

A PICTURE OF HEALTH

DEPRIVATION

1. INTRODUCTION

The purpose of this paper is to present the Board with evidence on the relationship between deprivation and health.

It concludes that while there is a clear link between deprivation and ill health, the strategic direction of *A Picture of Health* with increasing investment in Primary Care and input to community planning, along with health promotion, health protection and planned care will begin to address the major health issues of the people of Lanarkshire including those of deprived communities and that health outcomes are not materially affected by the location of emergency hospitals.

2. NATURE OF DEPRIVATION

There is no single generally agreed definition of deprivation. It is a multi-dimensional concept where standards are defined in relation to social norms or expectations. It is therefore a relative concept rather than an absolute one that overlaps, but is not synonymous with poverty.^{1,2} Absolute poverty can be defined as the absence of the minimum resources for physical survival, whereas relative poverty relates to the standards of living of a particular society at a specific time.³ The different concepts of deprivation include the following:

- Material deprivation, which reflects the access people have to material goods and resources. Access to these goods and resources enables people "to play the roles, participate in relationships and follow the customary behaviour which is expected of them by virtue of their membership in society".²
- Social deprivation has been separately distinguished as relating to people's roles and relationships, membership and social contacts in society.
- Multiple deprivation relates to the occurrence of several forms of deprivation concurrently, such as low income, poor housing, and unemployment.

3. DEPRIVATION AND HEALTH

Many factors can be identified which may influence a person's health and wellbeing. These can be categorised into three broad groups as follows.²

- Factors in the physical or socio-economic environment are usually external to the individual. These include general factors, which are often shared by all people in certain areas, such as air pollution, climate, local amenities and services; and factors that are more specific to individuals, such as occupation, income and housing quality.
- Factors intrinsic to the individual, such as genetic factors, biological and ethnic diversity, early life experiences, lifestyles and health behaviours.

- Issues related to the health service, such as the provision and quality of health services, access to health services, and utilisation of health services.

The distribution of all these influencing factors on health is not equal across all people in our society. This produces the differences or inequalities that are seen so often, in health, in access to services, and in the outcomes of health care. The different arguments about the links between deprivation and health have been summarised as follows:^{4,5}

- Artefact explanations suggest that the observed differences may be produced as an artefact of the process of measurement, such as errors of misclassification. Research to date has not supported this as the major explanation for the observed differences;
- Social selection explanations suggest that health may somehow determine socio-economic position, with the unhealthy being downwardly socially mobile, leading to a group of people with greater morbidity and/or a higher risk of dying among lower socio-economic groups. There is little evidence to support this as the major explanation for the observed differences;
- Behavioural and cultural explanations suggest that health related behaviours, like cigarette smoking, poor diet and lack of exercise, lead to the observed inequalities. However, the risk of death from many causes which have not been related to "lifestyle" is still higher in less privileged groups. Other research indicates that differences in health related behaviours cannot account for the large observed differences in mortality (especially all-cause and coronary heart disease mortality rates);
- Material and social life circumstances. These explanations suggest that there are hazards inherent in society to which the more disadvantaged have no option but be exposed. For instance, hazards relating to poor housing, certain occupations, pollution, unemployment and psychosocial stress have all been associated with poorer health.

The current evidence suggests that the first three explanations, at most, account for only some of the observed health inequalities in relation to social class. The most widely accepted explanation is "material and social life circumstances", although there may be some interdependence with other explanations. Health-related behaviour in particular is not independent of, and is likely to be closely related to, life circumstances. The processes by which life circumstances determine risk and the mechanisms by which exposures produce disease are, however, not yet well understood.

The close association of health and deprivation means that deprivation indices can be used as proxies for general health status and allows ranking across a combination of factors. The overall deprivation or prosperity of a community can be measured and compared with other areas using a wide range of routinely collected statistical information. In Scotland, the Scottish Index of Multiple Deprivation (SIMD) has been developed. This enables small areas of between 500 and 1,000 individuals to be compared and ranked according to a combination of factors. The overall SIMD is created from 31 different indicators which cover specific aspects of deprivation including Income, Employment, Health, Education, Housing and Access. This is widely accepted methodology and provides a ranking of the data zones from the most

deprived to the least deprived. The 1222 local authority electoral wards for Scotland were ranked on the health domain indicators and divided into five equally sized groups (quintiles), each with 20% of wards.

Most health deprived	33%
↓	30%
	25%
	11%
Least health deprived	1%
	<hr/> 100%

Only one Lanarkshire ward lies in the affluent 20% of Scottish wards while nearly two thirds lie in the poorest 40%. A large swathe of Lanarkshire is health deprived, especially in North Lanarkshire and Blantyre-Hamilton-Larkhall.

A disproportionate number of the 15% most deprived datazones in Scotland are in Lanarkshire. The population of the areas in the 15% most deprived datazones that are served by Lanarkshire is shown in Table 1.

Table 1

**NHS Lanarkshire
Population in the 15% most deprived datazones in Scotland¹
By LHCC**

LHCC	Total population	Population in the 15% most deprived datazones in Scotland	% of the population in the 15% most deprived datazones in Scotland
Coatbridge	43430	16524	38.0
Motherwell	77425	22822	29.5
Airdrie	52547	15179	28.9
Hamilton	103338	26771	25.9
Wishaw	64575	15207	23.5
Clydesdale	59304	3780	6.4
Cumbernauld	66169	3594	5.4
East Kilbride	85609	0	0.0
Total	552397	103877	18.8

1. Scottish Index of Multiple Deprivation (SIMD) 2004
LHCC areas as used in this table correspond to the relevant locality areas

Causes of death in Lanarkshire

Death rates in Lanarkshire remain above the Scottish average for men and women, both under and over age 65. While death rates are improving over time, the gap between Lanarkshire and Scotland is not decreasing. Lanarkshire's death rate has consistently averaged around 6% above the Scottish rate since the start of the 1990s. Individual years have been rather better or rather poorer; 2004 was one of the latter, as shown in Table 2.

Table 2

Standardised mortality ratios 1981-2004 (Scotland 1981-83 = 100)

Year	Scotland	Lanarkshire	Lanarkshire as a % of Scotland
1981-83	100.0	106.6	106.6
1984-86	95.6	100.4	105.1
1987-89	92.5	96.0	103.8
1990-92	87.0	92.4	106.2
1993-95	85.5	91.3	106.8
1996-98	81.1	86.7	106.9
1999-01	77.2	82.0	106.2
2002	74.9	79.8	106.6
2003	74.9	79.8	106.5
2004	71.1	77.0	108.2

Poor health is widespread in Lanarkshire. Only two LHCC areas (Clydesdale and East Kilbride) had slightly lower standardised mortality ratios than Scotland in 2004 while all others except Cumbernauld had markedly higher ratios (>110), as shown in Table 3.

Table 3

Standardised mortality ratios, by LHCC, 2004

LHCC	SMR
Airdrie	119
Clydesdale	98
Coatbridge	113
Cumbernauld	104
East Kilbride	99
Hamilton	114
Motherwell	112
Wishaw	118
Lanarkshire	109

Disability and long-term illness

There are a number of ways in which disability and long-term illness can be estimated. The 2001 Census asked people to self-report if they had “any long term illness, health problem or disability which limits your daily activities or the work you can do?”

Within Lanarkshire there is a substantial degree of geographical variation in the level of limiting long-term illness recorded by the Census (Table 4). The age structure of local populations is an important factor in this, but the impact of deprivation is also significant.

Table 4

Population reporting limiting long-term illness, by LHCC, Census 2001

LHCC	Population (all ages)	Deprivation Rank	LLTI number	LLTI % of pop.
Airdrie	54684	3	12652	23.1
Clydesdale	58584	6	12590	21.5
Coatbridge	44962	1	11426	25.4
Cumbernauld	63670	7	12464	19.6
East Kilbride	85702	8	15577	18.2
Hamilton	102840	4	24005	23.3
Motherwell	76756	2	17633	23.0
Wishaw	63085	5	16368	25.9
Lanarkshire	559890		122715	22.3

Smoking

Smoking causes an estimated 1000 deaths each year among Lanarkshire smokers and an estimated further 200 deaths among its non-smokers from passive smoking. In most cases these deaths are preceded by long periods of increasingly poor health requiring treatment and care from both primary and secondary care services. The prevalence of smoking varies between surveys. The Scottish Executive uses data from the Scottish Household Survey which puts the prevalence of smoking in Lanarkshire health board area in 2004 for adults aged 16+ yrs at 28.8%, equal highest with Greater Glasgow.⁶ The average prevalence for 2002-2004 for Lanarkshire health board area adults living in the 20% most deprived postcodes in Scotland was 36.3%, which lies fifth among the ten relevant health boards. This

suggests that in Lanarkshire there is a higher prevalence of smoking across a wider range of social status than elsewhere, and is commensurate with the more widespread ill-health indicated above.

4. COMMUNITY PLANNING

Community Planning is making a major contribution to improving the health and wellbeing of individuals, families and communities across Lanarkshire and both North and South Lanarkshire's Community Plans have a specific health theme.

In **North Lanarkshire** the health theme is made up of the following key areas:

Alcohol, Diet, Tobacco, Exercise, Workplace Health, Capacity.

Within each there are several programmes of work.

In **South Lanarkshire** the health theme focuses on:

Smoking, Physical Activity, Healthy Eating, Alcohol and Drug Misuse, Mental Health and Wellbeing.

Sexual health and ***oral health*** have been prioritised and there is also a focus on ***health protection*** and ***workplace health*** to deliver an action plan.

Within each there are several programmes of work.

NHS Lanarkshire has contributed senior management, planning and public health time and expertise to the community planning partnerships.

Community Health Partnerships (CHP)

Reducing the impact of deprivation is not a task for the health service alone. Over many years NHS Lanarkshire has worked in partnership with local authorities, local community groups and the voluntary sector to improve the health of the most deprived communities.

One of the core aims of CHPs is the need to take affirmative action to assist the disproportionate number of individuals and families in Lanarkshire who suffer from the linked problems of poverty, deprivation and ill health. This focus on reducing inequalities in order to improve health and wellbeing is being delivered through enhanced partnership working between primary and secondary care and between the NHS and Local Authorities. These partnership goals are set out in a range of service plans including:

Joint Health Improvement Plans
Integrated Children's Services Plans
ADAT Corporate Action Plan.
Mental Health Framework
Community Plans.

5. COMMUNITY REGENERATION

Regeneration Outcome Agreements have recently been introduced. These are partnership agreements to help tackle poverty, deprivation and health inequalities in the areas designated as the 15% data zones with the greatest level of need across both

North and South Lanarkshire with *specific* health linked programmes to improve the health and wellbeing of the people living in the most deprived areas of Lanarkshire.

6. HEALTH PROMOTION

Health promotion activities have been delivered through 138 programmes/services in 2005/6. Most were delivered pan Lanarkshire or across each local authority linked to work with that local authority. In 2005/6, 25% were dedicated specifically to tackling deprivation, disability and discrimination, a further 28% had these issues as a major component.

Programmes dedicated specifically to tackling deprivation include:

- Tackling binge drinking among young people across Lanarkshire (2005-2007). This is in addition to 'Street Base', community alcohol outreach that promotes diversion activity for young people in South Lanarkshire: and 'Landed' Peer Education for vulnerable young people aged 12-22 years promoting health, learning and citizenship, with programmes on drugs, alcohol, smoking cessation, relationships and sexual health.
- Community Mothers' Breastfeeding Peer Education support was developed in North Lanarkshire and followed in South Lanarkshire. 'Best Fed Babies' was developed in Blantyre and North Hamilton and has been extended to Rutherglen and Cambuslang.
- A Community Health Educator has been appointed to encourage increased uptake of screening programmes through targeting minority ethnic women living in deprived areas of North Lanarkshire.
- 'Cooking for Health' targeting specific client groups including the deaf community and Asian women in Airdrie, Motherwell, Cumbernauld and Hamilton.
- 'Get Ready for Work' for young people in Motherwell tackling health and other barriers to work.

7. DEVELOPMENT OF PRIMARY CARE SERVICES TO MINIMISE THE IMPACT OF DEPRIVATION ON HEALTH

Over 90% of contacts between health professionals and patients take place in the community and access to care is through a planned route with care arranged either by the general practitioner or community services.

The responsibility for reducing the impact of deprivation and so reducing inequalities in health between relatively deprived and affluent communities lies at all levels from the individual to various organisations. The NHS plays its part through targeting health care at the most deprived areas, particularly through the development of local preventative primary care and community services. These take into account local deprivation and many are specifically targeted at areas of multiple deprivation.

Increased Capacity in Primary Care

As part of the Picture of Health process NHS Lanarkshire has committed to improving the capacity within primary care to tackle the burden of illness which arises from long term conditions, most particularly in deprived communities. A number of major developments are being progressed with the investment of £2.133 million in increased community based staffing to deliver more proactive management of long-term illness.

Allocation of Resources to Deprived Localities

The poor health status of more deprived communities has to some degree been recognised in the allocation of resources to support Community based Clinical Services, particularly nursing. Detailed work has been carried out to assess the population share of each of the localities and to weight these in accordance with the Arbuthnott Formula, (which includes a weighting for deprivation).

The existing allocations of staff are shown in the table below.

Table 5

Locality	Population Share %	Arbuthnott Weighted %	Resource Share %
Coatbridge	8.22	9.25	10.04
Airdrie	9.51	9.97	10.64
Cumbernauld	11.98	10.65	11%
Wishaw	11.69	10.58	10.65
Motherwell	14.01	16.8	15.19
Clydesdale	10.74	10.12	10.96
East Kilbride	15.5	13.6	12.6
Hamilton	18.71	19.07	18.87

While the above figures do not reflect a complete match between allocation and Arbuthnott-weighted share there is clearly a trend towards a share above population levels in the areas of highest deprivation such as Airdrie, Coatbridge, Wishaw, Motherwell and Hamilton. It is also noticeable that the level of resource in the most affluent communities of East Kilbride and Cumbernauld is weighted to reflect the lesser burden of illness.

Anticipatory Care has recently been advocated as a key means of improving health. The Scottish Executive has committed £1million in each of the next two years to support the Prevention 2010 pilot project in Airdrie, Coatbridge and Wishaw. This extra resource is being allocated to these deprived areas for additional staff to identify, contact and offer health checks to those most at risk of developing life-limiting conditions. People between the age of 45 and 65 years will be offered a full health assessment including blood pressure, cholesterol, smoking and other lifestyle checks. Where indicated, a treatment plan including medication management, lifestyle advice and support will be provided. This pilot is designed to reduce the risk of heart attacks and strokes and to promote improved quality of life.

The North Lanarkshire Keep Well pilot started in October 2006 and by June 2007 it covered a total of 21 practices in the localities of Airdrie, Wishaw and Coatbridge with an additional 7 practices having signed up. People between 45 and 64 years of age are invited to an initial cardiovascular disease (CVD) screening appointment with a nurse and by the end of June 2007 over 5000 people had attended. At this appointment the screening nurses assess the person for CVD risk factors and around one third are will be referred on to a Chronic Disease Management Nurse (CDMN)

for a more detailed cardiovascular assessment. The CDMN arranges for initial treatment and onward referral to other services to help with losing weight, giving up smoking and support with taking up exercise.

Table 2 shows the number of people that have attended for Keep Well appointments in Lanarkshire and that have been referred on to other services in the first eight months of the pilot (13).

Table 2 - Keep Well attendances and onward referrals in the first eight months of the Keep Well pilot in North Lanarkshire

	Locality			Total
	Coatbridge	Wishaw	Airdrie	
Practices involved in Keep Well	8	7	6	21
Numbers on practice lists aged 45-64	13002	5389	6445	24836
Patients attended for initial screening appointment	3074	1563	816	5453
Patients not attending (DNA)	1077	1287	1182	3546
Referral to Chronic Disease Management Nurse	1007	798	273	2078
Referrals to Counterweight	312	197	82	591
Referrals to smoking cessation	139	77	41	257
Referrals to exercise programme	181	119	39	339
Referral to General Practitioner	47	13	0	60
Referrals to other service	13	5	1	19

Further work is being planned to engage with the hard-to-reach population in the second stage of the pilot and also to monitor the success of different approaches to engagement and the provision of clinical care as part of the Keep Well pilot.

8. LINK BETWEEN DEPRIVATION AND SPECIFIC ILLNESSES IN SCOTLAND

A link between material deprivation, coronary heart disease, stroke, cancer and suicide was highlighted in Scotland by an analysis of hospital admissions and mortality data conducted by the Information and Services Division (ISD) in Scotland.⁷ The key findings from this work are summarised below:

Coronary heart disease: The incidence of, and mortality from, acute myocardial infarction in those aged under 65 are higher in those from more deprived areas. There is, however, no correlation with deprivation for mortality from acute myocardial infarction in those over 65. It should be noted that the frequency of coronary artery bypass graft procedures in people over 65 is highest in those from the less deprived areas. There is a tendency for men (0-64 and 65+) and women (0-64) from less deprived areas to have angiography and coronary artery bypass grafting/angioplasty following first hospitalised acute myocardial infarction earlier, and more often, than those from more deprived areas. Inequalities in procedure rates, by deprivation, should be investigated further, especially for people prior to first acute myocardial infarction when the greater proportion of such procedures are carried out.

Stroke: There is an increased risk of mortality from stroke in the under 65 population with increasing deprivation category. This relationship is not seen in those aged 65 or more. The incidence of first hospitalised stroke patients in those over 55 also shows a clear rising gradient with deprivation. There is increased survival at 30 days after first hospitalised stroke in men from the most deprived areas. However, there are no significant differences in the proportions, by deprivation, of hospitalised stroke patients discharged to their own homes within 56 days of stroke. Reduction of socio-economic inequalities in stroke mortality is likely to require equitable access to effective primary and secondary prevention and effective hospital care.

Cancer: The incidence rates for lung and cervical cancer rise with increasing deprivation category, while for colo-rectal cancer the rates are similar across all deprivation categories. The trend for breast cancer differs with lower incidence rates with increasing deprivation. The percentage uptake of breast screening from 1992-95 is lower in women from more deprived areas. For all four of these common cancers there is decreasing survival with increasing deprivation. There is no apparent difference in the likelihood of dying at home between cancer patients from different deprivation categories. The patterns of cancer incidence by deprivation indicate the importance of primary prevention, while the variations in survival indicate the importance of monitoring equity of access to effective secondary prevention and treatment.

Mental Health: There is an increasing risk of suicide with deprivation that is more marked in younger age groups. For schizophrenia, the incidence rates in general practice are markedly higher in people from the most deprived areas. A common feature of the mental health data examined is a tendency for there to be high rates among the most deprived with relatively little variation in rates between other groups. The hospital data show clear gradients in first admission ratios for depression, anxiety and schizophrenia with the most deprived having the highest admission rates. These variations in admission rates may reflect differences in factors other than incidence. Further research is required into the relationship between socio-economic deprivation and psychiatric morbidity. Exploration of inequalities in care pathways and clinical outcome by deprivation is important, as is exploration of variations in incidence and prevalence of the conditions.

Further Analysis

A separate analysis of hospital admissions and deaths from Coronary Heart Disease (CHD) in Scotland between 1981 and 1999 showed that people living in areas of socio-economic deprivation have a higher death rate from CHD, spend more time in hospital as a result of CHD and have a higher in-hospital mortality rate and mortality within 28 days of discharge.⁸

Studies that have been carried out in other parts of the UK have also shown some differences in the way that people from deprived communities use hospital facilities and in their health outcomes. A large study carried out across all Primary Care Trusts in London showed that rates of hospital admission for long-term conditions (asthma, diabetes, heart failure, COPD) are higher in deprived communities irrespective of the standard of primary care that is offered.⁹

Another study carried out in South East England showed that people living in deprived areas use hospital services differently to more affluent population groups

for cancer of the breast, lung or colorectal area.¹⁰ People living in deprived areas with lung, colorectal, and breast cancer were more likely to be admitted as emergencies, less likely to have day case procedures, and less likely to receive surgical treatment than their counterparts from affluent areas. Patients with colorectal cancer in deprived areas were also more likely to be seen inappropriately in hospitals treating fewer than 100 cases a year. More effective early diagnostic and referral procedures in primary care settings in deprived areas are required if there are to be significant reductions in mortality from these cancers.

9. ACCESS TO SECONDARY CARE

Throughout the consultation on a Picture of Health, it has been commented that NHS Lanarkshire has paid insufficient attention to the impact of deprivation on health in Lanarkshire and that, specifically, the configuration of hospitals could mean that deprived populations are disproportionately disadvantaged and that people living in deprived circumstances have a greater need for acute hospital care, and the time to access that care may make a critical difference to the outcome of illness or injury.

Ninety per cent of contacts between patients and health care professionals are in primary care. Less than 10% of contacts take place in hospital and all outpatient appointments or hospital care is accessed through routine referral to outpatient care. Access to such services remains unchanged in a Picture of Health.

The Department of Health undertook an independent enquiry into Inequalities in Health¹¹ and the following extract from the Acheson report examines inequalities in access to secondary care. “Evidence on variations in access to secondary care is often difficult to interpret, since many studies do not adjust for case mix or distinguish between emergency and elective care. Monitoring equity of access to secondary care from routine data sources is also difficult, since the collection of data about ethnicity, socio-economic status and utilisation of the private sector is incomplete.

There is a positive relationship between levels of deprivation in an area and hospital admission rates, although there are also great variations in hospital admission rates between GP practices. Thus deprivation is not the only factor influencing hospital admission and higher admission rates could also in part reflect poorer access to primary and community care services, as for example in the case of diabetes and asthma,

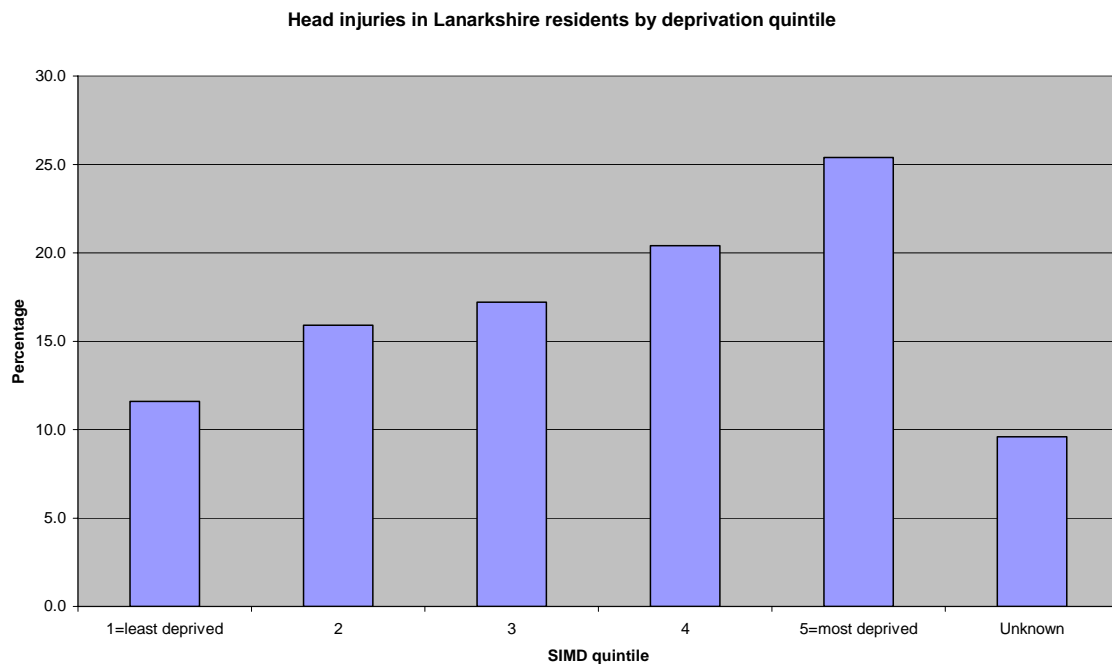
For outpatients, attendance is either higher in disadvantaged groups or similar to the better off, after adjusting for need. For some ethnic minority groups outpatient attendance rates are lower than for the ethnic majority. There is some evidence to suggest that this may be related to GP referral beliefs and practices. Inequity in access to investigation and specialist cardiac services treatment has been observed in relation to socioeconomic factors, ethnic group, gender, age and geography. For example, since mortality from coronary heart disease in South Asians is 40 per cent higher than the general population, intervention rates for large Asian communities might be expected to be higher than average. The evidence shows the opposite after adjusting for socio-economic and geographical factors. Similarly, rates for coronary artery bypass grafts and coronary angioplasty are not generally higher in areas with the greatest need, as was reported in the Scottish study. For many other hospital treatments, there is little evidence of systematic inequalities in access between

deprivation groups.”

Access, however, is not just about physically being able to reach services, or taking time off work to attend them, but also about intellectual access and understanding. It can be too easy for health professionals to assume that patients and carers understand and grasp the importance, implications and vocabulary associated with their consultation, and that the information they are given fits the context of their lives.

Access to Treatment for Injuries

Information about patients attending an accident and emergency department in Lanarkshire for a head injury is recorded on a dedicated database that was established in Hairmyres, Monklands and Wishaw in 2006. Analysis of the first full calendar year of data shows that almost 10,000 patients attended for a head injury and that these were fairly evenly distributed across the three accident and emergency departments in Lanarkshire, with a small number being seen at a Glasgow hospital. Head injury is thought to be more common in deprived communities and analysis of accident and emergency attendances in Lanarkshire for head injury supports this conclusion. A clear gradient of increasing frequency of head injury in more deprived communities is shown in the table below.



Although head injuries are more common in deprived communities in Lanarkshire, the number of attendances at accident and emergency for head injury were similar across the three hospital sites. Wishaw had the highest number of attendances for head injury followed by Monklands and then Hairmyres.

Hospital	Episodes	Patients
Hairmyres	3039	2937
Monklands	3362	3238
Wishaw	3634	3499
Glasgow	103	85
Total	10138	9759

Deprivation and access to treatment for injuries was also examined in published reports from the Scottish Trauma Audit Group (STAG). It showed a significant deprivation related gradient in injuries of all types,¹² particularly marked in children and in road traffic accidents and is shown in both hospital admission and in mortality rates.

The STAG database included injured patients, who were admitted to hospital for at least three days or who died within hospital and are shown by SIMD quintiles in Table 6.

Table 6

Inpatient discharges following emergency admission: 2004/2005
External cause as diagnosis¹
By SIMD quintile²
Lanarkshire residents

SIMD quintile	Emergency admission - external causes
No. of discharges	
1	1045
2	1537
3	1740
4	1892
5	2517
Total	8731
Percentage	
1	12.0
2	17.6
3	19.9
4	21.7
5	28.8
Total	100.0

1. ICD10 codes S00-Y98 as any diagnosis.

2. Scottish Index of Multiple Deprivation (SIMD) quintiles within Lanarkshire.
20% of the Lanarkshire population is in each quintile.

STAG also demonstrated that through the 1990s the increased presence of consultants in accident and emergency medicine, anaesthetics and surgery was linked to a reduction in the mortality of seriously injured patients.¹³ In terms of survival, the management of injured patients in Scotland is significantly better than the rest of the UK.

Influence of trauma services on mortality

Two Scottish studies have examined the influence of trauma services on outcome. A study of all child deaths in the South East of Scotland over an eleven-year period found that 99 of 138 deaths (72%) occurred within an hour of injury or were dead when found. Ninety-two of these children showed no signs of life when the ambulance crew arrived at the scene. The authors concluded that “the

potential for improving survival by providing seriously injured children with earlier medical attention.... seems to be limited”¹⁴

A study of deaths in adults due to injury showed similar results.¹⁵ Seventy-five per cent of 331 patients were either dead when found, or died instantly with unsurvivable injuries. Five patients died in the first hour after injury and before reaching hospital.

The authors of these papers concluded that the greatest potential for reducing deaths from injuries lies with prevention.

Both of these studies show that the number of patients where the time between injury and arrival at hospital could *possibly* have made a difference to survival is very small. Other studies show that there is no evidence that time makes an *actual* difference to outcome.

Influence of the time from injury to treatment on outcome

A study in the West of Scotland examined the outcome of 4,500 patients with moderate or severe traumatic injury over a two-year period.¹⁶ No patients were found to have died during the primary transfer from the scene of injury to hospital. The study compared the outcome for patients in rural areas with patients in urban areas. The total ambulance time (including the time to respond to the call, the time spent at the scene and the transport time) was 70 minutes for patients in rural areas compared with 42 minutes for patients in urban areas. There were no differences in length of inpatient stay, length of intensive care unit stay or mortality between the urban and rural groups.

Access to specialist trauma care for people from deprived areas

Using the STAG database, it has been found that head injury is relatively more common in deprived areas¹⁷ the excess of injuries being mainly due to isolated head injuries as a result of an assault. Similar proportions of head injured patients were transferred to specialist neurosurgical centre, the time to surgery was similar and there was no significant difference in mortality. This study shows that for a service that directly affects Lanarkshire, but is provided at a distance because of the concentration required to maintain quality of care in one hospital, people from deprived areas are not disadvantaged either in terms of the process or outcome of care. It is therefore concluded that:

- Injuries are commoner in people from deprived communities.
- The proportion of injured people who die between the arrival of the ambulance crew and arrival at hospital is very small.
- In existing conditions in Scotland, the time between injury and hospital care makes no difference to length of hospital stay or mortality.
- In head injury, deprivation makes no difference to access to care, the process of care or the outcome.

There is no evidence that moving consultant led accident and emergency away from areas of the greatest deprivation in Lanarkshire will have an impact on the

outcome of moderate and severe traumatic injury.

NHS Lanarkshire can have the greatest influence on the impact of injury in deprived areas by working with local authorities and voluntary organisations to prevent injury.

Access to Specialist Healthcare Services

Deprived populations have greater levels of illness, therefore it makes sense to locate emergency hospital facilities within a reasonable travelling distance for deprived communities. Levels of car ownership are also lower in deprived areas making the population less mobile. However, there are also significant levels of illness in some affluent communities and density of population is an important consideration since greater density in an affluent area can lead to a higher overall level of healthcare need than that associated with illness in a deprived community.

There is evidence from the STAG database and other research studies to show that journey times to hospital do not affect the quality of care or outcomes of care following an injury, which occur more commonly in deprived communities. A recent NHS Lanarkshire analysis reached a similar conclusion about journey times to hospital for patients with a myocardial infarction (18) and there is some evidence to support the centralisation of care for myocardial infarctions in order that primary angioplasty can be offered (19). In a recently published study, it has been shown that patients with a greater distance to travel to a hospital have an increased mortality from respiratory causes but not from chest pain or severe trauma (20). However this study is based on data from 1997-2001 and since that time, there have been a number of developments in pre-hospital care and the care that is offered in accident and emergency departments.

However there is some evidence that deprived communities use hospital services in a different way to more affluent communities for cancer care and for CHD, in particular people from deprived communities were more likely to receive reactive emergency care. Health outcomes appear to be worse in deprived populations particularly for CHD, stroke and suicide in the under 65 years age group. Although there is no evidence that this finding is associated with poorer access to hospital care facilities, it nonetheless provides a case for ensuring a reasonable level of access for these communities as the proposals for primary care development outlined in *A Picture of Health* demonstrate.

Given the decision that current services cannot be maintained on all 3 hospital sites on account of quality of care and workforce considerations, level 3 provision comprising emergency inpatient care, consultant-led accident and emergency care, coronary care and intensive care will in due course be available on two hospital sites. The majority of hospital care episodes are outpatient attendances and only a proportion of inpatient episodes are for emergency care and journey times will increase for some of these. Journey times to hospitals have been studied in detail and given the geography of Lanarkshire, the increase in journey times is small and needs to be balanced against improved standards of care that result from centralising emergency admissions to hospitals. Journey time to hospital is, however, only one relatively small part of the overall time from onset of symptoms to treatment where an increasing role is played by ambulance staff in the stabilisation and treatment of emergency admissions. It is noteworthy that the

majority of contacts between patients and hospitals can be provided in a level 2 hospital which provides all planned specialist services including elective surgery on an inpatient or day case basis and all outpatient clinics. Access to hospital facilities will therefore remain unchanged for the majority of patients in the catchment of a level 2 hospital.

Given that their healthcare needs are greater, issues of access for deprived communities need to be considered and acknowledged in any decision about the location of level 2 and level 3 hospital facilities. The evidence suggests that journey times per se do not appear to significantly alter the outcome of emergency hospital care. Variations in the usage of hospital services and in healthcare outcomes between deprived and affluent populations need to be monitored on an ongoing basis to inform future whole system service planning and redesign.

10. CONCLUSION

There is a clear link between deprivation and ill health and the strategic direction of *A Picture of Health* with increasing investment in primary care and input to community planning along with health promotion, health protection and planned care are designed to address the major health issues of the people of Lanarkshire, including those of deprived communities. Consideration of issues of access for emergency care for deprived communities have shown that journey times in themselves do not appear to affect the outcome of emergency hospital care and health outcomes are not materially affected by the location of the emergency hospitals.

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