Occasional Paper No. 01 June 2003

Health Indicators for the North East Integrated Regional Framework

Introduction

There are a number of national policies and strategies which include targets or indicators to monitor the reduction of inequalities in health. However there has been concern about the availability and quality of data to monitor indicators leading to the targets; confusion about the relationships among the targets; and a lack of accessible information about how to achieve the required improvements [1].

In July 2002, the Public Health Observatory and Health Development Agency were asked to undertake some development work to make sense of the range of targets and indicators that may be used at regional level. One output of the work would be to provide the health component of the next iteration of the SustaiNE framework [2].

This occasional paper aims to:

- Summarise a brief set of regionally relevant indicators based on explicit criteria;
- Provide an overview of the key targets and their policy sources.

The indicators are presented in sequence to identify those interventions that might have impact in the short term separately from those where a decade or more may be required before the impact can be seen.

An accompanying technical report [1] additionally provides:

- Signposts to evidence of effective interventions;
- A development plan which aims to improve the range of indicators in relation to health status, determinants of health and inequalities.

Detailed descriptions of the indicators are given on the following pages.

Contents

Summary

The list of indicators proposed is as follows:

Indicators which may be influenced within 3 years:
- Smoking Quit Rates;
- Teenage Pregnancy Rates;
- Mortality from Coronary heart Disease.

Indicators which may be influenced within 5 years:
- Educational Attainment;
- Infant Mortality Rates;

Indicators which may be influenced within 10 years:
- Life Expectancy at Birth;
- Mortality from Lung Cancer;
- Mortality from Respiratory Diseases.

Smoking Quit Rates

Definition: The percentage of those using specialist smoking cessation services, who successfully quit (self reported) at 4 weeks.

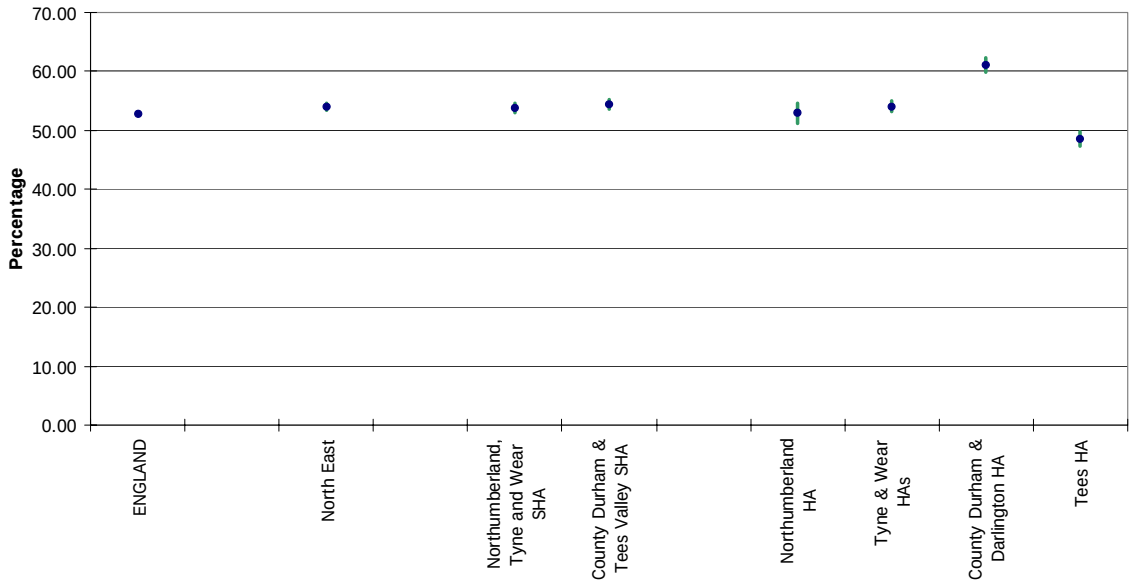
Rationale: Smoking is the single greatest cause of preventable illness and premature death in the UK. Seven out of ten adult smokers say they would like to give up, but most find it difficult. For smokers who do give up, the chances of getting a serious or fatal disease are greatly reduced. There is a commitment in the NHS Plan [3] to a world-leading smoking cessation service. The NHS Cancer Plan [4] reinforces the role of the services in tackling cancer and health inequalities. One third of the target reduction in cancer mortality is planned to be delivered from a reduction in smoking.

The indicator can potentially be used to identify a reduction in health inequalities and health improvement in cancer and heart disease, if cessation services preferentially succeed with groups with higher levels of cancer and heart disease.

Timeliness: Quarterly returns to Department of Health by (old) Health Authority. Raw data has been used to recalculate percentage values for amalgamated (old) Health Authorities which approximate to the sub regions, Strategic Health Authorities and Government Offices. Note that in this instance Darlington is included in with Durham and not with Tees.

Source: Department of Health.

Percentage of people setting a quit date who self report having successfully quit smoking at 4 weeks, 2001/02



Commentary: The Quit Rate for England is 52.7%. The North East has the fifth highest quit rate of the nine English regions (54.1%) and this is statistically significantly higher than England.

Quit rates for the two Strategic Health Authorities are similar to the region quit rate. Of the North East's four groupings of health authorities, County Durham & Darlington HA has the highest quit rate (61.1%) and Tees HA the lowest rate (48.6%).

Teenage Pregnancy Rates

Definition: The number of conceptions (one or more live or still births or a legal abortion) per 1,000 females aged 15-17 years. Figures do not include illegal abortions or miscarriages. The date of conception is estimated using recorded gestation for abortions and stillbirths, and assuming 38 weeks gestation for live births.

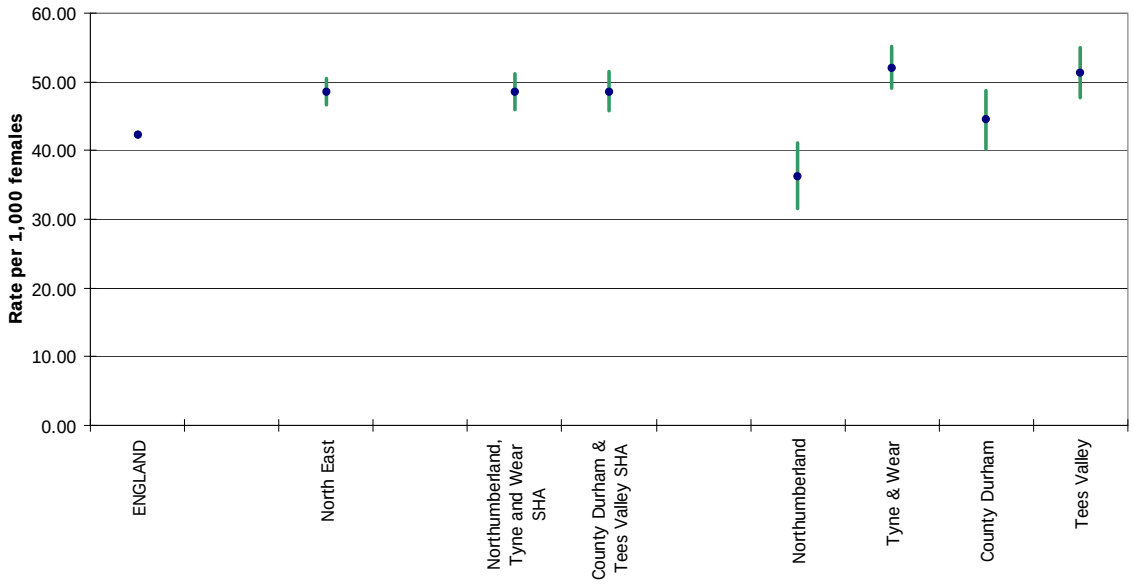
Rationale: The UK has one of the highest rates of teenage pregnancy in Europe. Teenage mothers are less likely to finish their education, less likely to find a good job, and more likely to end up both as single parents and bringing up their children in poverty. The children themselves run a much greater risk of poor health, and have a much higher chance of becoming teenage mothers themselves [5, 6].

The Government has set a target to reduce the number of teenage conceptions by half, by 2010.

Timeliness: Three year rolling data, updated annually.

Source: Office for National Statistics.

Conception Rate per 1,000 females aged 15-17 years, 2001



Commentary: The conception rate for England for females aged under 18 was 44 per 1,000 in 1999-2001. The conception rate in the North East was highest of all regions and significantly higher than England at 52 conceptions per 1,000 females aged 15-17 years.

Both Strategic Health Authority areas had conception rates significantly higher than England (at 52 conceptions per 1,000 females for each Strategic health Authority). The sub-regions of Tyne & Wear and Tees Valley had the highest conception rates in the North East at 55 conceptions per 1,000 females. Northumberland had a significantly lower conception rate than the North East and England at 40 conceptions per 1,000 females.

When interpreting these figures it is worth bearing in mind that some county areas with low overall rates have districts with amongst the highest rates in

England.

Mortality from Coronary Heart Disease

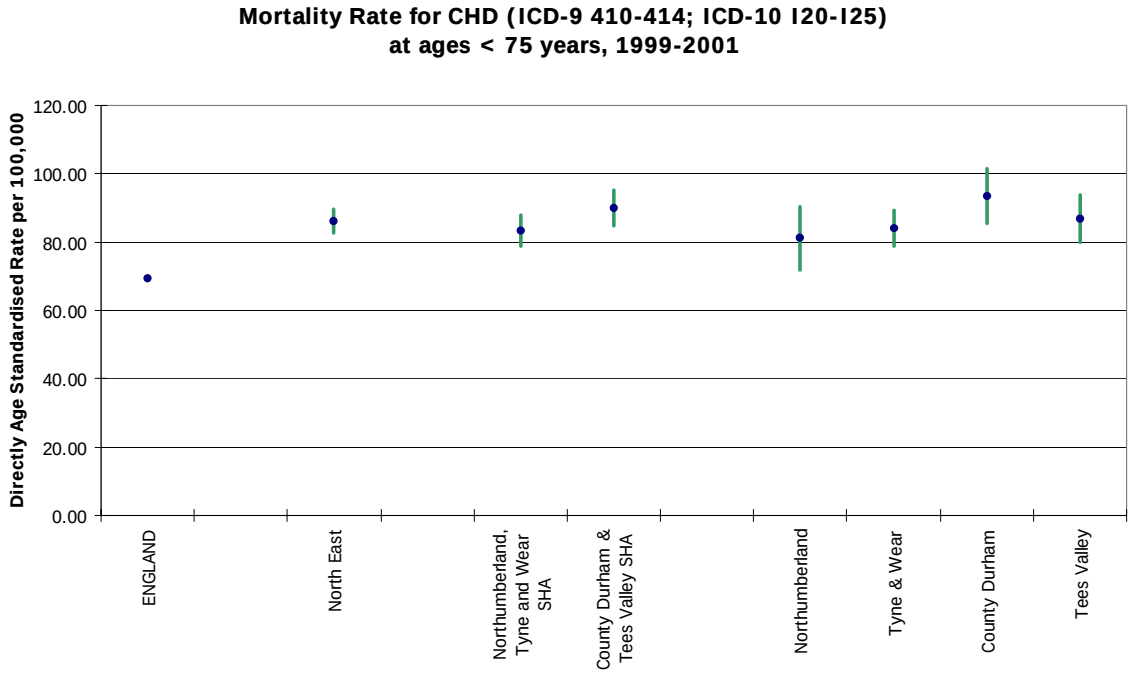
Definition: Mortality Rates for CHD (ICD-9 410-414; ICD-10 I20-I25) are presented in two forms:

- as Directly Age Standardised Rates per 100,000 – which allow for valid comparisons between populations with different age structures; and
- as a rate of Years of Life Lost (<75 years) per 10,000 – which indicates premature mortality.

Rationale: Coronary heart disease (CHD) is responsible for about 20% of all deaths, some 10% of years of life lost and a significant burden of ill health in the population. It is potentially preventable and disproportionately affects the deprived groups in society; therefore tackling this group of diseases could offer the greatest reduction in health inequalities [7].

Deaths from CHD under 75 are a health indicator in Quality of Life Counts [8].

Timeliness: Three year rolling averages updated annually, available retrospectively. Latest year 1999-2001. Can be monitored annually.



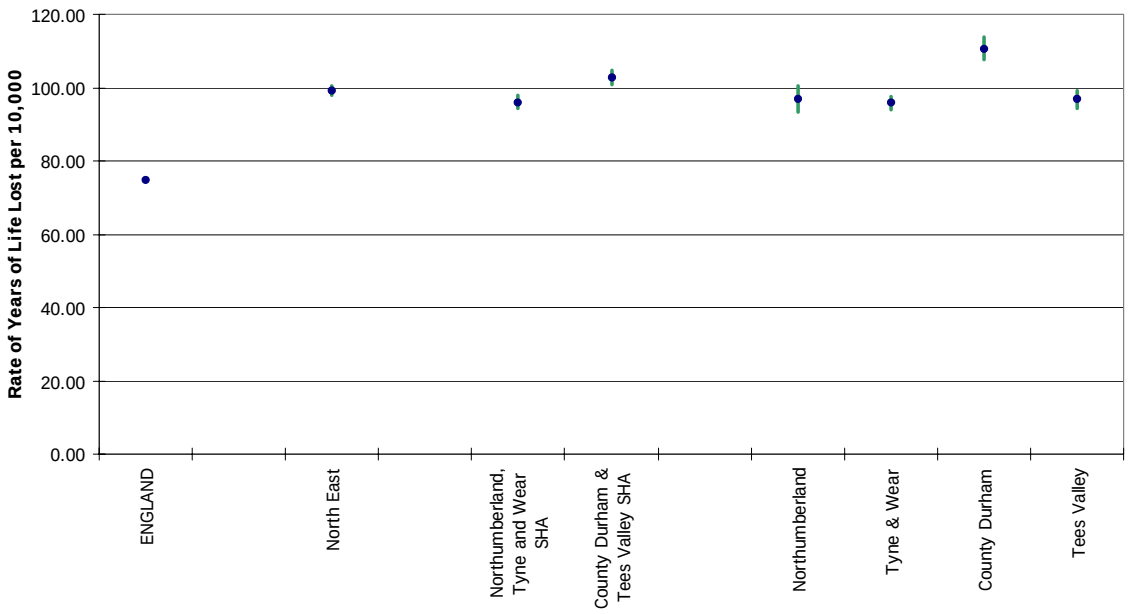
Source: Office for National Statistics: PHO Death Extracts, mid year population estimates.

Commentary: The Directly Age Standardised Death Rate from CHD at ages under 75 for England is 69.3 per 100,000. The North East has the highest rate of the nine English regions (86.2 per 100,000) and this is statistically significantly higher than England.

Northumberland, Tyne & Wear Strategic Health Authority has a lower mortality rate than the region as a whole (83.3 per 100,000) and County Durham & Tees

Valley Strategic Health Authority has a higher mortality rate than the region as a whole (90.0 per 100,000) – these are statistically significantly higher than the mortality rate for England. Of the North East's four sub regions, County Durham has the highest rate (93.6 per 100,000) and Northumberland the lowest rate (81.2 per 100,000).

Premature Mortality from CHD (ICD-9 410-414; ICD-10 I20-I25), 1999-2001



Commentary:

The Rate of Years of Life Lost from CHD at ages under 75 for England is 48.7 per 10,000. The North East has the highest rate of the nine English regions (99.1 per 10,000) and this is statistically significantly higher than England.

Northumberland, Tyne & Wear Strategic Health Authority has a lower rate of years of life lost than the region as a whole (96.1 per 10,000) and County Durham & Tees Valley Strategic Health Authority has a higher rate than the region as a whole (102.8 per 10,000) – these are statistically significantly higher than the rate for England. Of the North East's four sub regions, County Durham has the highest rate (110.7 per 10,000) and Tyne & Wear the lowest rate (95.8 per 10,000).

Educational Attainment

Definition: Percentage of 19 year olds with an NVQ Level 2 qualification or equivalent (5 A*-C grades at GCSE/GNVQ), 2002.

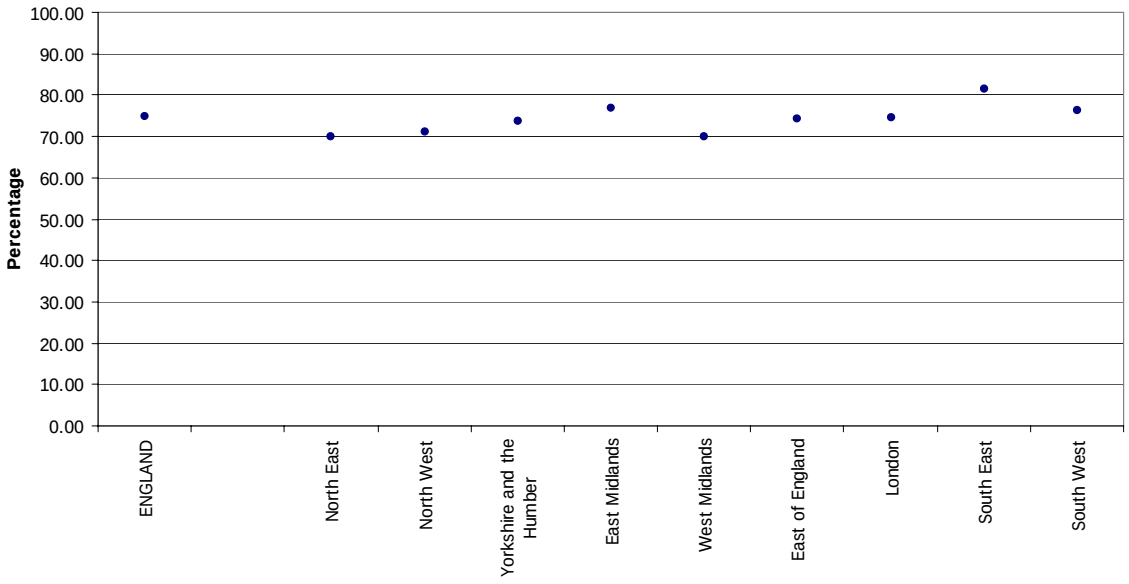
Rationale: Educational attainment is strongly influenced by the socio-economic status of the parents and can be viewed as both an outcome measure and a population indicator of future health and well-being [9]. The Department for Education and Skills first published its National Learning Targets in 1998. One of these targets was to increase the percentage of 19 year olds with an NVQ Level 2 qualification to 85% by 2002. This target is one also included in Quality of Life Counts [8].

Since this data is not published in raw format, it is not possible to present data for Strategic Health Authorities or sub regions; data is collected through the Labour Force Survey, and is available only for England and Government Office Regions. The Department for Education and Employment is looking at ways to produce this information accurately at more local levels.

Timeliness: Data is published annually.

Source: Department for Education and Skills.

Percentage of Young Adults achieving at least NVQ Level 2 Qualification, 2002



Commentary: The percentage of 19 year olds in England achieving NVQ Level 2 qualification of equivalent in 2002 was 75%. The North East Region together with West Midlands had the lowest percentage reaching Level 2 at 70%.

The difference in educational attainment between males and females was higher in the North East than any other region, with 82% of females achieving Level 2 or equivalent, and only 64% of males. In England, 77% of females achieved Level 2, compared to 72% of males.

Infant Mortality

Definition: Infant Mortality Rate is a measure of the yearly rate of deaths in children less than one year old. Using the ONS Link File, the measure of infant mortality is the number of deaths at ages under one year from the number of live births in the period 1997-1999, expressed as a rate per 1,000.

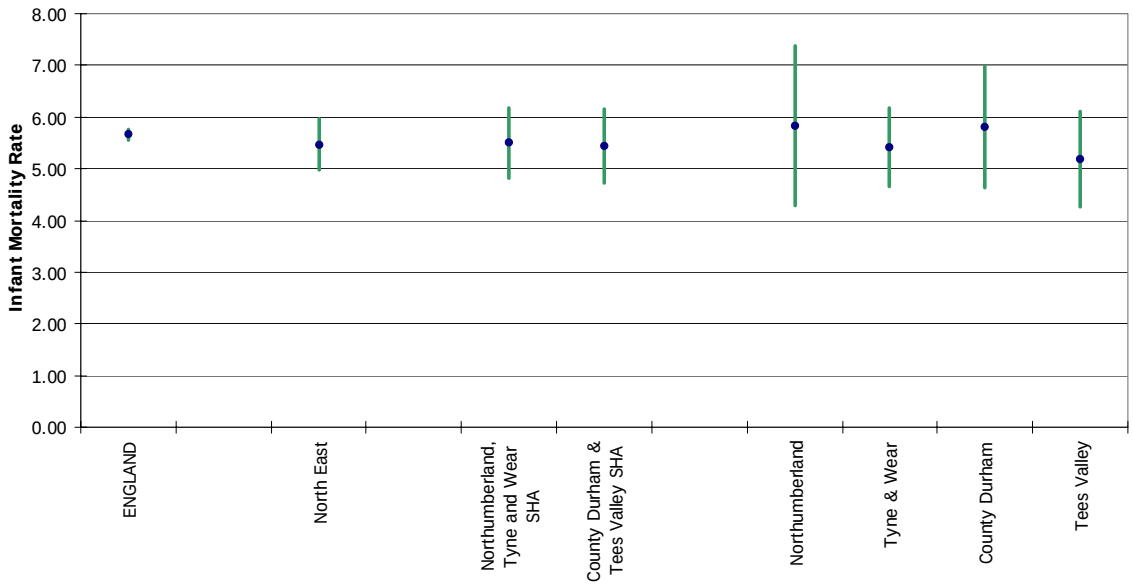
Rationale: Infant Mortality Rate has been selected because it is one of the Government's national health inequalities targets [10] as follows:

> *"Starting with children under 1 year, by 2010 to reduce by at least 10 per cent the gap in mortality between manual groups and the population as a whole (excluding sole registrations)."*

Timeliness: Three year rolling averages updated annually, available retrospectively. Latest year 1997-1999. Can be monitored annually.

Source: ONS Link File.

Infant Mortality Rate, 1997-1999
(Data from ONS Link File)



Commentary: The Infant Mortality Rate for England is 5.7 per 1,000. The North East has the sixth highest Infant Mortality Rate (5.5 per 1,000) of the nine regions. The difference between England and the North East is not statistically significant. Two factors which may improve our status in relation to this indicator are the small ethnic minority population; and the good antenatal and obstetric care.

Infant Mortality Rates for the two Strategic Health Authorities are similar to the region rate. Of the four sub regions of the North East Northumberland has the highest Infant Mortality Rate (5.8 per 1,000) and Tees Valley has the lowest Infant Mortality Rate (5.2 per 1,000). None of the differences are statistically significant.

Life Expectancy at Birth

Definition: Life Expectancy (expressed in Years) - is an estimate of the number of years a new born baby would survive, were he or she to experience the age-specific mortality rates of the stated area and stated time period throughout his or her life. Calculations used the method described by Silcox et al [11].

Rationale: Life Expectancy is a useful summary measure of the mortality experience of a population. It can be used as a high level measure of inequalities in health [10] and is well understood by the general public.

Life Expectancy has been selected because it is one of the Government's major health inequalities targets as follows:

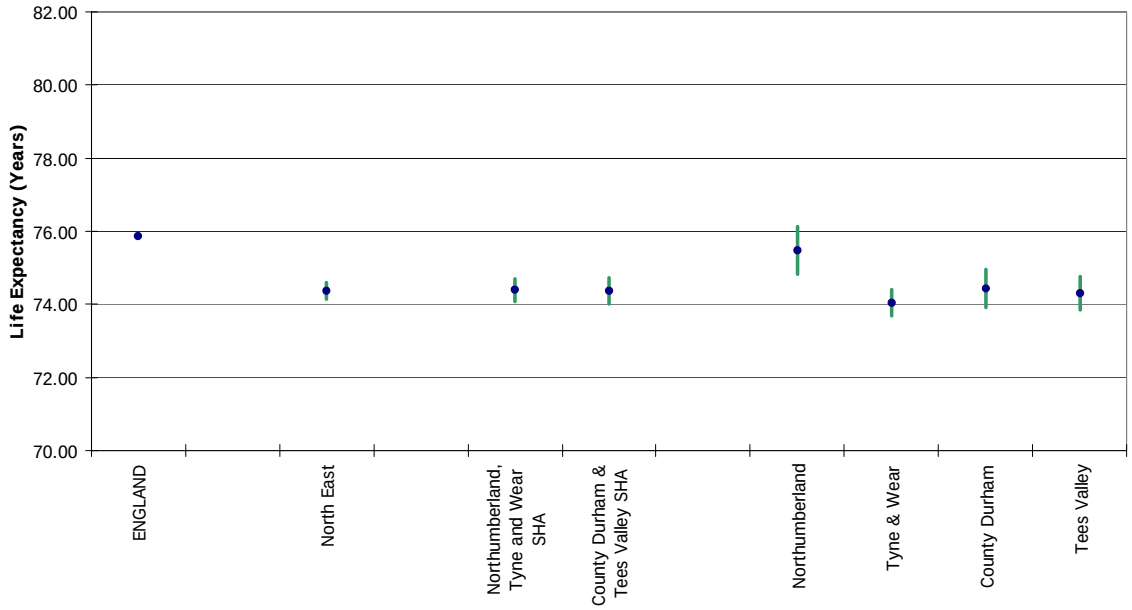
> *"Starting with Health Authorities, by 2010 to reduce by at least 10% the gap between the quintile of areas with the lowest life expectancy at birth and the population as a whole."*

Life Expectancy at Birth is a Regional Indicator identified in Quality of Life Counts [8]. The national headline indicator for health is Healthy Life Expectancy but it is recognised that this data is not available regionally. This data can also be presented to reflect the social gradient, on relation to inequalities in health.

Timeliness: Three year rolling averages updated annually, available retrospectively. Latest year 1999-2001. Can be monitored annually.

Source: Government Actuary Department; Office for National Statistics.

Life Expectancy at Birth for Males, 1999-2001

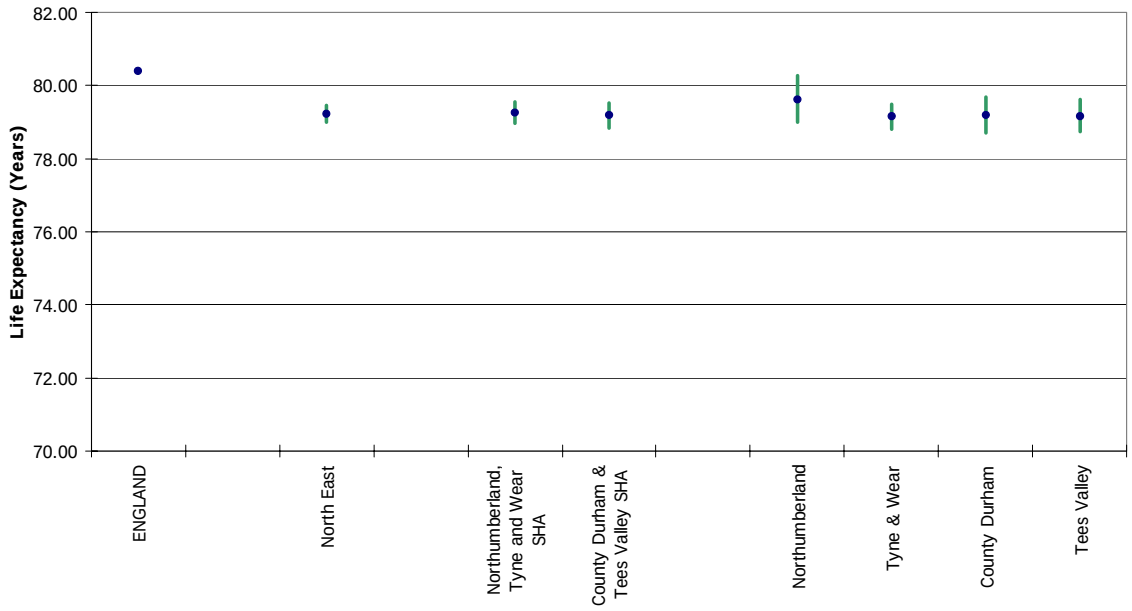


NOTE: y-axis does not begin at zero.

Commentary: Life Expectancy at birth for males in England is 75.9 years. The North East at 74.4 years (jointly with the North West) has the lowest Life Expectancy at birth for males of all the English Regions; this is statistically significantly lower than Life Expectancy for England and all other Regions except the North West.

Life Expectancy at birth for males for the two Strategic Health Authorities is similar to that for the region. Of the four North East sub regional partnerships, Northumberland has the highest life expectancy at birth for males in the region at 75.5 years (statistically significantly higher than for the North East); Tyne & Wear has the lowest highest life expectancy at birth for males in the region at 74.1 years.

Life Expectancy at birth for females, 1999-2001



NOTE: y-axis does not begin at zero.

Commentary:

Life Expectancy at birth for females in England is 80.4 years. The North East at 79.1 years (jointly with the North West) has the lowest Life Expectancy at birth for females of all the English Regions; this is statistically significantly lower than Life Expectancy for England and all other Regions except the North West.

Life Expectancy at birth for females for the two Strategic Health Authorities is similar to that for the region. Of the four North East sub regional partnerships, Northumberland has the highest life expectancy at birth for females in the region at 79.6; Tyne & Wear has the lowest highest life expectancy at birth for males in the region at 79.2 years. None of these differences were statistically significant.

Mortality from Lung Cancer

Definition: Mortality Rates for Lung Cancer (ICD-9 162; ICD-10 C33-C34) are presented in two forms:

- as Directly Age Standardised Rates per 100,000 – which allow for valid comparisons between populations with different age structures; and
- as a rate of Years of Life Lost (<75 years) per 10,000 – which indicates premature mortality.

Rationale: The death toll from all cancers is second only to that from circulatory diseases, causing one in four deaths. Four in ten people will develop cancer in their lifetime. There are many different types of cancer but the most common are lung, breast, prostate and colorectal. Some types of cancer are preventable, others are amenable to treatment, especially if detected early.

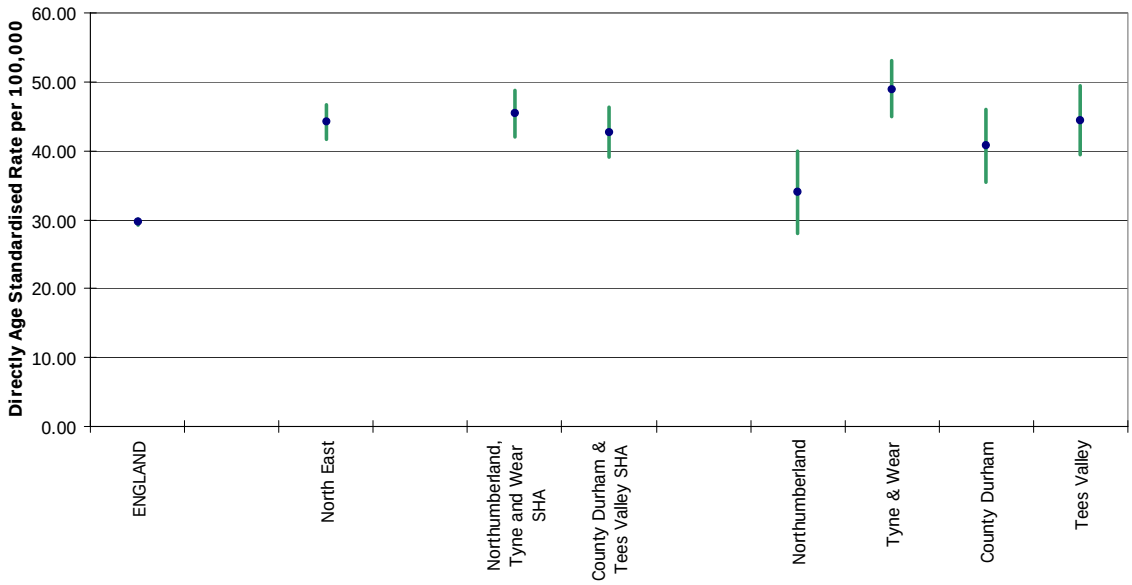
Lung Cancer is responsible for around 17% of all deaths and some 5% of years of life lost.

Deaths under 75 from cancer are recognised as a health indicator in Quality of Life Counts [8].

Timeliness: Three year rolling averages updated annually, available retrospectively. Latest year 1999-2001. Can be monitored annually.

Source: Office for National Statistics: PHO Death Extracts, mid year population estimates.

Mortality Rate from Lung Cancer (ICD-9 162; ICD-10 C33-C34) at ages under 75 years, 1999-2001

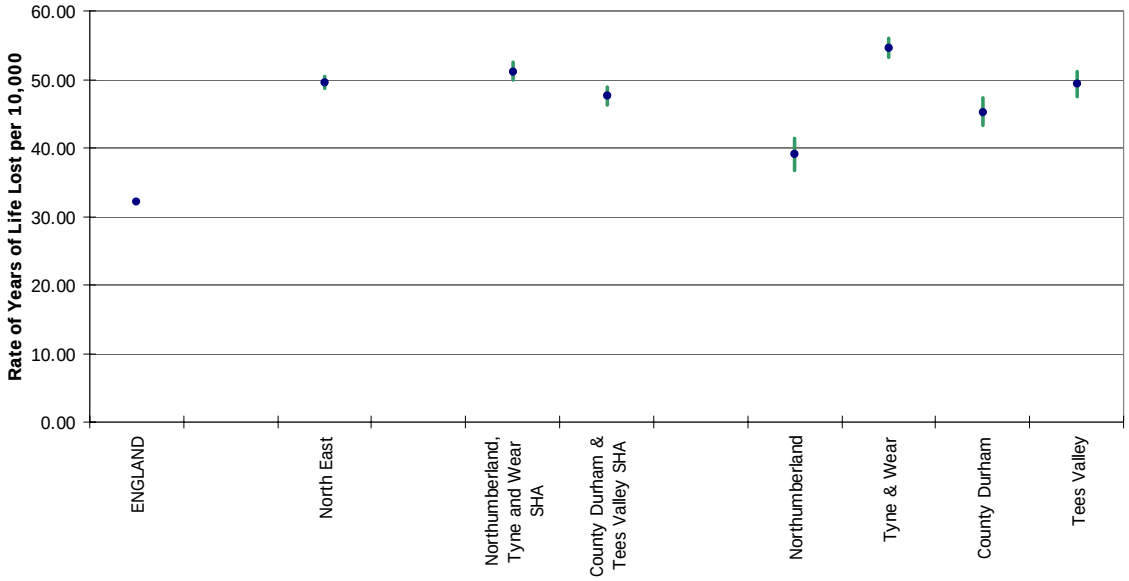


Commentary: The Directly Age Standardised Death Rate from Lung Cancer at ages under 75 for England is 29.7 per 100,000. The North East has the highest rate of the nine English regions (44.2 per 100,000) and this is statistically significantly higher than England.

Northumberland, Tyne & Wear Strategic Health Authority has a higher mortality rate than the region as a whole (45.4 per 100,000) and County Durham & Tees

Valley Strategic Health Authority has a lower mortality rate than the region as a whole (42.7 per 100,000) – these are statistically significantly higher than the mortality rate for England. Of the North East's four sub regions, Tyne & Wear has the highest rate (49.0 per 100,000) and Northumberland the lowest rate (34.0 per 100,000) – Northumberland's rate is not statistically different from the England rate.

Premature Mortality from Lung Cancer (ICD-9 162; ICD-10 C33-C34), 1999-2001



Commentary:

The Rate of Years of Life Lost from Lung Cancer at ages under 75 for England is 32.1 per 10,000. The North East has the highest rate of the nine English regions (49.6 per 10,000) and this is statistically significantly higher than England.

Northumberland, Tyne & Wear Strategic Health Authority has a higher rate of years of life lost than the region as a whole (51.2 per 10,000) and County Durham & Tees Valley Strategic Health Authority has a lower rate than the region as a whole (47.6 per 10,000) – these are statistically significantly higher than the rate for England. Of the North East's four sub regions, Tyne & Wear has the highest rate (54.6 per 10,000) and Northumberland the lowest rate (39.1 per 10,000) – rates for Northumberland and County Durham are statistically significantly lower than for the region.

Mortality from Respiratory Diseases

Definition: Mortality Rates for Respiratory Diseases (ICD-9 460-519; ICD-10 J00-J99) are presented in two forms:

- as Directly Age Standardised Rates per 100,000 – which allow for valid comparisons between populations with different age structures; and
- as a rate of Years of Life Lost (<75 years) per 10,000 – which indicates premature mortality.

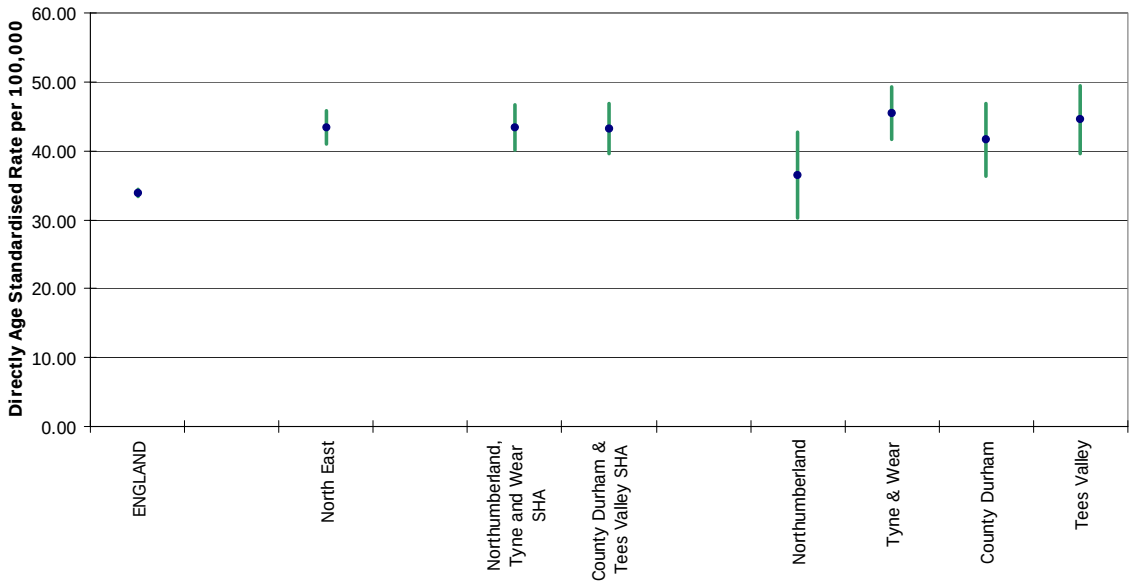
Rationale: While not a key target area for Saving Lives [12], deaths from respiratory diseases is a major cause of death, accounting for some 17% of all deaths and about 7% of years of life lost.

Respiratory illness is included as a health indicator in Quality of Life Counts [8], but the proposed figure is prevalence of wheezing in the last year.

Timeliness: Three year rolling averages updated annually, available retrospectively. Latest year 1999-2001. Can be monitored annually.

Source: Office for National Statistics: PHO Death Extracts, mid year population estimates.

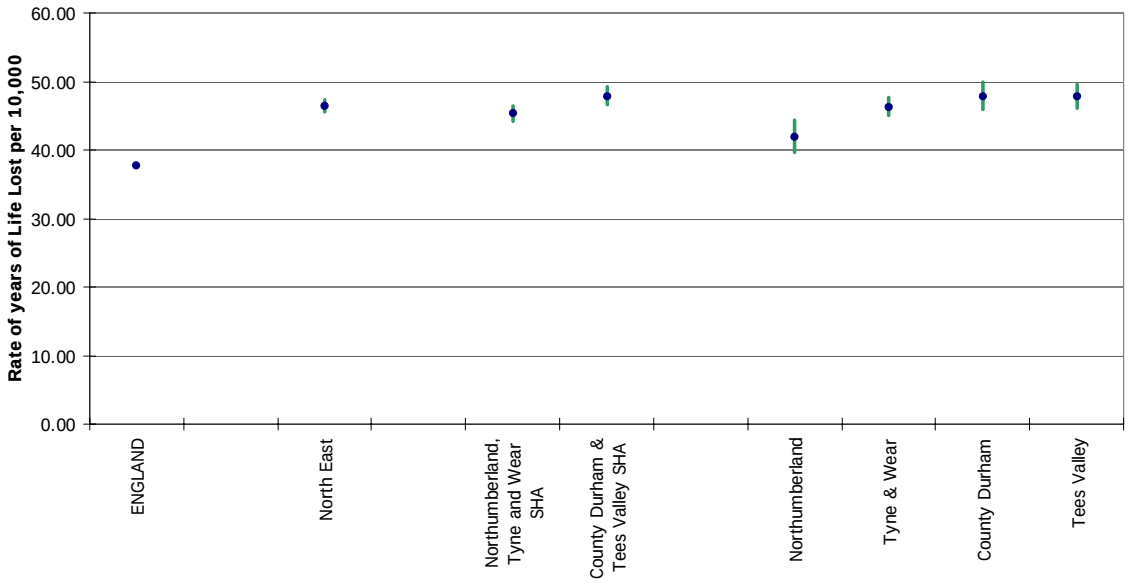
Mortality Rate from Respiratory Diseases (ICD-9 460-519; ICD-10 J00-J99) at ages < 75 years, 1999-2001



Commentary: The Directly Age Standardised Death Rate from Respiratory Diseases at ages under 75 for England is 34.0 per 100,000. The North East has the highest rate of the nine English regions (43.3 per 100,000) and this is statistically significantly higher than England.

Rates for the two Strategic Health Authorities are similar to the region rate. Of the North East's four sub regions, Tyne & Wear has the highest rate (45.5 per 100,000) and Northumberland the lowest rate (36.5 per 100,000) – Northumberland's rate is not statistically different from the England rate.

Premature Mortality from Respiratory Diseases (ICD-9 460-519; ICD-10 J00-J99), 1999-2001



Commentary:

The Rate of Years of Life Lost from Respiratory Diseases at ages under 75 for England is 37.7 per 10,000. The North East has the highest rate of the nine English regions (46.5 per 10,000) and this is statistically significantly higher than England.

Northumberland, Tyne & Wear Strategic Health Authority has a lower rate of years of life lost than the region as a whole (45.3 per 10,000) and County Durham & Tees Valley Strategic Health Authority has a higher rate than the region as a whole (47.9 per 10,000) – these are statistically significantly higher than the rate for England. Of the North East's four sub regions, County Durham has the highest rate (47.9 per 10,000) and Northumberland the lowest rate (42.0 per 10,000).

Discussion

This paper proposes a set of eight key health-related indicators for the North East of England for use in the Integrated Regional Framework and other regional, sub-regional or local strategies. The criteria used to select the indicators included:

- Importance in terms of nationally established targets;
- Availability of robust data which is regularly updated;
- Consideration of the health status of the population of the North East;
- Availability of evidence for effective interventions; and
- Whether the indicators are meaningful at sub-regional and local levels.

The work was focussed around three headings as follows:

- Improving health and reducing inequalities in health;
- Improving educational attainment; and
- Addressing social exclusion (with reference to specific vulnerable groups such as asylum seekers, prisoners, minority ethnic groups, older people, teenage parents, children in the looked after system and people with long term sickness and disability).

In addition, it was suggested that the indicators should be sequenced so that those where interventions might achieve a noticeable impact in the short term could be identified separately from those where a decade or more may be required.

Initial work was undertaken to develop an overview of key policies and their associated targets for the NHS and for local government. This work provides vital context for the North East and is reported in the technical report [1] which is available on both the North East Public Health Observatory's website (www.nepho.org.uk) and the Health Development Agency's website (www.hda.nhs.uk). In the process of compiling the indicator set, a number of potential indicators were considered and rejected, largely because robust and regularly updated regional sources of data could not be identified. These included:

- **Lifestyle indicators** - including alcohol and drug use, diet, obesity, smoking and physical activity;
- **Vulnerable Groups** – including asylum seekers, prisoners, minority ethnic groups, older people and children looked after;
- **Indicators of Population Mental Health.**

The evidence base for interventions aimed at supporting progress towards the various targets is outlined in the technical report [1].

This work did not address the problems which arise when national targets are directly applied to small populations, such as Primary Care Trusts. The Association of Public Health Observatories is currently undertaking a project to develop and refine ways to construct locally relevant 'baskets of indicators' related to inequalities in health. However, the need for locally meaningful indicators in the meantime helped to inform the selection of indicators in this paper.

The South East Public Health Observatory has been constructing a Health Poverty Index [13] with domains related to health status, health behaviour, unmet health care need, environment and individual and community resources.

The Association of Public Health Observatories is currently working with colleagues at the Department of Health to develop Regional Public Health Indicators. As the results of these three projects are published, they may lead us to re-consider the regional indicators for the North East.

Action Required

The technical report [1] includes a plan for development work to be undertaken to improve the data flow so that future indicator sets are able to reflect positive aspects of health, health related behaviour, vulnerable groups within the population and wider determinants of health.

This includes work to:

- **Develop lifestyle indicators** – exploring the developing North East Regional Information Partnership, primary care sources, and commercially available data sources, rather than relying on rolling surveys;
- **Identify links between environmental data and health data** – exploring data held by the Environment Agency and its developing Health Unit and considering the Quality of Life Counts [8] indicators;
- **Develop indicators on vulnerable groups** – including asylum seekers, prisoners, minority ethnic groups, older people, children looked after, and those with chronic sickness or long term disability;

The next stage of this work is to develop the analysis of the data presented in this report using historic trends to see whether collective efforts within the region have:

- Accelerated the trend to improve health and/or reduce inequality;
- Slowed down the trend of worsening health and/or increasing inequality.

The next cycle of the Sustainable Development Framework in 2005 should have this analysis available.

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Technical Notes on the Presentation of Data

Most indicators are presented for England, the North East region, the 2 Strategic Health Authorities, and the 4 sub-regions. Smoking quit rates are presented England, the North East region, the 2 Strategic Health Authorities and amalgamated (old) health authorities approximating the sub-regions. Educational attainment data is presented for England, and the nine Government Office regions. Comparative data across the nine Government Office regions is available for all indicators.

The charts present data in the form of life expectancy, infant mortality rate or directly age-standardised rates (the dot on the chart). The charts also show the 95% confidence intervals around the rate (the vertical bar running through the dot). These give a measure of the precision of the rate. When numbers from which rates are calculated are large, rates are more precise and confidence intervals are narrower. When numbers are small, the effect of random variation is much larger, the degree of precision is less and the confidence interval is wider. Where the confidence interval of a rate does not overlap that of a rate for another area, the difference in rates between the areas is described as statistically significant (in this case at the 5% level). Where confidence intervals overlap, the difference may be due to chance.

Standardisation is a set of techniques used to remove as much as possible the effects of differences in age or other variables when comparing two or more populations. In this report, the direct method of standardisation is used so that the specific rates in a study population are averaged, using as weights the distribution of a specified standard population. The directly standardised rate represents what the

crude rate would have been in the study population if that population had the same distribution as the standard population with respect to the variable(s) for which the adjustment or standardisation was carried out.

Causes of death are classified according to the International Classification of Diseases [14, 15]. The current version is the tenth revision ICD-10 [15], which only came into effect for mortality data in 2001, mortality data from years prior to this were coded in ICD-9 [14], so both are quoted. It should be noted that, at this stage, no scaling factors have been applied between ICD-9 and ICD-10.

References

1. BAILEY K, LEARMONTH A, WILKINSON JR & CRESSWELL PA. *Health Indicators for the North East Integrated Regional Framework.* North East PHO and Health Development Agency. 2003.
2. NORTH EAST ASSEMBLY. *Sustaine: Quality of Life in the North East. Towards a Regional Framework.* North East Assembly. 2002.
3. DEPARTMENT OF HEALTH. *The NHS Plan. A Plan for Investment. A Plan for Reform*. The Stationery Office. 2000.
4. NATIONAL HEALTH SERVICE. *The NHS Cancer Plan. A Plan for Investment. A Plan for Reform*. Department of Health. 2000.
5. MACHIN S. Childhood Disadvantage and Intergenerational Transmission of Economic Status in *Exclusion, Employment and Opportunity*. Case Paper No 4. Centre for Analysis of Social Exclusion, London School of Economics. 1988.
6. SOCIAL EXCLUSION UNIT. *Teenage Pregnancy.* Cabinet Office. 1999.
7. SCIENTIFIC ADVISORY GROUP INTO INEQUALITIES IN HEALTH (Chair: Sir Donald Acheson). . *Independent Inquiry into Inequalities in Health Report.* The Stationery Office. 1998.
8. DEPARTMENT OF ENVIRONMENT, TRANSPORT AND THE REGIONS. *Sustainable Development – the UK Government's Approach. Quality of Life Counts.* DETR. 1999.
9. CRESSWELL PA & BAILEY K. *Occasional Paper No. 3 - Inequalities in the Health of Children & Young People*. Northern & Yorkshire Public Health Observatory. 2001
10. DEPARTMENT OF HEALTH. *The National Health Inequalities Targets.* Department of Health. 2001.
11. SILCOCKS PBS, JENNER DA & REZA R. Life Expectancy as a Summary of Mortality in a Population: Statistical Considerations and Suitability for use by Health Authorities. Journal of Epidemiology & Community Health. Vol:55 No: 1 pp38-43.
12. DEPARTMENT OF HEALTH. *Saving Lives: Our Healthier Nation.* The Stationery Office. 1999.
13. SOUTH EAST PHO & SOCIAL DISADVANTAGE RESEARCH CENTRE. (2002). *Health Poverty Index (HPI) Visualisation Tool.* http://www.hpi.org.uk/ South East PHO and SCRC, University of Oxford.
14. WORLD HEALTH ORGANISATION. *International Classification of Diseases. Ninth Revision. (ICD-9)*. World Health Organisation. 1977.
15. WORLD HEALTH ORGANISATION. *International Classification of Diseases. Tenth Revision. (ICD-10)*. World Health Organisation. 1992.