

# **CONTENTS INDEX**

## **A COMMUNITY HEALTH COUNCILS**

**[BRECKNOCK AND RADNOR COMMUNITY HEALTH COUNCIL](#)**

## **B NHS TRUSTS AND HEALTH AUTHORITIES**

**[CEREDIGION AND MID WALES NHS TRUST](#)**

**[NORTH WEST WALES NHS TRUST](#)**

**[POWYS HEALTHCARE NHS TRUST](#)**

**[WELSH AMBULANCE SERVICES NHS TRUST](#)**

**[NORTH WALES HEALTH AUTHORITY](#)**

## **C ORGANISATIONS**

**[BRITISH DENTAL ASSOCIATION](#)**

**[INSTITUTE OF RURAL HEALTH](#)**

**A**

**COMMUNITY HEALTH COUNCILS**

**BRECKNOCK AND RADNOR COMMUNITY HEALTH COUNCIL**

## **INTRODUCTION**

This report is a response to the invitation from the Mid Wales Regional committee of the National Assembly for Wales to submit information and views on the cost of providing health care in rural areas.

Rural areas:

- a. are sparsely populated
- b. they have poorer road and rail links
- c. some areas are remote from even small towns and villages.

these factors bring special challenges and cost implications to the delivery of services. Factors include:

1. The excess time taken to deliver health care.
2. The extra skills required for comprehensive and flexible service in remote areas.
3. In rural areas there is a greater incidence and dependence upon small local hospitals. Such hospitals are more expensive because of diseconomies of scale. There is also likely to be less scope in such areas for using day surgery instead of more expensive inpatient treatment, because of the longer distances patients have to travel. There is a need to have those beds and facilities, however there are fewer patients through those beds and less use of various clinical specialty because of the fewer population. Access to services in urban areas is better in distance and provision.

## **EVIDENCE**

The cost implications associated with rural areas outlined above have been researched and evidenced by the Scottish Executive in their resources allocation document for health "Fair Shares for All" and by the University of York report "Concentration and Choice in the Provision of Hospital Services" 1997.

The report concluded that the review of evidence showed that a significant adjustment should be introduced as an integral part of the resource allocation formula to take account of the additional costs of providing hospital and community services in remote and rural areas.

The actual application of this factor resulted in Boards with a substantial proportion of their population living in remote and rural areas receiving additional resources per head of population between 7.5% to 10% and those Boards with a significant rural population receiving an additional 2% to 3%.

The report also concluded that, by comparison, other Health Boards, with largely urban populations, required fewer resources per head of population because of the lower costs that they faced in providing health services.

## **OTHER RESEARCH**

In a report published in the Health Services Journal "Country Strife" (12 August 1999), White and Flowerdew report that an analysis of other public services has shown that there are greater costs for rural areas and, as a result, rurality is now considered when resources are allocated.

The report concluded that the costs of maintaining a significant number of additional beds and the diseconomies resulting from having smaller, relatively isolated hospitals need to be taken into account when allocating resources to rural areas and, without such an adjustment, rural areas will continue to be underfunded in relative terms, compared to their urban neighbours.

## CONCLUSIONS

Research confirms that remote and rural areas:

- a. Have a higher number of small hospitals.
- b. Small hospitals (less than 100 beds) cost significantly more to run as they do not benefit from economies of scale and bed throughput.
- c. Funding formulas of other public sector bodies take significant account of rurality in increasing resources to rural areas.
- d. The cost of community-based services, such as district nursing, are higher due to excess travel time.

## B

# NHS TRUSTS & HEALTH AUTHORITIES

## CEREDIGION AND MID WALES NHS TRUST

### ADDITIONAL COSTS OF PROVIDING HEALTH SERVICES IN RURAL AREAS

One of the basic tenets of the current Government's vision for modern health care is the delivery of high quality services which are locally accessible. Over 80% of Britain is rural but only one in five of the population lives and works in a rural community and those communities vary enormously in their size, remoteness, social and economic base. Popular images mask a range of problems associated with deprivation and disadvantage in rural communities which are often similar to those of run-down urban areas. Deprivation can, however, go unrecognised as it often exists in isolation and lack of focused research taking account of spatial factors makes it difficult to illustrate by traditional statistical measures.

The nature of rural deprivation has, however, been described in a number of studies, and "problems" identified include:

- poverty and social exclusion
- poor access to health services exacerbated by poor public transport and poor quality road networks
- limited employment, education and leisure opportunities
- problems associated with alcohol and drug misuse
- mental health problems directly attributable to relative isolation and economic decline
- rapid changes in approaches to agriculture which small traditional communities cannot absorb or accommodate, and the consequential loss of traditional agricultural employment and associated services

- lack of available private healthcare provision
- rapidly growing elderly population

Health status issues, which directly contribute to the additional cost burden of providing reasonably accessible rural health care include sparsity of population, inevitable lower usage of hospital facilities due to lower patient numbers, greater reliance on services delivered in the community, particularly at home, the burdens of additional travelling time, and the expenses of travel itself.

### **Rural Healthcare Facilities**

Rural social and healthcare delivery is more expensive than in an urban District General Hospital facility because there are a number of community hospitals and health centres scattered around an area doing the job of a single, larger unit. Single-handed or smaller GP partnerships in rural communities will also have similarly increased average unit costs. Smaller acute hospitals, community hospitals and health centres because they are demand-led, tend to be smaller units. Their very size has implications for the costs of the services they deliver. The necessary service standards result in high fixed costs, e.g. the need for additional consultant medical staff to provide safe levels of clinical cover and specialist nurses covering low population groups and hence low patient numbers.

The capital costs of building and maintaining facilities and providing equipment are higher in relative terms. There are also associated increased infrastructure costs in maintaining smaller facilities. There is little scope for economies of scale in the procurement of working supplies and associated transport costs are also increased.

### **Physical Isolation**

The remoteness of alternative facilities or specialist centres adds to the cost of delivery of health care in rural communities by imposing additional transport, particularly ambulance transport, demands. The mechanism of service level agreements for the purchase of these services by healthcare providers with predominantly rural populations also adds to the cost.

Distances which patients need to travel to receive treatment (particularly tertiary care) and less availability of extended family support in rural locations lead to reduced incidence of face to face contact between the clinician or clinical team and the patient, resulting in, for example, increased incidence of repeat prescribing in the primary sector, lower rates of day surgery in secondary care with consequently increased numbers of higher cost inpatient stays and longer periods of hospitalisation.

Telemedicine could be used to help to overcome this problem, as evidenced in the "Keeping Care Local" study. However there are initial start-up costs e.g. equipment requirements for Teleradiology, which inhibit its development.

### **Demographic Structure**

Rural communities, and Mid Wales in particular, also tend to have resident populations with a higher percentage in the elderly age ranges, many of whom have retired to the area. This places additional demands on health service resources, often for lengthy and costly treatment regimes, which continue to increase as life expectancy extends and medical science develops the skills, techniques and drugs to treat a growing range of medical conditions more effectively, e.g. cancer treatments.

The absence of family support networks for such patients and the relatively low availability of nursing home or residential care, whether public or private provision, can also lead to an increase in the longer term use of expensive acute hospital beds, by bed blocking.

### **Community Hospitals**

Whilst lack of family support can and is to some extent, alleviated by efficient use of a network of community hospitals in rural locations, in many cases the fabric and environment of these hospitals is inappropriate for the delivery of quality modern healthcare. The provision and maintenance of community hospitals, or the alternative strengthening of community based services delivered in the home, all have additional financial implications both in staffing and equipment because of the distances involved. There are also time cost implications due to the relatively poor quality road networks which predominate in rural areas.

Specific examples can be cited:

Maternity - Services need to be staffed on a 24 hour basis irrespective of the lower delivery numbers. Community support costs for ante-natal and post-natal care are higher due to travelling involved. High demand for home births in isolated locations and the absence of GP support raises the required skill mix profile for midwifery staff.

Ophthalmology - There is a requirement for more inpatient care for cataract surgery simply because of the distances between patients' homes and acute hospital facilities.

Community Services - Significant increases in travelling time for staff results in less efficient/effective use of staff time. Ceredigion health workers travel over 1 million miles each year on official business costing nearly £400,000. Appropriately trained and multi-skilled nurses, to reflect the wide range of care being provided in isolation, also incurs additional costs.

Theatres/A&E - There is a need to stock consumables for a wide range of potential procedures to ensure safe standards of care. Increased requirement for specialist training of staff to provide the range of cover necessary, although patient numbers may be very small.

Patient Transfers - Higher costs of patient transfer, both in transport costs and staff time and costs. Increased incidence of requirement for helicopter transport to compensate for poor road access and longer travelling distances and times.

Medical Staffing - Consultant led services essential to meet Royal College guidelines and recommendations.

SCBU/ICU - In order to provide this specialist service, there are essential equipment, staff training and nursing skillmix costs which are incurred irrespective of the number of patients treated.

### **Rurality/Higher Costs**

There appears to be a lack of robust quantitative information on rurality and health care. However analyses in other public services have demonstrated higher costs for rural areas, and we understand that rurality is now a consideration in allocations for education, police and district council services. Length of coastline is also a consideration in fire services provision.

### **National/International Comparisons**

Comparison with other countries is difficult in that health care structures and funding arrangements differ from those in the United Kingdom. However, in Finland for example, health care receives a significant proportion of government funding and two of the four factors for resource allocation are based on rurality.

Recent research has demonstrated a positive correlation between population density, acute and community bed numbers and numbers of GPs. This has confirmed that rural areas, of necessity, have more and smaller hospitals than urban areas, with overall higher bed numbers per capita.

The recent review of allocation formulae for healthcare services in Scotland has led to consultation on a proposed new formula which includes an adjustment to reflect the extra costs of delivery health care in rural and remote areas with scattered populations and relatively poor accessibility. The adjustment proposed reflects the extra time involved in the delivery of health care and the higher skill levels required to deliver a more flexible and comprehensive service remote from peer support.

## **NORTH WEST WALES NHS TRUST**

### **Cost of Providing Health Services in Rural Areas**

We welcome the opportunity to provide comments to the Mid Wales Regional Committee on the subject of the cost of providing health services in rural areas, as North Wales has similar problems.

Unfortunately, due to holiday commitments, we are unable to provide a detailed response but would highlight the following as areas

that warrant further consideration:-

*[i] Community Hospitals*

The Service Review in 1998 highlighted that both Dyfed/Powys and North Wales spent considerably more per head on "community type" inpatient beds.

While there is clearly no standard model for a "community" hospital, and the location of existing community hospitals reflect historic factors, in rural areas with a significant percentage of the population living greater distance from the local District General Hospital, the need for a community hospital is greater.

However, the rurality can mean that a community hospital covering an acceptable geographical area does not necessarily support sufficient population to generate economics of scale. This is reflected in the number of units with 30 beds, or fewer, in rural areas.

Inpatient maternity facilities are possibly the most noticeable example of diseconomies in small units.

*[ii] Outpatient Clinics*

We have undertaken a detailed study of outpatient costs which shows that the typical direct medical staffing cost of an outpatient attendance in a community hospital is 3-4 times higher than an equivalent attendance at our District General Hospital.

The key factors are:-

[a] The need to build in travel times for doctors and support staff

Bangor - Blaenau Ffestiniog 2 hours

Bangor - Dolgellau 2½ hours

Bangor - Holyhead 1½ hours

[b] Population base tends to result in lower average attendance per clinic session by up to 15%.

*[iii] Community Services*

There are two factors that make community services more expensive in a rural area.

[a] Geographical area covered increases the time clinical staff spend travelling rather than in "face to face" contacts.

The only area where we have some information to support this is for community nursing using the "comcare" activity recording system.

This shows staff in areas like Meirionnydd spending 50% more of their time travelling compared to staff in less rural areas like Bangor, (12 minutes travelling time on average per contract compared to 8 minutes). The community nursing team in Botwnnog in Dwyfor spend 27% of total available time travelling, Barmouth in Meirionnydd 29% compared to 10% for the Bodnant surgery in Bangor.

The average annual mileage (and therefore travel costs) ranges from 5,000–6,000 miles in Meirionnydd to 3,000–4,000 in less rural Arfon

[b] There can be diseconomies in allocating specialist staff to community based teams. While the population of an area like Meirionnydd might warrant less than one "whole time equivalent" specialist, due to the geographical area covered, the local team will tend to need a whole time post. Recruitment of part time staff is difficult and travel distance constrains linking such posts with other areas. This is noticeable with specialists such as community psychiatrists, psychologist and other therapists.

*[iv] Formula for Allocating Resources*

While supporting the initiative by the Welsh Office to review the existing formula for allocating resources, there was concern that this work tended to look to the English formula rather than develop a Welsh formula reflecting specific issues within Wales. Wales has greater extremes of sparsity than found in England. Travel distances which should be considered in a "scarcity" formula also need to be calculated more carefully due to geographical features such as mountain ranges, estuaries and straights which add considerably to travel distances. Characteristics of deprivation in rural areas are not necessarily detected in measures of deprivation that are developed primarily with inner city deprivation in mind.

A formula also needs to reflect the lack of support networks available to elderly migrants in rural and resort areas.

[v] We intend to examine those services which can be delivered as close as possible to patient's homes, provided that it is safe and financially viable. This may involve new service delivery patterns and technologies, but may create the possibility of relieving pressures on the District General Hospital as well as releasing capacity. We also need to explore the use of health resources with other agencies working with some communities.

In addition to the above points there are issues in relation to Ambulance services and the use of specialist services in England. These we assume will be covered by responses from Health Authorities and Ambulance Trusts.

**POWYS HEALTHCARE NHS TRUST**

**COST OF PROVIDING HEALTH SERVICES IN RURAL AREAS**

**1. INTRODUCTION**

**1.1** This report is in response to the invitation from the Mid Wales Regional Committee of the National Assembly for Wales to submit information and views on the cost of providing health care in rural areas.

**1.2** The basis of this report is to examine the argument that the cost of providing health services in rural areas is greater than in urban areas.

**1.3** The report is based on a review of existing evidence-based research.

**2. CHARACTERISTICS OF A RURAL AREA**

**2.1** Rural areas have the following characteristics which differentiate them significantly from urban areas.

- (a) They are sparsely populated
- (b) They have poorer road and rail links
- (c) Many areas are remote from even small towns and villages.

These factors bring special challenges and cost implications to the delivery of services.

**3. COST IMPLICATIONS**

**3.1** There are three main areas which, because of the characteristics described earlier, serve to increase the costs of providing health services in rural areas. These are:

(a) The *excess time* taken to deliver health care in rural and remote areas, e.g. a district nurse will have to travel far greater distances and see fewer patients than her counterpart in an urban area. (Time being a more precise measure of excess costs than distance.) There is also an additional indirect cost in that patients will have to travel further at their own expense to receive services.

(b) The *extra skills* required by community-based staff to deliver a more comprehensive and flexible service in remote areas. Multi-skilled staff represent additional employment costs.

(c) Evidence shows that rural areas have a greater incidence and dependence upon small local hospitals. Such hospitals are more expensive to run than larger hospitals (typically of 300+ beds) usually found in urban areas. This is because of diseconomies of scale associated with small units and the inevitable duplication of fixed costs associated with many small disparate units as compared to one large District General Hospital. There is also likely to be less scope in such areas for using day surgery instead of more expensive inpatient treatment, because of the longer distances patients have to travel.

**3.2** There is also implicit duplication of cost associated with (c) because the residents of rural areas will still require access to the specialist services of a DGH, in addition to their local community hospital.

## **4. EVIDENCE**

**4.1** The cost implications associated with rural areas outlined above have been researched and evidenced by the Scottish Executive in their resource allocation document for health "Fair Shares for All" and by the University of York report "Concentration and Choice in the Provision of Hospital Services" 1997.

### **4.2 "Fair Shares for All"**

This report identified that larger hospitals were more cost-effective than small hospitals and examined the extent to which Health Boards in remote and rural areas faced higher costs because of the need to provide a higher proportion of services from relatively small hospitals. Statistical analysis was used to identify the relationship between the ratio of actual to expected costs and measures of sparsity and density.

**4.3** Two types of analysis were performed. Firstly, a model which covered all hospital services showed that the key indicator in explaining differences between Health Boards' costs was the proportion of people living in urban locations with more than 1,000 people. The results of the analysis indicated that several Health Boards with significant and remote rural areas require significant increases of 3% to 5% in resources to meet the additional costs of hospital services.

Secondly, a model which analysed in more detail the effects of remoteness on hospital costs was developed for acute, maternity, mental illness and care of the elderly. Again, population density was determined to be the main or key influence on the relative costs of providing all of these services.

**4.4** The report concluded that the review of evidence showed that a significant adjustment should be introduced as an integral part of the resource allocation formula to take account of the additional costs of providing hospital and community services in remote and rural areas.

**4.5** The actual application of this factor resulted in Boards with a substantial proportion of their population living in remote and rural areas receiving additional resources per head of population of between 7.5% to 10% and those Boards with a significant rural population receiving an additional 2% to 3%.

**4.6** The report also concluded that, by comparison, other Health Boards, with largely urban populations, required fewer resources per head of population because of the lower costs that they faced in providing health services.



**4.7** It should be noted that the previous Scottish resource allocation formula "SHARE" made some minor provision for rurality, as does the Welsh formula, but this was considered to be too simplistic and was only applied to a small part of the budget.

#### **4.8 University of York**

The York report reviewed the available evidence on the possible effects of the concentration of hospital services on:

- (a) Costs (economies of scale)
- (b) Clinical Outcomes
- (c) Patient Access.

York found, inter alia, that economies of scale were not fully exploited in hospitals of below 100 beds and that the optimum economies of scale were found in hospitals of between 300 and 600 beds.

#### **4.9 Other Research**

In a report published in the Health Service Journal "Country Strife" (12th August, 1999), White and Flowerdew report that an analysis of other public services has shown that there are greater costs for rural areas and, as a result, rurality is now considered when resources are allocated. Examples included education, the police and district council services. The report also showed that rural areas tend to have more hospitals, and consequently higher costs, than areas of high population density. Statistical analysis of health service provision in England showed a positive correlation between population density, community bed numbers and numbers of G.P.s.

**4.10** The report concluded that the costs of maintaining a significant number of additional beds and the diseconomies resulting from having smaller, relatively isolated hospitals need to be taken into account when allocating resources to rural areas and, without such an adjustment, rural areas will continue to be underfunded in relative terms, compared to their urban neighbours.

### **5. CONCLUSIONS**

**5.1** All available research confirms that:

- (a) the costs of community-based services, such as district nursing, are higher in remote, rural areas due to excess travel time.
- (b) Remote, rural areas have a higher number of small hospitals.
- (c) Small hospitals (less than 100 beds) cost significantly more to run as they do not benefit from economies of scale.
- (d) Funding formulas of other public sector bodies take significant account of rurality in increasing resources to rural areas.

### **REFERENCES**

- (a) Fair Shares for All" Scottish Executive, 1997
- (b) "Concentration and Choice in the Provision of Hospital Services" University of York, 1997
- (c) "Country Strife" White and Flowerdew, Health Service Journal, 12th August, 1999.

# **WELSH AMBULANCE SERVICES NHS TRUST**

## **THE COST OF PROVIDING HEALTH SERVICES IN RURAL AREAS**

### **1. TERMS OF REFERENCE**

This paper provides views and information on the costs of providing ambulance services in Welsh rural and urban areas. It has been produced by the Welsh Ambulance Services NHS Trust and is submitted for consideration by the Mid Wales Regional Committee at its October 1999 meeting.

### **2. INTRODUCTION**

The costs of providing ambulance services both Emergency and Patient Transport Services are affected by many factors. These will be examined to give a view on the rural and urban capability of this Trust to achieve performance standards and a cost-effective service to patients and health services. The main factors can be summarised as follows:-

- i. Distance to Health Services or Specialties
- ii. Population Density and Demand
- iii. Performance Standards
- iv. Road Networks and Public Transport

### **3. DISTANCES TO HEALTH SERVICES OR SPECIALTIES**

Typically in urban areas the distance and therefore times taken to respond, deal with calls and return for further calls is far less than rural areas. As a consequence response times are somewhat easier to achieve and the cost per call is generally less than rural areas.

Responding to calls in rural areas entails longer journey times, often in excess of 1 hour. During this time there are additional pressures on staff who are required to stabilise and work with patients for longer periods of time until delivered to the appropriate health care facility.

The funding formula for Health Authorities does recognise the additional distances travelled in rural areas in respect of Ambulance Services but does not recognise the need to provide cover in the absence of an ambulance dealing with an emergency. Whilst there is a recognition of distance included in the formula this does not necessarily mean that funding levels to the Ambulance Service will be as indicated in the formula. The funding for Ambulance Service is concluded in partnership with Health Authorities who may or may not fund at the formula levels or indeed for the current performance standards. Currently no common purchasing specification in Wales exists.

Distance is only one factor in the determination of Ambulance Service costs. Other factors such as vehicle and staffing required to meet demands and the performance standards would be more of a factor in determining costs.

### **4. POPULATION DENSITY AND DEMAND**

The Audit Commission in its document 'A Life in the Fast Lane' clearly identifies that population density is very closely related to unit costs. The document, extract at Annex A, clearly demonstrates higher costs for rural services.

Even in rural settings there are pockets of higher population density. This enables cover to be provided for the area in a similar

way to urban areas. Detailed analysis of performance indicates that the higher population areas within a rural setting can achieve a similar response and performance standard to urban areas. Generally this is still at a higher unit cost due to demand. The problem area in achieving standards at an affordable cost, and to present overall value for money for the NHS, are the sparsely populated areas. Annex B to this report highlights our performance over the current categories of urban, rural and sparse areas of Wales. The analysis clearly shows that performance achieved in the sparsely populated areas does not match that of the urban and rural categories.

An analysis of the total calls made to the accident and emergency service clearly indicates that the demand is less in the rural and sparsely populated areas. Further details are shown at Annex C.

## **5. PERFORMANCE STANDARDS**

Performance in the Ambulance Service in achieving the response times for the various categories of calls received are shown in Annex B again this demonstrates that the more rural and sparsely populated areas are those that it is most difficult to deliver the standards. With substantial additional resources there is no doubt that the response times can be met. Further vehicles, staffing, training and more remote locations for Ambulance Stations would be needed to fully meet the current and expected performance standards. The dialogue with the Health Authorities continues but it must be recognised that, particularly in Powys, the standards we meet are a reflection on the agreed funding level. It may be to increase the funding level would not represent overall value for money for the NHS.

## **6. ROAD NETWORKS AND PUBLIC TRANSPORT**

The road networks will have a direct bearing on our ability to respond to calls and to subsequent travelling time from scene to hospital. As an example the average travelling time in Powys is 34 minutes compared with 21 minutes in Bro Taf. The road networks will have a direct bearing as more services become specialised in certain locations. The indications are that longer distances will be required in the future and without in some areas the necessary access to high quality road networks.

The Ambulance Service is currently the main provider of patient transport services to other NHS Trusts. The demand on our service will have a direct relationship to the public transport available particularly in the rural and sparsely populated areas of Wales.

## **7. CONCLUSION**

There is little doubt that the delivery of Ambulance Services in rural and sparsely populated areas can cost considerably more than in urban areas. The unit cost per call for direct staff can be as much as 3 times higher than in urban areas. This is due to the need for level of service, distances travelled and demands.

To further improve standards in rural and sparsely populated areas will require substantial additional resources. It is an understandable desire of everyone to have emergency ambulance cover close at hand but that may not be an economic use of resources for NHS Wales when call rates are low and resources are limited and expensive. The Ambulance Service in Wales has increased its standards in the first year and it is the intention of the Board to continue to endeavour to provide higher standards of quality and response to people in need of Ambulance care.

## **LIST OF ANNEXES:**

**ANNEX A:** Extracts from the Audit Commission Document "A Life in the Fast Lane"

(Note:Exhibit 8 and Exhibit 10)

**ANNEX B:** PERFORMANCE STANDARDS

999 Calls of life threatening nature

999 Calls non threatening life conditions

Doctors urgent calls

ANNEX C: Emergency Ambulance Services Demand

Annex A

EXTRACTS FROM THE AUDIT COMMISSION DOCUMENT –  
‘ A LIFE IN THE FAST LANE’

Comparing overall costs

20. But efficiency comparisons between services are difficult to make. Costs per A&E response are affected by many factors, including:

Geography: how urban or rural the area is, where hospitals are located, traffic density and the road network;

Economies of scale: the larger a trust is, or the more calls that it receives, the lower its costs per call should be, because it can spread its overheads more thinly; and

Funding levels: most health authorities have funded A&E ambulances on a historical basis; without detailed consultancy work they have no way of knowing whether they are funding generously or stringently.

The crude cost<sup>1</sup> of providing crews, control staff and transport varies nearly threefold between ambulance trusts [EXHIBIT 7] – from £50 to £125 per ambulance response. Even greater variation occurs in the overhead cost (per response) that is allocated to the A&E service, through part of this may be due to inconsistencies in precisely *how* the allocation is made (Appendix 1).

<sup>1</sup> The crude cost is the cost before making any adjustment for the factors listed in paragraph 20.

Exhibit 7 Crude cost per response in ambulance trusts crew control staff and transport. unadjusted, these costs vary nearly threefold between ambulance trusts.

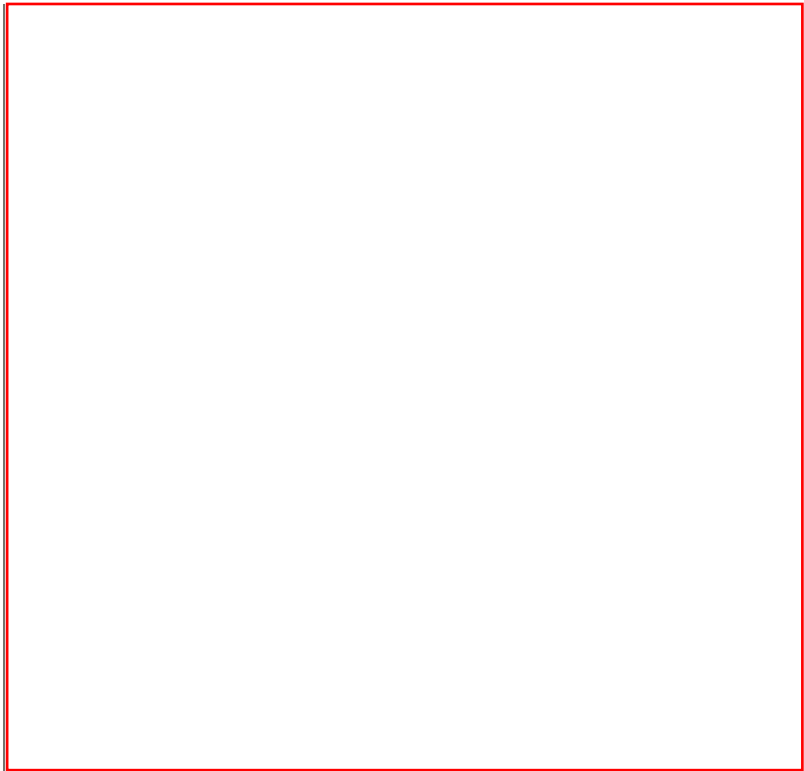
Note: 2 services where there are special local factors, London and Isle of White have been excluded from exhibits 7 to 10 to preserve anonymity.

Source: Audit Commission questionnaire 1996/97.

21. Three measurable factors account for most of the variation: population density, average mileage per trip, and the number of call-outs per head of population. All three tend to increase unit costs in rural areas, where the population is more scattered, round trips are longer, and people tend to make less use of the ambulance service.

- Population density is very closely related to unit costs [EXHIBIT 8]. At one extreme, there can be several crews working within an urban area of only a few square miles. They can cover the area jointly so that each has a high workload. Thus, quick response times in a densely populated city can be achieved at low cost, although factors such as high-rise flats eventually limit performance. In a very rural area, by contrast, there may be only one call per house in an area of one hundred square miles. In that situation, crews have to spend much more ‘unproductive’ time ready and waiting for a call in order to meet the 19 minutes target.
- Average mileage per trip has an effect on cost even after allowing for density of population. It varies according to how many hospitals receive ambulance patients, and where they are located in relation to clusters of population.
- Busier services, defined as those that deal with a higher call rate in a given type of area, also have slightly lower unit costs. As with high population densities, an area that generates more calls can be served with less time waiting for work.

Exhibit 8 cost per response and population density in different ambulance services. Population density is very closely related



to unit cost.

Source    Audit Commission questionnaire 1996/97 (costs);  
Department of Health and Welsh Office (population density).

**Minimising the available hours so that they just match the demand**

25.The challenge for ambulance services is to provide the minimum number of available hours to deal with the workload and still meet the response time standards. There is no universal target for ‘available hours per response’; urban services can expect higher utilisation rates than rural ones, and all services tend to have lower rates in the very early morning [Exhibit 10]. A very busy service may reach an average of 0.6 journeys per hour without jeopardising response times. In rural areas where A&E utilisation rates are low, the emergency ambulance service is sometimes operated jointly with the non-emergency patient transport; this helps to obtain an acceptable cost overall.

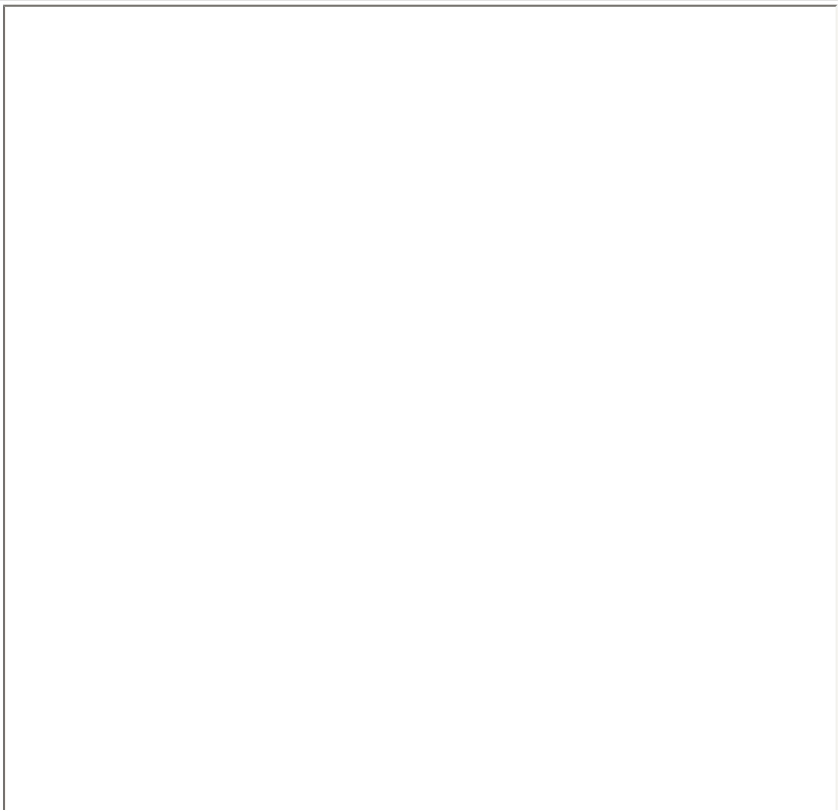


Exhibit 10 incidents per available ambulance hour in 3 services. Urban services can expect higher utilisation than rural ones, and all other services tend to have lower rates in the very early morning.

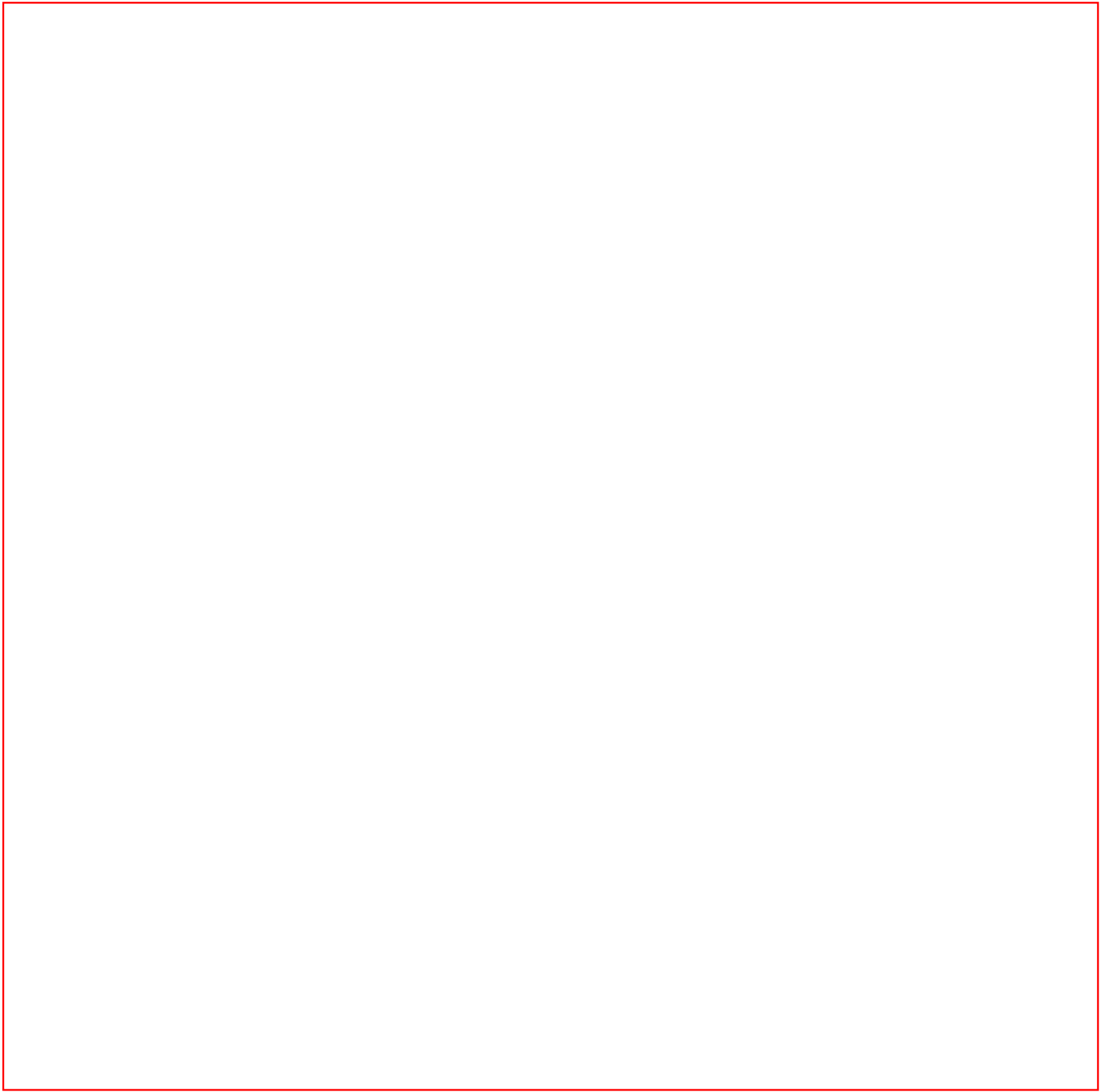
Source 3 site visits (selected to illustrate the range of performance between urban and rural trusts)

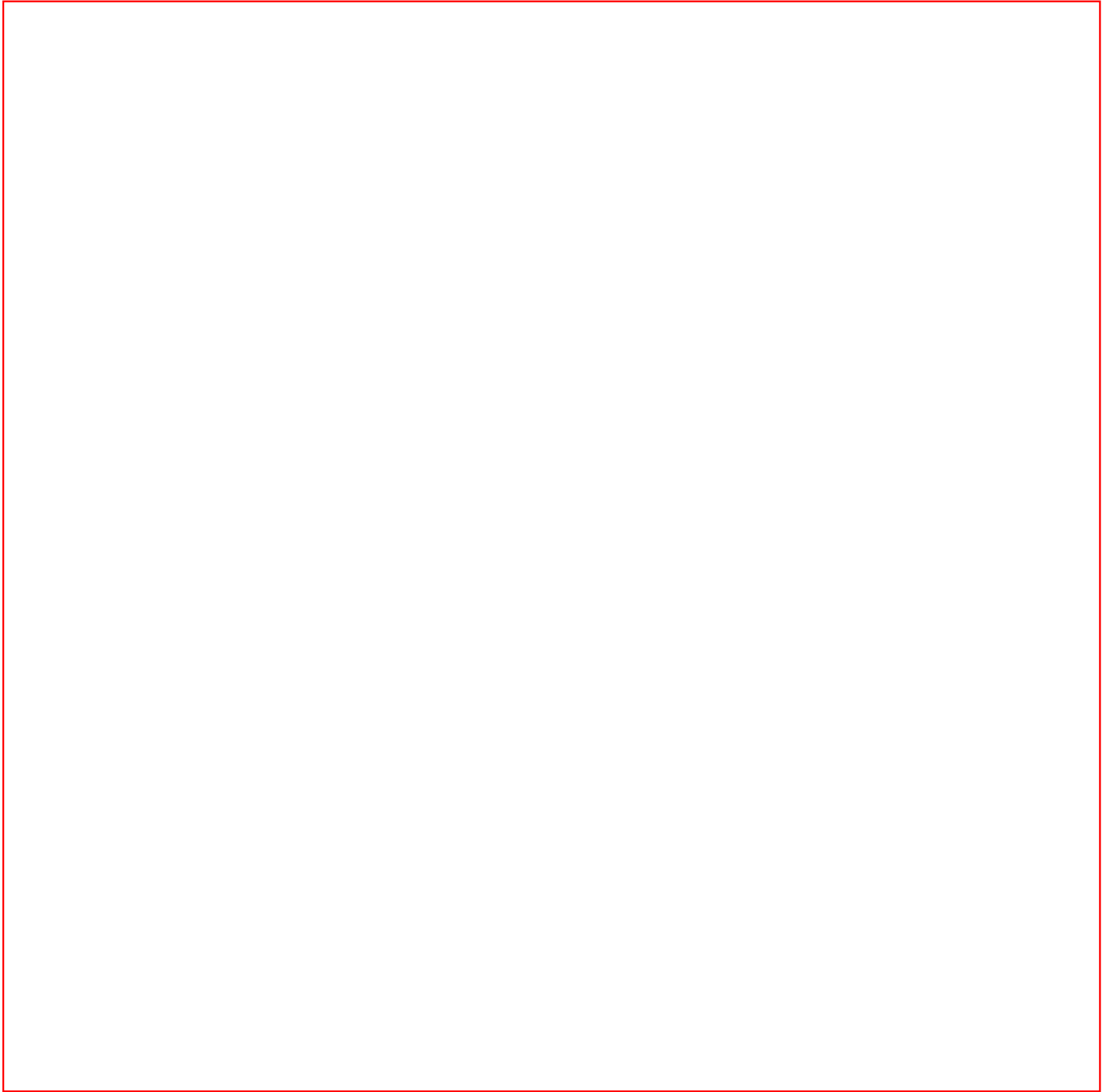












**NORTH WALES HEALTH AUTHORITY**

RESOURCE ALLOCATION WORKING GROUP

**SPARSITY SUB-GROUP REPORT FOR RAWG MEETING, 2 OCTOBER 1997**

**Members: Nigel Morris Director of Finance, North Wales Health Authority**

**Jean Sait Director of Patient Care, Dyfed Powys Health Authority**

**Carolyn Theobald Chief Officer, North East Wales CHC.**

## **1. TASK**

**1.1** At the meeting of RAWG on 3 July 1997, a Group was set up to consider the inclusion of sparsity/rurality factors in a new Resource Allocation Formula.

**1.2** The remit of the Group was to provide an overview of David Fone's paper (RA(97)4) and any other work being done on rural need, specifically to determine:

**can we measure need in rural/sparsely populated areas?**

**if so, how?**

**it is sufficiently important to be included in the formula?**

**1.3** The Group found it difficult to divorce need factors from the factors relating to the cost of service provision in sparsely populated areas, in comparison with providing the same level of service in urban and more densely populated areas. An interim report was submitted to the RAWG in August 1997, when it was agreed that there appeared to be a lack of evidence for the inclusion of a rural needs indicator, but that there was likely to be an evidence based case for including a rural cost indicator.

**1.4** Since that meeting, the Sparsity Sub-Group has completed a literature review and met with the Institute of Rural Health at Gregynog, Powys. A résumé of that work is given below.

## **2. PAPERS CONSIDERED BY THE GROUP**

**2.1** A literature search was carried out for the Group by the Librarian at Dyfed Powys Health Authority, by the Information Officer of the Association of CHCs for England and Wales (ACHCEW), and via the Internet. This confirmed first impressions that there is relatively little published research on rural health care needs in the UK, none of which was carried out in Wales. Far more research has been carried out in the United States and Northern Europe. The Group therefore reviewed a selection of UK and overseas publications which appeared relevant to the Welsh context.

**2.2 Summaries and key findings of the papers reviewed are included as Annex 1.** They are:

**David Fone's** paper: "Resource Allocation and Rurality" - RA(94)4;

"Sparsity Factors And The SSA (Standard Spending Assessment) Formulae": Paper for the **Association of Directors of Social Services in Wales**, April 1997;

**Welsh Office Education and Training Group (ETG)** - Notes of the sixteenth meeting, January 1997;

**Rural Development Commission** - Rural Research Series: Fair Shares for Rural Areas? an assessment of public resource allocation systems, 1996;

**Health Policy** 26 (1993) 19-27: - Rurality and resource allocation in the UK;

**Journal of Public Health Medicine**, Vol. 14 No 3: - A rural advantage? Urban-rural health differences in Northern England;

**United States Department of Agriculture**: Issues in Rural Health: - How will measures to control Medicare spending affect rural communities? (Agricultural Information Bulletin No 734, March 1997);

**"Rural Health Care Issues"** - Statement of Associate Administrator for Policy, Health Care Financing Administration, to US Senate Sub-Committee on Health, House Committee on Ways and Means, September 1996;

**British Medical Journal** 1993 May 22 pp1358-1359: -Editorial;

**British Medical Journal** 1993 Jul 3 p66: - Letter in response to 9 above;

**Unpublished Paper** - Determinants of cost efficiency of Finnish hospitals, 1997;

**Journal of Productivity Analysis**, 7, 63-80 - Rural Hospital Performance and its correlates, 1996;

**University of Oregon** - Allocative Inefficiency in the Production of Hospital Services, c-1990.

### **3. MEETING WITH INSTITUTE OF RURAL HEALTH**

**3.1** During the course of the literature review, the Group became aware of work on rural health issues being carried out by Dr John Wynn Jones, a Powys GP currently seconded to the Institute of Rural Health, based at the University of Wales, Gregynog, near Newtown, Powys. The Group met Dr Wynn Jones and the Institute's Director, Jane Randall Smith, in August.

**3.2** Dr Wynn Jones gave the Group a number of contacts to follow up for further information. He confirmed that there was at present a lack of hard evidence on rural health need, but informed us that a major study was due to be published by researchers in Northumberland in 1998. This may well provide valuable information to be considered by the RAWG in future years, if it becomes a standing forum for review of the allocation formula.

**3.3** With reference to the additional costs associated with providing services to rural areas, and the incorporation of a factor into the allocation formula, Dr Wynn Jones noted that considerable research had been done in the US. There, states were phasing out the formula element and replacing it by special payments to rural areas in recognition of additional cost

**3.4** Dr Wynn Jones informed us of work being carried out within Wales, coordinated by the Institute. Research was taking place on the skills which health professionals require to practice in rural areas, over and above those used by their peers in urban areas. The study is to begin with GPs, with the intention of extending it to nurses and other professional groups. This may also produce useful information for future reviews.

**3.5** Other issues discussed at the meeting included:

the applicability or otherwise of urban-based deprivation indices to rural areas;

the difficulty of defining rurality;

equity of access to services (see Section 4 below).

### **4 EQUITY OF ACCESS TO SERVICES**

**4.1** It is widely accepted that referral rates to, and take-up of, specialist services decrease proportionally with distance/ travelling time from the centre providing them. Rural patients and their carers face significant journeys to GP surgeries and other primary care services, with longer journeys for secondary care, and therefore bear additional costs to access those services. The costs and logistics of travel are becoming more significant with the decline in rural transport services and, in some areas, withdrawal of or reduction in concessionary travel schemes for elderly people. The reluctance of patients in isolated locations to access services provided at a distant location when they are first required may ultimately increase morbidity and result in more expensive interventions.

**4.2** Differences in treatment regimes develop to compensate for the lack of access to specialist services, but there is currently no research evidence on costs and outcomes. For example, in rural areas, many services are provided in the primary care setting which would be provided in acute hospitals or minor casualty units in more densely populated areas - for example, treatment of injuries. Furthermore, data collection tends to focus on district general hospitals; there is therefore likely to be an under-estimation of need as a result both of failure to access acute services, or the unrecorded provision of those services in primary care.

**4.3** Accepted service standards can discriminate against health services provided in rural centres with relatively low throughput of patients. Information Technology such as telemedicine can be developed to provide remote access to specialist services, but this has cost implications, both in developing and implementing the systems.

**4.4** Finally, it is feared that recruitment difficulties in rural primary care services will have a further impact on equity of access to services.

## **5. ECONOMIC CONSIDERATIONS**

**5.1** The publications studied supported the view that small hospitals serving rural populations are inherently less cost efficient than large specialist hospitals. The same is likely to be true of community health services.

**5.1** Factors contributing to these inefficiencies include the following:

- less scope for economies of scale;
- a need to employ more staff per head of population to allow for increased travelling time, with associated costs;
- an increased need for domiciliary visits where patients have difficulty travelling to hospitals or clinics;
- increased training and development costs for single-handed practitioners, both in the costs associated with attending courses (locum cover etc.) and the wider range of skills required;
- the consequences of the rural lifestyle (transport difficulties, seasonal employment factors) for factors such as DNA rates;
- a relatively high proportion of consultant staff are required in small departments to comply with Royal College accreditation requirements;
- low staff turnover in rural areas leads to more staff at the top of their scale and consequently higher costs;
- there are less opportunities to make use of day-case care where patients would be returning to isolated rural areas with limited support services;
- specialist areas have to be staffed with the correct skill mix, despite sub-optimal utilisation of the department.

## **6. conclusions**

**6.1** There seems to be little research evidence at present to indicate a simple measure of rural health care need. However, it is likely that further evidence will become available from research work in progress elsewhere in the UK, and this should be revisited in the future.

**6.2** Distance and additional travel time and costs impact on the per capita costs of providing community health and primary care services in rural areas and should be recognised in the resource allocation process.

**6.3** In the interests of equity, it is vital to maintain a network of core services to address the health needs of sparse rural

populations. However, the type of hospital required to meet these needs is inherently inefficient in comparison with large specialist hospitals serving greater catchment populations.

**6.4** There is recognition in published work in the UK and overseas of additional cost pressures on acute providers serving rural areas, such as when patients have to remain in hospital an extra night due to the logistics of travel, or when outreach outpatient clinics are provided.

**6.5** The recommendations for further research set out in paras 6.1 to 6.3. of David Fone's paper (RA(97)4) should be pursued. In summary, these are:

- an analysis of socio-economic deprivation census variables to ensure that any acute needs indicators derived in Wales are valid for both urban and rural areas;
- development of an acute needs index for Wales, derived from modeling utilisation and supply side factors with appropriately selected socio-economic variables, limiting long-term illness and measures of mortality;
- further work on the impact of rurality on costs of service provision, to inform the calculation of a "rural premium" with the aim of determining resource allocation to achieve equity of access for all populations in Wales.

**6.6** If it is accepted that rural cost factors should be recognised, statisticians need to research the feasibility of using a proxy variable in the allocation formula;

**6.7** Alternatively, the RAWG needs to consider the alternative option of introducing supplementary payments to Authorities covering large tracts of rural Wales, with the stipulation that these are in turn reflected in locality or provider budgets for the most rural areas.

## ANNEX 1

### PUBLICATIONS REVIEWED BY THE GROUP

#### **1 David Fone's paper: "Resource Allocation and Rurality" - RA(94)4**

This paper, presented to the first meeting of the RAWG, provides a good overview of rurality issues. We felt that the most significant issues raised by the paper were:

Two types of "rural deprivation" are defined in para 3.3: deprivation in rural areas (socio-economically deprived people living in isolated clusters in the midst of relative affluence) and rural deprivation (defined by difficulty of access to services). Both are difficult to quantify from a health need perspective;

Many census-derived indicators of deprivation are inappropriate to rural areas, do not generally identify rural deprivation, and may bias against rural areas in allocation formulae;

Indices of rurality distinguishing between affluent and poor rural areas are complex to calculate and need regular updating;

While rural needs are difficult to quantify, available evidence indicates that the direct costs of providing services in rural areas are higher than in urban areas.

#### **2. "Sparsity Factors And The SSA (Standard Spending Assessment) Formulae": Paper for the Association of Directors of Social Services in Wales, April 1997**

This paper presents the result of an overview exercise focusing on key budget headings influenced by rurality factors. We feel that many of the findings would be equally applicable to health services. Key conclusions were:

There is clear evidence that sparsity influence the costs of delivering services in rural areas;

Rural authorities incur an average additional transport cost of over £10,000 per 1,000 elderly population to provide home care services;

The additional costs of providing standard levels of service in rural areas need to be recognised.

### 3. Welsh Office Education and Training Group (ETG):

Notes of the sixteenth meeting, January 1997

This paper was of interest due to Note 5: Back to Work course funding for nursing and PAMs. This noted that:

"Fixed rate funding (of £350 per student, with an equal contribution by the Trust) *penalised rural areas where costs e.g. travelling would be higher*".

As a result, the Group decided to fund 50% of actual costs up to a total expenditure limit.

### 4. Rural Development Commission - Rural Research Series:

Fair Shares for Rural Areas? an assessment of public resource allocation systems, 1996

The Rural Development Commission commissioned management consultants to carry out an assessment of the resource allocation systems for public services including NHS expenditure. The Summary of Findings is attached at Annex 2

The study concluded that the "systems used to allocate resources ..... appear to operate to the disadvantage of rural areas" and that "the resource allocation formulae tend to be based on indicators which characterise urban life ..... Rural authorities may face higher costs in delivering services to sparsely populated areas, but the allocation systems seldom recognise these. On the other hand, substantial enhancements are made to the allocations for the London area to reflect higher ..... costs which these authorities are said to face."

On NHS resourcing, the report finds that:

target allocations for most urban DHAs are significantly higher per capita than for the more rural;

there are likely to be greater costs associated with providing services to some population groups in rural areas, e.g. the elderly living alone might be more likely to stay over in hospital since there are fewer support services if they return home;

this is not reflected in the formula, which gives equal weight to these client groups wherever they live;

there is no account taken of sparsity or rural isolation on the costs of service provision, although this might be expected to impact on the costs of maintaining smaller hospitals, or of the greater need to keep people in hospital overnight.

The consultants recommended that more work is needed to establish evidence about the factors which determine the needs for and costs of providing local services and access to those services.

### 5. Health Policy 26 (1993) 19-27:

Rurality and resource allocation in the UK

Ian S Watt, School of Public Health, University of Leeds; Trevor A Sheldon, Hull HA.

"This paper considers the present ways in which resource allocation within the NHS takes account of rural areas and



highlights a number of inconsistencies. It goes on to discuss ways in which rurality could influence future allocation formulas and identifies priorities for future research":

#### Access to services:

Within rural areas, people with increased health needs such as the elderly, the disabled and low-income groups are particularly affected by reduced access and most disadvantaged by lack of access to a private car and reduced rural bus services;

However, inequalities may also result from barriers to care arising from cultural factors, i.e. more equitable provision in terms of access may not result in the same level of take-up for a given level of need;

The relationship between need, utilisation and access is therefore complex. Resource allocation formulae developed in a mechanistic way from utilisation data which assume that each unit of supply generates the same level of met need may not achieve an equitable result.

#### Costs of health care:

Centralisation of health care provision can lead rural populations, especially the poor and people with poor mobility, to face higher personal costs for access to services;

If care is organised to improve access, such as by branch surgeries and smaller local hospitals, significant economies of scale and possibly quality returns may be forfeited;

Trade-offs would seem to be necessary between equity of access and expense to the health service above the level of national norms - a political decision;

Adequate access in rural areas will only be maintained as a result of conscious policy decisions, made explicit to the public by policy makers.

#### Validity of proxies:

Since most deprivation indices have been constructed using urban populations, there are doubts whether the relationship between the variable and the underlying factor it is meant to be proxying is generally applicable to rural areas;

The potential urban bias in proxies used as weighting factors in formulae for allocation could result in rural areas being disadvantaged or advantaged, depending on how it is used, especially in sub-regional allocation.

#### Conclusion:

Research should not only seek to make valid assessments of how "need" varies between rural and urban areas but how the unit costs of supplying health care in the two environments differs;

If it is true that direct costs of supplying services in rural areas is higher than in urban, a case could be made for a supplement being paid to meet them, in addition to a needs-based allocation of resources;

If rurality is to be a factor in allocation, there is a need for greater rationality and consistency in the way this is achieved;

*It is conceivable that present economic pressures mean that equity of access is an ideal the NHS can no longer afford to pursue as an absolute..... in which case this should be made explicit.*

## A rural advantage? Urban-rural health differences in Northern England

Peter Phillimore, Dept of Social Policy, University of Newcastle on Tyne; Richard Reading, Northumberland HA

The data assembled for a large study of health and deprivation in the Northern Region of England were reanalysed to examine three questions:

How wide are rural health inequalities compared with those in urban areas?

Is health intrinsically better in rural areas, given comparable deprivation or affluence?

Is the association between health and wealth weaker in rural than in urban areas?

The study concludes that:

Health inequalities between the most affluent and deprived wards are narrower in rural areas, but this reflects the generally narrower range of social inequalities. At the extremes of the socio-economic spectrum, comparison reveals strikingly similar health patterns across the four environmental settings identified for the study;

However, when extreme rural wards are compared with conurbations, a distinct health advantage in the rural area is apparent;

The underlying association between health and wealth is as strong in rural as in urban areas;

The issue of whether the elements of deprivation are the same in rural as in urban areas requires further examination;

In forming policies, the danger has been that health inequalities would come to be seen as primarily an urban phenomenon. This study has confirmed that differentials in health status and prospects are manifest in all environmental settings and should not be underestimated in the rural UK.

### 7. United States Department of Agriculture: Issues in Rural Health:

How will measures to control Medicare Spending Affect Rural Communities? (Agricultural Information Bulletin No 734, March 1997)

The report looks at legislative proposals to control the increase in spending on Medicare from the premise that:

*"Medicare covers a higher proportion of rural than urban residents because rural residents are more likely to be elderly or disabled persons entitled to benefits".*

The proposals may therefore have a greater effect on rural than urban communities.

It is interesting to note that "important supplemental payment categories" for Medicare payments to providers include:

Sole Community Hospitals in rural places with only one hospital;

Rural Referral Hospitals serving large health care markets;

Physicians practising in federally designated Health Professional Shortage areas.

The report also notes that:

"Many health care analysts expect that increasing competition in health care markets will force relatively more rural than

urban hospitals to close ..... Because a higher proportion of rural hospitals have financial deficits".

#### 8. "Rural Health Care Issues"

Statement of Kathleen A Buto, Associate Administrator for Policy, Health Care Financing Administration, to US Senate Sub-Committee on Health, House Committee on Ways and Means, September 1996

This statement discusses the Medicare programs targeted at improving access to beneficiaries living in rural areas. Ms Buto's evidence to the Committee includes the following relevant points:

Hospitals located in rural communities are on average smaller, have lower occupancy rates, are more dependent on long-term care units, and are financially more fragile;

Medicare has operated specific programs to aid rural providers financially;

Since 1995, rural hospitals have received higher annual updates in their funding, dramatically increasing payments to rural relative to urban hospitals;

The rural hospital is recognised as the centrepiece of rural communities' health care delivery systems, and special programs have been implemented over the past 25 years to provide enhanced payments for rural hospitals which fall into a number of different categories.

#### 9. British Medical Journal 1993 May 22 pp1358-1359: -Editorial

A copy of the article is attached at Annex 3. The authors review evidence of relative need between rural and urban areas. The authors find that:

Most datasets that permit comparison between urban and rural areas point to better health in rural areas;

Although in aggregate urban districts have a higher morbidity and mortality than rural ones, there is little to indicate whether this pattern holds for all rural populations and degrees of rurality - e.g. mortality in some rural districts in the north is higher than in some urban districts in the south, and decreasing mortality from urban to rural areas may not persist for the remoter rural areas;

The information needed to make definitive statements on rural-urban patterns of disease is not available;

The costs of providing services in rural areas are usually higher because economies of scale are lacking and travel costs are higher;

It is important that deprivation indices used in formulae are validated for rural use.

#### 10. British Medical Journal 1993 Jul 3 p66: - Letter in response to 9 above.

In his letter responding to the above editorial, John Wilkinson at North Yorkshire HA points out that:

"Some hospitals and secondary care services in rural communities are likely to face difficulties in operating in the internal market because of their relative inability to reduce fixed costs. The knock-on effects may lead to the denudation of basic services to which the population may expect reasonable access. .... One way of dealing with such problems may well be to recognise the "unprofitability" of such services by giving a direct sparsity grant."

#### 11. Unpublished paper:

Determinants of cost efficiency of Finnish Hospitals

Miika Linna and Unto Häkkinen, National Research and Development Centre for Welfare and Health, Helsinki, Finland.

12. Journal of Productivity Analysis, 7, 63-80:

Rural Hospital Performance and its correlates

Gary D Ferrier, Department of Economics, University of Arkansas and Vivian Valdmanis, Department of Health Administration and Policy, University of Oklahoma.

13. Allocative Inefficiency in the Production of Hospital Services

(Journal unidentified from copy available):

B Kelly Eakin, University of Oregon, c.1990.

All three papers reached broadly similar conclusions, namely:

In hospitals under 100 beds, there is significant scale inefficiency;

Above 100 beds, the optimal scale cannot be determined by size alone, since it also depends on the scope of services provided;

Above 100 beds, scale inefficiency was small in comparison with other factors of inefficiency;

However, very large hospitals tended to have a greater percentage inefficiency;

Inefficiency was greatest in hospitals with a larger market share;

Specialisation in high cost procedures was found to increase efficiency;

Underemployment of doctors is a major factor contributing to inefficiency;

Cost inefficiency arises due to excessive use of inputs and the wrong mix of labour and beds (Group comment - this is predominantly a managerial issue);

Ownership has an effect on rural hospital efficiency. Public hospitals, though less efficient, are less likely to close, being funded by taxes. Private hospitals have an option of self-selection, i.e. where to open.

Sparsity Sub-Group

September 1997

# ORGANISATIONS

## **BRITISH DENTAL ASSOCIATION**

General dental practitioners who work within and provide services under NHS regulations do within a fee scale which is drawn up by the Dental Rates Study Group following recommendations from the Doctors and Dentists Review Body. The fee received for each item of treatment has two components, the costs of doing the job i.e. an allowance for practice overheads and laboratory fees and materials, and the salary element for the GDP, in simplistic terms, the profit margin.

Many years ago the fee scale was meant to remunerate the average GDP with an salary recommended by the DDRB. In recent years the DDRB has recommended a % increase and the relationship of fees to expenses has been lost.

The feescale is applied universally across the UK with practitioners receiving the same for a particular item of treatment whether it is provided in London or Llandrindod Wells!

Also, the feescale has some irregularities which result in some treatment items being uneconomic to provide.

So, the cost to the NHS of providing dentistry in rural areas is fixed by the feescale i.e. there are no supplements.

However, the costs of providing the service rests with GDPs. In rural areas practice costs are perhaps lower than in urban areas but there are other unquantifiable costs.

These include:

- the costs of failed appointments which are higher in rural areas.
- the cost to the patient of travelling to find the service.
- the added costs of providing continuing education
- the costs of providing emergency care - long travelling times and a shortage of dentists so the burden of providing the service on the individual is greater.

Part time practices which run as branches from main centres like Shrewsbury have higher costs than full time practices. Simply this is because the fee income is lower but the fixed overheads remain the same.

The Community Dental Services in mid Wales come under pressure to provide emergency care for unregistered patients as well as undertaking their traditional roles.

There will be added costs in providing the service to take account of travelling times, usage of facilities, although many are shared, cost of training and the provision and maintenance of mobile facilities.

## **INSTITUTE OF RURAL HEALTH**

### **Cost of providing health services in rural areas**

Unfortunately there is no commonly accepted definition of "rural" in the UK, nor one that can be readily applied to health care. "Rural"

Mid Wales is characterised by a low density of population with small scattered market towns. There is no large urban conurbation. Aberystwyth has a small resident population that is swelled by a transient student population but it is still a small town. Health services across the area are provided through primary care general medical practices and, uniquely to rural areas, small community hospitals. The district general hospitals that service this area are situated at Aberystwyth, to the south of the Dyfed Powys Health Authority area and across the border in England.

There has been little research into the cost of providing health services in rural areas, such as mid-Wales, in the UK. However, generally it is felt that costs are higher. There is little evidence that is not anecdotal although the Rural Development Commission concluded that public resource allocation systems were operating to the disadvantage of rural areas (RDC, 1996). They suggest that rural health authorities face higher costs in delivering services to sparsely populated areas, but that the allocation systems seldom recognise these.

"Equity of health services" through out the UK has become an issue under this Government and access to care is one aspect that has received attention. Across rural Wales the population travels vast distances to access services; primary care professionals travel large distances to deliver their services and to access the necessary continuing professional education and training that is required; outreach consultants can make long journeys to run clinics. The travelling in itself is costly but the lost productivity (of patient and clinician) also needs to be taken into account.

Recent proposals to create "super hospitals" will exacerbate the situation further. Costs of accessing services will be passed from the NHS to the individual. Importantly, the balance between quality/safety and ease of access has to be appropriate. This balance must also reflect the priorities of patients in terms of which services they are prepared to travel for. The likely implications of this is that smaller DGH or community hospitals can have a crucial role to play in the management of certain conditions that need not necessarily be undertaken at a "centre of excellence". An inevitable outcome of meeting the appropriate balance between safety and access in rural areas is that equitable health care is a less cost efficient service.

The Institute has conducted some research jointly with the University of Glamorgan on the nature of general practice in rural areas in the UK. The research used a Delphi methodology which asked a panel of 'experts' to reach consensus on the differences between rural and urban general practice. The key differences were: an increased emergency/minor casualty work; difficulties associated with distance and travel; specific rural illnesses occur such as zoonoses; and difficulties in obtaining cover for absence and 'out-of-hours' (University of Glamorgan, 1998, unpublished study). All these features have consequences for the cost of providing health care in rural areas. For example, rural doctors who have more difficulty in obtaining locums, often have to pay the maximum rates for locum services. They also have more difficulty in accessing continuing professional development - travelling costs for rural health professionals to access education and training are much greater than in urban areas and the distances to be travelled also mean greater time away from practice (and increased costs).

As a reflection of the lack of research into rural general practice in the UK, and in particular to the costs of providing health care, the Institute has been commissioned by the BMA to undertake preliminary research into this field. A literature review of rural general practice, with particular reference to: definitions of rurality; access for patients in rural areas; rural deprivation payments; and issues of dispensing and other GMS income, is underway. The aim of this preliminary research is to develop a set of priority research questions to enable greater understanding of rural general practice.

Interest in rural health care is increasing, and consequently the level of evidence required by policy makers is also increasing. However, until recent years, there has been little research in rural health care in mid-Wales or indeed in the UK. There is clearly a need for evidence and this can only be met by further research. In particular, more evidence is needed to analyse the costs of delivering health services into rural areas compared with urban (and sub urban areas) to provide a sound evidence base on which appropriate resourcing formulae can be based. This has implications as to how "rural" is defined and the use of appropriate deprivation indicators for rural areas.

One area of research, which has developed in recent years, has been the use of telecommunications in delivering health care in rural area. If costs are to be reduced, by minimising travelling times, the implications of modern information and communication technology for delivering both services and education and training in to rural areas also need to be considered.

## References

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University of Glamorgan (1998) Unpublished report of research into ‘A study to obtain a definition of rurality and to investigate the problems encountered by practitioners who work in rural health settings.

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