resource capital to be assessed able to make contributions (estate including property) and as such this is likely causing a skew on some of the data. With the larger sample size for this category, some of this skew will be accounted for by using the mean calculation.

Building on the report by Burholt et al. (2011), the majority of those who are being supported in their own homes are in receipt of care for physical / mobility issues and as such will require less care hours than someone with more intensive nursing needs for cognitive impairments which is more likely in residential care. This lack of intensity is noted when the mean cost is observed, producing by far the lowest figure of the three environments.

As a note of caution, the figures reflect the supply of care and not necessarily the actual need. As Burholt et al. reported, those in receipt of care in their own homes may be unable or unwilling to ask for increased support should their circumstances change. This could be due to a desire to remain in their own home and fear of this option being taken from them and/or confusion as to where to go for assistance through red tape and forms.

4.3 Cost of equipment and modifications

Care Environment	Time in Environment	Cost (Min)	Cost (Max)	Cost ($\bar{x}$ for total length of care)
Extracare	<12 Months	£22	£27	£24
	12-18 Months	£24	£4,795	£887
	19-24 Months	£7	£3,676	£311
Residential Care	<12 Months	£3	£8,840	£689
	12-18 Months	£16	£4,009	£683
	19-24 Months	£16	£6,310	£443
Community	<12 Months	N/A	N/A	N/A
	12-18 Months	N/A	N/A	N/A
	19-24 Months	£1	£10,827	£610

Table 4.3 reflects the costs incurred for modification and equipment designed to support older adults. The data for modifications and equipment was taken from the Local Authority Social Services costings database.

The equipment can include such things as walking frames and minor modifications such as changes to light fittings which account for the smaller end of the cost spectrums. At the higher end (and more relevant in community dwelling older adults) of the cost spectrum are modifications and equipment, such as bath hoists and wet room conversions. As there are huge differences in the types of modifications required, this accounts for the disparity in the minimum and maximum costs.

There are likely to be larger scale modifications paid by social services for those living in their own homes as this is where the least specialised equipment will currently exist and specific supportive housing design features will be less likely. This is also the least cost effective way of providing the equipment when comparing the three care environments as the modifications can only be used by that person (or persons if a couple) where in residential and Extracare (to a lesser extent) facilities are communal and as such can be utilised by a number of residents.

The costs linked to residential care are also higher than those in Extracare, which is likely due to the nature of the infrastructure supporting each of the environments as well as residential care including costs of meal provision, laundry on top of accommodation running costs. Residential care is largely speaking an older housing stock and as such is likely to require additional modifications when older adults with differing needs become resident. This is illustrated by the larger initial costs and continued spend for the residents as they age and as care needs increase.

By contrast, Extracare housing has lower initial equipment costs as they are newer housing stock and are often equipped with wider door frames, accessible bathing rooms etc and as such the costs are incurred later in the residents' occupancy as physical needs may increase, requiring modification of existing facilities to meet the needs of individual changes in circumstance.

When the range of costs is set aside and the mean costs are observed, there is no statistical difference between each of the care environments, however, this is when the range and contextual information provide more of an insight into the cost trends.

4.4 Costs and duration of inpatient hospital stays

Care Environment	Time in Environment	Number of Admissions	Duration of Stay (days)	Cost ($\bar{x}$ for total length of care)
Extracare	<12 Months	2	38	£13,309
	12-18 Months	3	40	£12,520
	19-24 Months	2	19	£8,594
Residential Care	<12 Months	2	30	£11,209
	12-18 Months	2	41	£14,790
	19-24 Months	2	52	£19,196
Community	<12 Months	N/A	N/A	N/A
	12-18 Months	N/A	N/A	N/A
	19-24 Months	3	52	£20,249

Inpatient stay duration was retrieved from the SAIL database housed at Swansea University and the costs are standard costs from the Department of Health Reference Costs manual.

Those service users in Extracare had comparable numbers of stays both between time bandings and also to those resident in residential care environments. The main fluctuation between the grouping by band and environment was in duration of stay (Extracare, $p \leq 0.01$; Residential, $p \leq 0.05$) and the associated cost (Residential, $p \leq 0.01$).

Those service users in Extracare who have currently resided there the longest appear to have lower costs than those who have been there a shorter period and consequentially have lowered costs. This finding is supported by previous research (Burholt et al., 2011) whereby when a resident in Extracare increases their care requirements outside and above those available in the care agreement/block contract (especially with regards cognitive impairment) then the service user is re-housed into a residential care facility. This results in only the 'most well' older adults in receipt of care remaining in Extracare and those with increased or specialist needs accumulate in residential care. This is supported when looking at the data collected for residential care homes when a marked steady increase in cost is observed through each banding despite the number of admissions being stable. This trend would be indicative of stable admissions but for more serious illnesses (also supported by the duration of stay).

Where at first glance it would appear that Extracare is resulting in reduced NHS inpatient costs, this is not the full picture. This explanation, however, is only theorised in context and cannot be supported empirically using the data collected any further than to mention that there is a significant difference in length of stay ($p \leq 0.01$) and cost ($p \leq 0.01$) between care environments.

The data available does not stipulate the illness experienced so inferences are being made by triangulating cost, length of stay and tacit knowledge of the sector.

When regarding the community figures, the cost and duration of stay looks similar to the same time band cohort in residential care. However, there is likely to be a different story which is alluded to by the slightly elevated number of days spent as in-patients. Before being discharged, patients are assessed and a care plan is put into place that can facilitate their return to a place of residence. When returning to Extracare or residential care, this support network is already in place and care packages can be relatively easily modified to account for both short and long term changes to service user need. This is not necessarily the case when returning to a community setting.

Assessments need to be conducted as to the service users' ability to care for themselves, as well as for services to be put in place to support the older adult. The additional reallocation of community resource takes longer than in supported living and as such then results in longer stay with increased costs, often for relatively minor initial admissions. Again, this is a supposition of the data based on situational experience and knowledge but is supported by the figures obtained.

4.5 Cost and number of outpatient visits

Care Environment	Time in Environment	Number of Attendances	Cost ($\bar{x}$ for total length of care)
Extracare	<12 Months	2	£269
	12-18 Months	1	£134
	19-24 Months	3	£400
Residential Care	<12 Months	2	£290
	12-18 Months	2	£241
	19-24 Months	2	£283
Community	<12 Months	N/A	N/A
	12-18 Months	N/A	N/A
	19-24 Months	3	£345

The number of outpatient visits was retrieved from the SAIL database housed at Swansea University and the costs are standard costs from the Department of Health Reference Costs manual.

The costs associated with out-patient service utilisation are relatively small and are relatively stable across time band and care environment. This is represented by the fact there are no significant differences for either Extracare or residential care in cost or attendances between any of the time bands.

Data pertaining to the type of care service and reason for appointment are not given in this databank due to the anonymised nature of the dataset. Due to this, little can be ascertained from the figures other than that the place of residence makes comparatively little difference to the cost and utilisation of out-patient procedures undertaken.

4.6 Cost and number of emergency admissions

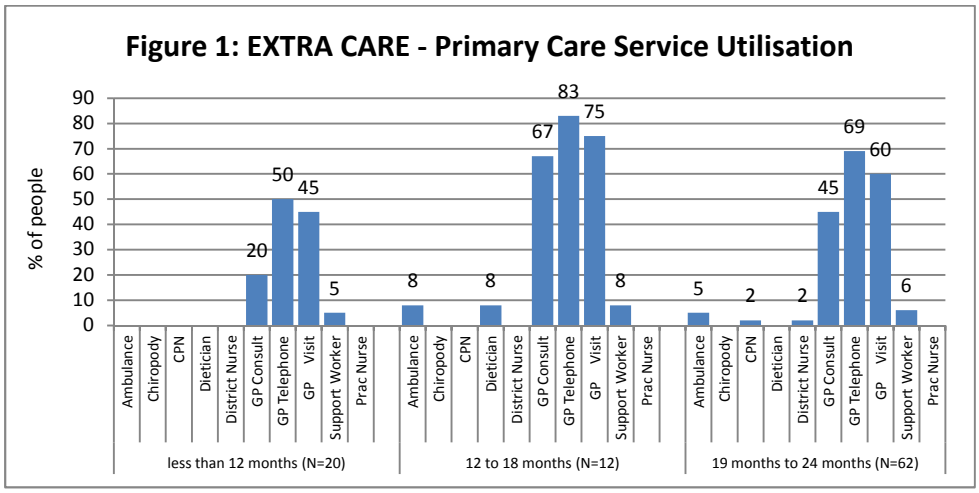
Care Environment	Time in Environment	Number of Admissions	Cost ($\bar{x}$ for total length of care)
Extracare	<12 Months	2	£248
	12-18 Months	3	£372
	19-24 Months	3	£314
Residential Care	<12 Months	2	£222
	12-18 Months	2	£290
	19-24 Months	3	£312
Community	<12 Months	N/A	N/A
	12-18 Months	N/A	N/A
	19-24 Months	2	£222

The number of emergency admissions was retrieved from the SAIL database housed at Swansea University and the costs are standard costs from the Department of Health Reference Costs manual.

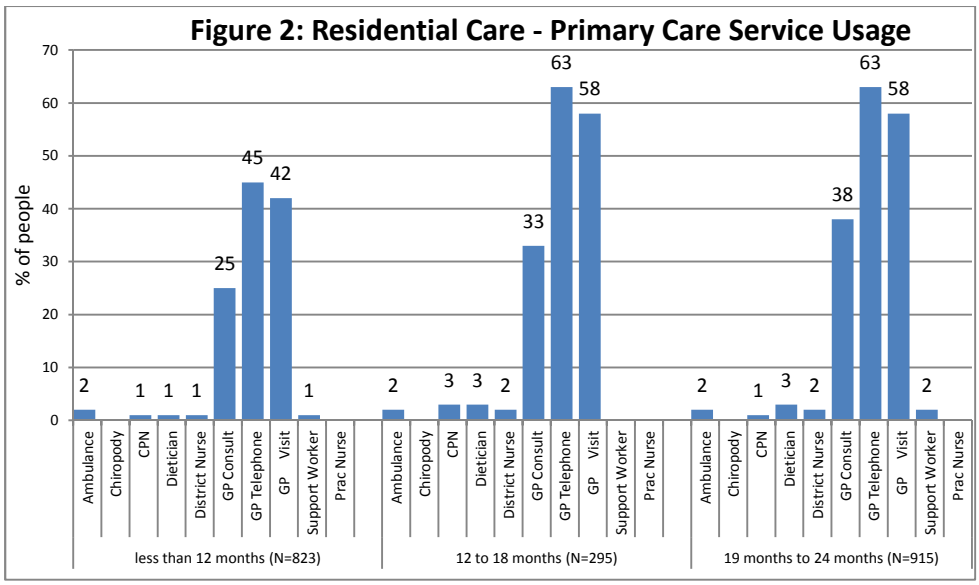
The costs associated with emergency admissions are relatively small and are relatively stable across time band and care environment. Data pertaining to the type of care service and reason for appointment are not given in this databank due to the anonymised nature of the dataset. Due to this, little can be ascertained from the figures other than that the place of residence makes comparatively little difference to the cost and utilisation of out-patient procedures undertaken.

The only statistically significant change was in the cost over time within residential care ($p \leq 0.01$), which it is anticipated results from complications of existing illness, falls and end of life care. Due to the acute emergency nature of admissions of this kind, it was not anticipated that any notable difference would be found.

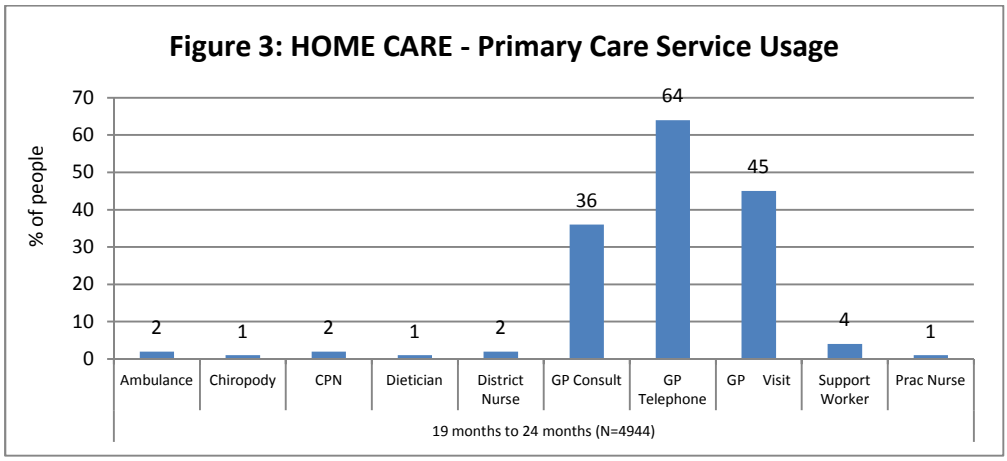
4.7 GP care by type



A graph illustrating the primary care service utilisation of Extracare residents.



A graph illustrating the primary care service utilisation of residential care residents.



A graph illustrating the primary care service utilisation of older adults receiving home care.

The data for the graphs included in 4.7 are collected from the SAIL database housed at Swansea University.

Figures 1-3 illustrate the percentage of people utilising different primary care services in each of the care environments by time banding. The primary finding from this is that in each of the care environments, the three most frequently used services are the same as is the order of this frequency.

The most commonly used service is the GP telephone service. This is where the service users contact the GP surgery for advice, support and guidance. This is the first port of call and the most inexpensive way of engaging with the GP.

The second most common service in each of the environments is the GP home visit. Conversely to the telephone call, this is the most costly way of engaging with the GP, however, seems to be one favoured especially within the Extracare setting.

The third most utilised service is that of the GP consultation. This is where the service user visits the surgery to receive treatment from the GP. Other than these three services, there is not a huge reliance on primary health care outside the hospital services already discussed.

Worthy of consideration, however, is that only those receiving care in the community seem to utilise the practice nurse ($p \leq 0.05$). This is a relatively cheaper and at times most cost effective way of care being provided – for the vast majority of cases - but is also reflective of the high number of home visits also taking place. However, whilst being the best source available, the GP Read Codes may not be 100% reliable for assessing which health professional delivered care as the majority of codes entered pertained only to the treatment plan and illness description.

When looking at the environments separately it needs to be considered that the figures reported refer to the percentage of residents who have used the services and not the numbers of times those residents have used said services.

4.8 Costs relating to GP activity

The majority of patients required multiple medication prescriptions. To calculate the cost of the medication prescribed to patients during their time in each care environment, the number of times a patient had a consultation with their GP was used as an indication that a prescription for medication was also administered. The table outlining the most prescribed medications for this client group (See Appendix) shows that pain relief, antibiotics, and medication to counteract hypertension and high cholesterol were the most frequently prescribed for medium to long term management of health issues. Due to the extremes in illness and subsequent service usage within Extracare environments, paired with a limited sample size, significance values may not be wholly representative.

4.8.1 Total GP and medication costs by care environment

GP time and medication costs		
Care Environment	Time in Environment	Cost ($\bar{x}$ for total length of care)
Extracare	<12 Months	£249
	12-18 Months	£472
	19-24 Months	£613
Residential Care	<12 Months	£304
	12-18 Months	£551
	19-24 Months	£605
Community	<12 Months	N/A
	12-18 Months	N/A
	19-24 Months	£493

GP visits and medication prescribed were taken from the SAIL database housed at Swansea University and the costs are standard costs from the Department of Health Reference Costs manual.

For overall costs of GP time and associated medication, there is a significant difference between the three care environments ($p \leq 0.01$) with those in residential care incurring the highest costs and those in the community the lowest. It is also within this care environment that there is a significant difference ($p \leq 0.01$) in cost and service utilisation between the time bandings.

This finding is commensurate with the levels of care needs supported in each of the care environments. No other significant differences were calculated.

4.8.2 Total costs incurred through all non-medication GP services by care environment

Other Primary Care Service Providers		
Care Environment	Time in Environment	Cost ($\bar{x}$ for total length of care)
Extracare	<12 Months	£952
	12-18 Months	£877
	19-24 Months	£898
Residential Care	<12 Months	£963
	12-18 Months	£920
	19-24 Months	£920
Community	<12 Months	N/A
	12-18 Months	N/A
	19-24 Months	£913

Service Utilisation was taken from the SAIL database housed at Swansea University and the costs are standard costs from the Department of Health Reference Costs manual.

The table above combines the costs incurred through all other GP based services. As with the overall GP costs, there is a significant difference between the three care environments ($p \leq 0.01$) with those in residential care incurring the highest costs, however, in this instance it is those in Extracare who use the fewest additional resources. It is also within the residential care environment that there is a significant difference ($p \leq 0.01$) in cost and service utilisation between the time bandings.

This finding is commensurate with the levels of care needs supported in each of the care environments. The switch between Extracare and community care reflects the different services (See Appendix) required to maintain the independence of older adults in their own home without the integral support associated with Extracare. No other significant differences were calculated.

4.8.3 Cost of laboratory procedures utilised by care environment

Laboratory Procedures		
Care Environment	Time in Environment	Cost ($\bar{x}$ for total length of care)
Extracare	<12 Months	£584
	12-18 Months	£307
	19-24 Months	£327
Residential Care	<12 Months	£656
	12-18 Months	£402
	19-24 Months	£396
Community	<12 Months	N/A
	12-18 Months	N/A
	19-24 Months	£374

The number and type of laboratory procedures conducted were taken from the SAIL database housed at Swansea University and the costs are standard costs from the Department of Health Reference Costs manual.

The table above details the costs associated with laboratory procedures requested by GPs. Approximately 80% of laboratory procedures were either biochemistry or haematology. Other lab tests performed were not analysed and costed as specific details were not available.

There is a significant difference between the three care environments ($p \leq 0.01$) with those in residential care incurring the highest costs and those in Extracare using the fewest additional resources and incurring costs marginally smaller than those in the community.

It is also within the residential care environment that there is a significant difference ($p \leq 0.01$) in cost and service utilisation between the time bandings. This finding is commensurate with the span of care needs supported in each of the care environments.

4.8.4 Total costs of primary care received by care environment

Overall Primary Care costs – all services accessed		
Care Environment	Time in Environment	Cost ($\bar{x}$ for total length of care)
Extracare	<12 Months	£624
	12-18 Months	£618
	19-24 Months	£785
Residential Care	<12 Months	£594
	12-18 Months	£718
	19-24 Months	£749
Community	<12 Months	N/A
	12-18 Months	N/A
	19-24 Months	£666

Service utilisation data were taken from the SAIL database housed at Swansea University and the costs are standard costs from the Department of Health Reference Costs manual.

This table indicates the total costs relating to the access of primary care, aggregating the costs provided in section 4.8.

Where there is a significant difference between care environments ($p \leq 0.01$) where residential care again comes out at the most expensive for service utilisation, this finding is to be taken with caution.

It is highly probable that the differences between residential care and Extracare are due to the differentials in sample sizes and the likelihood of a skewed distribution in relation to Extracare as opposed to a more normal distribution for residential care

5.0 Data limitations

5.0.1 Duration of Care

As discussed previously there are several limitations in respect to the costing information. The dates chosen captured older adults who were receiving care at some point between November 2010 and November 2012. This included people in receipt of care from 1 month to 24 months. This could have potentially skewed the data when looking at average costs for each environment. To mitigate this whilst still maintaining manageable groups of data, each data set was banded by duration of residence. Linked to this is the flexibility of care package delivery, especially within the Extracare environment. Packages of care grow and shrink in response to acute client need and as such, creating an average cost is the most accurate way of producing associated costs, however, there are still periods where costs are subject to considerable variation.

5.0.2 Coding at Point of Care

There were also issues identified with the way in which data are recorded that have to be considered in light of the results presented. The way in which GPs record data (coding) can result in the same illness being recorded in a number of different ways and as such being grouped as a different treatment. There needs to be greater consistency in GP coding and less variation in the codes available to enable grouped costs to be more accurately calculated. Linked to this is the need for practitioner codes to be allocated. Costs were calculated using average costs per admission but costs in GP surgeries would be lower if procedures were conducted by a nurse opposed to a GP themselves. This data was not readily available.

5.0.3 Block Contracts

Regarding Extracare data, the use of block contracts meant that it was not always known what care was being provided and to whom over what period. Where block contracts were not used, service user records were only available for the time an individual was in receipt of care which has resulted in low Extracare numbers being available. Tenure dates were not available and as such any NHS utilisation data could not be ascertained for these residents. Analysis is based on the start and end of the provision of care packages, therefore making it difficult to establish where some service provision took place, for example re-ablement and respite care. It is difficult to ascertain whether an illness requiring re-ablement or respite took place in Extracare or led to a person moving into Extracare. Although different budgets are used to pay for housing and health care, it would be useful for the purposes of cost analysis and resource allocation if this data was available.

6.0 Conclusions

- Overall costs indicate that the least expensive environment for delivery of care is in service users own homes with the most expensive being residential care. Caveats to this are that as Burholt et al. (2011) indicate, residential care supports older adults with higher levels of care needs so type of care needs to be considered. Further, residential care includes housing costs where neither Extracare nor community based care include rent or mortgage payments as these are not costs incurrent by Social Services.
- When looking at the individual types of care and support utilisation it becomes apparent that the lowest equipment / modification costs were incurred by residents in Extracare, with the highest by those receiving care and support in the community. This is reflective of the age of housing stock and support infrastructure with Extracare having communal aides and ready modified flats where this is not the case for community properties.
- Hospital data linked through the SAIL databank illustrates that inpatient costs were significantly higher in residential care than in Extracare, again reflective of the underlying care need of older adults in each environment.
- The highest costs were associated with those in receipt of care in the community, because of delays in enacting assessments, re-ablement and new community support care packages. This highlights the need for better communication between agencies and local authority departments to expedite the coordination of support packages to support the service users who live in the community to return to their residence.
- Outpatient admissions and A&E costs were relatively stable across each of the care environments and as such warranted little discussion.
- The most common GP services utilised by residents in each of the care environments were telephone consultations, home visits and GP surgery consultations.
- Very few other services were utilised by the majority of those in receipt of care. This may be an area warranting further investigation to ascertain whether or not resource allocation is efficient or whether additional service users can be efficiently supported using a wider array of community based interventions to minimise impact on other primary care services.
- Residential care appears to be the most expensive on average for all costs relating to GP activity.
- Specific audits of care services should be conducted to ascertain the extent of care service utilisation and to ensure all data is being accurately recorded, stored and shared between local authority departments.
- The study demonstrates the need for regular communication, access to all relevant information and inter-agency and inter-professional data sharing using accurate information to be in place to enhance the accuracy of costing of care provision and

inform decisions relating to the most efficient services for people requiring social care provision.

7.0 Implications & Future Research

Although no direct implications have been identified from the analysis of the data, they do highlight some important issues for consideration:

The need for more inter-departmental working is evident so that total costs can be calculated irrespective of the micro budget it is derived from. This in turn will allow for more effective utilisation of resources through allocation by need. Where a care client could be better supported in a particular environment bases on care need and cost effectiveness, this option can be highlighted and resource made available to support the choice of client and care worker.

Associated with this, more targeted interventions to support older adults in their chosen care environment can be implemented with effective accurate information as to the best care and environmental support options.

The data further highlight the need for more accurate and consistent recording and record maintenance for both GPs and local authorities. Accurately recording what test has been conducted, where, when and by whom would enable an accurate cost to be reflected.

Similarly test results should be labelled as such to prevent costing of tests to be duplicated. Similarly recording more accurately the tenancy of residents would enable costs and resource consumption to be more accurately mapped. In doing this, there can be more effective resource allocation based upon need rather than historical consumption or block contracts.

The main implication, however, is that further research is needed to potentially track the care pathway of a cohort of older adults from the time of entering the care framework until the time they exit from it. Only in tracking individual case studies on a larger scale can the pattern of utilisation be mapped. The data potentially exists within the databanks, however, retrospectively tracking individuals is a task outside the remit of this research due to the time intensity. With dates only available for specific care packages when there is continuation of care and not allowing for breaks in this, more worth can be derived currently from metadata analysis using aggregated figures.

Appendix A

A breakdown of Care Environment Costs

- Service Utilisation data were collected from the SAIL database housed at Swansea University and the costs are standard costs from the Department of Health Reference Costs manual.

	Time in environment		N	Minimum	Maximum	Mean
Extra Care	19 to 24 months	EXTRA CARE TOTAL COST	44	£415	£46760	£11969
		Reablement (Total number of hours)	9	6	172	58
		Reablement (Cost)	9	£97	£2970	£1003
		Day Care – (Total days in day care between 2010 – 2012 for Hazel Court residents)	13	8	104	75
		Day Care (Cost)	13	£813	£10408	£4953
		Respite (Total number of days)	4	9	39	20
		Respite (Cost)	4	£400	£4439	£2120
		Equipment (Cost)	18	£7	£3676	£311
	12 to 18 months	EXTRA CARE TOTAL COST	10	£629	£24405	£5095
		Reablement (Total number of hours)	2	32	65	49
		Reablement (Cost)	2	£553	£1124	£839
		Day Care – (Total days in day care between 2010 – 2012 for Hazel Court residents)	3	56	104	88
		Day Care (Cost)	3	£2056	£10408	£7624
		Respite (Total number of days)	3	20	49	35
		Respite (Cost)	3	£1595	£5056	£2976
		Equipment (Cost)	7	£24	£4795	£887
	less than 12 months	EXTRA CARE TOTAL COST	14	£18	£13182	£2252
		Reablement (Total number of hours)	3	47	458	237
		ReablementCost	3	£804	£7913	£4090
		Day Care – (Total days in day care between 2010 – 2012 for Hazel Court residents)	1	66	66	66
		Day Care (Cost)	1	£2423	£2423	£2423
		Respite (Total number of days)	0			
		Respite (Cost)	0			
		Equipment (Cost)	3	£22	£27	£24

Residential Care	19 to 24 months	Total Residential Care Costs	562	£2674	£67076	£35221
		Equipment costs	45	£16	£6310	£443
	12 to 18 months	Total Residential Care Costs	248	£1183	£39115	£22348
		Equipment costs	20	£16	£4009	£683
	less than 12 months	Total Residential Care Costs	776	£144	£39831	£7221
		Equipment costs	103	£3	£8840	£689
HOME	19 to 24 months	Reablement (Total number of hours)	1236	< 1	2028	136
		Reablement (Cost)	1236	£4	£35071	£2360
		Day Care (Total days in day care between November 2010 –November 2012)	916	1	262	72
		Day Care (Cost)	916	£26	£17066	£3078
		Respite (Total number of days)	375	1	147	24
		Respite (Cost)	375	£0	£15855	£2446
		Domiliary Care (Total number of hours)	1105	< 1	7504	800
		Domiliary Care (Cost)	1105	£3	£129753	£12434
		Equipment (Cost)	885	£1	£10827	£610

Appendix B

A breakdown of Primary Care Service Usage and Cost

- Service Utilisation data were collected from the SAIL database housed at Swansea University and the costs are standard costs from the Department of Health Reference Costs manual.

	Time in environment		N	Minimum	Maximum	Mean
Extra Care	19 to 24 months	Ambulance (number of times accessed)	3	1	2	1
		Ambulance (cost)	3	£263	£526	£351
		Chiropody (number of times accessed)	0			
		Chiropody (cost)	0			
		CPN (number of times accessed)	1	1	1	1
		CPN (cost)	1	£67	£67	£67
		Dietician (number of times accessed)	0			
		Dietician (cost)	0			
		District Nurse (number of times accessed)	1	1	1	1
		District Nurse (cost)	1	£39	£39	£39
		GP Consultation and Prescription (number of times accessed)	27	1	8	3
		GP Consultation and Prescription (cost)	27	£43	£342	£127
		GP Telephone consult (number of times accessed)	43	1	60	11
		GP Telephone consult (cost)	43	£22	£1320	£244
		GP visit (number of times accessed)	37	1	17	5
		GP visit (cost)	37	£92	£1564	£453
		Health Support Work (number of times accessed)	4	1	12	5
		Health Support Work (cost)	4	£31	£372	£140
		Practice Nurse (number of times accessed)	0			
		Practice Nurse (cost)	0			
	12 to 18 months	Ambulance (number of times accessed)	1	1	1	1
		Ambulance (cost)	1	£263	£263	£263
		Chiropody (number of times accessed)	0			
		Chiropody (cost)	0			
		CPN (number of times accessed)	0			
		CPN (cost)	0			
		Dietician (number of times accessed)	1	1	1	1
		Dietician (cost)	1	£112	£112	£112
		District Nurse (number of times accessed)	0			
		District Nurse (cost)	0			
		GP Consultation and Prescription (number of times accessed)	8	1	5	2
		GP Consultation and Prescription combined (cost)	8	£43	£214	£101

		GP Telephone consult (number of times accessed)	10	1	7	3
		GP Telephone consult (cost)	10	£22	£154	£70
		GP visit (number of times accessed)	9	1	11	4
		GP visit (cost)	9	£92	£1012	£409
		Health Support Work (number of times accessed)	1	5	5	5
		Health Support Work (cost)	1	£155	£155	£155
		Practice Nurse (number of times accessed)	0			
		Practice Nurse (cost)	0			
	less than 12 months	Ambulance (number of times accessed)	0			
		Ambulance (cost)	0			
		Chiropody (number of times accessed)	0			
		Chiropody (cost)	0			
		CPN (number of times accessed)	0			
		CPN (cost)	0			
		Dietician (number of times accessed)	0			
		Dietician (cost)	0			
		District Nurse (number of times accessed)	0			
		District Nurse (cost)	0			
		GP Consultation and Prescription (number of times accessed)	4	1	3	2
		GP Consultation and Prescription (cost)	4	£43	£128	£64
		GP Telephone consult (number of times accessed)	10	1	7	3
		GP Telephone consult (cost)	10	£22	£154	£55
		GP visit (number of times accessed)	9	1	5	2
		GP visit (cost)	9	£92	£460	£215
		Health Support Work (number of times accessed)	1	2	2	2
		Health Support Work (cost)	1	£62	£62	£62
		Practice Nurse (number of times accessed)	0			
		Practice Nurse (cost)	0			
Residential Care	19 to 24 months	Ambulance (number of times accessed)	18	1	3	1
		Ambulance (cost)	18	£263	£789	£292
		Chiropody (number of times accessed)	0			
		Chiropody (cost)	0			
		CPN (number of times accessed)	10	1	2	1
		CPN (cost)	10	£67	£134	£74
		Dietician (number of times accessed)	23	1	2	1
		Dietician (cost)	23	£112	£225	£137
		District Nurse (number of times accessed)	20	1	3	2
		District Nurse (cost)	20	£39	£117	£59

		GP Consultation and Prescription (number of times accessed)	333	1	16	3
		GP Consultation and Prescription combined (cost)	333	£43	£683	£123
		GP Telephone consult (number of times accessed)	575	1	35	6
		GP Telephone consult (cost)	575	£22	£770	£140
		GP visit (number of times accessed)	533	1	87	6
		GP visit (cost)	533	£92	£8004	£529
		Health Support Work (number of times accessed)	19	1	4	2
		Health Support Work (cost)	19	£31	£124	£52
		Practice Nurse (number of times accessed)	1	2	2	2
		Practice Nurse (cost)	1	£23	£23	£23
	12 to 18 months	Ambulance (number of times accessed)	7	1	2	1
		Ambulance (cost)	7	£263	£526	£301
		Chiropody (number of times accessed)	0			
		Chiropody (cost)	0			
		CPN (number of times accessed)	8	1	1	1
		CPN (cost)	8	£67	£67	£67
		Dietician (number of times accessed)	9	1	2	1
		Dietician (cost)	9	£112	£225	£125
		District Nurse (number of times accessed)	6	1	18	4
		District Nurse (cost)	6	£39	£702	£156
		GP Consultation and Prescription (number of times accessed)	94	1	14	3
		GP Consultation and Prescription (cost)	94	£43	£598	£132
		GP Telephone consult (number of times accessed)	186	1	31	6
		GP Telephone consult (cost)	186	£22	£682	£135
		GP visit (number of times accessed)	170	1	25	5
		GP visit (cost)	170	£92	£2300	£463
		Health Support Work (number of times accessed)	1	3	3	3
		Health Support Work (cost)	1	£93	£93	£93
		Practice Nurse (number of times accessed)	0			
		Practice Nurse (cost)	0			
	less than 12 months	Ambulance (number of times accessed)	13	1	2	1
		Ambulance (cost)	13	£263	£526	£324
		Chiropody (number of times accessed)	0			
		Chiropody (cost)	0			
		CPN (number of times accessed)	5	1	1	1
		CPN (cost)	5	£67	£67	£67
		Dietician (number of times accessed)	7	1	1	1
		Dietician (cost)	7	£112	£112	£112

		District Nurse (number of times accessed)	9	1	2	1
		District Nurse (cost)	9	£39	£78	£52
		GP Consultation and Prescription (number of times accessed)	201	1	9	2
		GP Consultation and Prescription (cost)	201	£43	£384	£84
		GP Telephone consult (number of times accessed)	373	1	30	4
		GP Telephone consult (cost)	373	£22	£660	£84
		GP visit (number of times accessed)	344	1	15	3
		GP visit (cost)	344	£92	£1380	£275
		Health Support Work (number of times accessed)	5	1	6	2
		Health Support Work (cost)	5	£31	£186	£68
		Practice Nurse (number of times accessed)	0			
		Practice Nurse (cost)	0			
Home	19 to 24 months	Ambulance (number of times accessed)	81	1	3	1
		Ambulance (cost)	81	£263	£789	£308
		Chiropody (number of times accessed)	25	1	8	3
		Chiropody (cost)	25	£41	£328	£133
		CPN (number of times accessed)	82	1	19	1
		CPN (cost)	82	£67	£1273	£89
		Dietician (number of times accessed)	47	1	5	1
		Dietician (cost)	47	£112	£562	£146
		District Nurse (number of times accessed)	87	1	10	2
		District Nurse (cost)	87	39	390	66
		GP Consultation and Prescription (number of times accessed)	1719	1	47	3
		GP Consultation and Prescription (cost)	1719	£43	£2007	£127
		GP Telephone consult (number of times accessed)	3159	1	77	6
		GP Telephone consult (cost)	3159	£22	£1694	£124
		GP visit (number of times accessed)	2204	1	118	6
		GP visit (cost)	2204	£92	£10856	£537
		Health Support Work (number of times accessed)	189	1	46	4
		Health Support Work (cost)	189	£31	£1426	£120
		Practice Nurse (number of times accessed)	29	1	8	1
		Practice Nurse (cost)	29	£11	£90	£15

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