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Reducing Health Inequalities Implementation Theme

Briefing Paper 3: The social determinants of health inequalities: implications for research and practice

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We will influence the future of health and social care by working together with people who have long-term conditions.

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Introduction

The previous two briefing papers have looked at "*why health inequality matters*", Briefing Paper (BP 1) and "*how research conducted under the aegis of CLAHRC (SY) can address the issue of health inequality*", Briefing Paper 2 (BP 2). The third paper in this series (BP 3) builds on some of the ideas outlined in these papers but focuses on understanding the fundamental or underlying causes of health inequalities – something that is clearly essential for all Public Health practitioners

working in NHS and other health organisations. What we seek to do in this briefing paper is to describe, discuss and critique the social epidemiology which provides the evidence base for our contemporary understanding of the causes of health inequalities. This is not a small task and it is not an uncontroversial one either. Much contemporary social epidemiology has produced evidence which seems to point to the argument that more unequal societies (and here what we mean by unequal refers to socio-economic factors, such as income) have poorer health and well-being than more equal ones. This finding has generated a number of theories regarding what it might be about unequal societies that seems to cause such damage. This paper outlines both the evidence and the theories and looks at a range of recent work, including the Marmot Review (2010) and Wilkinson and Pickett's "The Spirit Level" (2009), which make important claims and raise

Inequalities in health- the new evidence.

Inequalities in health cannot be separated from broader socio-economic inequality-tackling health inequalities means tackling the widening gap.

The "Wilkinson hypothesis" is that "*inequality is the fundamental causative factor, not simply one of the variables*" and cannot be effectively addressed piecemeal.

"Proportionate universalism", as Michael Marmot has argued, is necessary to tackle disadvantage.

basic questions about social determinants of health inequalities which in turn, generate questions for research, for policy and for practice.

BP1 reviewed the somewhat troubled and ambivalent relationship that previous governments have had with the issue of inequalities in health and what can and should be done about them. Whilst addressing inequality remains an ostensible feature of the current Coalition Government's health and social priorities, (we are writing from the vantage point of summer 2011) doubts have been raised about the strength and nature of this commitment, particularly when it comes to the thorny questions of equality of outcome and of taking measures to narrow gaps or redistribute either financially or in terms of service delivery for groups from varying socio-economic backgrounds. Whilst the coalition have accepted the broad thrust of the Marmot Review they have declined to act on the recommendation of developing standards for "minimum income for healthy living" and in November 2010, Theresa May, Equalities Minister, announced that the socio-

economic duty on public bodies in the Equality Act was to be permanently dropped. This would have given public bodies responsibility for auditing all of their policies for their impact on economic inequality, similar to the responsibility to ensuring that policies are not indirectly discriminatory to women, for example. However she argued;

“Just look at the socio-economic duty. It was meant to force public authorities to take into account inequality of outcome when making decisions about their policies. In reality, it would have been just another bureaucratic box to be ticked. ...That was as ridiculous as it was simplistic and that is why I am announcing today that we are scrapping the socio-economic duty for good.” (17 November 2010, quoted in the Guardian).

Whilst it is now relatively clear that it would be possible to achieve a consensus that health inequalities are unfair and unjustified (including the fact that they are not an artefact of the way that research has been conducted), what should be done to tackle them is much more problematic. What is even more problematic is how best to respond to the new evidence, presented here, that it is inequality *per se* that is the problem; that is, that living in an unequal society causes a range of health and social problems which cannot be addressed problem by problem, but which are best tackled by narrowing the gap between rich and poor. This then raises the political questions (above) concerning inequality and a whole set of arguments about the necessity to audit health policies and practices for their impact on inequality and the possible consequence of a need to make changes which may be less than politically comfortable.

Prior to this more recent work it has been possible to make a separation of sorts between inequalities in health and the broader questions of socio-economic inequality, allowing the latter to be bracketed off as something which may be undesirable (or for some, desirable), but which did not need to be addressed in order to develop and deliver health policies and practices. However, such a separation is now increasingly difficult to maintain, as this stark (but patently clear) quote from the Marmot Review demonstrates;

“Health inequalities result from social inequalities. Action on health inequalities requires action across all the social determinants of health”.

(p9 Marmot Review, Executive summary, Key messages of the review).

A consequence of taking this argument seriously, is that addressing the social determinants of health inequalities, is likely to require shifts in what *kinds* of interventions are delivered (broadly

speaking) and how their *outcomes* are evaluated and is likely to have consequences for the nature of research, for policy and practice and for the advocacy role of public health practice. We refer in more detail to the advocacy role of public health practitioners towards the end of this paper, but it is apparent that this role may be an extremely challenging one if inequalities in health begin to widen at an increasing rate, over the next few years.

Before we set out our arguments, we need to make a commentary on BP1 and to outline our approach here. BP1 outlined five axes of inequality (socioeconomic/class, race/ethnicity, age, disability and sex and gender) and recommended that "*research to be undertaken under the aegis of CLAHRC (SY) should consider the issue of inequality under all five axes*" (p13). Much of the work in social epidemiology is concerned with socioeconomic/ class factors and this is where the bulk of the new work is focused. Unique amongst the axes identified are the socioeconomic/class factors, given that they also impact upon all of the other axes.

Other forms of inequality such as gender or race/ethnicity of course cannot be simply reduced or subsumed into the socio-economic, but socioeconomic gradients exist within each axis and needs to be considered. It is beyond the scope of this paper to consider the other axes of inequality. This paper concentrates primarily on the socio-economic or class determinants of health inequalities in order to make clear the central arguments regarding the social determinants of health inequalities.

PART 1

Background to debates within the social determinants of health

BP1 summarised some of the UK Government commissioned research concerning inequalities in health (The Black Report, The Health Divide (Whitehead), The Acheson Report) and the gradual shift that took place from "burying" uncomfortable evidence, through to acknowledgment of the scale and nature of the problem. As BP1 makes clear, this policy shift then informed the green paper "*Our Healthier Nation: A Contract for Health*" and the subsequent development and implementation of strategies to address inequalities in health. But whilst there have been specific initiatives which have improved health (and of course it is important to acknowledge that the health of the nation as a whole has improved in the decades since the Black Report), not only has the gap in morbidity and mortality between the richest and the poorest widened, but as the Marmot Review succinctly puts it:

"There is a social gradient in health – the lower a person's social position, the worse his or her health. Action should focus on reducing the gradient in health."

Tackling inequalities in health means addressing this gradient rather than just focusing on the health of the poorest; or as the Marmot review puts it "*proportionate universalism*". A sense of the scale of what this gradient looks like in the case of the UK, or what the WHO Commission on Social Determinants mean when they conclude that '*social injustice is killing on a grand scale*', is well described in the key findings of the Marmot Review (see below) and shown on the graph Fig 1 below:

"In England, people living in the poorest neighbourhoods, will, on average, die seven years earlier than people living in the richest neighbourhoods. Even more disturbing, the average difference in disability free life expectancy is 17 years. So, people in poorer areas not only die sooner, but they will also spend more of their shorter lives with a disability... even excluding the poorest five per cent and the richest five per cent, the gap in life expectancy between low and high income is six years, and in disability-free life expectancy, 13 years." (Marmot Review, Exec Summary p10).

Or put another way;

"If everyone in England had the same death rates as the most advantaged, people who are currently dying prematurely as a result of health inequalities would, in total, have enjoyed between 1.3 and 2.5 million extra years of life. They would, in addition, have had a further 2.8 million years free of limiting illness or disability." (p12)

In terms of economic costs;

"It is estimated that inequality in illness accounts for productivity losses of £31-33 billion per year, lost taxes and higher welfare payments in the range of £20-32 billion per year, and additional NHS healthcare costs associated with inequality are well in excess of £5.5 billion per year." (p12).

It is also important to note with the current proposals to raise the pension age, significant numbers of people in the poorest areas do not reach the current pension age without disability; raising the age risks a transfer from pensions to disability benefits if this gap remains in the future.



Fig 1; Life expectancy and disability free life expectancy (DFLE) at birth, persons by neighbourhood income level, England, 1999-2003. Source; the Marmot Review.

These are utterly stark illustrations of the scale of the problem. But the question that arises is, what is it about life in an unequal society that causes the gradient in health that we see in Figure 1 above?

The Black Report and a broad range of subsequent studies put forward four types of explanation for health inequalities; material, cultural/behavioural, selection and artefact. The "artefact" explanation; that the inequalities were not "real" but a product of the way the data was gathered and analysed, has largely disappeared with the growing body of evidence to the contrary. Social selection was a proposal, almost a Darwinian explanation, which argued that people who experience poorer health in early life which leaves them ill equipped in the jobs market resulting in a combination of low social status and ill health. The evidence for selection does show a small role for ill health in childhood playing a part in later low social status, but illness in childhood is, in turn, impacted upon by social circumstances. Some conditions, such as schizophrenia, do result in downward social mobility but the numbers of individuals experiencing this are small and insufficient to account for the patterns we see above.

But the material and cultural/behavioural explanations that Black proposed are more complex and remain the subject of debate as to whether they can be usefully combined to provide a way of understanding inequalities in health that can point up the underpinning factors and hence, what might be the best approaches to tackle these.

Before addressing these questions in more detail the evidence that has brought these questions to the fore and which informs "the Spirit Level", is reviewed.

1.1. Inequalities in health: background and history and the epidemiological transition

There is a long tradition within public health research of attempts to explain why the health of the poor is worse than that of the rich and of proposals as to what can best be done about this. The contemporary debates about inequality mirror the earlier disagreements described above and, in particular, have focused on the role of behaviour and of moral judgements in making sense of the health of the poorest. But relationships which today appear self evident, such as that between squalor and disease were, in the past, often disputed with both moral and political judgments being made about the behaviour of the poor and their own 'contribution' to ill health. The sickness and poverty encountered by the early social reformers (Booth, Rowntree and others) was argued to be caused by "ignorance" and the taller stature and better health of the more affluent, signs of their physical (and moral) superiority.

Today a similar pattern of blame for the "lifestyle" and behavioural choices which can impact upon the chronic diseases which affect developed countries is growing, with a denial of the salience of the conditions of daily life in constructing available resources and an emphasis on faulty behaviour and a lack of responsibility. A recent example being Professor Steve Field, then chair of the Royal College of General Practitioners writing in the Guardian (8th August 2010) that, *"The truth is that too many of us neglect our health, and this is leading to increasing levels of illness and early death"*.

These debates about the role of environmental or contextual factors versus individual, behavioural and biological explanations is primarily (or at least has been best studied) in countries that have passed through what is known as the "epidemiological transition". The epidemiological transition is central to understanding the work of Richard Wilkinson, Kate Pickett, Michael Marmot and others and to the perspective of the WHO on global patterns of

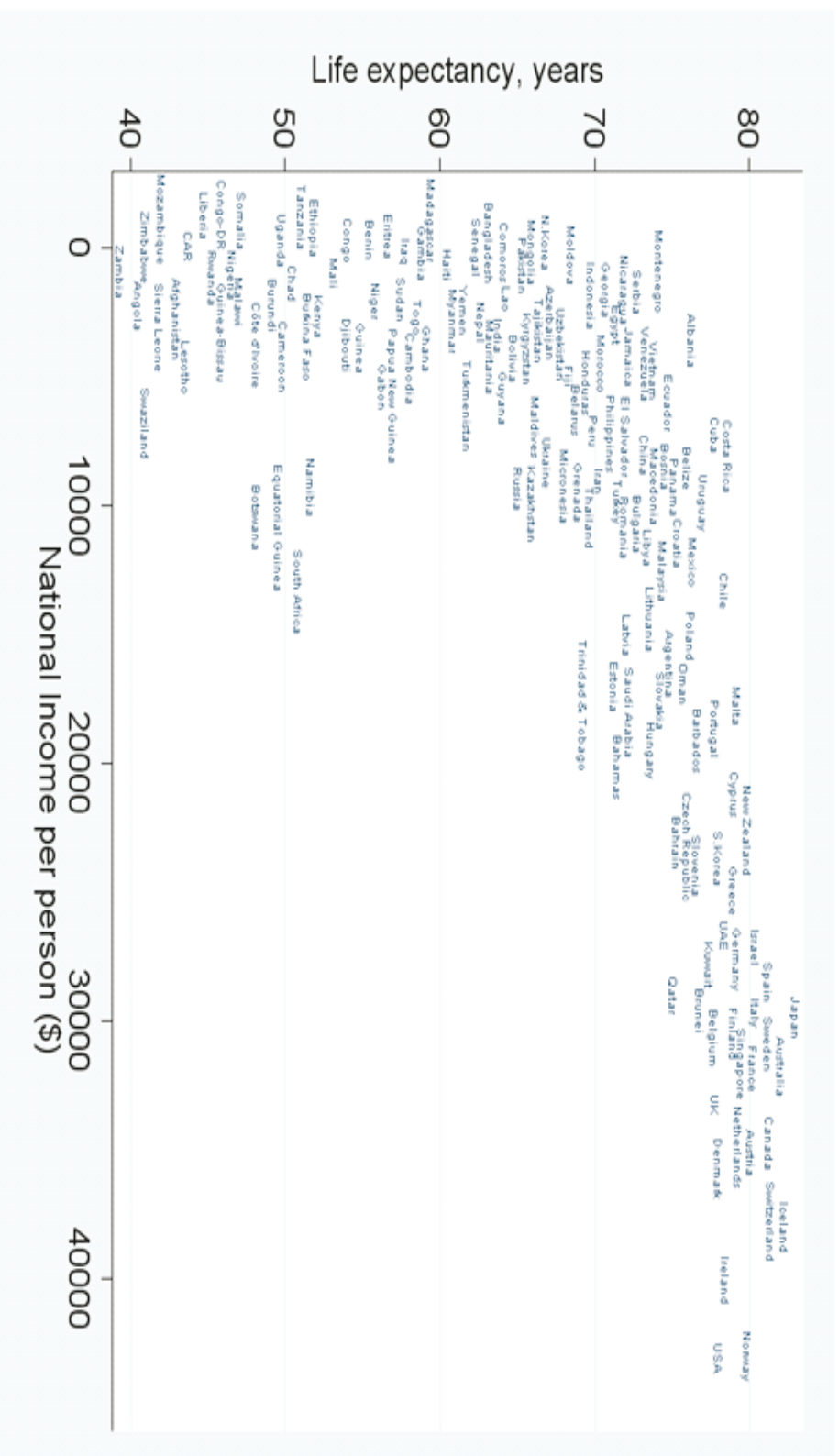
disease and mortality. This is the point in the development of a country when the epidemic diseases of poverty, such as water borne and infectious diseases, cease to be the major causes of mortality and are replaced by the cancers, cardiovascular and other degenerative conditions familiar in the developed world (Wilkinson 1994). Inequality plays a key role in this picture (see graph below), with the epidemiological evidence showing that as national income per capita rises there is a rapid increase in life expectancy (shown in the first, steep part of the curve on the graph).

However, above a certain threshold (the amount in dollars is currently around \$25,000 per capita - these are World Bank figures - with some evidence that this figure shows a small rise over time), further increases in national income per capita do not bring longer life (and there is evidence that this also applies to health in general and to a range of social and well being indicators such as the happiness of children) and may result in life expectancy showing a slight fall.

Prior to the epidemiological transition, the relationship between health (as measured by life expectancy) and income is a linear one; as income increases so does life expectancy. Economic growth, increasing affluence and the investment in a basic public health infrastructure (sanitation, clean water, education etc) make a major and rapid difference to life expectancy. The patterning of mortality is one of high rates amongst infants, under fives mortality and the elderly, these being the vulnerable groups most sensitive to the inadequate nutrition and infectious diseases which go hand in hand with poverty (Hall & Lamont 2009). However, following the epidemiological transition the picture changes markedly

What matters at this point is how economically unequal a given society is so, for example, men in Costa Rica live longer than black men in the US, a far more affluent country, even when purchasing parity is accounted for. Health in affluent societies loses its relationship with national income per capita, but within a given country the familiar gradient from rich to poor is maintained, and health and a range of social problems (see Index) show a relationship with the extent of inequality not with average income.

Income per head and life-expectancy: rich & poor countries



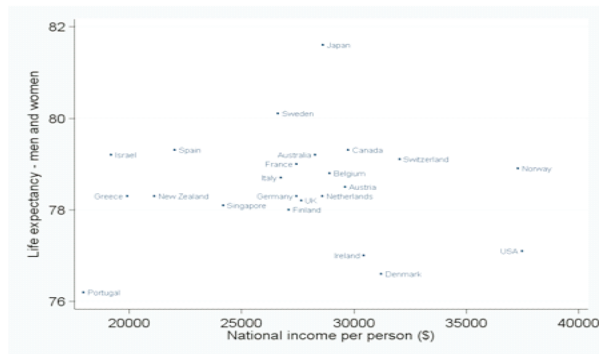
Source: Wilkinson & Pickett, *The Spirit Level* (2009)

www.equalitytrust.org.uk

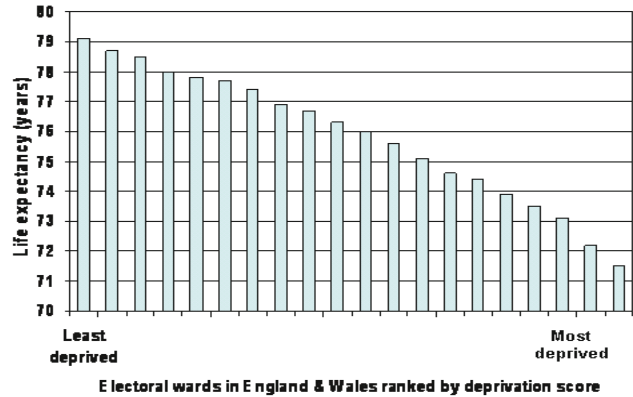


Health is related to income differences *within* rich societies but not to those *between* them

Between (rich) societies



Within societies



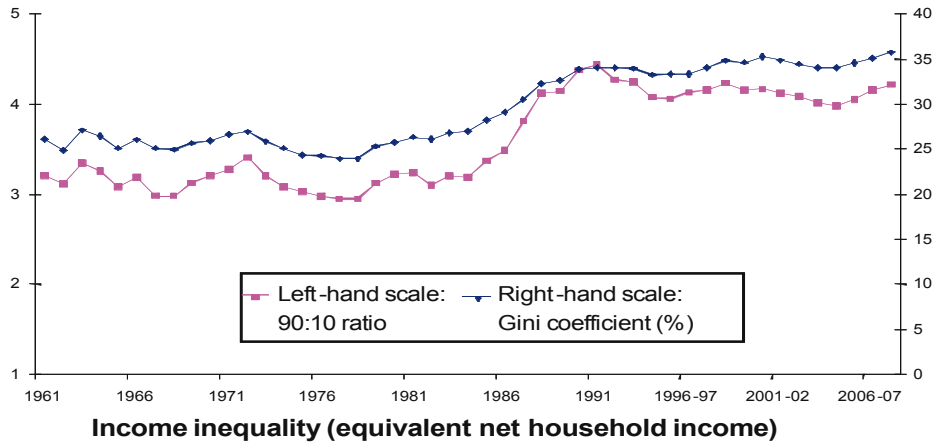
Source: Wilkinson & Pickett, *The Spirit Level* (2009)

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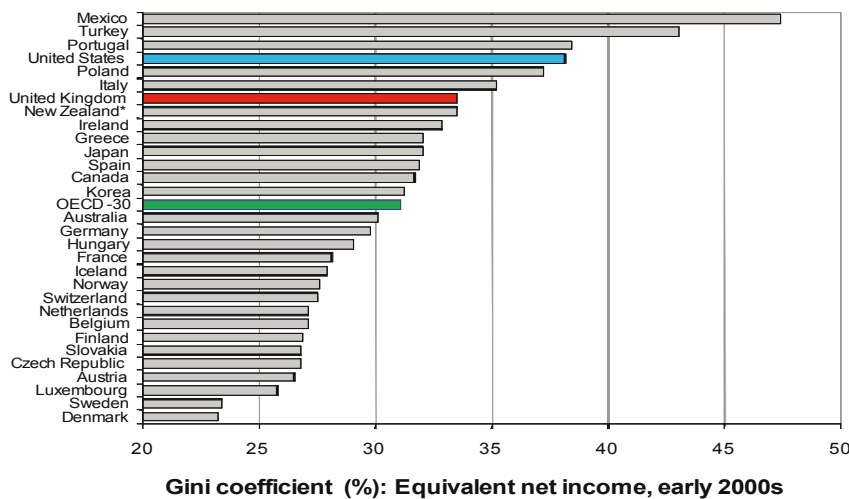
And today the picture in the UK is one of wide and increasing inequality, which has health consequences for the lives of many. The recent report *An Anatomy of Inequality in the UK* (2010) uses the Gini coefficient and the 90:10 ratio (measures of the extent of inequality in a society), to demonstrate the size of the gap, showing that economic inequality has widened in the last decades and is continuing to do so and, further, the UK has a poor record on inequality compared with other European countries.

Background: Over the most recent decade, earnings inequality has narrowed a little and income inequality has stabilised on some measures, but the large inequality growth of the 1980s has not been reversed



Source: IFS, based on FES and FRS (equivalent net incomes)

... and inequalities in earnings and incomes are high in Britain, compared with most other industrialised countries



Source: OECD (2008).

Source: The Hills Report.

So there is substantial evidence about both the size (and the increasing size) of the gap in incomes, and equally robust evidence demonstrating the health consequences of such inequality, there have been debates in recent years about both the strength of the relationship and whether it still holds good.

1.2. The relationship between health and inequality - debates

Disagreements concerning the nature and strength of the relationship in part reflect the process of robust peer review and debate about both statistical techniques and ways of interpreting the evidence. But there are also political and theoretical disagreements between authors, debates about and questions raised concerning the social and political consequences of the varying interpretations. Material which rests upon large datasets, statistical interpretations and modelling, inevitably leaves space for multiple interpretations of the evidence and different conclusions to be legitimately drawn, depending on where the focus or the gaze lies.

The debates tend to focus on three points:

- Area size.
- Does the relationship still hold today.
- Confounding and mediating factors (statistical approaches to interpreting the data).

These have been hotly contested and readers interested in more detail should look at Lynch (2004) and Wilkinson (2005). But to summarise; firstly, the relationship is at its strongest the larger the area being measured- large cities, provinces, societies show a much steeper gradient than small towns or electoral wards. This is primarily because of geographical segregation - poorer or richer people tend to live in clusters so small areas are made up of similar people - hence the similarities in health and wealth. As Danny Dorling puts it:

“When we talk of rising segregation it is often the segregation of ethnic or religious groups that is imagined, but it is the rich who are most geographically segregated and have been becoming more so in more unequal countries” (Dorling 2010, p172).

Secondly, some analyses have used statistical controls which, as Wilkinson commented, *“rather than being genuine confounders, are likely either to mediate between class and health or to be other reflections of the scale of social stratification”* (2006 p1768), thus obscuring or eliminating the relationship. And thirdly, the relationship has waxed and waned over time, particularly amongst the elderly. This may reflect the development of recent medical interventions likely to have had major impacts on disease in the elderly, for example better management of hypertension, cardio-vascular disease and improved cancer treatments. Mortality in old age from degenerative diseases represents a lifetime’s exposure, so there may be particular characteristics of elderly people in different time periods. But two more recent, major studies have shown that the relationship between

health and inequality has re-emerged and endures and that income inequality had “*an independent and more powerful effect on life expectancy at birth than did per capita income*” (De Vogli et al. 2004).

1.3. Understanding the relationship between inequality, health and social problems

In *The Spirit Level*, Wilkinson and Pickett construct an Index of Health and Social Problems (see index below) which extends their perspective beyond the health/inequality relationship, using a wide range of studies and national and international datasets which examine levels of trust, mental health, life expectancy and infant mortality, morbidity, obesity, educational performance, teenage births, homicide and imprisonment rates and social mobility to argue that the underpinning variable for *all of them* is income inequality. Importantly, moving on from the initial starting point above about the role of inequality, what is argued is that inequality is the *fundamental causative factor* not simply one of many variables (Wilkinson & Pickett, 2009). It is this powerful argument which represents a shift, and one reflected in the Marmot report and increasingly in a range of studies and reports (Dorling, 2010) which has implications for public health policy and research.

The Spirit Level has been criticised for its data selection methods, certain aspects of their use of statistical techniques (multivariate analysis) and, probably most importantly, for its central argument; that inequality is bad for all of us and that addressing problems piecemeal and leaving the gradient largely untouched, will not deliver health and social gains. For a detailed overview of this debate see the Equality Trust website. Without caricaturing a complex debate, the evidence for the relationship appears to be robust; the debates around statistical technique are no different from those raised in a wide range of studies and there is a political debate embedded within a methodological argument which attempts to contest the nature and strength of the relationship because, were the evidence to be solid, it would be politically uncomfortable at best.

But, if we accept the central relationship (between income inequality and health), what is it about unequal societies that causes this damage?

1.3.1 Explanations of the mechanisms

There are two major explanations for the corrosive consequences of life in unequal societies; ‘psychosocial’, associated with the work of Richard Wilkinson and others (Marmot & Siegrist 2006; Wilkinson 2000) and neo-material (Lynch et al. 2004; Lynch et al. 2000). These explanations are often counter-posed and remain highly contested but as Hertzman & Siddiqui (2009 p43) comment “*each hypothesis has been presented as mutually exclusive of (and, in fact in competition with) the*

others... however, it is our belief that these pathways operate together in different combinations and permutations in different contexts". This integrated perspective may be the best way forward for work around the social determinants and order to explain why this may be case, the neo-material and psychosocial explanations are reviewed below.

1.4. Neo-materialist explanations

Neo-materialist explanations for inequalities in health emphasise the *"combination of negative exposures and lack of resources held by individuals, along with systematic under-investment across a wide range of human, cultural and political-economic processes"* (Lynch 2000 p1001). These are both cumulative exposures to negative material circumstances and the lack of resources to manage such impacts, combined with the consequences of long term and systematic lack of investment in social or welfare infrastructures. For neo-materialists, it is the practical, tangible, economic circumstances faced by richer or poorer populations that are argued to account for the overwhelming majority of the inequalities in health which are observed. Differences such as the dangerous or damaging types of employment experienced by the less affluent, worse or sub-standard housing, living in more polluted environments and others are cited to demonstrate the salience or the centrality of the material to health.

The other aspect of neo-material explanations concerns class and how class or socio-economic position rather than simply position in a hierarchy may shape inequalities in health. Some aspects of this debate become rather pre-occupied with questions about how class can be understood and whether, for example, a better measure of inequality might be the degree of class exploitation within a society as indicated by the ratio of the total value added in the manufacturing sector to wages and salaries rather than simple measures such as income disparity. But neo-materialists also raise some important questions about how class might shape health inequalities. Readers who wish to understand more about these sets of arguments might wish to read Bottero (2005).

Neo-materialists also point to how psychosocial explanations have been used in public health, to promote strategies which do little to challenge fundamental inequalities. An often quoted example of this is where the focus has been on communities and the need to acquire "social capital" or enhance "social cohesion", rather than addressing the material inequalities which arguably account for the loss or absence of such qualities (Kawachi et al., 1999). In response, Wilkinson disagrees that class is not addressed within his work; he argues that there have been social changes which present a challenge to classical stratification models of class such as the majority of the population being employees structured within a hierarchy and that wider share and home ownership have

impacts on the shape and meaning of the experience of being working class. Again, these are detailed arguments and readers can follow this up in Savage (2000) and or (Bottero, 2005).

Causes of the damage:

Social status

Comparisons involving shame and respect

Stress in childhood

Lack of friends and social support

It is difficult, however, to see how ownership of some of the goods that the neo-materialists argue have an impact on health well-being could do so by exclusively or primarily material pathways. For example, possession of more than one car is unlikely to have a direct positive effect on health particularly for the seven percent of British individuals who personally own more than one car (Dorling 2010). Indeed, it could be argued that the effect could be a negative one resulting in reduced incentives to walk or take exercise. It could be argued that any health gain is more easily explained by the prestige or status

attached to owning two cars or increasingly, to the new status of an environmentally friendly car or its reverse, the SUV depending on aspirations (Marmot 2004).

Neo-materialist perspectives may be most applicable in the US where services are often funded locally and where an impoverished tax base can result in very limited material circumstances. There is also considerably less welfare provision and much weaker legislation in areas such as health and safety at work and no universal access to free health care, with important consequences for mortality and morbidity. This is less likely to be the case in the UK and Europe where more financial resources are distributed nationally resulting in less unevenness. Thus, the health care gradient that remains, in the light of such provision, indicates something which goes beyond the purely material in its impacts on health. This is where the psychosocial explanation begins.

1.5. Psychosocial explanations

Psychosocial explanations begin where the material ends, with most psychosocial theorists acknowledging the major role that access to goods, to adequate health and safety and to comprehensive health care are all key social determinants. However, when (known) material and behavioural risk factors are controlled for, these only account for around a third of the gradient in mortality, and whilst position in a hierarchy will determine access to a range of goods and services and to certain rights and privileges contingent on status, there still remains an excess of mortality and morbidity which is not adequately explained by material factors (as typically understood) (Marmot 2004). There are three key parts of the psychosocial explanation the damage caused by life in unequal societies, these are:

1.6. Childhood stressors

It is not feasible to review the extensive literature on the effects of early childhood on a wide range of health and social outcomes but, briefly, childhood encompasses both critical and sensitive periods, where biological parameters may be set and which are crucial to aspects of cognitive and emotional development. But the significance of childhood goes beyond critical periods as there are both cumulative patterns (evidence that those who grow up in stressful circumstances tend to experience the same circumstances throughout life) and *pathway* effects where one type of deprivation increases the chances of being exposed to another (poverty in early life leading to poorer educational outcomes, leading to lower paid, lower skilled work). Thus the type and range of resources available during childhood are a major factor in determining adult health and well being.

As the Marmot Review Task Group on early life and education put it:

“Children in England do not have access to equally nurturant environments, while childhood outcomes and subsequent health outcomes are unequal. Policy which is concerned with reducing health inequalities, therefore, has to be concerned with these wider inequalities and has to tackle inequalities in the broad socioeconomic context underlying childhood environments”.

But there is also a powerful argument about how the prevailing culture in a society shapes how children are reared and how adults prepare children for the demands of the adult world. As Wilkinson & Pickett describe, preparing children for life in a competitive society with an emphasis on individualism and watching out for the self is very different from one where what is anticipated is reciprocity and co-operation. There is often a tension between the values which parents wish to instil into their children and those which may dominate in the workplace and in the world of work that children will eventually enter.

1.7. Social support, shame and social comparison

Social relationships are vital to well-being, *“So important are these dimensions of social life that lack of friends and low social status are among the most important sources of chronic stress affecting the health of populations in rich countries today”* (*The Spirit Level*, p198) with this being demonstrated both in the epidemiological evidence that lonely or isolated people have worse health and in experiments which explore the importance of sharing and co-operation to people.

Looking at social status, what seems to be central is shame and a process of social status differentiation involving evaluations of the self in relation to socially salient others. In order to feel shame or shame related discomfort we have to care about or value the opinion of another or hold

within ourselves a set of values which mean something to us. Wilkinson draws on the work of sociologist Thomas Scheff (1990) for whom shame is viewed as “*The social emotion*” (p.79 emphasis in the original) which for humans as evaluative beings, means exposure to the threat of exclusion from the bonds and connections with others which are so central to our lives. Wilkinson and Pickett (2009) describe this in the following way:

“Greater inequality seems to heighten people’s social evaluation anxieties by increasing the importance of social status. Instead of accepting each other as equals on the basis of our common humanity as we might in more equal settings, getting the measure of each other becomes more important as status differences widen... If inequalities are bigger, so that some people seem to count for almost everything and others for practically nothing, where each one of us is placed becomes more important.” (Wilkinson & Pickett 2009 p.43-44).

Wilkinson and Pickett refer to the work of Gilligan, a US prison psychiatrist, who says that he has “*yet to see a serious act of violence that was not provoked by the experience of feeling shamed and humiliated... and that did not represent the attempt to... undo this “loss of face”.* (p110). Unequal societies may present more opportunities for people to feel shame, both chronic and acute and may provide less resources, particularly for the poorest, to protect themselves. Thinking of the example of “chavs”, where a great deal of contempt towards younger, poorer people is seen as acceptable, making it very difficult for the least affluent to feel themselves to be acceptable.

These comparisons are often a source of considerable anxiety especially amongst those with the least resources in society. A society which presents itself as a hierarchy of worth with the most affluent and successful at the top can be a very threatening and challenging place to live.

1.8. The biology of stress - how inequality gets inside the body

Psychosocial explanations draws upon the complex and multifaceted biology of the stress response. There is a growing body of evidence which demonstrates the link between certain types of stress and bodily responses such as raised but blunted cortisol. These stressors appear to operate via the sympathetic-adrenal-medullary (SAM) and the hypothalamic-pituitary-adrenocortical (HPA) systems, producing effects akin to those of aging where the physiological costs of meeting new challenges progressively increase, opening up the door to ill health and to the chronic diseases and causes of mortality, such as stroke and cardio-vascular disease, which are now amongst the most frequent causes of death in the developed world.

It is amongst the working age population that the increased mortality and morbidity is found in unequal countries, and research in the workplace, such as the Whitehall studies, have shown that that it is the *sense of control* over ones work and a *sense of autonomy*, both of which seem to relate to status and position in a hierarchy, which make a difference to health. Others studies have found that the number of demands and the extent of control or the amount of effort in proportion to rewards are also of enormous importance for health, and that the presence or absence of social support plays a part.

“The really exhausting and the really repulsive labours, instead of being better paid than others, are almost invariably paid the worst of all, because performed by those who have no choice. The inequalities of wages are generally in an opposite direction to the equitable principle of compensation.” (Mill, 1848. Quoted in Siegrist and Marmot, 2006, p76)

But findings based on the civil service, which is the subject of the Whitehall studies may not be that applicable across the working age population as most people do not work in such hierarchical organizations where status is so apparent. Stress may be less status bound and relate to more of the “wear and tear of daily life” or to the difficulties, more frequently encountered in unequal societies, of securing the co-operation of others when needed (Hertzman & Siddiqi 2009, p29). There is evidence that these dysregulated stress responses are impacted upon by the baseline parameters set in childhood which, in turn, are impacted upon by factors such as maternal stress and poverty. Cognitive and social/emotional development are shaped by the same factors which impact upon biology with studies showing working memory, mathematical competence and “school readiness” all being impaired by poverty and by inequality.

1.9. Integrating the material and the psychosocial

To explain these threats and challenges and how they may impact on health and well being means integrating both the material and the psychosocial thus making sense of the health gradient. Whilst we live in an affluent society by global standards, there remain material inequalities (lack of access to a range of dental treatments, children and families living in poverty and poor quality housing, for example) and even where people are not poor there are psychosocial factors that also impact on health such as economic insecurity and increasing levels of isolation. It seems clear that there are societies which are more or less able to health promoting or health damaging and that inequality is at the centre of these processes.



Part 2

Is inequality a sufficient explanation - "Fundamental causation"

In the second part of this briefing paper we consider some of the explanations which can deepen and extend understanding of the mechanisms by which inequality may "get under the skin". Hall & Lamont (2009), whilst welcoming the findings from social epidemiology, comment that agency, what people do in the circumstances in which they find themselves, is often missing. The factors that shape people are crucial to understanding inequalities in health, but people resist negative stereotypes be these individual or collective (a "rough" estate with the corollary that those who live there are rough, a pride in being a good parent where single parenthood is a stigmatised identity). This resistance can be positive, a drive to do well at school despite an impoverished background, or negative, joining a gang to feel a sense of power and control in a life that allows for very little, but people are active in their lives and not simply shaped.

This sense of agency is crucial to understanding "fundamental causation", a theory developed in the mid nineties to tease out and understand how class or socio-economic position (SEP) might operate as a variable in health inequalities and it is this which is explored below.

2.1. Fundamental causation theories

There is now a body of evidence, that shows that inequality itself may be at the root of a wide range of health and social problems which are more prevalent in unequal societies. The traditional focus in public health practice, has been on tackling each problem in relative isolation but, as Wilkinson & Pickett put it "*we know that our societies are endlessly recreating these problems in each generation*" (p26). As one problem with a social gradient is largely eliminated, rickets for example, another emerges to take its place (obesity) and the gradient remains and often widens. Additionally, it is now clear that some of the "downstream" methods of tackling inequalities in health can have the apparently paradoxical result of widening the very gap which is being targeted. These "*intervention induced inequalities*" flow from strategies such as exhortations to floss or eat "5 a day", which are much easier for those with greater resources and life opportunities to implement or from access to particular technologies which have a cost attached which is affordable only by some (for example, dental implants, going to the gym). Thus, addressing inequality is the most productive, and sometimes the only, way to successfully address these problems. But for public health it is also useful to understand more of how this multi-stranded mechanism, inequality, might work, how in practice these socioeconomic differences express themselves.

In 1995 Link & Phelan, looking at the social gradient in health, developed their theory of fundamental causation to explain how class or SEP might operate as a mechanism. This theory has much to offer the inequalities debate and offers a way forward for researching health inequalities as well as an explanation for how SEP manifests itself in succumbing to or protection from disease and illness.

2.2. Fundamental causation: how it works

When trying to make sense of how SEP or class might operate, or how it might influence health, what is usually proposed is that it is a “placeholder” variable, that is a marker for (other) factors, which when identified and teased apart, will emerge as the “real” cause or causes. For example, the observed connection between low incomes and higher rates of cardio-vascular disease (CVD) is a product of smoking and dietary behaviours and patterns of physical activity. The conventional public health approach would be to launch programmes (dietary modification programmes, exercise interventions etc) to address these variables, thus seeking to break the link between CVD and SEP. However, what typically happens is the gradient may only flatten slightly or it may disappear (as did deaths from infectious disease in developed societies) only to be replaced by another social gradient, or it may widen with more affluent people embracing the necessary changes faster. What is different about Link and Phelan’s fundamental cause argument is that it is not simply a theory of the specific proximate mechanisms which link SES and health but a theorising of the existence of an over-arching or meta-mechanism which explains the enduring relationship over time and explains how, even when the intervening mechanisms change, the relationship (SEP and health) re-asserts itself. Being more affluent results in:

“access to resources... that help individuals avoid diseases and their negative consequences through a variety of mechanism. Thus, even if one effectively modifies intervening mechanisms or eradicates some diseases, an association between a fundamental cause and disease will re-emerge. As such, fundamental causes can defy efforts to eliminate their effects when attempts to do so focus solely on the mechanisms that happen to link them to disease in a particular situation.” (1995, p81).

This means that the social gradient in health will exist and will re-establish itself even when new knowledge or interventions become available, particularly in conditions where the underlying disease causing mechanisms are known or controllable, even if not completely understood.

Link and Phelan argue that the fundamental relationship is largely contingent upon the existence of knowledge about the disease and the consequential potential for mastery and thus prevention. Looked at historically, in the case of clean water for example, increasing affluence would improve the likelihood of living in an area with adequate sewerage; as sanitation became widespread the health gradient in infectious disease in more developed nations disappeared with mortality patterns emerging relating to increasing affluence. Interestingly, many of the changes which resulted in reduced morbidity and mortality, preceded a clear understanding of the “*germ theory*” of disease, illustrating that the causation of a disease does not have to be finally ‘settled’ in order to result in a health gradient. All that is necessary is for the bulk of the changes in behaviour and practices to be in the direction of disease reduction. A more contemporary example is cardio-vascular disease, where initially being well fed increases life expectancy, but as adequate food becomes widespread the advantage temporarily disappears as obesity and high cholesterol diets increase morbidity in the affluent. However, the gradient quickly reappears, as affluent people adopt “healthy eating” and exercise practices and cardio-vascular disease thus becomes a killer of those further down the socio-economic scale. Thus, in Link and Phelan’s (1995) terms, the “*social disparities are in themselves a fundamental cause of differences in health outcomes*” (p55).

What fundamental causation would predict is that the more that is known about how to treat or prevent a given disease, the steeper the social gradient will be. At the heart of fundamental causation is the capacity (on the part of the more advantaged groups in society) to access and to mobilise a range of resources; this may be access to the money to purchase advantageous goods or services, such as an MRI scan which might speed up the diagnosis of a back problem or (as commented above) the financial capacity to purchase dental implants, but may also be less tangible but nonetheless, vital embodied or socially structured resources. For example, the ability to advocate for one self or another (in the appropriate interactional styles), the ease with which advantageous behaviour change is possible, the ability to obtain information or access the best health care practitioners (or to possess networks which identify the best practitioners) in a given field can make an enormous difference to health outcomes. It is this combination of financial resources, networks, appropriate information seeking behaviours and a classed *habitus*¹ which privileges health, which makes the difference.

¹ Pierre Bourdieu described the habitus as a set of dispositions, tastes, habits, perspectives that we acquire, particularly in early life, which then orient and pre-dispose us to ways of being in the world. Thus the habitus will shape the kinds of sport or music or books that we are likely to choose; we often do not have quite the range of choices that we may like to think we are able to exert.

2.3. Testing the theory

Link & Phelan (2004) tested their hypothesis by looking at the preventability/treatability of causes of death and their social gradients. They identified a number of conditions about which little was known about treatment or prevention (the more that is known the more feasible it becomes to marshal resources to "fight" the condition, the less is known the more any gradient reflects embodied characteristics which are brought to the illness). It could be proposed that more affluent people would be healthier in the first place, putting them in a good position to face any illness regardless of specific treatments or cures. This was reflected in the early years of HIV where gay men had far better survival times than injecting drugs users despite the lack of any specific treatments for HIV. However it was difficult to identify conditions about which little was known of the relevant risk factors (malignant neoplasm of gallbladder and extra-hepatic bile ducts, for example), so the authors included those conditions considered to have low preventability and compared the unpreventable and low preventable to highly preventable causes (cardio-vascular disease, bowel cancer etc), finding the predicted, much steeper, social gradient. Where what a person could do or access made a difference there was a steep gradient, where little or nothing was known, the gradient was much flatter.

In 2005, Lutfey and Freese undertook a fascinating ethnography that attempted to throw light on the **mechanisms** by which fundamental causation operated looking at two diabetes clinics serving very different populations in the US. They proposed some interesting extensions to the theory as well as illustrating its usefulness through a highly detailed piece of qualitative research. They proposed two mechanisms via which fundamental causation might operate; compensatory inversions and maximally maintained inequality. [See boxes].

There were also basic factors which related to the lived experience of socio-economic position (SEP) that would have probably been hidden in more conventional epidemiological or health services evaluation research in their study. Less articulate or less well educated patients tended to be given less complex but less risky regimens; but regimes that had a long-term down side. Simple regimens were more readily embraced because they required less work and planning but gave better control of blood sugar. Once the researchers began to unpick the reasons for this they found that the simple regimens were more forgiving with shift work and work with fixed breaks (it was possible to sleep when necessary during the day or get by if breaks were delayed). The more affluent patients tended to have jobs which lent themselves to more fine-grained control of blood sugar levels and to have existing skills (putting material into a computer spread sheet) which aided

control and which meshed with existing skills and lifestyles. Importantly, the effective but simple regimes were associated with greater risks of blindness and amputation in later years.

Fundamental causation- the mechanisms

Compensatory inversions:

Where the least well-off experience a disadvantage relating to a particular resource and would then benefit from a compensatory mechanism, the compensatory mechanism was likely to go in the opposite direction to the one needed.

The example:

The least articulate of the patients, those who most needed to be seen by the experienced medical interviewers (compensatory mechanism) were actually seen by the most inexperienced health care practitioners (inverse compensation). The affluent patients saw the most experienced doctors.

Maximally maintained inequality:

The well-off have such a grip on access to *status mediating mechanisms* that the gap will only close when they have "*effectively achieved saturation at that level*". For health, this means that whilst medicine advances, many of those advances will leave the gap in health outcomes between rich and poor untouched or widened; it would only be when the "*highest level of therapeutic attainment saturates to the entire population*", that the gap will close.

The example:

The eradication of a disease may be the only way to eliminate the gradient - the elimination of diphtheria in the west ended the health gradient.

The study also established that implementation of new technologies frequently increased the health divide (the introduction of new insulin pumps which allowed for very precise control but were not affordable by uninsured or underinsured patients), which demonstrates how advances in medicine

may result in a widening of the gap - another illustration of the concept of “*maximally maintained inequality*”. Whilst it is likely that these factors will be more powerful in the US than in the UK due to lack of medical insurance or under-insurance in the US, a similar but marked pattern also occurs in the UK where the more affluent purchase services such as physiotherapy, psychotherapy, podiatry etc and access other technologies more rapidly or with greater ease than the less affluent.

Fundamental causation- example 1. Cancer survival in the UK

The House of Commons Public Accounts committee recently published a report identifying marked variations in cancer diagnosis, treatment and survival, and speculating what the reasons might be for late presentation and subsequent under-recognition of cancer amongst the least well-off.

"Nobody knows why some areas see more emergency admissions for cancer, why screening is taken up more readily in some parts than in others, why some patients get radiotherapy or chemotherapy and others do not." (Guardian, 1st March 2011).

2.4. What fundamental causation adds to policy and practice questions

Developing understandings of inequalities in health involves looking beyond simple relationships between variables and deepening understanding of the nature of the variables. As Carpiano puts it:

“Research on social determinants of health has overwhelmingly utilised a variable based approach, which, even when theoretically driven, still only assesses associations between measures and thus is limited in telling us about the processes or mechanisms underlying such associations.” (2008, p246).

Fundamental causation approaches can begin to shed light on the processes which underpin the types of public health interventions which have had mixed success in narrowing the health divide. Rather than try to unravel the variables and address as though they were separate, it may be more effective to consider them as a whole and look for institution wide changes or sometimes for change in an area which may seem to be at some distance to the health inequality which is being addressed, for example the opening hours of leisure centres may play a much wider role in reducing obesity than a campaign directed at obesity. Unfortunately this is, in part, what the

socioeconomic duty in the Equality Act would have done; a given area has high rates of cardiovascular disease, the plan to meet cuts targets is to reduce the opening hours of all of the swimming pools, who uses the swimming pools in the evenings? If this is less affluent people who are in work and unlikely to have sufficient income to join a private gym if the pool is shut, then we can predict that this will have the effect of an addition, albeit small, to the gradient in health.

This approach can also help to frame research into inequalities in health. As with planning and policy approaches, it may be more effective to undertake research which seeks to understand what actually happens around the behaviours necessary to control or prevent disease rather than assuming they can be addressed in isolation. And it will be important to attend to the meaning of behaviours and practices to make sense of what is likely to be embraced or resisted and why.

3. Conclusion

Living in an unequal society has consequences for health that cannot be effectively addressed by looking at health alone. What the new evidence shows is that inequality has an "independent" effect on health that cannot be tackled without narrowing the gap. Current government thinking demonstrates a reluctance to press for legislation or cross population initiatives to address health inequalities, preferring to focus on "nudging" individuals into making better choices. However, there is a wealth of evidence that, nudging may not be particularly effective and, if it were effective, it may well widen rather than narrow the gap.

Fundamental causation - example 2. Dental caries

Goodwin and McGrady's (2010) study of dental caries in children in Newcastle and Manchester found a marked social gradient in caries but in Newcastle the water is fluoridated and the gradient is much flatter than Manchester. Fluoridation mediates the behaviour changes (types of food consumed, brushing, dental visits) necessary to reduce caries.

All social classes of children in Newcastle had better dental health, but it was the poorest who benefited the most.

This evidence raises challenges for public health and is a very difficult finding to address for two primary reasons. Firstly this may be heard as a counsel of despair, that nothing can be done to improve health without narrowing the gap and narrowing the gap is not within the capacities of most health care practitioners, PCTs, LAs or GPCCs. The second reason is that there is often a very powerful imperative to do *something* (or to be seen to be doing something) and this impetus may conceal the possibility that a given intervention may be only weakly effective, ineffective or indeed make the gap wider.

However, placing inequality at the centre of policy and practice opens up the possibility of both advocacy and auditing for public health practitioners. Ensuring that knowledge is dispersed regarding the central role of inequality and then measuring to what extent initiatives narrow or widen the gap can begin to address the problem. Deepening the knowledge base of how these inequalities manifest themselves, using a fundamental causation approach can provide invaluable materials which can be brought to bear on specific issues and areas and advocacy may extend to challenging some of the approaches of central government if there is no evidence base to sustain them.

Michael Marmot quotes Pablo Neruda on the opening page of Fair Society, Health Lives; "*Rise up with me against the organisation of misery*"; advocating for what we know and what we know we can do about it seems like the beginnings of a way to do just that.

Key messages for public health

Public health practitioners have a key advocacy role in tackling inequalities in health by ensuring that the existing evidence is understood and disseminated to professionals and to community organisations and interested groups.

Audit public health initiatives for their impact on narrowing the gap - this may mean that more indirect initiatives are the most useful.

Deepen the knowledge base using a fundamental causation approach.



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5. Wilkinson and Pickett's Index of Health and Social Problems

International Data and USA state level on the following:

- Levels of trust.
- Mental illness including drug and alcohol addiction.
- Life expectancy and infant mortality.
- Obesity.
- Children's educational performance.
- Teenage births.
- Homicides.
- Imprisonment rates.
- Social mobility (not available for US states).

6. Glossary

1. **Gini coefficient.**

The Gini coefficient is a measure of inequality expressed as a value between 0 and 1. Zero would indicate perfect equality where income would be shared equally across the population and 1 perfect inequality, where all the wealth would be in the hands of one individual.

2. **Proportionate universalism.**

"Focusing solely on the most disadvantaged will not reduce health inequalities sufficiently. To reduce the steepness of the social gradient in health, actions must be universal, but with a scale and intensity that is proportionate to the level of disadvantage. We call this proportionate universalism." (From the Marmot Review).

3. **Social epidemiology.**

Social epidemiology is the study of how social interactions and social forces, for example, social norms, laws, institutions, conventions, social conditions and behaviour and others, can affect the health of populations.

4. **Socio-economic position.**

A combination of economic factors such as income and wealth with a range of broader indicators such as education and social status to form a composite measure of position in society

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