Socio-Economic Inequalities in Health Care in England*

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Abstract

This paper reviews what is known about socio-economic inequalities in health care in England, with particular attention to inequalities relative to need that may be considered unfair ('inequities'). We call inequalities of 5 per cent or less between the most and least deprived socio-economic quintile groups 'slight', inequalities of 5–15 per cent 'moderate' and inequalities of more than 15 per cent 'substantial'. Overall public health care expenditure is substantially concentrated on poorer people. At any given age, poorer people are more

likely to see their family doctor, have a public outpatient appointment, visit accident and emergency, and stay in hospital for publicly-funded inpatient treatment. After allowing for current self-assessed health and morbidity, there is slight pro-rich inequity in combined public and private medical specialist visits but not in family doctor visits. There are also slight pro-rich inequities in overall indicators of clinical process quality and patient experience from public health care, substantial pro-rich inequalities in bereaved people's experiences of health and social care for recently deceased relatives, and mostly slight but occasionally substantial pro-rich inequities in the use of preventive care (for example, dental check-ups, eye tests, screening and vaccination) and a few specific treatments (for example, hip and knee replacement). Studies of population health care outcomes (for example, avoidable emergency hospitalisation) find substantial pro-rich inequality after adjusting for age and sex only. These findings are all consistent with a broad economic framework that sees health care as just one input into the production of health over the life course, alongside many other socio-economically patterned inputs including environmental factors (for example, living and working conditions), consumption (for example, diet and smoking), self-care (for example, seeking medical information) and informal care (for example, support from family and friends).

Policy points

- Poorer and more socially disadvantaged people tend to consume more health care at any given age, in terms of both volume and cost, because they are sicker.
- Richer and more socially advantaged people tend to present to health care providers at an earlier stage of illness and to consume more preventive care.
- There are slight pro-rich inequities in some clinical process quality and patient experience measures but bigger inequities in some forms of preventive care and care involving substantial elements of co-payment and/or non-medical personal care.
- There are substantial pro-rich inequalities in population health care outcomes (for example, potentially avoidable mortality and hospitalisation), but it is not known how far these reflect inadequate care rather than morbidity beyond the control of health and social services.
- To address inequalities in health care, policymakers need better information about how local inequalities change over time in response to local policy changes, together with longitudinal analysis of health care inequalities over the life course.

I. Introduction

This paper reviews evidence on socio-economic inequalities in health care in England, a country that consistently comes near the top of international league tables of equity in health care financing.[1] Benefit incidence studies show that public health care expenditure in England disproportionately benefits poorer people.[2] However, this does not necessarily mean that health care is distributed fairly in relation to need, since poorer people tend to be sicker and so have greater need for health care. So our review pays close attention to empirical studies that have attempted to allow for need in order to assess how far socio-economic differences in health care may be considered unfair or inequitable.

England's tax-funded National Health Service (NHS) provides a relatively generous package of health care, free at the point of use, which makes up nearly 85 per cent of national health care expenditure. Whilst the level of public funding is high, however, England is not an outlier. All high-income countries offer their citizens a substantial package of publicly-funded health care, including countries with relatively low shares of public expenditure on health such as the US and Chile, which spend just under 50 per cent compared with the OECD average of 73 per cent in 2012.[3] While all health care systems in wealthy countries have equity goals relating to access to, and/or delivery of, health care as well as its financing,[4] the English NHS is unusual in also having explicit policy objectives relating to reducing inequalities in health care outcomes. These objectives were first articulated in 2000[5] and formalised in the 2012 Health and Social Care Act.[6]

Associated with these policy goals is a large literature on the distribution of health care and of health in the UK and England. In this review, we confine our attention primarily to the literature on inequalities that takes an economics perspective. Under this umbrella, we focus mainly on health care and present studies of departures from equality in health care supply, utilisation, expenditure and quality. We also devote some space to recent literature on inequality in patient experience and outcomes. We do not review evidence of inequality in health care financing since the NHS is largely funded through general taxation and few people in England report financial difficulties in paying health care bills or face catastrophic medical expenditures.[7]

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[1]Van Doorslaer et al., 1999; World Health Organisation, 2000; Schoen and Osborn, 2010; Davis et al., 2014.

[2]Kelly, Stoye and Vera-Hernández, this issue.

[3]OECD, 2014.

[4]Van Doorslaer et al., 1999; Wagstaff and van Doorslaer, 2000.

[5]Department of Health, 2000.

[6]This legislation placed a duty upon NHS health care payers in England to 'have regard to the need to (a) reduce inequalities between patients with respect to their ability to access health services; and (b) reduce inequalities between patients with respect to the outcomes achieved for them by the provision of health services' (Department of Health, 2012).

[7]Schoen and Osborn, 2010; Davis et al., 2014.

We focus on variations in health care associated with socio-economic characteristics related to ability to pay, such as income, education, deprivation and social class, although there is also evidence of social inequality by other individual characteristics such as ethnicity,[8] geographical location,[9] age,[10] gender,[11] veteran status,[12] type of illness[13] and other aspects of disadvantage or vulnerability.[14] As shorthand, we use the term 'poor' in a broad sense to mean 'socio-economically disadvantaged'.

We update previous reviews of studies of health care inequalities in England published in the 1990s and early 2000s[15] by identifying major national studies conducted subsequently. We also draw on major cross-country studies and reviews of evidence in the US.[16] However, our aim is to identify stylised facts about health care inequalities rather than to conduct a systematic review of this large, diverse and multidisciplinary empirical literature.

We start by reviewing general population studies that aim to provide a comprehensive picture of inequality in the health care sector as a whole, across a broad range of different clinical conditions. We then include a selection of recent national studies of inequalities in services for specific clinical conditions, which are reasonably representative of the literature. We focus on three common and high-profile conditions: cancer, circulatory disease and osteoarthritis. Cancer and circulatory disease are policy priorities due to their high mortality rates and cost, and osteoarthritis is a policy priority due to long hospital waiting times for hip and knee joint replacement. We also present selected studies of preventive services such as screening for cervical cancer, which are particularly prone to pro-rich inequality for reasons to do with health production that are explained in Section II. We do not review studies of inequality in long-term care, such as home care and residential nursing home services for the elderly. In England, public funding for long-term care is means tested and services are organised separately from the NHS as part of local government social care services.

Almost all the evidence we cite focuses on publicly-funded NHS health care, since data on privately-funded health care are generally not available from routine administrative data and only sometimes included in survey data. This is a limitation, since privately-funded care makes up a substantial proportion of elective hospital care for low-risk procedures and some forms of preventive

[8]Smaje and Le Grand, 1997; Szczepura, 2005.
[9]Hacking, Muller and Buchan, 2011.
[10]Raine et al., 2009.
[11]Raine et al., 2010.
[12]Bedard and Deschenes, 2006.
[13]Lawrence and Kisely, 2010; Emerson and Baines, 2011.
[14]Dixon-Woods et al., 2006; Parry et al., 2007.
[15]Goddard and Smith, 2001; Dixon-Woods et al., 2006; Dixon et al., 2007.
[16]Fiscella et al., 2000; Macinko and Starfield, 2002; Starfield, 2006; Agency for Healthcare Research and Quality, 2014.

care such as diagnostic tests and dentistry. Furthermore, important non-medical forms of prevention are privately funded – for example, housing quality, food quality and gym memberships.

Wherever possible, we seek to cite simple measures of relative inequality that are easy to compare across studies of different kinds of health care, such as relative gaps between the most and least socio-economically disadvantaged quintile groups of people in England. We call inequalities of 5 per cent or less between the most and least deprived socio-economic quintile groups 'slight', inequalities of 5–15 per cent 'moderate' and inequalities of more than 15 per cent 'substantial'. These criteria are arbitrary, but at least they are explicit and help us to achieve a degree of consistency in our conclusions about the size of different inequalities. Even this simple classification is not always possible, however, since there is substantial reporting diversity in the literature. For example, much of the health economics literature only reports concentration indices, which are hard to interpret, and much of the health services research literature only reports odds ratios from logistic regression, which – unlike rate ratios and relative risks – can be misleading without knowledge of baseline risks.[17] To facilitate comparison of the magnitude of inequality between different studies, we therefore recommend that future studies report marginal effects, as well as or instead of concentration indices and odds ratios, so that readers can calculate absolute differences between social groups allowing for covariates. There is also reporting diversity due to different units of analysis (for example, individual, household, small area, large area), different data sources (for example, whole-population administrative data versus sample survey data) and different methods of adjusting for need (for example, direct versus indirect standardisation and different sets of need variables). Another key limitation is that the vast majority of studies continue to be snapshots of a particular population at a particular point in time rather than comparative studies. Few studies compare health care equity in England at different points in time, few compare England with other countries and, so far, none has performed detailed comparisons of socio-economic equity in health care between different local areas of England. This makes it hard to draw conclusions about how far inequities are changing over time, how well England is performing on equity in health care compared with other countries, and whether some areas of England are succeeding better than others at tackling health care inequities.

Finally, almost all the empirical research focuses on health care received during a particular period rather than over the course of individual lifetimes. This absence of a lifetime perspective means that issues such as poor health leading to low incomes, or low incomes leading to later poor health, are not addressed by studies that focus on whether care currently is allocated according

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[17]Davies, Crombie and Tavakoli, 1998.

to current need or whether this allocation favours the currently poor or the currently rich.

The remainder of the paper is organised as follows. Section II outlines the production function approach to health and Section III discusses methods used to measure inequities in health care. Section IV presents findings from the studies we review and Section V provides a discussion.

II. Equity studies and the health production approach

We begin by outlining how socio-economic inequalities in health care fit into the broader economic approach that treats health care as one of many inputs into the production of individual health. The approach was introduced by Grossman (1972) and focuses on adult health, taking income as given.[18] The basic insight was that health care is an input into a production process rather than a final good. Medical treatment itself is often time-consuming and unpleasant, i.e. more like a 'bad' than a 'good'. What an individual values as a final good is health. Health demand consists of two elements. The first is a consumption effect: health yields direct utility, i.e. individuals feel better when they are healthier. The second is an investment effect (and the novel part of the model): that health increases the number of days available to participate in market and non-market activities.

In a simple production function approach, focusing on adult health under conditions of certainty, individuals get utility from a composite consumption good, Z, and their health stock, H, which depreciates over time, t, at a rate δ:

(1) $\qquad U_t = u\left(H_t, Z_t; \mathbf{s}\right)$

(2) $\qquad H_{t+1} - H_t = I_t - \delta H_t$

where $\mathbf{s}$ is a vector of tastes and I is investment in health. The household production function for health is

(3) $\qquad I_t = f\left(\mathbf{M_t}, T_{Ht}; \mathbf{E_t}\right)$

and that for consumption goods is

(4) $\qquad Z_t = f\left(\mathbf{X_t}, T_{Ct}; \mathbf{E_t}\right)$

where $\mathbf{M}$ is a vector of market inputs including medical care, T_H is time spent on improving health, $\mathbf{E}$ is a vector of factors that affect the production function,

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[18]The model has been developed to accommodate the growing body of evidence about the importance of physiological and skills development in early life (Almond and Currie, 2011; Galama and van Kippersluis, 2013).

including education and environment, **X** is a vector of market-produced goods and T_C is time spent on the composite consumption good.[19]

While the basic model is not primarily focused on the issue of socio-economic inequalities in health (and ignores any causal link between health and future income), its components make clear that departures from the allocation of current health care according to current need may arise for (at least) two different types of reason.

First, individuals will vary in their taste for health and consumption. Variation in taste means individuals will choose different levels of investment in health (including medical care) depending on their tastes as well as their resource constraints. This is not necessarily inequitable.

Second, health involves many inputs. Other inputs into health production include health-related consumption such as diet, physical activity, smoking, drinking and narcotic use. The ability to produce health from a given set of inputs will depend on the individual's knowledge (education) and the environment they face, including health-related factors such as living and working conditions, stressful aspects of the social and economic environment, air pollution, noise pollution, water pollution, transport safety and violent crime. Thus even if health care prices are set to zero, there are many other factors that may lead to socio-economic inequality in health and in the receipt of health care. First, poorer (more socio-economically disadvantaged) individuals will have fewer resources (wealth, human capital, social capital) to invest in the production of health. Thus a unit of medical care will be less beneficial than for a richer individual who will have more resources to utilise alongside that medical care. Second, the nature of a low-income individual's employment and life may also mean they are heavily time-constrained. If so, this will raise the relative prices of time inputs for them and they may therefore value the opportunity costs from using health care (for example, time away from domestic and work duties, travel costs) more highly than the potential health gains, particularly when considering investments in health such as preventive care. Thus poorer individuals may tend to use less preventive health care when facing no immediate pain or disability, and present to health care providers at a later stage of illness. This will mean that when they finally access health care, they will be in greater need and require more health care inputs. Third, the quality of care received may depend in part upon the intensity and effectiveness of care-seeking behaviour – for example, in navigating through a complex

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[19]This basic model has been extended to incorporate uncertainty (Dardanoni and Wagstaff, 1990), which is central to certain forms of health care such as screening and diagnosis that are essentially about reducing uncertainty, and to incorporate pre-adulthood stages of life. Current models of health and human capital development during the early years of life emphasise (1) the role of *in utero* nutrition and physiological development on outcomes in later life and (2) the role of families and childhood environments in shaping skills and character traits that influence both income and health in later life (Fogel, 2003; Heckman, 2012; Galama and van Kippersluis, 2013; Almond, Currie and Meckel, 2014; Heckman and Mosso, 2014).

health care system and lobbying providers for the best-quality care. Again, individuals with fewer resources will be less equipped to undertake such activity. All these reasons mean that we would expect, even in a system with zero monetary prices, to see poorer individuals having a greater need for care and requiring more health care relative to that need. To the extent that measures of inequities do not take into account the resources required by the individual to use health care inputs, they will present an overly positive picture of inequities in the receipt of care.

III. Measuring inequities in health care

The empirical literature on social inequality in health care usually adopts a normative perspective that seeks to distinguish 'appropriate' or 'fair' inequalities in health care from 'inappropriate' or 'unfair' inequalities. To mark this distinction, it is common in the literature to use the word 'inequities' (in Europe) or 'disparities' (in the US) to mean 'unfair' social inequalities in health care, though there is considerable variation in usage.[20] The basic idea is to measure departures from 'horizontal equity' – the appropriately equal treatment of people who are alike in relevant respects. Most authors in this literature define horizontal equity in health care in terms of the principle of 'equal access for equal need' – that citizens with equal need for health care should have equal access to high-quality care.[21] Some authors argue that the appropriate objective should be the more demanding one of equal utilisation for equal need.[22] However, other authors argue that it is important to respect individual preferences about how far to seek, accept and adhere to needed health care.[23] In practice, the empirical literature has focused on equality of utilisation, and interpreted this either as the relevant equity objective or as a proxy for equality of access.[24]

   To measure departures from horizontal equity, the basic research strategy is to measure cross-sectional associations between a socio-economic variable (for example, income) and a health care variable (for example, doctor visits) after adjusting for 'appropriate' or 'fair' differences due to differences in individual needs and, in some cases, preferences.[25] This is methodologically challenging for several reasons.

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[20]Gravelle, Morris and Sutton, 2006; O'Donnell et al., 2008; Fleurbaey and Schokkaert, 2009.

[21]Fiscella et al., 2000; Goddard and Smith, 2001.

[22]Sen, 2002b; O'Donnell et al., 2008.

[23]Fleurbaey and Schokkaert, 2011.

[24]Going the further step of measuring access by explicitly modelling individual choice behaviour is considerably more demanding in terms of data requirements. However, it can potentially yield useful information about how far departures from the equity goal arise because of behaviour on the part of individuals or the behaviour of suppliers. For example, a recent study found that only a small proportion of pro-rich inequalities in waiting times for heart procedures in England can be explained by patient choice of hospital and treatment (Moscelli et al., 2015).

[25]Fleurbaey and Schokkaert, 2011.

Ascertaining the appropriate magnitude of adjustment for 'fair' differences requires a potentially contestable normative assumption about how far people with different needs and preferences should be treated differently.[26] This is an assumption about 'vertical equity' – the appropriately different treatment of people who differ in relevant respects. Except in rare cases where it is reasonable to assume that all individuals have identical needs and preferences for health care, it is not possible to measure horizontal equity in health care without making a normative assumption about vertical equity. The simplest and most common vertical equity assumption is that the current population average relationship between need and utilisation is appropriate (i.e. 'on average, the system gets it right'). This assumption implies that need adjustment should be performed by estimating needed health care using population average reference values of non-need characteristics. An alternative assumption is that the need–utilisation relationship among socio-economically advantaged individuals is appropriate (i.e. 'the system gets it right for socio-economically advantaged patients'). Different vertical equity assumptions involving different reference values are also possible, as are assumptions based on expert opinion about what the need–utilisation relationship should ideally be, rather than on data on what it currently is.[27]

Another problem is that data on health care needs are often limited and may underestimate the additional needs of socio-economically disadvantaged individuals.[28] Data for the empirical studies of departures from equity in health care tend to be drawn either from household survey data or from administrative data (primarily routine hospital data, but also data on care in primary settings and specialised clinical registry data for particular conditions). One common limitation in both kinds of data is lack of detailed information on either stage of illness or multi-morbidity (the combination of multiple diseases in the same individual), both of which may tend to be more severe in deprived individuals.[29] A particular limitation in survey data is reporting bias in measures of self-reported health, whereby disadvantaged individuals tend to self-report better subjective health despite having worse 'objective' disease status from an external clinical perspective. This applies both to general measures of health and to reports of specific health conditions.[30]

Another limitation of general household survey data is that small sample sizes preclude studies of inequalities in the use of specific health care technologies for specific conditions.[31] Although administrative data have larger

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[26]Sutton, 2002; Morris, Sutton and Gravelle, 2005.
[27]Fleurbaey and Schokkaert, 2011.
[28]Cookson, Laudicella and Donni, 2012.
[29]Charlton et al., 2013; Shadmi, 2013; McLean et al., 2014.
[30]Sen, 2002a; Bago d'Uva et al., 2008; Bago d'Uva, Jones and van Doorslaer, 2009; Johnston, Propper and Shields, 2009; Johnston et al., 2010.
[31]Cookson, Laudicella and Donni, 2012.

sample sizes, they have limited measures of ability to pay. For example, UK administrative data on health do not include measures of patient or household ability to pay and have not been matched to other administrative data that provide such measures, such as tax records. The approach taken in all administrative data studies in England is to proxy ability to pay by measures of the socio-economic status of the population of the area in which the patient lives. Most studies in England since 2001 have used variants of the 'Index of Multiple Deprivation' based on just over 32,000 English small-area neighbourhoods of approximately 1,500 people (minimum 1,000 and maximum 3,000) that were introduced in the 2001 Census. Area deprivation is correlated with individual socio-economic status, due to house price differentials and wealth-related housing segregation. However, the correlation is imperfect – rich individuals may live in deprived areas and poor individuals may live in non-deprived areas. Furthermore, there are potential biases due to migration and consequent change in the individual-level composition of areas over time.

Another challenge is heterogeneity in needs and preferences between individuals. This can mean, for example, that the degree of horizontal inequity may vary between groups of individuals.[32,33] So an overall estimate of horizontal inequity that aggregates across different types of patient without explicitly modelling the interactions between need, preferences and socio-economic status may suffer from a composition effect. Finally, almost all analyses to date take current income and need (however defined) as given and have examined departures from equity at one point in time. If there is pro-rich inequality at all ages, then a cross-sectional snapshot will underestimate the extent to which health care is pro-rich. More broadly, they do not take into account the dynamic relationship between health and ability to pay.

As a result of these methodological challenges, it is often hard to draw clear normative conclusions about 'horizontal inequity' as opposed to positive conclusions about inequality.

IV. Findings

1. General population studies of the whole health care sector

Most economic studies focus on the general population and seek to provide a comprehensive picture of health care inequality across the health care sector as a whole. We review general population studies under three categories: (a) health care quantity (including supply, utilisation and expenditure), (b) health

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[32]Raine, 2002.

[33]For example, there might be substantial horizontal inequity between rich and poor patients with mildly elevated blood pressure (a 'low' level of need) but no horizontal inequity among patients with severe heart disease (a 'high' level of need).

care quality (including process quality and patient experience) and (c) health care outcomes.

a) Health care quantity

Table 1 summarises selected recent national studies of socio-economic inequality in overall health care supply, utilisation and expenditure in England.

Data on overall health care supply – for example, funding allocations, workforce, hospital beds and high-tech hospital equipment – are typically collected at the level of large administrative areas or hospitals. These data can be used to analyse inequality in large-area supply relative to need, by using large-area-level measures of need based on variables such as mortality, self-assessed morbidity, disease prevalence and proxies for morbidity such as emergency hospital admissions and pharmaceutical utilisation. For example, studies have looked at inequality between large areas in GP supply relative to need, finding persistent inequalities from 1974 to 1995[34] and from 2002 to 2006.[35] However, large-area studies cannot accurately pinpoint socio-economic inequality, much of which lies within the large and socio-economically diverse populations of administrative areas. To address this issue, a recent study has exploited the availability of data on family doctor or 'general practitioner' (GP) supply at neighbourhood level, by linking clinic-level workforce data with data on the neighbourhood of residence of each registered patient from 2004–05 to 2011–12.[36] This study adjusted for need based on age, sex and neighbourhood ill health, using the 'Carr-Hill' workload adjustment derived from estimates of the impact of these variables on GP workload. It found that adjusted supply of GPs per 1,000 population exhibited slight pro-rich inequality in 2004–05, but that this had reversed by 2010–11 to slight pro-poor inequality. The authors concluded that equity in GP supply had improved during this period, but that the Carr-Hill approach to need adjustment is insufficiently accurate to draw firm conclusions about levels of inequity.

Data on health care utilisation in England are available from both household sample surveys and whole-population hospital administrative data sets. Studies using survey data have examined family doctor visits, medical specialist visits and hospital visits, with the last often split into outpatient visits, day cases and inpatient hospital admissions. These studies typically find pro-poor variation in family doctor visits, though this typically disappears after adjusting for need. One study with detailed need adjustment uses data from 1998, 1999 and 2000 from the Health Survey for England and adjusts for age, sex, self-reported health, self-reported diagnoses of longstanding illnesses and small-area- (ward-) level indicators of mortality and illness.[37] It finds that richer and

[34]Gravelle and Sutton, 2001.
[35]Goddard et al., 2010.
[36]Asaria, Cookson et al., 2016.
[37]Morris, Sutton and Gravelle, 2005.

TABLE 1

Inequality in overall health care supply, utilisation and expenditure in England: selected recent national studies

Health care variable [data type]	Data years	Need-adjustment variables [data type]	Findings	Publication
Supply				
NHS family doctors (GPs) per general population [admin data]	2004–05 to 2011–12	Age, sex, small-area health [admin data]	Slight pro-rich inequality in 2004–05 switching slightly pro-poor from 2010–11	Asaria, Ali et al., 2016
Utilisation				
NHS family doctor (GP) visits [Health Survey for England]	1998 to 2000	Age, sex, self-assessed health and morbidity, small-area health [survey data]	No significant rich–poor inequality but slight anti-educated inequality	Morris, Sutton and Gravelle, 2005
Medical specialist consultations, including private [British Household Panel Survey]	2009	Age, sex, self-assessed health [survey data]	Slight pro-rich inequity	Devaux, 2015
NHS outpatient hospital utilisation [admin data]	2000–01 to 2008–09	Small-area age, sex and chronic condition prevalence [admin data]	Moderate pro-poor inequality	Cookson, Laudicella and Donni, 2012
NHS non-emergency inpatient hospital utilisation [admin data]	2000–01 to 2008–09	Small-area age, sex and chronic condition prevalence [admin data]	Moderate pro-poor inequality	Cookson, Laudicella and Donni, 2012
Expenditure				
NHS inpatient hospital costs (including emergency) [admin data]	2010–11 to 2014–15	None	Substantial pro-poor inequality, e.g. relative gap of 35% between most and least deprived fifths of patients aged 65 and over (£5,605 vs £4,146)	Kelly, Stoye and Vera-Hernández, this issue
NHS inpatient hospital costs (including emergency) [admin data]	2011–12	None	Substantial pro-poor inequality, e.g. relative gap of 31% between most and least deprived fifths of all-age population (£597 vs £455)	Asaria, Doran and Cookson, 2016

more highly educated individuals are less likely to visit their GP, but that after need adjustment the association with income, though not the association with education, becomes non-significant. This cannot be interpreted as inequity favouring less-educated individuals, however, since need for doctor visits in socio-economically disadvantaged individuals is likely underestimated, as explained in Section III. Furthermore, these data do not allow for the length and quality of family doctor consultations.[38] Finally, these studies may mask differential patterns of socio-economic inequality between different types of GP consultation. For example, there is evidence from studies in the 1990s that people from non-manual social classes were more likely to visit the GP for preventive health check-ups.[39]

Survey-based studies do, however, find clear evidence of slight pro-rich inequity in overall use of medical specialist visits including both NHS-funded and (where they have been examined) privately-funded visits, after controlling for need. These survey-based findings are consistent over time for the 1970s onwards. Findings for the pre-2000 period include Le Grand (1978), which is the first study of socio-economic inequality in health care we are aware of that attempted to allow for need, O'Donnell and Propper (1991) and Propper and Upward (1992). They are also consistent with findings in other high-income countries,[40] which typically show slight to moderate pro-rich inequities in specialist visits – usually larger than in the UK – and in preventive care such as dental visits, mammography and cervical screening, but no pro-rich inequity in GP visits.

One survey study found no significant income-related or education-related inequality in day-case and inpatient hospital utilisation after allowing for need during the short window 1998–2000.[41] However, a study using administrative data at small-area level for 2000–08 found significant 'pro-poor' inequality in both outpatient and non-emergency inpatient hospital care in each year of the period, after allowing for available small-area measures of need such as population size, age–sex structure and disease prevalence from primary care pay-for-performance disease registries.[42]

Analysis of health care expenditure in England requires administrative data, since survey respondents are not billed for their NHS care and do

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[38]There is evidence from a small-scale study published in 2001 of 1,075 GP–patient consultations by 21 GPs in the West of Scotland that consultation length tends to be shorter among socio-economically deprived patients (Stirling, Wilson and McConnachie, 2001), though a study published in 2002 of 190 general practitioners and 3,674 patients in six European countries found no education-related inequality after allowing for other factors including GP workload, the number of conditions discussed and the presence of psychosocial rather than purely biomedical problems (Deveugele et al., 2002).

[39]Goddard and Smith, 2001; Dixon et al., 2007.

[40]Van Doorslaer et al., 2000; van Doorslaer, Koolman and Jones, 2004; van Doorslaer, Masseria and Koolman, 2006; Bago d'Uva, Jones and van Doorslaer, 2009; Devaux and de Looper, 2012; Devaux, 2015.

[41]Morris, Sutton and Gravelle, 2005.

[42]Cookson, Laudicella and Donni, 2012.

not know how much it costs. Two recent studies have examined the socio-economic distribution of hospital expenditure using whole-population hospital administrative data. Both find that hospital expenditure is substantially concentrated on poorer people. Kelly, Stoye and Vera-Hernández (this issue) find a relative gap of 35 per cent between the most and least deprived fifths of patients aged 65 and over (£5,605 versus £4,146). Asaria, Doran and Cookson (2016) find a relative gap of 31 per cent between the most and least deprived fifths of all-age population (£597 versus £455).

b) Health care quality

Table 2 summarises recent national studies of socio-economic inequality in both the quality and outcomes of health care.

In the UK, in contrast with the US,[43] the study of inequalities in health care *quality* is relatively recent. Arguably, as quality is measured for patients who are already receiving care, it is less necessary to standardise for need in such studies.

There has been an increase in the availability of measures of quality of care in the UK since the early 2000s. The UK primary care pay-for-performance scheme introduced in 2004–05 includes data on practice-level primary care clinical process quality for a number of different conditions. One study examined an average of these scores and found a gap of 4 per cent between the most deprived and least deprived fifth of practices in 2004–05, which fell to 0.8 per cent in 2006–07.[44] A more recent study updated this analysis to 2011–12 and found ongoing inequality reductions.[45]

The UK Department of Health recently reported a series of estimates of the difference in health care patient experience at small-area level, based on data from the annual national GP Patient Survey.[46] Characterising small areas by deprivation, it found pro-rich differences between the top and bottom deprivation quintile groups in the proportion of people feeling supported to manage their condition, in patient-rated experience of GP services and NHS dental services and in patient-rated access to GP and dental services.[47]

Finally, a recent study of equity in palliative care used data from the 2013 National Survey of Bereaved People and found substantial pro-rich inequalities in bereaved people's experiences of care for a recently deceased close relative – for example, in the probability of rating the overall quality of care as 'outstanding' or 'excellent', in the probability of receiving as much support

[43]Fiscella et al., 2000; Institute of Medicine, 2001; Nelson, 2002.
[44]Doran et al., 2008.
[45]Asaria, Ali et al., 2016.
[46]https://gp-patient.co.uk.
[47]Department of Health, 2015.

TABLE 2

Inequality in overall health care quality and outcomes in England: selected recent national studies

Health care variable [data type]	Data years	Risk-adjustment variables	Findings	Publication
Process quality and patient experience				
Primary care process quality [QOF admin data][a]	2004–05 to 2011–12	None[b]	Slight pro-rich inequity (4%) reducing over time	Asaria, Ali et al., 2016
Proportion of people feeling supported to manage their condition [GP Patient Survey]	2012 to 2014	None[b]	Moderate pro-rich inequity, e.g. most deprived fifth 10 percentage points lower than least deprived fifth	Department of Health, 2015
Patient-rated experience of NHS services [GP Patient Survey]	2012 to 2014	None[b]	Slight pro-rich inequity, e.g. percentage point gaps between most and least deprived fifths of 4.7 (GP services), 3 (out-of-hours GP services) and 4 (dental services)	Department of Health, 2015
Patient-rated access to NHS services [GP Patient Survey]	2012 to 2014	None[b]	Slight pro-rich inequity, e.g. percentage point gaps between most and least deprived fifths of 5 (GP services) and 3 (dental services)	Department of Health, 2015
Family-rated quality of care for deceased close relative [National Survey of Bereaved People]	2013	Age, sex, cause of death	Substantial pro-rich inequity, e.g. odds ratio of 0.81 between most and least deprived fifths for rating overall quality of care as 'outstanding' or 'excellent'	Dixon et al., 2015

(Continued)

TABLE 2
Continued

Health care variable [data type]	Data years	Risk-adjustment variables	Findings	Publication
Outcomes				
Emergency hospitalisation for chronic ambulatory care sensitive conditions [hospital admin data]	2004–05 to 2011–12	Age and sex only	Substantial pro-rich inequality, e.g. in 2011–12 the most deprived fifth nearly 2.5 times more likely to suffer avoidable hospitalisation than the least deprived fifth	Asaria, Ali et al., 2016
Mortality amenable to health care [Office for National Statistics (ONS) admin data]	2004–05 to 2011–12	Age and sex only	Substantial pro-rich inequality	Asaria, Ali et al., 2016
Dying at home [National Survey of Bereaved People]	2013	Age, sex, cause of death	Substantial pro-rich inequality (odds ratio of 0.67 between most and least deprived fifths)	Dixon et al., 2015

[a]The quality and outcomes framework (QOF) is the UK primary care pay-for-performance programme; this study used a composite of indicators from multiple different clinical domains, importance weighted by expected mortality impact.
[b]Whether risk adjustment is appropriate for quality indicators is debatable; without risk adjustment, the measure of unfair socio-economic inequality may be partially confounded by unfair inequalities related to age, sex and other risk factors.

as needed from health and social services and in the probability of dying at home.[48]

c) Health care outcomes

To date, most studies of socio-economic inequality in overall health care outcomes have been conducted at population level and have adjusted for age and sex but not for morbidity and other risk factors beyond the immediate control of health care providers. One study of administrative data from 2004–05 to 2011–12, for example, found substantial pro-rich inequality in both avoidable emergency hospitalisation and mortality amenable to health care, which reduced slightly during the period.[49] However, we cannot draw conclusions about how far these pro-rich inequalities are 'unfair' inequalities attributable to inadequate health care, as opposed to worse health among poorer populations attributable to wider health production processes.

Patient-level studies of health care outcomes can control more accurately for morbidity and other individual-level risks of poor health care outcomes that are beyond the immediate control of health care providers. A limitation, however, is that patient-level studies focus on patients who have succeeded in getting access to health care and so may give a selective picture of inequalities in the general population – including outcomes for people who do not receive appropriate care. Furthermore, morbidity at the point of treatment may partly be due to inadequate health care in past years. A longitudinal perspective on fairness in health care would therefore need to allow for the dynamic relationship between health care and morbidity and not merely treat current morbidity as an exogenous risk factor.

2. Condition-specific studies of specific sub-populations

In this subsection, we review a selection of recent national studies of inequalities in services for specific clinical conditions. One of the advantages of the condition-specific approach is that there is less heterogeneity in need within conditions than across conditions. However, there is no reason to expect no heterogeneity nor that this heterogeneity is not socially graded.

Table 3 summarises selected national studies of socio-economic inequality in care for cancer, circulatory disease and osteoarthritis. Our selection is reasonably representative of the selection of topics in the published literature, which tends to reflect the priorities of policymakers and researchers rather than a more systematic assessment of importance in terms of expenditure, disease burden or potential health gain. The five disorders with the highest burden of disease in the UK in 2010 were low back pain, falls, major depressive disorder,

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[48]Dixon et al., 2015.
[49]Asaria, Ali et al., 2016.

TABLE 3
Continued

Health care variable [data type]	Data years	Risk-adjustment variables	Findings	Publication
Osteoarthritis				
Non-emergency hip and knee replacement [admin data]	2002	Age, sex, modelled need	Adjusted rate ratios of 0.31 (hip) and 0.33 (knee) between most and least deprived fifths	Judge et al., 2010
Specialist referral for hip pain [survey data]	2001 to 2007	Not applicable	Most deprived fifth less likely to be referred for hip pain than least deprived fifth (14% vs 20%)	McBride et al., 2010
Waiting times [admin data]	1997 to 2007	Age, sex	Most deprived fifth initially had longer waits, but these gaps disappeared by mid 2000s	Cooper et al., 2009
Patient-reported outcome gains [admin data]	2009 to 2011	Age, sex, ethnicity, detailed set of health variables	Gap between top and bottom deprivation fifths of 2.8 (hip) and 2.4 (knee) on a scale of 0 to 48	Neuburger et al., 2013

neck pain and other musculoskeletal disorders.[50] These five disorders receive substantially less attention in the health care inequality literature than cancer (no form of which is in the top 26 disorders by burden of disease), circulatory disease (ischaemic heart disease is number 19 and stroke number 23) and osteoarthritis (number 11).[51] As with the general population studies, most of the condition-specific studies are cross-sectional in nature and do not report trends in health care inequities over time.[52]

a) Cancer

It is well established that even in England, where the monetary price of care is zero, poorer patients tend to present at a later stage of cancer. For example, using data from 1998 to 2000, one study found that patients in the least deprived fifth of neighbourhoods are more likely to be diagnosed with breast cancer at early stage I (39.2 per cent versus 36.3 per cent) and less likely to be diagnosed at advanced stage IV (5.0 per cent versus 7.0 per cent).[53] Poorer patients are also more likely to be admitted as emergencies. A study using data from 1999 to 2006 found that cancer patients from the most deprived fifth of neighbourhoods in England are more likely to be admitted to hospital as emergencies than those from the least deprived fifth (colorectal cancer 37.9 per cent versus 28.9 per cent, breast cancer 17.0 per cent versus 10.7 per cent and lung cancer 55.2 per cent versus 48.3 per cent).[54] The same study also found that deprived patients are less likely to receive the preferred surgical procedures for these cancers. It is not known how far these patterns reflect differences in care-seeking behaviour and late presentation, as opposed to poorer-quality care for patients of lower socio-economic status (SES).

Poorer patients also have worse outcomes from cancer treatment in England, a finding echoed in other high-income countries.[55] For example, even after allowing for observable co-morbidity, patients living in more deprived neighbourhoods of England are more likely to experience re-operation or mortality following bowel cancer surgery.[56] Socio-economic inequalities in cancer survival following diagnosis are also well documented.[57]

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[50]Murray et al., 2013.

[51]We could only find one national study of socio-economic inequality in any of these areas – a 'twin-condition' study that looked at cardiovascular screening for patients with severe mental illness (Osborn et al., 2011) – plus one national study of ethnic-related inequalities in GP visits and antidepressant use for patients with common mental disorders (Cooper et al., 2013).

[52]A few studies report trends in socio-economic inequality in mortality over time. These studies typically find a mixed pattern of decreasing absolute inequality together with increasing relative inequality as a proportion of the average (Bajekal et al., 2013).

[53]Downing et al., 2007.

[54]Raine et al., 2010.

[55]Palmer and Schneider, 2005.

[56]Burns et al., 2011.

[57]Coleman et al., 2004; Rachet et al., 2010; Lyratzopoulos et al., 2011.

b) Circulatory disease

In contrast to cancer treatment, several recent studies of circulatory disease have found fewer differences across SES groups. One study using Health Survey for England data from 2003 and 2006 found pro-rich inequalities in outpatient visits, electrocardiography tests and heart surgery.[58] Another study, using practice-level administrative data from 2006–07, found that practices serving more deprived populations were less likely to prescribe statins (a cholesterol-lowering medication) for primary prevention of cardiovascular disease in low-risk patients.[59] However, a patient-level study using follow-up data for 2005–07 from the Whitehall study of civil servants found no socio-economic difference in use of cholesterol-lowering medication related to employment grade.[60] Furthermore, studies looking at secondary prevention following cardiovascular events or diagnosis in higher-risk patients have found no pro-rich inequities. Using patient-level clinical registry data from 1995 to 2005, one study found no deprivation-related difference in secondary prevention after stroke.[61] Another study using patient-level clinical registry data found no deprivation-related inequities in medical treatments for patients following heart attack or with chronic angina or requiring secondary prevention.[62] After controlling for available measures of need, a study using data from 1985 to 1999 found no association between social position and the use of cardiac procedures or secondary prevention drugs.[63] Finally, a small-area study using data from 2001 to 2008 also found no clear evidence of inequality in coronary revascularisation procedures favouring people living in less deprived neighbourhoods.[64,65]

Waiting times are used to ration demand in a system in which prices are zero. They are therefore particularly important in the English NHS context, although there have been substantial falls in NHS hospital waiting times since the early 2000s.[66] Interestingly, as waiting times have fallen for heart procedures, so have differences in waiting times across groups. One paper found a 35 per cent difference in waiting time – within the same NHS hospital – for patients undergoing non-emergency heart revascularisation procedures in

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[58]Vallejo-Torres and Morris, 2013.

[59]Fleetcroft, Schofield and Ashworth, 2014.

[60]Forde et al., 2011. There was a substantial ethnic gap: a substantial differential among high-risk individuals, favouring white over South Asian people.

[61]Raine et al., 2009.

[62]Hawkins et al., 2013.

[63]Britton et al., 2004.

[64]Cookson, Laudicella and Donni, 2012.

[65]These studies contradict findings from earlier studies in the 1990s (Goddard and Smith, 2001) – for example, a study using data from 1993 to 1997 that found that GP practices serving areas of high deprivation had lower need-adjusted utilisation of coronary angiography and revascularisation (Hippisley-Cox and Pringle, 2000). However, these earlier studies tended to have less detailed controls for need, so we cannot tell whether there has been change over time.

[66]Propper et al., 2008.

2002 between the most deprived and least deprived groups.[67] This difference fell to 10 per cent by 2010. There was a corresponding fall for angioplasty from 50 per cent in 2002 to 15 per cent in 2010.[68]

c) Hip and knee joint replacement for osteoarthritis

Two national studies using small-area-level administrative data found evidence of substantial deprivation-related inequality in total hip replacement in the early 2000s, both before and after allowing for small-area-level need.[69] The second study estimated a considerably larger magnitude of inequality, due to use of a modelled estimate of small-area need rather than age and sex adjustment alone. This study found need-adjusted rate ratios of 0.31 and 0.33 respectively for hip and knee replacement in the over-50s in 2002, suggesting that people living in the least deprived fifth of neighbourhoods in England are three times more likely to receive a needed hip or knee replacement than those in the most deprived fifth. These are surprisingly large inequalities, especially given that these data focus only on publicly-funded hip replacements and a substantial proportion of hip and knee replacements are performed privately (around a quarter at the time these studies were conducted, though this share fell during the 2000s as NHS waiting times fell). Further, the findings for hip and knee replacement are somewhat unusual as many other elective hospital procedures (including cataract surgery, heart revascularisation and overall elective services) do not exhibit pro-rich inequalities of this kind.[70] One study using data from 2001 to 2007 found substantial differences between the most and least deprived fifth of neighbourhoods in England in rates of primary care referral for hip pain (14 per cent versus 20 per cent) and dyspepsia (12 per cent versus 15 per cent).[71] Socio-economic inequality in the utilisation of joint replacement may partly be explained by the fact that there is substantial clinical uncertainty about the appropriate timing of surgery, and patients often have to navigate their way through a lengthy series of outpatient consultations before being admitted for surgery.[72]

Studies using administrative data in the late 1990s and early 2000s have also found 'pro-rich' inequalities in waiting times for hip and knee joint replacement (and other 'high-profile' types of low-risk elective surgery, including cataract

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[67]Moscelli et al., 2015.

[68]These inequalities in waiting times may partly be caused by differential care-seeking behaviour, such as non-attendance at appointments and less effective self-advocacy in persuading NHS clinicians and administrators of the need for a shorter waiting time. They may also reflect provider behaviour during clinician–patient interactions, such as 'unconscious bias' in how clinicians frame consultations with different social groups (van Ryn and Burke, 2000; Balsa, McGuire and Meredith, 2005; Willems et al., 2005; Haider et al., 2011).

[69]Cookson, Dusheiko and Hardman, 2007; Judge et al., 2010.

[70]Cookson, Laudicella and Donni, 2012.

[71]McBride et al., 2010.

[72]Marques et al., 2014.

surgery). One study found a 7 per cent longer waiting time for hip replacement for patients living in the most deprived areas than for those living in the most affluent areas in the year 2001–02.[73] However, inequalities in waiting times for hip and knee replacement reduced between the late 1990s and the 2000s as average waiting times fell.[74] Indeed, inequalities in waiting times for hip and knee replacement had disappeared by the mid 2000s while those for heart treatment persisted. Furthermore, from both the joint replacement and the heart treatment studies, there is some indication that inequalities in waiting times for elective hospital-based treatment have fallen whilst inequalities in the use of these treatments have not fallen.[75] This may be due to the difference in the absolute changes in these two variables: the fall in waiting times during the 2000s was larger than the growth in utilisation.[76] So as waiting times have become very low, it may no longer be worth richer individuals investing in actions to reduce them, meaning that the benefits of falling waiting times have been disproportionately felt by poorer individuals.

Finally, a recent study using patient-level administrative data found evidence of deprivation-related inequalities in patient-reported outcome measures after hip and knee replacement surgery from 2009 to 2011.[77] These inequalities were attenuated but not eliminated by adjusting for risk in the form of pre-operative health and disease severity. However, the adjusted differences were small: absolute differences between top and bottom deprivation fifths of 2.8 and 2.4, on a scale of 0 to 48, respectively for hip replacement (Oxford Hip Score) and knee replacement (Oxford Knee Score).

d) Preventive care

Table 4 summarises selected recent national studies of socio-economic inequality in preventive care, including dental check-ups, eye tests and condition-specific studies of adult screening and childhood vaccination.

Preventive care inequalities are pervasive and can be substantial, as one would expect from a health production perspective in so far as poorer individuals are less able and willing to invest in health.[78] In addition, neither dental check-ups nor eye tests are universally funded by the NHS, though there are various age- and means-related subsidies.[79]

Most condition-specific studies of equity in preventive care focus on screening and vaccination programmes that target particular 'at-risk'

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[73]Laudicella, Siciliani and Cookson, 2012.

[74]Cooper et al., 2009.

[75]Cookson, Laudicella and Donni, 2012.

[76]The overall growth in inpatient utilisation of heart surgery (coronary artery bypass grafting, CABG) was around 35 per cent whereas the reduction in waiting times for CABG was nearly 70 per cent. Waiting times for CABG fell from around 160 days to around 50 days.

[77]Neuburger et al., 2013.

[78]Goddard and Smith, 2001; Dixon et al., 2007.

[79]Labeit, Peinemann and Baker, 2013.

TABLE 4

Inequality in preventive care in England: selected recent national studies

Health care variable [data type]	Data years	Findings	Publication
Dental check-ups [British Household Panel Survey]	2009	Substantial pro-rich inequity (19% relative gap between 58% for the poorest and 69% for the richest household income quintile groups)	Devaux and de Looper, 2012
Eye tests [British Household Panel Survey]	1992 to 2008	Substantial pro-rich inequity	Labeit, Peinemann and Baker, 2013
Bowel cancer screening participation [admin data]	2006 to 2009	Substantial pro-rich inequity: least deprived fifth 74% more likely to participate than most deprived fifth (levels of 61% vs 35%)	von Wagner et al., 2011
Bowel cancer follow-up testing after initial screening shows there may be cancer [admin data]	2006 to 2009	Slight pro-rich inequity: least deprived fifth 3.5% more likely to attend follow-up colonoscopy than most deprived fifth (levels of 89.5% and 86.4%)	Morris et al., 2012
Measles, mumps and rubella (MMR) vaccination [admin data]	2001	Slight pro-rich inequity: vaccine uptake slightly higher in less deprived areas (87% vs 85%)	Middleton and Baker, 2003
Human papilloma virus (HPV) cervical cancer vaccine [admin data]	2008–09 to 2010–11	No pro-rich inequity: deprivation-related differences in 2007–08 pilot disappeared by 2008–09, but ethnicity-related inequities remained	Fisher et al., 2014
Cervical cancer screening for women aged 25–64 [World Health Survey]	2002–03	Pro-rich inequities	McKinnon, Harper and Moore, 2011
Cervical cancer screening for women aged 40–74 [National Statistics Omnibus Survey]	2005 to 2007	Pro-educated and ethnic differences	Moser, Patnick and Beral, 2009
Preventive check-ups with family doctor (GP) [survey data]	1990s	Non-manual occupational classes more likely to have a preventive check-up with their GP	Dixon et al., 2007

Note: Need adjustment is arguably not necessary for these studies, other than selecting an appropriate age group to study, as in principle everyone in a particular age–gender group is in need of particular kinds of screening, vaccination and health check-ups.

sub-populations. The measurement of need is relatively straightforward in studies of this kind, in so far as everyone in a particular age–sex group is considered to need the service in question. For example, the national bowel cancer screening programme in England currently recommends and offers colonoscopy and stool examination screening for colon cancer to all men and women between the ages of 60 and 75 years.[80]

In general, poorer and less-educated patients are less likely to participate in adult screening programmes. For example, in the early stages of the NHS bowel cancer screening programme from 2006 to 2009, there were substantial differences in uptake between people living in the most and least deprived fifth of neighbourhoods in England of 35 per cent versus 61 per cent.[81] Even following positive screening results, people living in the most deprived fifth of neighbourhoods were still a little less likely to attend appointments for further diagnostics and treatment.[82] Children from poor families are also less likely to participate in childhood vaccination programmes. For example, coverage of the measles, mumps and rubella (MMR) vaccine during the 1990s was lower in the most deprived fifth of neighbourhoods of England than in the least deprived fifth (86 per cent versus 92 per cent in 1992 and 85 per cent versus 87 per cent in 2001).[83] Interestingly, this inequality subsequently reversed in the mid 2000s following adverse press coverage of the MMR vaccination, as parents from more affluent neighbourhoods responded more negatively to this media coverage. Socio-economic inequality was also found in uptake of human papilloma virus (HPV) cervical cancer vaccine during pilots in the financial year 2007–08.[84] This was found to disappear in the subsequent national roll-out, though ethnic inequalities remained from 2008–09 to 2010–11.[85]

These findings are mirrored in other high-income countries. A recent study of 13 European countries excluding England found pro-rich and pro-educated inequities in breast and colon cancer screening, blood tests and flu vaccination using data from the Survey of Health, Ageing and Retirement in Europe pooled across three survey waves around 2004, 2007 and 2009.[86] Data from the British Household Panel Survey suggest that participation in courses leading to qualifications increases the probability of having a smear test by between 4.3 and 4.4 percentage points.[87] The WHO World Health Survey of 70 countries in

[80]Data on individual health could, in principle, provide further useful information about need within such groups. For example, a person aged 60 with particular risk factors such as a family history of colon cancer may be considered to need screening more than another person of the same age without those risk factors.

[81]Von Wagner et al., 2011.

[82]Rates of colonoscopy following positive faecal occult blood testing (FOBT) in the least and most deprived fifth of neighbourhoods in England were 89.5 per cent and 86.4 per cent respectively (Morris et al., 2012).

[83]Middleton and Baker, 2003.

[84]Roberts et al., 2011.

[85]Fisher et al., 2014.

[86]Carrieri and Wuebker, 2013.

[87]Sabates and Feinstein, 2006.

2002–03 found slight to moderate pro-rich inequity in cervical cancer screening for women aged 25–64 in 50 out of the 67 countries with screening data[88] and pro-educated inequity pooling across all 22 of the participating European countries including the UK.[89] While the latter finding was not statistically significant within the UK alone, the sample was small (521 women). A larger study of 3,185 women aged 40–74 in 2005–07 did find statistically significant educational and ethnic inequities in cervical screening.[90]

V. Discussion

Our review suggests the following stylised facts about the socio-economic distribution of health care, after some kind of adjustment for need, in England:

1. Poorer individuals consume a greater quantity of publicly-funded NHS health care in terms of overall expenditure and utilisation.
2. Richer patients tend to achieve better health care outcomes (for example, surgical mortality or preventable hospitalisation) even after adjusting for observable risk factors.
3. Richer individuals tend to present to health care providers at an earlier stage of disease progression; consume more medical specialist visits including privately-funded visits; consume more preventive NHS care such as screening and vaccination services; are more likely to receive a needed NHS hip or knee replacement operation and to be referred by their doctor for specialist investigation of hip pain; have shorter waiting times for heart bypass surgery and angioplasty; may receive slightly better NHS quality of care for some conditions as measured by clinical process quality indicators; and report slightly better patient experiences.

The picture is thus one of an overall pro-poor distribution of quantity but a pro-rich distribution of quality, experience and access to services including waits for treatment. However, in terms of magnitude, the pro-rich inequity gaps are generally slight (5 per cent or less) and it is unusual to find a need- or risk-adjusted gap of greater than 10 per cent between the richest and poorest fifths. Furthermore, studies rarely provide detailed information about how far these pro-rich inequities are attributable to the behaviour of NHS health care providers as opposed to socio-economic differences in health care-seeking and self-care behaviour. We therefore recommend that future studies report marginal effects, as well as or instead of concentration indices and odds ratios, so that readers can calculate absolute differences between social groups allowing for covariates.

[88]McKinnon, Harper and Moore, 2011.
[89]Palència et al., 2010.
[90]Moser, Patnick and Beral, 2009.

These stylised facts make sense in the context of a health production approach where health care is only one input into health and the costs of other inputs differ systematically with income. Individuals who have fewer resources will tend to have worse health at all stages of life. This helps to explain fact (1), since people with worse health need more health care and generally demand more health care in a universal health system such as the English NHS, which sets prices at or close to zero. It also helps to explain fact (2), since people with worse health are at risk of worse health care outcomes. It also helps rationalise the set of facts under point (3). Poorer individuals invest less time and money in improving their health because they have fewer resources to invest, face higher opportunity costs in terms of lost income and household production relative to their limited resources, and may value future health benefits less if they have a higher rate of time preference.[91]

Finally, important gaps in knowledge remain. There are few studies that compare change over time, or that compare performance on equity in health care between different sub-national areas to help managers learn lessons about effective ways of reducing health care inequalities. The selection of condition-specific study topics is skewed by political priorities and researcher interest and convenience. A more systematic approach would place greater emphasis on conditions involving high disease burden, high expenditure, and high potential health gains through more vigorous implementation of cost-effective health care. Research is needed to tell us how far inequalities are due to the behaviour of providers and how far to individual choices about health care.[92] Studies of inequalities in health care could usefully be integrated with studies of wider inequalities in health – such as a recent study of trends in inequality in cardiovascular mortality that examines the contributions of trends in treatment uptake and risk factors.[93] Another future research direction is to exploit internationally comparable administrative data sets to make more detailed condition-specific comparisons between health care equity in different countries.[94]

Finally, as is clear from this review, most of the research on whether health care is allocated according to need has focused on appropriate adjustment for need, taking resources as given. But to the extent that ill health drives both health and socio-economic factors, particularly employment, earnings and income, it is no surprise that the poor use more health care. A life-cycle perspective, in which attention is given to the relationship between income and need, will allow a fuller assessment of the extent to which this is inequitable.

[91]For a discussion of this with respect to obesity, see Propper (2005), for example.
[92]Moscelli et al., 2015.
[93]Bajekal et al., 2012.
[94]Cookson et al., 2015.

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