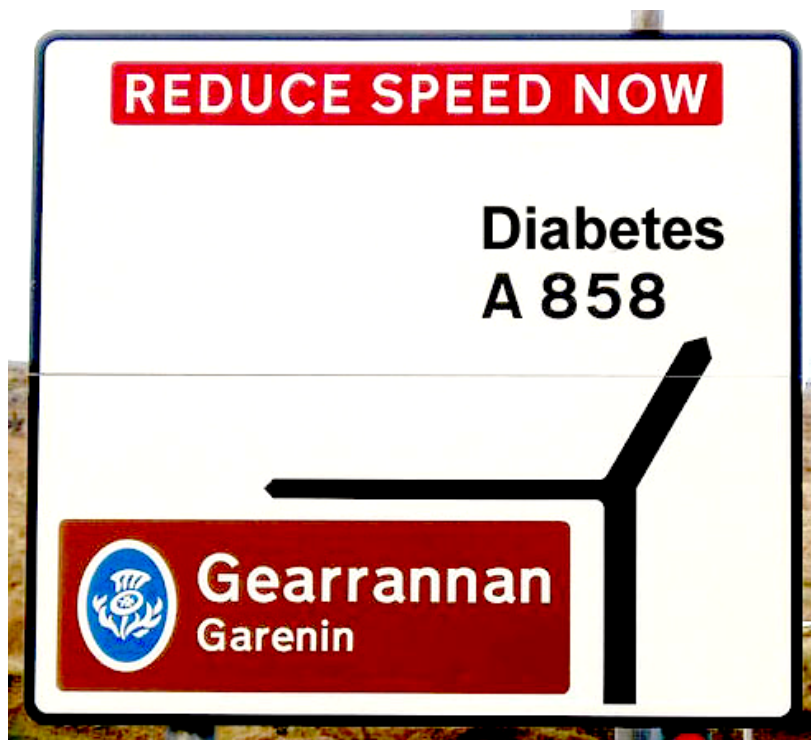


# going the extra mile

the impact of distance on access to diabetes care in rural areas



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## → Abbreviations

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BMA	British Medical Association
DM	Diabetes Mellitus
HDU	High Dependency Unit
NHS	National Health Service
NHS QIS	NHS Quality Improvement Scotland
OOH	Out of Hours
RARARI	Remote and Rural Areas Resource Initiative
RCGP	Royal College of General Practitioners
SEHD	Scottish Executive Health Department
SIGN	Scottish Intercollegiate Guideline Network
WHO	World Health Organisation
WIH	Western Isles Hospital



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## → Introduction

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*“We can never depend on getting a doctor when we want one. He has to go five miles by road and then three miles by sea, and in bad weather it is not possible to cross the Sound.”*

*Rev. Father McNeill, Eriskay, 1912*

In 1912 a comprehensive review of health care in the most remote and rural areas of Scotland was published: The Dewar Report (Highlands and Islands Medical Service Committee, 1912). It provides a fascinating snapshot of health care provision at the time, and describes a large number of recommendations in order to improve the health of the local population. As a direct result of the report, the Highlands and Islands Medical Service was founded to provide health care to the remote communities of Scotland. This is widely believed to have provided the basis for the UK National Health Service (Godden & Richards, 2003).



However, since The Dewar Report there has been limited progress in addressing the unique challenges of delivering health care in rural areas. This is despite a good awareness of the urgency, including the recent Arbutnott Report *Fair Shares for All* (SEHD, 2000) which called for an “end to the tyranny of distance in delivering local health care” in its review of resource allocation across Scotland. A number of other groups have recently attempted to highlight the problems – both present and predicted – of meeting health needs in rural areas. In particular, the Rural and Remote Areas Resource Initiative has led to the formation of subgroups including a “Solutions Group”: a network of rural health professionals who have reported the need to turn numerous recommendations into real practice (RARARI Solutions Group, 2002).

In addition, government and academic research has been particularly focused on the effects of urban deprivation on health, and the findings of these studies have often been squeezed into rural models of health care. Yet rural communities, no matter what definition is used, are significantly different from their urban-based counterparts in aspects that are both obvious and subtle. Four fifths of the UK landmass is rural; 20% of the Scottish population live in rural areas (BMA, 2005). To misunderstand the health needs of 1 in 5 Scottish people is to deprive a significant proportion of Scottish society of the health care they require.

The recent report “Healthcare in a rural setting” from the British Medical Association (2005) has done much to rekindle interest and debate on the subject at a national level. Many longstanding issues – including a surprising number that were originally identified in the century-old Dewar Report – are considered in an updated context. These issues include the impact of the European Working Time Directive, the new GP contract with its implications on out-of-hours service, and the shift towards increasingly specialist-delivered and centralised health care.

This special study module project focuses on one of the four themes of the BMA report: the impact of distance on the accessibility of health care in rural settings. Distance is one of the more obvious and ubiquitous challenges of rural-based health care. However it has also been one of the most difficult challenges to address, and requires some of the most innovative and pragmatic solutions.

To tackle the effect of distance on access to health care, it is important to recognise that different modes of health care delivery are required in comparison to those employed in urban settings. Furthermore, there needs to be flexibility to avoid the tempting dichotomization of communities into urban and rural areas: a multidimensional spectrum exists and each area needs to tailor services to its own specific needs.

It is intended that this report will blend a review of the evidence base with a limited, yet broad, experience of health care facilities within a typically rural area: the Isle of Lewis. Five weeks have been filled by spending time with a range of health professionals, including general practitioners, specialist nurses, hospital consultants and the ambulance service. In addition, relevant peer-reviewed literature, government reports, local strategies and health care planners have been consulted. Throughout the experience, comparisons have been made with personal experience of urban-based healthcare in Glasgow.



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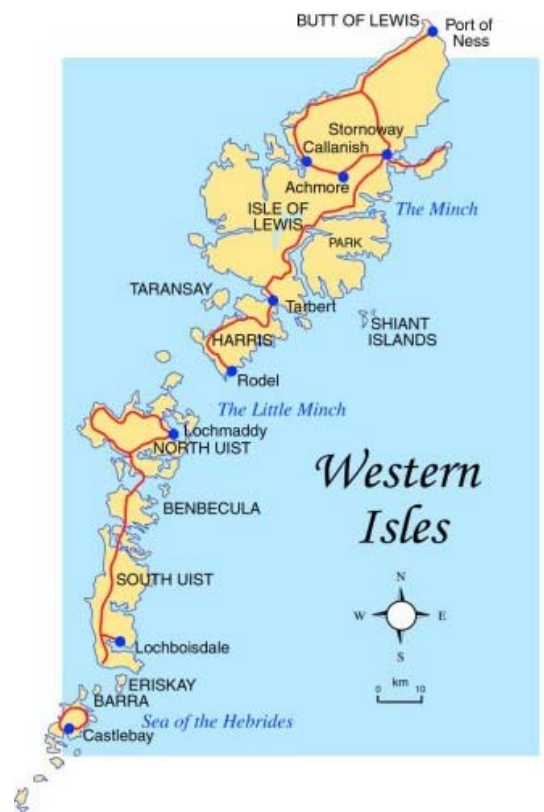
## → Methodology

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### Why Lewis?

There are three island groups recognised in Scotland – the Orkneys, Shetland and the Western Isles. The Western Isles consists of ten inhabited islands, of which Lewis is the most populated and most northerly. 26,000 people live in the Western Isles. 6000 reside in Stornoway which is the main town for economic activity, local government and health care. It has therefore been a good base from which to see the range of health services available within the island group.

As with the rest of the UK, GPs are the primary contact for health care, and are able to refer patients to limited consultant-led services at the Western Isles Hospital (WIH) in Stornoway, or to more specialist services on the mainland. The Group Practice – to which I have been attached for five weeks – is the largest practice in Stornoway, and has six GPs. It also operates a “satellite surgery” in the remote area of Ness, and so it has been possible to observe both ends of the rurality spectrum within the Western Isles.



### Why diabetes?

Diabetes mellitus (DM) is a common chronic condition that demands a multidisciplinary approach by a wide range of health professionals. Selecting the management of diabetes as a focus of study therefore facilitates an excellent view of a wide range of integrated services in both primary and secondary care. There is a high prevalence of DM in the Western Isles, and this makes it possible to extract useful, generalised conclusions about chronic health care within a rural setting. Several other factors make DM a good condition on which to base the report

- ❖ A massive increase in global prevalence of DM is forecast – up to twice the current level by 2030 (WHO, 2005). The rise in prevalence in Scotland is expected to be a similar level. It is therefore important to develop good models of care on which to base future growth of services.
- ❖ DM Type 2 is predominantly a condition of older people. The population of older people in the Western Isles is higher than the national average, and is estimated to increase to an even greater level.

- ❖ There is good international evidence-based literature on the management of DM. This includes a limited number of studies that focus specifically on rural models of care
- ❖ There is a large amount of data on DM care in Scotland, made available by the SEHD and the well-established charity Diabetes UK
- ❖ A Diabetes Resource Centre exists within the WIH to co-ordinate diabetes care. The team appears to have adopted an enthusiastic approach to improving services throughout the Western Isles.

### Why GP-centred?

Amidst the multidisciplinary nature of DM care, the GP remains the ultimate co-ordinator of individual patient health care, and is potentially involved in all interactions between his/her registered patients and other health professionals. Thus, for the purposes of this project, experience with relevant agencies involved with providing diabetes care has only been possible with the guidance and awareness of the GPs at the Group Practice. Advice has been sought at all stages on the best ways of approaching the most appropriate individuals to obtain relevant information for this report.



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## → What does rurality mean?

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Recent publications have highlighted the urgent need to define rurality in order to facilitate valid research into rural health care (Deaville, 2001). Challenges have arisen from the loose application of the term in the media, especially in relation to recent coverage of a number of high profile changes to government policy in the UK: namely fox-hunting, post office closures and land reform (BBC News Online, 2004). In many cases, the term “rural” is used to connote an idyllic, independent and/or high-class lifestyle. However, the reality is often very different, especially when the challenges of delivering healthcare are considered (Mukherjee, 2004). The following indicators of rurality are particularly pertinent to the delivery of health care.

- ❖ **Remoteness and population density:** maintaining basic standards of service within a large geographical area, where transfer to specialist services requires considerable journey time and logistical support.
- ❖ **Population Profile:** a higher proportion of elderly people, associated with chronic disease (including diabetes (Department of Health, 2001) and limitations on physical access to services. Seasonal changes in population density and demographics occur due to tourism.
- ❖ **Loss of Core Services:** such as post offices, dentists and public transport, to the detriment of the local community (Hope, Anderson & Sawyer, 2000) and causing the greatest difficulty to those individuals who have limited mobility (especially the elderly and infirm (Farmer et al, 2003)).
- ❖ **Land Use and Employment:** typically more agricultural, with an increasing shift towards service-based employment. These factors influence the levels of unemployment, occupation-related illness and the overall prosperity of the local community (Asthana et al, 2002).

Of additional note is the distinction made by the SEHD between “accessible rural” (within 30 minutes drive of an urban settlement of more than 10,000 people) and “remote rural”.

All these factors influence the way in which distance affects accessibility of health care, and the feasibility of the options that can be put in place to improve access.

### **The rurality of Lewis**

Lewis fulfils all of the above criteria for rurality. There is a broad range of population density across the island. Despite this, the population of Stornoway is under 7000 and therefore all areas of the Western Isles are classified as “remote rural” by the SEHD.

One caveat to this classification is the presence and accessibility of the WIH, as rural health care is sometimes defined as having to travel significant distances to access secondary care. It is a sizeable hospital of 212 beds and provides acute care up to HDU level. However, much hospital-based care is being increasingly shifted to mainland centres, largely due to new rules on accreditation and working hours. These will make several hospital specialties unsustainable within the WIH, resulting in downgrading of specialist services offered on Lewis.



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## → Challenges of providing accessible rural health services

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*“It is just the Portree doctor we have, and he must come in a boat, and in the winter time he cannot come. We may possibly have to wait a fortnight for him, and the patient will be suffering pain all the time. It is quite possible that the patient may die without seeing a doctor at all”.*

*Mr Graham, fisherman, Rona (Isle of Skye) quoted in 1912*

Geographical distance from local services is a fact of life in a rural area. This is exemplified in many definitions of rurality, which include increased travelling time to public services as a major criterion. The geographical aspects of distance are further exacerbated by hazardous roads, harsh weather conditions and the absence or infrequency of public transport (Leight, 2003). It is therefore no surprise that car ownership in rural areas is higher than urban populations of similar demographics.

### **Distance Decay**

However, the problems of distance tend to affect specific groups, including women with young children, the elderly and those from lower social classes (Deaville, 2001). These groups are also less likely to own a car. As these groups include the most frequent users of health services, it is vital to consider ways of planning health service provision that limit such barriers. The problem is well recognised: in 1971 Tudor Hart observed “the availability of good medical care tends to vary inversely with the need for it in the population served.” This led to the widespread recognition of the “inverse care law”, and examples of this phenomenon from rural areas have been reported since then.

One example is the term “distance decay”. It is known that take-up of immunisations, cervical smears, general medical/dental examinations (Leight, 2003) and breast screening (Deaville, 2001) are all lower in rural areas. However, it is also known that there is an inverse relationship between service usage and the distance from that service. Put simply, the further away the patient lives from the venue of health care, the less likely they are to access it.

### **Vulnerable Populations**

Leight proposes that another approach should be considered: that rural groups should be considered within a “vulnerable population model”. This approach recognises that interrelationships exist between resource availability, relative risk and health status, and that

vulnerable groups have increased susceptibility to adverse health outcomes. Experiencing distance as a barrier to health care and inadequate local health care resources are cited as two of the key determinants of being in a “vulnerable group”. Chronic illness is another factor that increases the chance of being included in this definition. Considering the problems of health care delivery in this context enables previously-researched models to be used, ensuring that a wide view of the problems experienced by such individuals are taken into account. Distance is one of many other factors of living in a remote/rural area and the other factors may be inter-related in making it difficult to access health services.

At this point, it should be remembered that the founding principle of the NHS was equality of access to health care (RCGP, 2004). Indeed, this report was introduced with the observation that efforts within the Highlands and Islands to improve access to health care at the start of the century are believed to have pre-empted the NHS.

### **User perception**

However, as well as efforts to make services more accessible, the motivation of patients to attend health services also requires attention. There is little use in providing easy-to-access facilities if individuals have no intention of accessing them in the first place. Services such as Accident & Emergency and the emergency ambulance service are usually well accessed due to the fact that an acute medical problem carries the strong indication that medical treatment is required. At the opposite extreme, screening services experience much lower levels of usage, as no visible problem is evident to the patient. When perceived need of a service is low, and is coupled with barriers of access such as distance, attendance will be severely restricted. This is possibly the greatest challenge in implementing a diabetes service within the Western Isles.

The attitudes of patients in rural areas in Scotland have been studied by the Scottish Centre for Social Research. They found that while GP services were very well used (coupled with a preference for seeking acute treatment from their GP), access and preference for using local hospital facilities were lower. When asked whom they would call for the onset of chest pains over night, rural residents were more likely to call their GP than the ambulance service. User attitudes are therefore important to consider, and if necessary address, if health care delivery is going to be altered.



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## → Improving access

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Fundamentally, there are three main ways of reducing the distance between the patient and service.

1. **Moving patients to services**
2. **Moving services to patients**
3. **Use of technology to remove the need for services and patients to be in the same geographical location**

In the frustrations of solving the rural problems of access to health care, it is sometimes tempting to believe that people who live in rural areas cannot expect the same level of care as those who live in more populated areas, simply because of the inherent problems caused by distance. But whenever this proposition has been mentioned to individuals in the course of the project, it has been consistently and vehemently opposed. The debate is controversial and ongoing, and is outwith the scope of this report. However, two observations have been made from limited experience in the Western Isles.

1. The practical aspects of living in a rural area make it impossible to deliver identical levels of care within the same models used in urban areas.
2. To achieve similar standards of care (and to the extent described in the national guidelines), innovative methods of service delivery need to be developed, with the specific issues of the local area in mind.

### **Moving patients to services**

This approach is the most common practice of health care. The patient travels to a central location from where the service is provided. This is the case for GP surgeries, hospital-based outpatient clinics, drop-in centres and hospital inpatient care.

This form of delivery depends on the patient's ability to travel, and consequently patients who have their own vehicles are at an advantage. This is even more pertinent in rural settings where public transport is limited in coverage and frequency. Hospitals tend to be better served by public transport than other places, however significant travel time and expense are often incurred, especially when repeated follow-up appointments are required.

For some, public transport will not be suitable, especially for the elderly and infirm. In these cases, ambulance (non-emergency) transfer will be required. Ambulance services in rural areas therefore face a “double whammy” of increased usage – the proportion of patients and mileage travelled to reach them will both be higher than in urban areas. It is vital to include this consideration in the development of any new centrally delivered service, if accessibility to the service is to be assured.

Advantages	Disadvantages
Effective use of clinicians’ time High turnover of patients Hospital facilities and services available Well-equipped and clinically sound environment Other professionals may be available for 2 <sup>nd</sup> opinion/guidance	Patient’s social circumstances not adequately assessed High rate of appointment defaulting Limited confidentiality Associated with long waiting times Medicalisation and stigmatisation of condition Requires additional transport support for those who cannot use private or public facilities

Table 1. Pros and cons of hospital-based care.

As well as access to services delivered in the local hospital, other venues of health care follow the same principles. There is a definite and continuing shift of all specialist services to the mainland, where centralisation allows health professionals to maintain their skills in particular procedures, and continue their accreditation with the royal colleges. For those services to be accessible to rural communities – where such specialties are unsustainable locally – considerable expense is incurred due to the costs of transport, often involving commercial flights at short notice, and accommodation on the mainland. Where specialist transfer is required of seriously ill patients (e.g. by helicopter, with SHOCK team) the cost is significantly greater. Occasionally a pervading attitude seems to exist that such specialist transfers can be carried out easily. However, there are considerable logistical and financial factors, and the implications of increasingly centralised services need to be carefully planned if health care to rural populations is not to be jeopardised.

The psychological and practical aspects of patients being transferred away from family support are also important, not least for the effect on the local economy and lifestyle desirability. Investment is being ploughed into the regeneration of rural areas – especially those that are currently deprived – and expecting patients to be more mobile than previously required will do little to assist other initiatives to attract new populations to these areas.

Of course, as outlined in the table, there are significant advantages to delivering health care from a central location. The pros and cons need to be balanced for each service, within the context of the overall package of care being used.

### *In the Western Isles*

Currently, a consultant-led diabetes service operates from the Diabetes Centre, based in the WIH. Two outpatient clinics are held every three weeks (as the clinic team travel to an outreach clinic every third week) and these are for patients in Lewis and Harris. Most patients appear to travel to these clinics themselves, with the longest journey being two hours from Leverburgh in the south.

### **Moving services to patients**

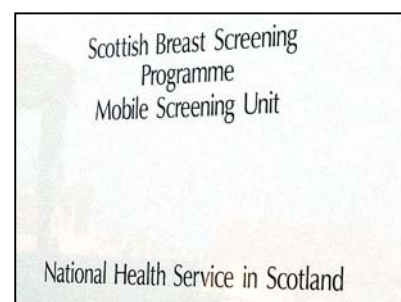
Of course, distance can also be reduced for patients by transporting the health care facilities, including professionals and equipment. This may involve visiting the patient at home, operating a mobile unit or providing outreach services from local locations.

### *Home visits*

Domiciliary visits are normally provided by the primary care team. General practitioners are relatively well placed to visit and assess less mobile patients, although such visits must still be rationed to avoid working time being unnecessarily taken up with travel. For other members of the primary care team, such as district nurses, health visitors and physiotherapists, domiciliary visits are an accepted necessity of providing continuous care to chronically ill patients. Problems relating to distance are mainly due to increased mileage and serving a wider geographical.

### *Mobile units*

Recent technology has allowed complex medical equipment to be fitted to a lorry, allowing much greater flexibility in the location where the health service is delivered. MRI scanners, breast screening units and blood donation facilities have all been converted for vehicles. Whilst there are technical and financial limitations to the extent of these facilities, the prospect of



providing more services in this form is extremely promising. The major attraction is that specialist services can be made available in remote areas, without the need to base these services in the area permanently. Investment in developing mobile services can also be shared across a wide geographical area, indeed across the boundaries of health boards.

Within the Western Isles, many examples of mobile services now exist for delivering health and other services. Non-health examples include a mobile library and cinema. Health examples include a mobile breast-screening unit.

In terms of diabetes, a very positive relationship has been established between the Western Isles Health Board and Tayside Health Board. A mobile retinopathy-screening unit has been developed by Tayside, and is now hired on an annual basis by the Western Isles to tour the islands. Retinopathy is an excellent example of where early detection of disease progression is vital. Diabetic retinopathy will inevitably lead to irreversible blindness if left untreated – and such events of blindness are now considered as critical incidents (Tilley). The mobile unit has already demonstrated its worth in detecting eye disease amongst the registered diabetic population of the Western Isles, allowing effective, early reversal of these changes. This is an example of where general lessons of service design should be applied to other aspects of health care delivery.

#### *Outreach clinics*

Outreach clinics are common for delivering secondary care, whereby the clinical team travels on a regular basis away from their base, to a location that is easier for remote populations to access. Evidence exists to support the use of outreach services in diabetes care (Majumdar, 2003). However, it is important that outreach clinics are not delivered as an isolated service. A systematic review in 2004 (Gruen) revealed that simple “shifted outpatient department” models resulted in little improvement on health outcomes. To have a positive effect on health, it was found that secondary care outreach services should be comprehensively integrated with primary care services, education, and other local services. Such networking also results in more efficiency, guideline-consistent care and less use of inpatient services.

The WIH diabetes service operates outreach services to the Uists and Barra. When these happen, the whole team from the diabetes centre travels to provide a “one-stop clinic” similar to the one run at the centre. Due to financial restrictions, it was not possible to observe these clinics and how well they are integrated to the local primary care service. However, it is clear that providing local specialist-delivered care is a significant improvement to when the service was available only at the WIH.

#### *Visiting specialists*

In addition to the consultant team at WIH, there is close liaison with other hospitals, particularly Raigmore Hospital in Inverness. Patients are frequently transported to Raigmore for sub specialist investigation or review. However, a number of specialists also travel from Raigmore to

Stornoway to hold consultations at WIH. The feasibility of these visits depends greatly on the workload within the islands (and therefore whether it is more cost-effective to send patients or the specialist). It is also important to recognise that the local knowledge of visiting specialists will be poorer than those professionals who reside locally (Winters). Themes of hardiness, independence, self-reliance and more reluctant sick roles have been identified in rural populations (Leight, 2003). These may be important in the holistic care of patients, especially those with long-term, chronic diseases.

Whilst localised service delivery reduces the access barriers created by distance, there are still problems for some patients in attending these facilities. One of the main issues is with offshore workers who find it very difficult to synchronise their work commitments with visiting health services. Consequently, these cases may require special consideration for additional help with transport to central facilities (e.g. funded transport from remote areas to the WIH), which inevitably results in increased cost. The further development of the diabetes patient register will assist in identifying these patients, and perhaps also in planning future visits.

## **Use of technology**

An alternative to bringing patients and services physically closer is the use of technology to remove the need for physical proximity altogether.

### *Information & Communications Technology*

There has been good progress in developing good communications infrastructure across the Western Isles, and the Scottish Executive has committed to ensuring 100% access to broadband by the end of 2005 (Broadband for Scotland, 2005; Connected Communities, 2005)). This will continue to open up new possibilities for telemedicine, allowing images and discussion to be exchanged securely without the need for face-to-face contact. Videoconferencing will be possible between patients and professionals allowing medical consultations and case discussion to take place. Specialties where telemedicine has the potential to play a particularly important role include radiology and dermatology.

There are significant practical issues still to be addressed. However, work has already started to evaluate the potential of information technology to replace the traditional consultation, and the rural nature of Scotland's Highlands and Islands has already been identified as a good area to trial systems for international markets. This could be promoted further to assist with the costs and expertise required.

## *NHS24*

NHS24 has now replaced local provision for out-of-hours services in Scotland. It provides two roles in giving health advice and arranging OOH medical cover where required. Traditionally, health professionals in rural practice have had an extremely heavy out-of-hours workload, with a large proportion of GPs being on call every night. NHS24 now handles all OOH calls and as a result there is less of a continual burden on local GPs. However, there are still many unresolved issues with the service, which is still early in its development (BBC News Online, 2003). Rural communities feel particularly aggrieved about the centralisation of previously local services, and the limited OOH access to health professionals. There has also been an increased burden on local ambulance services, and there are doubts whether enough planning has gone into meeting this extra demand. However, rural GP practices tend to offer more same-day appointments than their urban counterparts (Deaville, 2001) and further development of the service may actually result in a better, more sustainable service.

### **Other methods of addressing distance**

In addition to the above solutions, it is important to recognise that other ideas are developing. In particular, the Scottish Ambulance Service has considered the problems of getting acute care to patients quickly in remote areas. Two examples of work in this area illustrate the open mind required. First-responder system is recognised as being very pertinent to remote areas, whereby local people are trained in advanced first aid in order that qualified care can be given in emergencies during the time taken for an ambulance to arrive. Secondly, there is a project operating in several areas within Scotland to assess the implementation of paramedic-administrated thrombolysis, with the aim of reducing the door-to-needle time for patients having a myocardial infarction. Results so far appear to be extremely positive, and this looks set to be rolled out across Scotland (with particular focus in rural areas) in the near future.

Finally, it is important to recognise that simple adaptation of services that are already in place can offer the most effective and acceptable solutions. Increasingly, specialist-centred multidisciplinary teams are delivering health care. However, especially in rural areas, it may be better for generalists (particularly general practitioners and practice nurses) to develop the skills required to provide multi-specialty community-based care. A very basic example of this is where repeated blood tests need to be done: practice nurses or general practitioners may be able to obtain opportunistic samples when consulting or visiting on other matters. This approach is often preferred by patients, and cuts down the number of journeys required by both professionals and patients. It is noted that this approach has always existed, but is highlighted in the context of increasingly specialist and mainland-centred care.

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## → Conclusions

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The term “rurality” describes a very broad range of settings. Yet, the term “rural health care” has been increasingly employed to represent the communities within this spectrum in order that they are not forgotten in plans to deliver increasingly specialist services from centralised (and urban) locations.

The Isle of Lewis is one area where many general issues of rurality are present. My time in Stornoway has therefore allowed me to have a practical view of these issues whilst writing the report. In the course of this time it has become evident that most decisions on health are made in centres based in cities and are at considerable danger of being disproportionately biased towards urban needs. If the NHS is to provide equity of health care access to the UK population as a whole, it is vital that more consideration is made with regard to the specific needs of rural areas.

This report has focussed on the problems of distance on providing accessible health care services. A wide range of ideas has been considered, with reflection on their practical implementation where possible. The relatively short duration of the project (and previous lack of exposure to rural health) have caused some limitation in the scope with which this report can be considered. In particular, it has been difficult to observe the work of the few community hospitals that exist in the Western Isles. However, it is hoped that this has been negated to some degree by a careful review of recent literature and a wide experience whilst on the island.

In conclusion, there are significant challenges in delivering rural health care. Consequently there have been considerable innovative ideas that have the potential to improve health care in urban areas too. Work to investigate the issues regarding rural access to healthcare should receive more support, and – more importantly – matched with effective implementation of strategies that have been proven to work.



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