Initial thoughts about targets & indicators in relation to health inequalities in the UK

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Background

In the past decade or so there has been considerable and divergent experience of using targets for health inequalities. Both in the UK and in many other countries, however, there is a growing acknowledgement that any serious attempt to reduce health inequalities carries with it an obligation to be clear about the main dimensions of health inequality that should be reduced and the indicators that should be used.

In the UK, England, Northern Ireland, Scotland and Wales share a common commitment to reducing health inequalities and have set explicit targets in areas such as life expectancy, cancer mortality, long standing illness and smoking prevalence. However, many of the targets leave much to be desired in terms of their limited conceptual scope, methods and approaches. At one level this might be regarded as relatively unimportant. The mere fact of having health inequalities targets is laudable. But because the UK has been in the vanguard of research and policy development to reduce health inequalities, a critical appraisal of the strengths and weaknesses of the approaches adopted in the different home countries would be very timely.

There are many different ways to specify health equity goals and to establish monitoring systems to review and report on progress toward meeting them. What is most important is that targets make sense for the policy context in which they are employed, that they are closely monitored, and that the results are disseminated for public scrutiny. Whatever approach is adopted, it is crucial that health inequalities goals should be linked to indicators that can be regularly updated, that monitoring data should be widely disseminated, and that government agencies should produce regular reports explaining what progress, or lack of it, has been made.

The purpose of this very preliminary note is to start a discussion with interested colleagues. To that end this draft contains information about the (a) emergence of health inequality targets in the UK, (b) some of the issues and problems that have arisen with using them and (c) a brief indication of the new developments in Scotland that have much to commend them. It concludes with a small set of questions that might promote useful further discussion.

Some key questions that underpin this discussion are:

- Are the targets and indicators to be used at national or local level?
- If targets are set nationally what are the implications for measurement locally?
- Are the targets aspirational or do they need to be measured in a performance management framework? Is this affected by the timeframes of the Review (i.e. short, medium and long term)?
- What is the balance between process, intermediate and final outcome measures?
- What is the balance between targets/indicators relating to wider determinants
- and those relating to healthcare?
- To what dimensions of inequality should the targets and indicators relate? Are there particular measurement issues in incorporating dimensions covered by the Equality Bill in the measurement of social determinants (e.g. age, gender, ethnicity, disability)

The primary health inequality targets in the UK

1. England

Two "headline" targets were announced in England in February 2001. Since then, various technical changes have been made and the targets are now expressed as follows :

• To reduce by at least 10 percent the gap in life expectancy between the most disadvantaged "spearhead" group of areas with the lowest life expectancy at birth and the population as a whole by 2010.
• To reduce by at least 10 percent the gap in infant mortality between *routine and manual groups* and the population as a whole by 2010.

Both of these targets are defined in slightly odd ways. The "spearhead" group of geographic areas used for the life expectancy target represents almost, but not quite, the most disadvantaged quintile of local authorities. The "routine and

manual" occupational/socioeconomic group used for the infant mortality target is intended as an approximation to the original use of the term "manual." The new term was adopted following the introduction of a new National Statistics Socio-Economic Classification (NS-SEC). But it seems to be at odds with the technical guidance provided by the Office for National Statistics:

Although the name of the third class in the "3" Class version of NS-SEC is "Routine and manual occupations" this does not perpetuate the manual/ non-manual divide. Changes in the nature and structure of both industry and occupations have rendered this distinction both outmoded and misleading.

Alongside the two headline targets, 12 national health inequalities indicators have been adopted—which cover mortality from specific diseases, access to health care, health behavior, and the wider social determinants of health—to provide a broader context for assessing progress. The 12 headline indicators are listed below:

- death rates from the big killers – cancer and heart disease
- teenage conceptions rate
- road accident casualty rates in disadvantaged communities
- numbers of primary care professionals
- uptake of flu vaccinations
- smoking among manual groups and among pregnant women
- educational attainment
- consumption of fruit and vegetables
- proportion in non-decent housing
- PE and school sport
- children in poverty
- homeless families living in temporary accommodation

However, it should be noted that this is rather strange mix of indicators and it has been much criticised for including some that have no distributional elements to them at all. Annex 1 summarises key trends data reported in the 2007 Status report.

A wider set of indicators related to health inequalities are included in the most recent official publication on health inequalities, *10 Years On*. Details are shown at Annex 2.

There would be considerable merit in detailed discussion of the pros and cons of these different indicators in the context of the Marmot Review.

2. Wales

Wales established "health gain" targets in 2002. These were expressed in somewhat more general terms than those in England. They relate to specific leading causes of death such as cancer and coronary heart disease (CHD); for example:

• To improve CHD mortality in all groups and at the same time aim for rapid improvement in the most deprived groups.
• To improve cancer mortality in all groups and at the same time aim for rapid improvement in the most deprived groups.

However, considerable effort has been made to develop more specific health inequalities indicators in Wales, some or all of which might be adopted as targets in due course. Most recently, a new set of health inequalities targets has been established specifically aimed at addressing childhood poverty. Box 1 sets out these targets.

Box 1 Child Health Inequality Targets in Wales

In October 2006 the Welsh Assembly Government published milestones and targets to measure progress toward eradicating child poverty in Wales. They address the topics of income and work, education, housing, and health, including child health inequalities targets. These targets state that by 2020, the
• ratio of infant mortality rates between the most deprived and the most

affluent fifths of the population will be no more than 1.3 (30%).
• ratio of low birth weight rates between the most deprived and the middle fifth of the population will be no more than 1.12 (12%).
• percentage of caries among the 5 year old children of the most deprived fifth of the population will be 55.3 percent.
• percentage of caries among the 12 year old children of the most deprived fifth of the population will be 46.2 percent.
• ratio of childhood pedestrian injuries reported to the police between the most deprived and the middle fifth of the population will be 1.20 (20%).
The strategy also makes a commitment to develop new targets in areas where current data are limited, such as childhood obesity.

Source: Welsh Assembly Government.

3. Scotland

In Scotland, health improvement targets were first adopted in 2004 after a lengthy process of deliberation, involving the establishment of a Measuring Inequalities in Health Working Group, whose recommendations were received by the Scottish Executive in 2003. The working group recommended that 23 indicators should be employed to monitor trends in inequality. Their proposals were accepted and reported in the White Paper *Improving Health in Scotland: The Challenge*. However, the working group cautioned against the creation of explicit targets. The Scottish Executive chose to reject this advice and to focus on reducing health inequalities by increasing the rate of improvement across a range of indicators for the most deprived communities by 15 percent by 2008. The six indicators are shown in Box 2.

Box 2: Scottish Health Inequalities Targets

For adults :
- coronary heart disease, mortality rates (for under 75s)
- cancer, mortality rates (for under 75s)
- adults smoking (aged 16-64)

- smoking during pregnancy (at 3 month stage)
For young people :
- teenage pregnancy (aged 13-15)
- suicides in young people (aged 10-24)

Source: Scottish Executive, 2006

It is important to note that major changes are underway in Scotland and these are worth close consideration in the context of the Marmot Review (see below).

4. Northern Ireland

In Northern Ireland, targets were included in the 2002 public health strategy, *Investing for Health*. The overall goal is to reduce inequalities in health among geographic areas and socioeconomic and minority groups. As in England, two specific targets have been adopted:

• To halve the gap in life expectancy between those living in the fifth most deprived electoral wards and the average life expectancy here for both men and women between 2000 and 2010.

• To reduce the gap in the proportion of people with a long standing illness between those in the lowest and highest socio-economic groups by a fifth between 2000 and 2010.

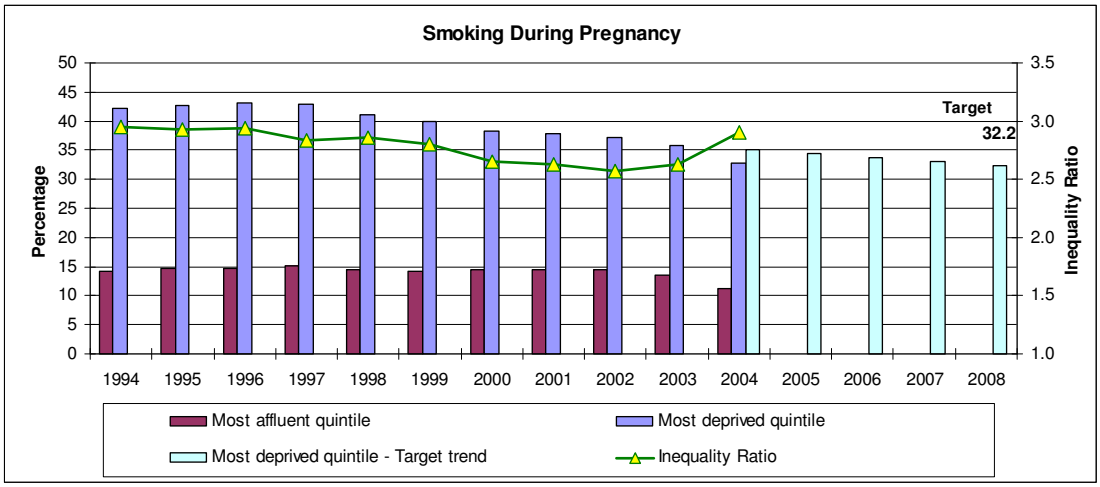
Selected Issues related to Targets

1. Focus on the worst off can be misleading

It is worth highlighting the approach adopted in Scotland in 2004, which was quite distinctive. Figure 1 illustrates the approach to setting health inequalities targets in relation to smoking during pregnancy. The bars in the graph show smoking rates since 1994, illustrating differences between the most advantaged and most disadvantaged quintiles of geographic areas as measured by the Carstairs deprivation index. The triangles show the inequality ratio, calculated by dividing the most disadvantaged quintile rate by the most advantaged quintile rate such

that a higher ratio implies greater inequality.

Figure 1



Source: Scottish Executive, 2005

By the time the health inequalities targets were set as part of the 2004 spending review, a reduction of 15.2 percent in rates of smoking in the most deprived areas had been observed between 1994 and 2003, which represents a decrease of 1.81 percent per year. The way in which the health inequalities target is expressed requires that the rate of decline should increase by 15 percent over that observed for the period 1994–2003. This implies a reduction of 2.08 percent from the baseline figure of 35.8 percent in 2003 to yield a target figure of 32.2 percent for 2008.

During the first year of the target period, 2003–2004, there was an 8.38 percent reduction in smoking during pregnancy in the most deprived areas. This was the biggest annual decrease in percentage terms since the start of the data series in 1994. It represents 83 percent of the reduction planned for the five-year period 2003–2008. In terms of the target set by the Scottish Executive, this would represent considerable progress—were it not for the fact that the reported reduction in the most disadvantaged areas was almost certainly overstated (see below).

However, Figure 1 also shows that even if smoking during pregnancy did decrease in the most deprived areas, the percentage decrease in the most affluent areas was almost twice as high—a 16.91 percent decrease between 2003 and 2004. This means that the inequality ratio actually widened by 10.27 percent in the first target year, from 2.63 (2003) to 2.90 (2004). Thus while rates of smoking in pregnancy declined overall—possibly including among the most disadvantaged—the more rapid improvement among affluent groups means that inequalities expressed in terms of the relative-rate ratio have actually grown.

2. Poor conceptualisation of the target group

Questions have been raised in the United Kingdom for several years about the appropriateness of the infant mortality indicator. In spite of this concern, many issues remain unresolved, and to understand the continuing disquiet about the present formulation of the infant mortality target we need to examine the available data on infant mortality. We use for this purpose the data published by the Office for National Statistics in 2006.

Table 1 shows that of the 645,881 live births in England and Wales in 2005, just under 0.5 percent resulted in infant deaths (3,188). However, the infant mortality rate was substantially higher for sole-registered births (registered by the mother only) than for jointly registered births (both mother and father named at registration)—6.95 and 4.78, respectively. It is important to note that infant deaths for sole-registered births are not included in the official target for health inequalities despite clear evidence that this is a particularly disadvantaged subgroup of the population.

Table 1 Infant Mortality by Social Factors, England and Wales, 2005

Category	Live Births	Infant Deaths	Infant Mortality Rate
Joint Registered	600,716	2,874	4.78

Sole Registered	45,165	314	6.95
Total	645,881	3,188	4.94
NS-SEC (10% sample)			
1.1	4,437	124	2.79
1.2	6,013	225	3.74
2	12,169	450	3.70
3	3,457	176	5.09
4	8,220	332	4.04
5	7,857	302	3.84
6	6,628	429	6.47
7	7,893	475	6.02
Other	3,612	318	8.80

Source: Office of National Statistics, "Infant and perinatal mortality by social and biological factors, 2005", Health Statistics Quarterly, 32 (Winter 2006), 82-86

Table 1 also provides data on the socioeconomic (NS-SEC) distribution of nearly all (98.5%) infant deaths for jointly registered births for which information was available. No data are provided for infant deaths among sole-registered births. Infant mortality rates for different socioeconomic groups are calculated using as the denominator data obtained from a 10 percent sample of births for which the father's socioeconomic group was coded. There is a reasonably clear gradient of infant mortality rates from a low of 2.79 among the group classed as "large employers and higher managerial" (NS-SEC 1.1) to more than double that rate for "semi-routine" (NS-SEC 6) and "routine" (NS-SEC 7) groups—6.47 and 6.02, respectively. However, the rate is even higher—8.80—in a residual category (NS-SEC Other).

One characteristic of the health inequalities target in this area is that it compares infant mortality rates derived from a particular set of "disadvantaged" groups with the average for all jointly registered births only. This composite disadvantaged group is defined as "routine and manual" and comprises NS-SEC categories 5 through 7, one of three broad bands in the simplest model of social classification used by the Office for National Statistics. The other bands in

this three-way classification of the NS-SEC are "professional and managerial" (categories 1 and 2) and "intermediate" (categories 3 and 4). But it is important to note that the NS-SEC categories can be grouped in several different ways. One of the most recent studies to investigate inequalities in mortality that uses this method of classification shows very clearly that the health experiences of people in category 5 are very different from those in categories 6 and 7. The commonly used four-way classification of NS-SEC takes better account of the observable gradient in health inequalities, and this might have provided a better basis for setting targets.

In addition, and with the benefit of hindsight, it seems clear that a more comprehensive approach to inequalities would take more explicit account of other disadvantaged groups. In fact, to reflect this (in part), the official monitoring reports do provide data on sole-registered births, which have above average mortality rates and in 2005 accounted for more than 10 percent of all infant deaths in England and Wales. But there are other anomalies in the existing approach. It is questionable whether the target group for inequality purposes should include NS-SEC group 5, which had a relatively good infant mortality rate (3.84), and exclude NS-SEC Other (category 8, which includes the longterm unemployed and those who have never worked), which had a substantially higher infant mortality rate (8.80). Furthermore, the two excluded groups (sole registrations and NS-SEC Other) have more than one-fifth (22%) of all infant deaths.

3. Perverse incentives

As the example of Scotland's target on smoking during pregnancy illustrates, one problem with setting targets that rely only on improving health among the poorest is that inequalities can widen in terms of relative differences among social groups, depending on the rate of improvement among more affluent groups. However, in examining the data used to measure smoking during pregnancy we discovered another problem that may arise when assessing progress toward inequalities targets: variations in reporting and recording smoking behavior by social groups. Smoking status during pregnancy is recorded during a woman's booking visit to

a maternity unit—a prenatal check-up that usually occurs at the end of the first trimester of pregnancy. The responses are categorized into "never smokers," "former smokers," "current smokers," and "don't knows." We obtained data for the period 1997–2002 and examined the pattern of responses in Glasgow, for a study examining reductions in smoking during pregnancy in Scotland's largest city. Initial analysis of the data suggested a substantially greater and unexpected reduction in smoking rates among pregnant women in the most disadvantaged areas (15%) between 1997–1998 and 2001–2002 than among those in the most advantaged areas (3%). But on closer examination it became clear that most of the apparent reduction was driven by an increase in the proportion of pregnant women living in the most disadvantaged areas whose smoking status was unknown. Why did this occur? First, we suspect that, given the increased emphasis in recent years on the importance of not smoking during pregnancy, there was a tendency for some expectant mothers to provide false information about their smoking status at the time of their booking visit. The issue of inaccurate self reporting of smoking status among pregnant women has been highlighted in other studies. There may also be a reluctance among midwives to further explore the issue during the booking visit, particularly with women whose "other problems" (teenage pregnancy, drug misuse) may seem more significant. Whatever the correct explanation, it seems unsafe to accept at face value that the reduction in smoking during pregnancy in the most disadvantaged areas was as great as the official statistics in Scotland seem to suggest.

Since our analysis was made available to the Scottish Executive in 2006, the Information and Statistics Division of the NHS in Scotland has acknowledged the problems that can arise with self-reported smoking status in pregnant women. Measuring inequality in smoking during pregnancy provides a good example of how drawing attention to a particular adverse behavior, and formulating a specific target to reduce it, might exacerbate the problem. An unintended consequence of Scotland's policy focus on this area has been an increasing awareness among women that they should not be smoking during pregnancy and therefore should not report smoking, even if they are smokers. This may also be coupled with reluctance by some midwives to ask about smoking status or explore the issue in any depth. This seriously

compromises the accuracy of statistics used to measure progress in achieving the target.

4. Measuring health inequalities

Graham's distinction between three types of strategy to reduce health inequalities - focusing solely on the most disadvantaged, reducing the gap between the poor and the affluent, and, levelling the gradient - is also useful in thinking about measuring and monitoring the relative size of inequalities and changes over time. Many different measures of inequality are used and no doubt there are good reasons why this is the case in many instances but it can cause unnecessary confusion. There might be merit in trying to adopt more widespread acceptance of the most appropriate way(s) to measure and to compare indicators of health inequality.

Table 2 uses summary data about inequalities in infant mortality in England and Wales for the years 2002 and 2005 to illustrate some of the problems and choices that arise. It shows the estimated number of births and deaths by social group together with the associated infant mortality rate and the midpoint of the cumulative share of total births attributable to each social group. The most disadvantaged group consists of mothers in NS-SEC group 8 and sole registered births. A reasonably clear social gradient can be observed for both years.

Table 2 Inequalities in Infant Mortality, England and Wales, 2002 and 2005

	2002				*2005*			
Social Group NS-SEC	*Sample of births*	*Midpoint of the Cumulative Share of all births*	*Deaths*	*IMR Per 1000 live births*	*Sample of births*	*Midpoint of the Cumulative Share of all births*	*Deaths*	*IMR Per 1000 live births*
1.1	4272	0.964	126	2.95	4437	0.966	124	2.79

1.2	5705	0.881	186	3.26	6013	0.885	225	3.74
2	11117	0.740	404	3.63	12169	0.745	430	3.53
3	3108	0.621	173	5.57	3457	0.624	176	5.09
4	7204	0.534	351	4.87	8220	0.534	332	4.04
5	7724	0.409	310	4.01	7857	0.410	302	3.84
6	6245	0.292	450	7.21	6628	0.298	429	6.47
7	7353	0.178	482	6.56	7893	0.186	475	6.02
other*	6950	0.058	576	8.29	8129	0.063	632	7.77
All	59678	-	3058	5.12	64803	-	3125	4.82

* NS-SEC group 8 plus sole registered births.

Sources: Office for National Statistics (2003; 2006).

If one adopts the 2004 Scottish approach and focuses just on what is happening to the worst off group then it can be seen that the IMR declines from 8.29 in 2002 to 7.77 in 2005. The problem with this approach is that it is very easy to show that relative gaps can and often do increase even when absolute rates for the most disadvantaged groups are declining.

Following the example of countries such as Chile, which compare the least advantaged with the most advantaged, it is possible to calculate the relative risk by dividing 8.29 by 2.95 in 2002 and 7.77 by 2.79 in 2005 to yield statistics of 2.81 and 2.78 respectively. Finally, using the definition of inequality employed in England, which compares the combined rate for NS-SEC groups 5-7 with the mean for all jointly registered deaths, produces estimates of a 14 per cent gap in 2002 and 12 per cent in 2005.

It is important to notice how much difference the definition used makes to the perception of the size of inequalities. Compared with the gap of 12 per cent in 2005 using the English approach, an estimate based on the Chilean approach would produce a much larger gap of 178 per cent (RR, 2.78: 7.77/2.79), and comparing the most disadvantaged with the mean implies a gap of 61 per cent (RR, 1.61, 7.77/4.82). These comparisons serve to illustrate the nature of the choices than can be made in setting health inequality targets. But even if more conventional measures of the gap

between the poorest and the most affluent are used there is the risk that one or other of the extremes of the social distribution can shrink in relative size very quickly, as appears to be happening in Chile.

The approach now advocated by many analysts requires the calculation of the slope index of inequality (SII) and the relative index of inequality (RII). Using the data from table 2, the SII and RII can be obtained using the data in the "cumulative share" and "IMR" columns for both 2002 and 2005. In this instance, both measures suggest that inequalities in infant mortality in England and Wales fell between 2002 (SII, -5,577; RII, -1.089) and 2005 (SII, -4.823; RII, -1.001).

Recent developments in Scotland

In the past year or so there have been major changes in the approach to monitoring health inequalities in Scotland that are worthy of careful consideration. The following extracts from official reports summarise some of these developments. Their applicability to an English context will of course need to take into account any differences in patterns of social determinants and health outcomes, as wll as significant differences in data availability.

Since the development of the 2004 inequalities targets, various studies have investigated alternative methods of analysing and monitoring inequalities over time. The methods investigated include:

- absolute range (absolute difference between rates in the most and least deprived groups).
- relative range (ratio of rate in the most deprived areas to rate in the least deprived areas - *currently used for the existing targets*).

- slope index of inequality (SII) and relative index of inequality (RII) (which are sensitive to the mean health status of the population and can be interpreted as the absolute effect on health of moving from the lowest socioeconomic group through to the highest).
- concentration index (which allows analysis of the extent to which poor health is concentrated amongst those in the most disadvantaged groups).
- population attributable risk (PAR) (which measures the proportion of disease in the study population that is attributable to exposure to a particular factor and thus could be eliminated if that exposure were eliminated).

These different methods have pros and cons, for example: ratios in themselves do not give information about absolute improvement and will not inform about performance across the intermediate groups of population; the slope index of inequality and relative index of inequality only work well if there is a reasonably linear relationship between deprivation and the health indicator of interest. It is also important to note that measures of inequality will not necessarily work in localised situations where gradients between deprivation groups defined at a national level might not apply.

A recent review of approaches to measuring socio-economic inequalities in health (by the Scottish Public Health Observatory) recommended that measures are selected on a case by case basis and concluded that using a combination of approaches is often the best way to ensure that inequalities are fully understood.

It is recommended that a combination of measures is used to measure inequalities associated with targets.

Reporting progress in long-term trends in health inequalities

In the long term, success will be assessed in terms of a decline in inequalities in health outcomes which contributes to achieving the Government's overall purpose, strategic objectives and national outcomes. The Government will track and report progress at a national level.

The Task Force has had advice from a group of Government and external experts on appropriate high level population measures of health inequalities. This will form a new basis for measuring improvement over the longer term. The group has proposed a set of eight headline indicators of health outcomes and three inequalities measures of

each. These are closely linked to the Task Force's priorities: early years, mental health and wellbeing, the big killer diseases and the cluster of problems related to drugs, alcohol and violence.

The expert group proposed the following headline indicators of inequalities in health outcomes:

- Healthy life expectancy (at age 25).
- Premature mortality (from all causes, aged under 75).
- Mental wellbeing (adults aged over 16).
- Low birth weight.

The group has also suggested measures of inequalities in morbidity and mortality from specific causes for specific age groups:

- Coronary heart disease (CHD) (first ever emergency admission aged under 75; deaths aged 45-74)
- Cancer (incidence rate aged under 75; deaths aged 45-74)
- Alcohol (first ever hospital admission aged under 75, deaths aged 45-74)
- All-cause mortality (aged 15-44 years)

For each of these headline indicators, the expert group proposed the use of three measurement approaches in order to give a comprehensive picture of inequalities across the whole population. This addresses the problem with previous area-based health inequalities targets that only sought to improve the health of people living in the most deprived areas.

Relative Index of Inequality (RII)	*How steep is the inequalities gradient?* This measure describes the gradient of health observed across the deprivation scale, relative to the mean health of the whole population

Absolute range	*How big is the gap?* This measure describes the absolute difference between the extremes of deprivation - the rate in the most deprived minus the rate in least deprived group
Scale	*How big is the problem?* This measure describes the underlying scale of the problem and past trends

These different measures give insight into different aspects of inequalities. The most fundamental of these differences is between absolute and relative measures of inequality. Where improvement has been seen across the population, the inequality gap might well have narrowed in absolute terms. However, improvements in the most deprived areas may not be as great as overall improvements observed in the population, meaning that the inequality gap has widened in relative terms. To be successful, both absolute and relative dimensions of inequalities should be reduced.

Some questions to consider

- What is the optimum number of indicators or targets to adopt for the purpose of monitoring and promoting attempts to reduce health inequalities? Too many runs the risk of losing a clear focus, and too few will not provide sufficiently comprehensive coverage?

- Based on the analysis of approaches to inequalities' targets across the United Kingdom in this paper, is there some value in identifying guiding principles for inclusion of a target and/or indicator?

- To what extent does the selection of indicators of social determinants (as distinct from health outcomes) need to be influenced by convincing evidence about specific links between determinants and outcomes?

- Does agreement as to which dimensions of inequalities form the basis for targets or indicators depend on prior agreement (involving the Commissioners and Working Committee 3) on the prioritisation of Review recommendation?

- To what extent does the selection of indicators need to be constrained by concerns about local implementation?

- What are the best measures of the relative size and importance of inequalities? Does it matter that some of the best measures are not easily understood by non specialists?

- Are we primarily concerned with social inequalities (as measured by different indicators of socio-economic position such as NS-SEC, deprivation indices, educational attainment, housing tenure, income quintiles etc) or should we be explicitly considering age, gender, ethnicity etc?

ANNEX 1

EXTRACTS FROM THE 2007 STATUS REPORT: THE 12 NATIONAL HEADLINE INDICATORS

3.1 This section provides data against each indicator usually for the lowest fifth of the population (as measured by deprivation or area using local authority districts [LAD]) against the national average and against the highest (or least deprived) fifth from a given baseline to the latest data.

A note on data

3.2 The use of indicators for quantitative monitoring is limited by the availability of data. Data may not be available for all areas relevant to tackling health inequalities. Even where data are available, there will be limitations due to the time it takes for the figures to become available after the period to which they relate. Qualitative monitoring of action taken is also required, to supplement quantitative monitoring of indicators.

3.3 Data are presented for the national headline indicators, focusing on measures of inequality in relation to the indicators. This includes an assessment of progress in reducing inequalities since the baseline period.

Measures of inequality

3.4 For most of the indicators, the inequality measures presented are the absolute and relative gap between the most disadvantaged group and a reference group (the least disadvantaged group and/or the whole population). That is, the position of the most disadvantaged group is compared to the national average and the least disadvantaged group.

3.5 The most and least disadvantaged groups are identified using socio-economic measures (area deprivation, occupation-based socio-economic status, income) or suitable proxy measures (vulnerable households, eligibility for free school meals). Limitations of data availability mean it is not possible to identify the comparison groups in the same way for all the indicators.

3.6 The absolute gap is measured by the difference between indicator values in the groups compared. Differences closer to 0 indicate lower inequality. The relative gap is measured by the ratio between indicator values in the groups compared. Ratios closer to 1 indicate lower inequality.

3.7 For two indicators data are not analysed using the gap between comparison groups. For indicator 11 the extent of child poverty is monitored (as measured by the proportion of children living in low-income households). For indicator 12 the extent of homelessness is monitored (as measured by the number of homeless families with children living in temporary accommodation). For both indicators a reduction in extent indicates a reduction in inequality.

Baselines

3.8 For each of the indicators baseline periods have been selected against which progress is measured. While it is desirable to have a consistent baseline period across the indicators, this is not possible because of data availability. Where possible, baselines have been set at or close to 1997. However for many of the indicators data are not available prior to more recent years, or comparable data are only available for more recent years due to changes in the data collection.

Assessment of change

3.9 Data are presented for the latest year and for the baseline period. An assessment is made of whether inequalities are narrower in the latest year compared to the baseline on each of the inequality measures presented. For some indicators data are only available for the baseline period, so no assessment of change can be made.

3.10 The statistical significance of any change in the inequality measures is taken into account in assessing progress. Approximate 95% confidence intervals have been calculated for many of the inequality measures, to give an indication of the extent of possible sampling error (for those indicators based on sample surveys) or of expected random variation over time (for those indicators not based on sample surveys). Assessment of significant change is based on whether the confidence intervals for the differences and ratios between the baseline and latest year overlap. Confidence intervals for some of the measures based on sample surveys are quite wide, so it is difficult to make a robust assessment of progress.

Indicator 1a: Age-standardised death rates per 100,000 population for the major killer diseases (cancer, circulatory diseases), ages under 75 (for the 20% of areas with the highest rates compared to the national average) – CANCER
Overall Summary: There have been improvements in cancer death rates since 1995-97 (including for the most disadvantaged areas), with a narrowing of inequalities in absolute terms but no significant change in relative terms.

Indicator 1b: Age-standardised death rates per 100,000 population for the major killer diseases (cancer, circulatory diseases), ages under 75 (for the 20% of areas with the highest rates compared to the national average) – CIRCULATORY DISEASE
Overall Summary: There have been improvements in circulatory disease death rates since 1995-97 (including for the most disadvantaged areas), accompanied by a narrowing of inequalities in absolute terms but a widening of inequalities in relative terms.

Indicator 2: Rate of under-18 conceptions
Overall Summary: There has been an 11.7% drop in the rate of under-18 conceptions between 1998 and 2005 (with the average rate for the most disadvantaged areas also falling), but no significant narrowing of inequalities.

Indicator 3: Road accident casualties in disadvantaged communities
Overall Summary: There have been improvements in child road accident casualty rates since 1998 (including for the most disadvantaged areas). There has been a narrowing of inequalities in absolute terms, but no significant change in relative terms.

Indicator 4: Number of primary care professionals per 100,000 population
Overall Summary: There have been improvements in the number of full-time equivalent GPs per 100,000 weighted population since September 2002 (including for the most disadvantaged areas), but there has not been a significant narrowing of inequalities. The number of deprived PCTs more than 10% below the England average number of full-time equivalent GPs per 100,000 weighted population has increased since September 2002.

Indicator 5: Percentage uptake of flu vaccinations by older people (aged 65+)
Overall Summary: Between 2002 and 2005 the percentage uptake of flu vaccinations by older people increased (including for the most disadvantaged areas), accompanied by a slight narrowing of inequalities in absolute and relative terms. This does not mean all of the most deprived PCTs are improving relative to the least deprived PCTs. However, more deprived PCTs achieved the 70% uptake target in 2005 than in 2002.

Indicator 6a: Prevalence of smoking among people in manual social groups (Part 1 of: **Prevalence of smoking among people in manual social groups, and among pregnant women**)
Overall Summary: Since 1998 smoking prevalence among all adults has fallen (including among manual groups), but there has been no significant change in inequalities for manual groups compared to non-manual groups or all adults.

Indicator 6b: Prevalence of smoking among pregnant women (Part 2 of: **Prevalence of smoking among people in manual social groups, and among pregnant women**)
Overall Summary: Between 2000 and 2005, the overall prevalence of smoking throughout pregnancy decreased slightly, including a large fall in prevalence among women in the 'never worked' category but a slight increase among routine and manual groups. There were some signs of a widening of inequalities for routine and manual groups.

Indicator 7: Proportion of those aged 16 who get qualifications equivalent to 5 GCSEs at grades A* to C
Overall Summary: Between 2002 and 2005 the proportion of pupils achieving 5 or more A*-C grades at GCSE increased (including among pupils eligible for free school meals), with signs of a slight narrowing of the attainment gap between pupils eligible for free school meals and all pupils.

Indicator 8: Proportion of people consuming five or more portions of fruit and vegetables per day in the lowest quintile of household income distribution
Overall Summary: Between 2001 and 2005, inequalities in consumption of five or more portions of fruit and vegetables per day did not change significantly in absolute or relative terms.

Indicator 9: Proportion of households living in non-decent housing
Overall Summary: Between 1996 and 2006 the proportion of vulnerable private sector households and of social

sector tenants living in non-decent housing decreased, with a narrowing of inequalities between these groups and non-vulnerable private sector households in both absolute and relative terms.

Indicator 10: Percentage of schoolchildren who spend a minimum of two hours each week on high quality PE and school sport within and beyond the curriculum
Overall Summary: In 2006/07, participation in PE and school sport in School Sport Partnership schools with a high proportion of pupils eligible for free school meals is on average almost the same as in other schools. Latest data for 2006/07 are not directly comparable with available data for earlier years.

Indicator 11: Proportion of children living in low-income households
Overall Summary: The proportion of children in England living in low-income households has fallen since the baseline of 1998/99. This fall is shown for both relative and absolute low-income measures, and on both before and after housing cost measures.

Indicator 12: Number of homeless families with children in temporary accommodation
Overall Summary: Since March 2002 there has been a reduction in the number of homeless families with children in bed and breakfast accommodation; the number of homeless families with children living in all temporary accommodation is higher than at March 2002, but has been falling recently and is at its lowest since March 2003.

ANNEX 2

Extracts from Chapter 4, 'Developments over the last 10 years – indicator trends' in *Tackling Health Inequalities: 10 Years On*.

1. This chapter sets out developments over the last 10 years using the indicator trends based on the framework developed by the World Health Organisation (WHO) Commission on the Social Determinants of Health. A proposed operational approach and indicator set to measure social determinants of health and health equity on a wider basis was developed as part of the Commission's work.
2. The approach taken in this supplement has been to
    - Select a **sub-set** of the full WHO listing of proposed indicators rather than attempt to be comprehensive
    - Attempt to provide a set of indicators to cover the **full breadth of the Framework**
    - Focus on those indicators that were considered most pertinent for the **UK situation**
    - Attempt to be consistent with **existing UK government department targets/indicators** in appropriate topic areas to ensure read-across with national activity
    - Identify wherever possible indicators for which a **10 year trend** could be identified
    - Incorporate where appropriate the **existing set of headline indicators** (as published in the 2007 Status Report on the Programme for Action)
    - Enhance the presentation of **inequalities dimensions** of the indicators
    - Draw together in one document information from a wide variety of existing primary and secondary sources, using where appropriate published commentary extracted directly from those sources

3. For each of the 39 indicators selected, data have been presented in the form of a chart and brief commentary provided. In most cases, data and commentary have been taken from published primary or secondary sources, with the source identified. Where possible data have been presented to illustrate trends over the last 10 years or so. In some cases additional data have been presented in the form of an accompanying tabulation which is considered to provide added value. Such tabulations may for example present longer time trends or more detailed breakdown relevant to interpreting progress. In a few cases we have been unable to identify suitable time trend data. If however snapshot data is available and additionally some form of inequalities analysis possible, then these data have been presented.

4. Following our understanding of the requirements of the WHO Framework, the data for individual indicators are presented according to dimensions of inequality

particularly in sections four (differential outcomes in health) and to a lesser extent in regard of section two (social stratification). Many of the remaining indicators provide relevant trend information on a broad range of drivers of health inequality (eg poverty, employment, education, etc). During development of the indicator set it was decided to enhance coverage of the inequalities dimensions of the indicators. The indicators presented in this supplement need to be considered alongside the **headline indicators** published in the 2007 Status Report on the Programme for Action. The latter explicitly address the gradient between the most and least advantaged sections of the population. Taken together, these two closely related sets of indicators combine to provide a rich source of information on recent UK trends in health inequality.

Selected indicators from the WHO Commission on Social Determinants of Health Framework

Socioeconomic political context		
Political System: Governance	Participation	
A-1: Percentage voter turnout in Parliamentary elections		
Economic and Labour Systems	Economic system	Income Distribution
A-2: Gender Pay Gap: Ratio of median earnings of females to males		
Economic and Labour Systems	Economic system	Income Redistribution
A-3: Original income and Final income		
Economic and Labour Systems	Economic system	Employment by sector
A-4: Employment by industry		
Social Policies	Education	Government commitment to education
A-5: Education spending as a percentage of GDP		
Social Policies	Education	Commitment to education for all
A-6: % of 16-yr old with at least 5 GCSEs at grades A*-C		
Social Policies	Education	Commitment to education for all
A-7: Working age adults with no qualifications		
A-7b: Working age adults with no qualifications by selected sub-groups		
Health	Resources used in the health sector	
A-8: Government expenditure on health as a percentage of GDP		
War, conflict and militarization	Refugees, IDPs, asylum seekers, returnees per 1,000 population	
A-9: Applications received for asylum, excluding dependants		
A-9b: Applications received for asylum, excluding dependants by age and sex		
Values of inclusive citizenship		
A-10: Trends in incidents of crime (reported in the British Crime Survey)		
A-10b: Perceptions of anti-social behaviour		

Social Stratification		
Economic status	Income inequality	
A-11: Income inequality (Gini Coefficient)		
Economic status	Income inequality	
A-12: Children living in low-income households		
Education	Access to economic and educational opportunities	
A-13: Adult literacy by household social class		
Education	Differentials in returns to education	
A-14: Unemployment by level of education		
Occupation	Un or under-employment	
A-15: Unemployment rate		
A-15b: Employment rate gaps		
Occupation	Un or under-employment	
A-16: Part-time employment rate for males and females		
Gender	Access to economic and educational opportunities	
A-17: Labour participation rates by gender		
A-17b: Average length of absence from work following birth		
Gender	Social prestige of women	Rates of domestic violence against women
A-18: Domestic violence		
A-18b: Domestic violence victimisation rate		
Ethnicity (religion, race)	Socioeconomic disadvantage	
A-19: Employment rate by ethnicity		
A-19b: Occupational attainment of employees by sex, NS-SEC and ethnicity		
Ethnicity (religion, race)	Socioeconomic disadvantage	Education
A-20: % of 16-year old with at least 5 GCSEs, by ethnicity		

Differential exposures, vulnerabilities and consequences		
Material circumstances	Housing conditions	
A-21: Households living in non-decent homes		
Material circumstances	Housing conditions	
A-22: Households in fuel poverty		
A-22b: Households in fuel poverty (full income definition)		
Health related behaviours and biological factors	Smoking	
A-23: Smoking prevalence by overall and socioeconomic (manual) group		
A-23b: Adults smoking prevalence by Government Office Region		
A-23c: Adults smoking prevalence by sex and age		
A-23d: Adults smoking prevalence by ethnicity and sex		
Health related behaviours and biological factors	Alcohol consumption	
A-24: Excessive alcohol consumption by socioeconomic group		
A-24b: Average adult weekly alcohol consumption by Government Office Region		
Social cohesion / social capital	Social isolation	
A-25: Proportion of population who rarely or never spend time with friends, colleagues or others		
A-25b: Proportion of population who rarely or never spend time with friends, colleagues or others gender gap		
Psycho-social factors	Negative life events	
A-26: Suicide mortality rate by sex and age		
A-26b: Suicide rates by deprivation twentieth and sex		
Psycho-social factors	Subjective well-being	
A-27: Self-reported life satisfaction by social grade		
A-27b: Self-reported life satisfaction by social grade		
Health system	Availability (access service)	Physicians per 1,000 populatiom
A-28: Number of GPs per 100,000 population		
A-28b: Number of GPs per 100,000 population by area deprivation		
Health system	Contact (access service)	
A-29: Childhood immunisation rates		

Differential outcomes in health	
Mortality	Life expectancy at birth & 65
A-30: Life expectancy at birth by social class (males, females)	
A-30b: Life expectancy at age 65 by social class (males, females)	
Mortality	Infant mortality ratio
A-31: Infant mortality rate by social class	
A-31b: Infant mortality rate by ethnic group	
Mortality	Age-standardized mortality rate for CHD diseases
A-32: Ischaemic Heart Disease mortality rates by social class and NS-SEC	
Mortality	Age-standardized mortality rate for lung cancer
A-33: Lung cancer mortality rates by social class and NS-SEC	
Mortality	Age-standardized mortality rate for injuries & poisoning
A-34: Cerebrovascular disease mortality rates by social class and NS-SEC	
Morbidity	Prevalence of obesity in adults (15 years and older)
A-35: Prevalence of obesity among adults by sex and by income quintile	
Morbidity	Prevalence of hypertension in adults (15 years and older)
A-36: Prevalence of hypertension among adults and by income quintile	
Morbidity	Prevalence of major depression among adults
A-37: Prevalence of mental health/ill-health by social class	
Disability	
A-38:Prevalence of limiting long standing illness by NS-SEC	
Health status	
A-39: Self-reported health status	
A-39b: Adults self-assessed general health by social class and sex	