A qualitative comparative analysis of factors associated with trends in narrowing health inequalities in England

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A Qualitative Comparative Analysis of factors associated with trends in narrowing health inequalities in England

Tim Blackman, Jonathan Wistow and David Byrne

Summary

This study explores why progress with tackling health inequalities has varied among a group of local authority areas in England that were set targets to narrow important health outcomes compared to national averages. It focuses on premature deaths from cancers and cardiovascular disease (CVD) and whether the local authority gap for these outcomes narrowed. Survey and secondary data were used to create dichotomised conditions describing each area. For cancers, ten conditions were found to be associated with whether or not narrowing occurred: presence/absence of a working culture of individual commitment and champions; spending on cancer programmes; aspirational or comfortable/complacent organisational cultures; deprivation; crime; assessments of strategic partnership working, commissioning and the public health workforce; frequency of progress reviews; and performance rating of the local Primary Care Trust (PCT). For CVD, six conditions were associated with whether or not narrowing occurred: a PCT budget closer or further away from target; assessments of primary care services, smoking cessation services and local leadership; presence/absence of a few major programmes; and population turnover. The method of Qualitative Comparative Analysis was used to find configurations of these conditions with either the narrowing or not narrowing outcomes. Narrowing cancer gaps were associated with three configurations in which individual commitment and champions was a necessary condition, and not narrowing was associated with a group of conditions that had in common a high level of bureaucratic-type work. Narrowing CVD gaps were associated with three configurations in which a high assessment of either primary care *or* smoking cessation services was a necessary condition, and not narrowing was associated with two configurations that both included an absence of major programmes. The article considers substantive and theoretical arguments for these configurations being causal and as pointing to ways of improving progress with tackling health inequalities.

Introduction

In 2001, the UK Government adopted targets for narrowing health inequalities in England (Department of Health, 2001). For life expectancy the target was that over the period 1996-2010 the gap in male and female life expectancy between the England average and 70 'Spearhead' areas should reduce by 10 per cent. Supporting targets were introduced for premature mortality from cardiovascular disease (CVD) and cancers. Spearhead areas were fixed as those local authorities in the bottom fifth nationally in 1995-97 for three or more of the following five factors: male and female life expectancy at birth; the cancer and CVD mortality rates among under 75s; and the Index of Multiple Deprivation (IMD) average score (Department of Health, 2004). The areas accounted for 28 per cent of the population in England.

It will not be possible to establish for sure the extent to which the life expectancy targets have been met until 2012 because they are based on three-year rolling averages (1995-97 and 2009-11). The prognosis is not good given that the gap in life expectancy between Spearhead and non-Spearhead areas in 2006–8 widened by 2 per cent for males and 11 per cent for females (Marmot, 2010). There is, however, substantial variation across Spearhead areas in the extent to which they have been closing these gaps (National Audit Office, 2010). This study set out to investigate what local conditions may be behind this variation, examining the CVD and cancer outcomes which account for much of the variation in life expectancy.

Theoretical and methodological framework

We used Qualitative Comparative Analysis (QCA) to compare conditions across Spearhead areas. QCA uses an approach to elucidating causality that investigates an outcome as the product of how

conditions combine together. While variable-based methods such as regression techniques seek to estimate the average effect of particular independent variables, which may not be reflected in any individual case, QCA seeks to explain why specific *cases* have particular outcomes. Ragin (1987; 2000; 2008) has built QCA on insights from the qualitative case study, but the method has a mathematical foundation using Boolean algebra to make set-theoretic logical arguments. We use dichotomous measurement in what is known as crisp-set QCA, following Lam and Ostrom's (2010, p. 18) advice that such simplification helps focus explanation on the structure of relationships among what are posited, on substantive and theoretical grounds, to be causal conditions. In other words, it is the presence or absence of a 'quality' that we focus upon, using the same assessment across all cases.

QCA allocates cases to sets, which are shared configurations of conditions and outcomes, enabling possible causal pathways to be identified. The method does not involve specifying a single causal model that best fits the data, but instead involves determining the number and character of the different causal models that exist among the cases (Berg-Schlosser *et al.*, 2009; Byrne, 2009). It enables causal arguments to be made rigorously by creating a very close correspondence between theory and data analysis, analysing evidence in ways that directly address theoretical arguments about what matters to achieve some outcome: *how it happens*. This makes QCA especially appropriate for policy research; the process of defining conditions is then also a process of identifying conditions necessary for a policy outcome.

England's Spearhead areas can be regarded as both cases and local systems for which policy is seeking to achieve an outcome. They are networks of agents that come together and are interconnected to fulfil the shared purpose of making interventions in the local system (Plsek, 2001). At this level, there were three main players involved in each Spearhead area: the Primary

Care Trust (PCT), responsible for planning and commissioning health services locally; one or more local authorities; and one or more multi-agency local strategic partnerships (LSPs).

Selection of conditions for QCA is a question of identifying what conditions are deemed important for producing the outcome. This needs to be done on the basis of theoretical and substantive knowledge. We framed each Spearhead area as a case, and treated each case as a local system with organisational attributes and contextual features applying across each system and representing its conditions.

Defining the conditions

We considered two outcome conditions: trends in the gap for deaths before age 75 from CVD and cancers, measuring these gaps between each Spearhead area and the average for England. We defined two states for these conditions, narrowing or not narrowing, using visualisation of the trend by two independent assessors and a comparison of graphs for single year data for 2005, 2006 and 2007 and for three year rolling averages for 2004-06 and 2005-07. These assessments were supported by calculations of the absolute and relative differences between 2005 and 2007. This is a short period of time for considering trends in population health, although better than simply taking a snapshot of the gap for a single time point. The timescale was a practical decision based on 2005 being the base year, the year for which respondents were asked to make their assessments of local conditions, while 2007 was the latest year for which mortality data were available at the time. We are therefore looking at short trends and assuming that these will either continue into the future and/or are affected by the state of causal conditions in 2005. This is plausible since conditions that have even a small effect on important risk factors such as average cholesterol levels, blood pressure and smoking can impact on mortality rates within 12-24 months, although the impact becomes more

noticeable after 5-10 years (Care Quality Commission, 2009; Wilcox and de Gruchy, 2006). In this respect, we might note here that we found an effect of smoking cessation services on the CVD mortality gap but not on the cancer gap, which is what would be expected from looking at a short period of time given that quitting smoking can reduce CVD mortality relatively quickly compared to a more delayed effect on cancer mortality (Honjo *et al.*, 2010; Parsons *et al.*, 2010). However, the short time period is a limitation. It also makes sense in this situation to use as our outcome *any* narrowing, since dramatic improvements are very unlikely.

The principle method we used for collecting primary data about the Spearhead area was questionnaires. These were completed collectively by at least three key informants in each area: a public health professional, a lead clinician for the outcome, and a local authority health lead. Copies of the questionnaires are available at <http://www.dur.ac.uk/spearheads.health/questionnaires.htm>. The questions were designed to gather data about local conditions that could be analysed using QCA, based on a review of the literature, workshops with practitioners, and consultation with the Department of Health's National Support Team for Health Inequalities (the review included Asthana and Halliday, 2006; Blackman, 2006; Department of Health, 2004; Department of Health, 2008; Gatrell, 2005; Graham, 2004; Hunter and Killoran, 2004; Fotaki, 2007; Jeffries *et al.*, 2004; Marmot, 2004). There were separate questionnaires for CVD and cancers, with both covering approaches to policy and practice in the Spearhead area. Table 1 lists the items used in the analysis (more were considered but not used because of a lack of relationship with outcomes singly or in combination). The first questions were framed as statements with accompanying descriptors for levels of achievement on a six point scale from 'less than basic' to 'exemplary'. Participants were asked to assess their areas against these descriptors and provide examples to evidence the assessments. Questions were also included about ways of working, types of intervention and the local context. Responses were requested for the current situation (2008) and for three years ago

(2005). Our analysis uses the 2005 data to allow some time for the situation assessed to have an impact on the mortality trend. In addition, a variety of secondary data was used, also listed and briefly defined in table 1.

Table 1 near here

Out of 70 Spearhead areas, 29 returned the cancers questionnaire, with complete returns for 27, and 33 returned the CVD questionnaire, also with 27 complete returns. The response rate reflects the fact that the exercise was demanding, and many areas that initially agreed to participate found they did not have the time to do so because the exercise unavoidably coincided with a major Department of Health data exercise. However, the number of cases was sufficient for QCA and a Mann-Whitney test established no significant difference between the areas participating in the study and the non-responding Spearhead areas, using the five variables that determine Spearhead status. Data from the questionnaires and the secondary data sources were coded for analysis using SPSS and the fsQCA software developed by Ragin. For crisp sets we had to recode continuous and ordinal variables as binary, thus creating dichotomised data tables that were manageable and to which we could apply set-theoretic logic. Thresholds for dichotomisation were based on where a change in relationship with the outcome occurred (for example, the 'narrowing' outcome was clustered in the lower range of IMD scores, which provided the basis for binarising the scores into higher and lower). Robustness checks were undertaken to determine how binarisation thresholds affected the findings, and the thresholds used were found to be robust. Only a relatively small number of conditions had any patterned relationships with the outcome indicators and these could all be dichotomised based on inspection. They were imported into fsQCA to explore their effects in combination. Results were circulated to all participating Spearhead areas and discussed at a series of workshops.

Results

Of the 27 Spearhead areas, twelve had a narrowing gap for cancers. Four conditions had clear visual relationships with this outcome as single factors showing an obvious skew towards the narrowing cases: a working culture of individual commitment and champions; a higher spend per head on cancers; a lower crime rate; and a top PCT performance rating. Weaker skews were apparent for an aspirational organisational culture with challenging or stretching expectations; deprivation; higher accident and emergency admissions; and a higher PCT budget allocation against target. Four conditions had clear relationships with cases where cancer gaps were not narrowing: high assessments of the role of commissioning, strategic partnership working and public health workforce planning, and more frequent (quarterly or monthly) reviewing of progress. Conditions with weaker skews towards the not narrowing cases were identified as: comfortable or complacent organisational culture; cancers a top priority or one of a small number priorities; health inequalities tackled with a few major programmes; a chief executive who had left post recently; and the PCT having recently been in major financial deficit. Table 2 shows the configurations identified as providing parsimonious explanations of the cancer outcomes, removing conditions with weaker bivariate relationships found to play no part in the configurations that explained narrowing or not narrowing. Tables 3 and 4 show in more detail the combinations generated and how the configurations have been constructed. The ten conditions and their states included in the final QCA cancer configurations were: a working culture of individual commitment and champions, summarised as 'championing' (yes/no); spend per head on cancer programmes (higher/lower); organisational culture (aspirational/comfortable or complacent); deprivation (higher/lower, with effect depending on combination); crime rate (higher/lower); assessments of commissioning, strategic partnership working and the public health workforce (basic/good or exemplary); frequency

of progress reviews (higher/lower); and PCT performance rating (higher/lower). Brief definitions are given in table 1 and fuller definitions are considered where relevant in the discussion below.

Tables 2, 3 and 4 near here

Table 2 shows the necessary and sufficient configurations for the two outcomes of narrowing and not narrowing the cancer gap. For narrowing, 'championing' is in all configurations so is a necessary condition. The first narrowing configuration, adding higher spending on cancer to championing, includes nine of the twelve narrowing cases. Since there are no cases with this configuration not narrowing their gap it is a sufficient combination for narrowing. Also sufficient is the second narrowing configuration: championing combined with (surprisingly) a basic public health workforce, less frequent monitoring (also surprising), higher deprivation, higher crime, and an aspirational organisational culture. Three cases are in this configuration, with no contradictory cases. The third narrowing configuration has seven cases in a combination of championing, basic workforce planning, less frequent monitoring and lower deprivation. There are two contradictory not narrowing cases.

There are three configurations in table 2 with an outcome of the cancer gap not narrowing. In the first, the surprising results for two of the narrowing configurations have their mirror images, together with a further surprising result regarding partnership working. This configuration combines good or exemplary commissioning, good or exemplary strategic partnership working, a good or exemplary public health workforce, and an aspirational organisational culture. With six cases and no contradictions, this is sufficient for the gap *not* to be narrowing. The second configuration combines a comfortable or complacent organisational culture with higher crime, lower spending on cancer programmes, a lower performing PCT and lower deprivation. This is also sufficient,

although with only two cases. Finally, the third configuration combines a comfortable or complacent organisational culture, higher crime, a basic public health workforce, and less frequent monitoring. Four not narrowing cases are in the configuration but also one narrowing case.

Turning to the CVD outcomes, there were thirteen Spearheads with a narrowing gap. Six conditions had clear visual relationships, as single factors, with these narrowing cases: good/exemplary smoking cessation and primary care services; a few major programmes; good/excellent leadership; a higher PCT budget allocation; and lower population turnover. Weakly associated with narrowing were good/exemplary commissioning; higher spending on CVD; the PCT had not been in major financial deficit recently; the PCT chief executive had left post recently; a director of public health jointly appointed by the PCT and the local authority; more frequent (six monthly or quarterly) reviews of progress; lower deprivation; reducing health inequalities *within* the locality was the main priority; and championing. There were only fairly weak skews towards the not narrowing cases for: initiatives rely on a widely shared team player spirit; the local priority was closing the overall gap between the locality as a whole and the national average; interventions were partly based on primary care and partly on environmental measures; a higher number of GPs per head; and a lower number of accident and emergency admissions per head. As with cancers, table 2 shows the configurations that provide parsimonious explanations of the CVD outcomes, with more detail in tables 3 and 4. Six conditions were included: PCT budget (closer/further away from target); primary care services (basic/good or exemplary); smoking cessation services (basic/good or exemplary); a few major programmes (yes/no); leadership (basic/good or excellent); and population turnover (higher/lower).

From table 2 it is evident that there are no necessary conditions or sufficient configurations for the CVD outcomes. However, good/exemplary primary care services appear to be very important: they

feature in nine of the thirteen cases with a narrowing outcome. Also, all three narrowing configurations shown in table 2 are quite close to being sufficient, with few contradictory cases. The first combines a PCT budget allocation closer to target with good/exemplary primary care services. It includes eight narrowing cases and two contradictory cases. The second combines good or exemplary smoking cessation services with good or exemplary primary care services, with seven narrowing cases and one contradictory case. Good or exemplary smoking cessation services also appear in the third more complex configuration, although this only has three narrowing cases together with one contradictory case.

The two configurations with an outcome of not narrowing the CVD gap both include 'no major programmes'. This is not a necessary condition because it appears in one of the narrowing configurations but, combined with a PCT budget that is further from target and higher population turnover, it is sufficient for a not narrowing outcome, with seven cases and no contradictions. The second not narrowing configuration, combining no major programmes with basic primary care services, includes eleven not narrowing cases but three contradictory cases.

Discussion

Our analysis treats each Spearhead area as a configuration of causal and outcome conditions. One condition was found to be necessary in all the configurations with a narrowing cancer gap, individual commitment and championing, and is absent in all the configurations where the cancer gap is not narrowing. This is an intriguing attribute but we are limited in how much we can say about it because it was a statement in the questionnaires which was either agreed or not agreed as an appropriate descriptor of what 'best characterises the general working culture in this Spearhead area

towards narrowing the cancers gap'. The question served as a 'tin opener' and we have to re-visit the literature and our practitioner workshops to understand more about it.

The role of product champions in innovation has long been reported in the business literature (for a review, see Wilemon, 2009). In the health context, Stocking's (1985) study of innovation in the UK's NHS found that champions often had a key role in getting new, more effective approaches to problems taken up and diffused. Many subsequent studies have identified the role of champions in developing and disseminating process improvements and best practices (Ballard *et al.*, 2007; Kathol *et al.*, 2010; Westrick and Breland, 2009). Zöllner's (2002) review of national policies for reducing social inequalities in health in Europe argues for championing as necessary for overcoming obstacles to action at national and local levels, as does Marmot's (2010) review of progress with narrowing health inequalities in England. In our workshops with practitioners, championing of early detection and treatment was said to be key, with committed clinical leaders able to ensure that services were proactive and responsive to needs, working across organisational boundaries. Such leadership was said to animate local cancer networks: the NHS Cancer Plan put these networks at the heart of a commitment to tackle cancer and called for them to be strongly led and target resources where most needed (NHS, 2000).

Championing is not sufficient on its own to narrow the cancer gap but is sufficient in three configurations. The first is in combination with higher spending on cancer, while the second and third are more complex (see table 2). In the second, higher deprivation and higher crime represent challenging local conditions, but when combined with championing, high aspirations, less monitoring, and a basic but not good or exemplary public health workforce, we see the cancer gap narrow. The third narrowing configuration combines championing with lower deprivation, a basic public health workforce and less monitoring. When we consider both the narrowing and not

narrowing cancer configurations, we see an interesting pattern emerge regarding conditions that we call 'bureaucratic' and involve a strong emphasis on planning, coordination and monitoring assessed as compliant with 'best practice' for these processes. The public health workforce and monitoring were assessed as basic rather than good or exemplary in the narrowing configurations, contrary to what might be expected. In the first not narrowing cancer configuration in table 2, we see two similar bureaucratic conditions combining with a good or exemplary public health workforce: good or exemplary commissioning and good or exemplary strategic partnership working. The organisational culture appears to be aspirational but in a way that does not include championing and which may be aspirational in a rather different way: with regard to process rather than outcome. In fact, championing might be regarded as the antithesis of bureaucratic process.

We suggest that these conditions are 'bureaucratic' because they entail considerable effort devoted to meetings, plans and paperwork *especially if done to excess*. This leads us to a theory that work of this kind distracts effort from a focus on the cancer gap. It is important here to note that the 'basic' descriptors for commissioning, partnership working and the public health workforce are not undemanding, and no area assessed these as less than basic. The idea that being better than basic could be dysfunctional found support among many of the practitioners in our workshop discussions. It is echoed in Travers' (2007) study of 'the new bureaucracy', which he argues has grown in the UK and other countries with the rise of an audit culture as governments have, since the 1980s, taken less direct control of local services and exercise control instead through incentives and sanctions attached to performance assessments. It is perhaps paradoxical that we label these conditions bureaucratic, since this period has also been described as one of 'post-bureaucracy', with less emphasis on formalised processes and control mechanisms and more on teamwork, decentralised autonomy and reduced management layers (Drucker, 1988; Grey and Garsten, 2001). Whether this has really happened has been subject to much debate when national, regional and sectoral modes of

regulation remain evident (Johnson, Wood, Brewster and Brookes, 2009; Vie, 2010). Audit culture is a prime example, representing the continuing influence of bureaucratic values and control, including taking time from 'normal work' without adding anything (Clarke, 2006; Parker and Bradley, 2004; Travers, 2007).

Table 5 shows the descriptors used to assess the bureaucratic conditions. They were drafted on the assumption that good is better than basic, and so on. Looking at these descriptors through the lens of the above discussion, we might indeed interpret 'basic' as having the tools for the job in place, while the good and exemplary descriptors have a strong emphasis on plans, strategies, contracts, targets and progress reviews. Our results suggest that not only does this bureaucratic work not matter but it actually worsens outcomes. Seddon (2005; 2008) has explored this issue, arguing that audit culture focuses systems on compliance with targets and prescribed processes rather than learning how to match capability to outcomes. Achieving good or exemplary performance with processes of commissioning, workforce planning, strategic partnership working and reviewing is likely to entail an opportunity cost of time and resources that could otherwise be focused on 'normal work' to tackle the cancer gap: work that is in fact described by a 'basic' descriptor in table 3.

Table 5 near here

The CVD configurations are very different to cancer. Primary care services and smoking cessation services figure prominently (see table 6 for descriptors). One of these, assessed as either good or exemplary, appears to be necessary for the CVD gap to narrow, while combined they are almost sufficient - seven out of eight cases with the combination are narrowing their CVD gap. Eight out of ten cases are narrowing their CVD gap with the combination of good or exemplary primary care services and a PCT budget closer to target, with the latter indicating a good resource context. Good

or exemplary smoking cessation services also combine with five other conditions to narrow the CVD gap, but this is a small set with only three narrowing cases and one contradictory case. In terms of practice implications it would clearly be more sensible to focus on achieving the good/exemplary smoking cessation and primary care services combination than this more complicated pathway unique to the circumstances of four cases. There are also two configurations with a CVD gap that is not narrowing and where a necessary but not sufficient condition is having no major programmes to tackle the CVD gap. The largest of these two configurations is a combination of no major programmes and basic primary care services. The configuration of no major programmes, a PCT budget further from target and higher population turnover is sufficient for the gap not to be narrowing, and captures a set of circumstances likely to make progress very difficult.

Table 6 near here

Why are the CVD configurations so different to cancer? Cancer and CVD are different challenges. For cancer, tackling inequalities is recognised as needing 'clear commitment across the patient pathway at every level of NHS cancer services' (National Cancer Inequality Initiative, 2010, p. 27). The National Cancer Plan, published in 2000, inherited a situation where 'Patients often waited unacceptably long periods for diagnosis and treatment, coordination of care between all the healthcare professionals involved in cancer was often lacking and standards of care varied widely across the country' (Richards, 2007, p. 1). The plan represented determination to improve cancer services and invest in ending inequalities of access to cancer care due to a failure to detect and treat early and quickly (NHS, 2000). While deprivation and lifestyle factors are acknowledged, the emphasis on earlier detection by expanding screening and awareness programmes and timely and more effective treatment is very strong, creating a context that would legitimise the arguments of

clinical champions such as local NHS cancer leads for focusing the increased flow of resources into reshaping services, finding cancers in areas of high prevalence, and channelling cases into treatment. The substantial increase in the number of cancers diagnosed, and rising survival rates, means that these medical interventions must be credited with saving many potential premature deaths (Richards, 2007). Bureaucratic practices taken beyond what is necessary appear to hinder this, whether by diverting time and effort or by inhibiting championing itself. A recent review notes the progress made with tackling cancer but also draws attention to the continuing inequalities in cancer outcomes (National Cancer Inequality Initiative, 2010). Our analysis suggests what some of the reasons for this may be.

Tackling cancer inequalities across the whole care pathway was an established agenda at the time of our data collection, championed by a National Cancer Director and, we suggest, also depending on local championing across local health systems. There was no equivalent call to reshape services across the pathway for CVD. The National Service Framework for cardiovascular disease, published in 2000, required primary care organisations to establish preventative services based on identifying and treating people with established disease or risk factors (Department of Health, 2000). Given free primary care coverage in England and the availability of drugs such as statins and anti-hypertensives that can successfully manage CVD risk factors, as well as the availability of free smoking cessation services either directly or through referral, this comprehensive approach to detection and treatment in primary care was a sensible strategy. However, the response from primary care – run in the UK largely by self-employed general practitioners – was variable. Subsequent research identified the importance of the quality of primary care services across an area in achieving a reduction in CVD inequalities, and called on PCTs to ensure that the quality and quantity of primary care in deprived areas meets need and is well organised, including challenging GP practices causing concern (Ali, Wright and Rae, 2008; Bentley, 2008; Care Quality

Commission, 2009). It is, therefore, not surprising that we see good or exemplary primary care services in two of the three configurations with a narrowing outcome for CVD. The good or exemplary smoking cessation services condition is also in two configurations. While these services might be thought to associate with the cancer outcome as well, the effect of smoking cessation on cancer mortality is likely to be more long term than for CVD, and smoking cessation services are regarded as critically important to achieving a reduction in CVD mortality in deprived areas (Marmot, 2010). However, as with primary care services, there is geographical variation in the effectiveness of services (National Audit Office, 2010).

There were cases in our analysis that were contradictory and a few cases remain unexplained by any of the configurations. Rather than regarding this as 'noise', QCA as a case-based method focuses the researcher on why these cases are anomalous. There are not many and there is not the space to consider every one. By way of illustration, we can consider cases 14 and 15 in table 3. These are in configuration 2, a narrowing configuration for cancer, but they are not narrowing their gaps. If we look at the narrowing cases we see that all except case 8 share at least two of three other conditions likely to be receptive contexts for tackling cancer inequalities. These are a higher spend on cancers, lower crime and a high PCT performance rating. The absence of these conditions in case 15 points to a possible explanation for this case not narrowing its cancers gap. Lower crime may be an indicator of higher community social capital, which has been linked to health outcomes including cancer mortality (Islam *et al.*, 2008; van Hooijdonk *et al.*, 2008). Case 14, however, has both a lower crime rate and a three star PCT rating. We therefore went back to the dataset to see if there was anything unusual about this case and found that the black and minority ethnic population was high compared with other cases, at 15 per cent of the total population. Its ethnic composition may be a factor in its widening cancers gap, given there are ethnic dimensions to cancer prevalence and survival (National Cancer Intelligence Network and Cancer Research UK, 2009). These single case

explanations can add new insights regarding exceptions to general patterns, but it is the latter that is our prime interest in developing set-theoretic explanations.

QCA is an exploratory technique for identifying causal pathways and a number of limitations in this respect should be acknowledged. The first is that it is based on associations and relies on substantive and theoretical arguments to justify these as causal, rather than on experimental design. This issue also applies to the relatively short time period we have had to use between assessments of conditions and the outcomes postulated as caused by combinations of these conditions. A second limitation is that the crisp-set method used in this study reduces rich quantitative and qualitative data to binary attributes, with this dichotomisation based to a large degree on judgement. This is, nevertheless, judgement that makes clear and testable distinctions between what does and what does not matter that are easy for practitioners to engage with, actionable and transparent. QCA is not alone as a method that involves simplifying assumptions to understand complexity (De Meur, Rihoux and Yamasaki, 2009; King, Keohane and Verba, 1994). A third limitation is that, although QCA was developed for small N studies, when the total population is not included (as in our case) it is possible that the addition of missing cases could change the results. This might be regarded simply as an empirical reality (Spitzlinger, 2006). We did carefully compare the cases for which we obtained survey data with the non-responders using an extensive set of available secondary data and found no significant differences.

Conclusions

QCA is an exploratory method based on logical arguments that are made explicit in relation to real cases. It enables cases to be described in a synthetic way rather than disaggregating them into independent variables. Our analysis has been used to make arguments of complex causality

instanced by different paths to the same outcome and conditions found in one configuration being absent or acting differently in other configurations. In recognising these different paths as sets of the same types of case, practitioners can make use of the results to consider strategies that best make sense for their area (Fiss, 2007). Synergistic effects appear to arise from only certain configurations and many conditions appear to be irrelevant to the outcomes. For a narrowing cancer gap, we found that championing was a necessary but not sufficient condition. Two of the three narrowing configurations, however, were sufficient for narrowing. For a narrowing CVD gap, we found either good or exemplary primary care services or good or exemplary smoking cessation services were necessary conditions, with the two together being almost sufficient (7 out of 8 cases).

Ragin (2000) argues that necessary conditions have important policy implications. They may both constrain and enable outcomes, and it is much more difficult to enable an outcome because it only takes one necessary condition to be absent for the outcome not to occur. It is perhaps surprising that in our analysis we identify a relatively small number of necessary conditions, although none is sufficient on its own. Equally, the state of many conditions often did not appear to matter to the outcome. In some cases this may be because what matters is that a level of achievement for a practice is at least basic and instances of Spearhead areas assessing any practices being as poor as basic were very rare. So our analysis reflects practices being on the whole at least basic; it then picks out practices and other conditions where their qualitatively different states matter to the outcome. QCA, to quote Ragin (2000, p. 260), is 'a tool of discovery'. The causal arguments are based on association but supported by substantive and theoretical reasoning about real cases, connecting with actual practice.

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Table 1. Data used to assess local conditions in Spearhead areas

Primary data
Assessments on a scale from basic to exemplary, binarised as basic or good/exemplary, for: - The role of commissioning in reducing excess mortality attributable to cancer/CVD. - Partnership working across sectors at a strategic level. - The public health workforce. - Primary care services. - Smoking cessation services. Assessments (yes/no) for: - Approach: a few major programmes; many smaller projects; or an integrated, systematic approach. - Frequency of progress reviews. - General working culture: individual commitment and champions; 'team player' spirit; or good plans and systems. - Priority issue: closing the overall gap with the national average; reducing inequalities within the locality; or both equal priorities. - PCT's prioritisation of cancers/CVD gap: the top priority; one of a small number of priorities; one of a large number of priorities; or not a priority. - Leadership to tackle the gap: excellent; good; fair; or mixed picture. - Organisational culture: very/quite aspirational with challenging/stretching expectations for tackling the gap; comfortable with the current situation; or complacent/inward-looking. Questions on structural and financial issues: - Whether the PCT had been in financial difficulty. - Recent resignation of chief executive.
Secondary data (with binarisation details where relevant to the text)
- PCT performance rating based on a national exercise assessing performance across all functions (binarised as one or two stars or the maximum score of three stars). - Index of Multiple Deprivation 2007 (binarised as < 31.15 or >= 31.5). - Crime rate (binarised as < 64.5 or >=64.5 offences per 1,000 population). - Local authority migration estimates for inflow and outflow (binarised as >= 3.6 per cent of total population for inflow and >= 4 per cent for outflow; authorities falling within the higher and lower thresholds were the same for inflow and outflow). - Accident and emergency hospital admissions. - Distance from PCT 2005/06 target budget allocation as assessed by the Department of Health using a needs-based formula (binarised with threshold as > 4.3 per cent under allocation). - Spend per head on cancer programmes in 2005/06 (binarised as < £86 or >= £86 per head).

Abbreviations: CVD (cardiovascular disease); PCT (Primary Care Trust).

Table 2. Configurations for cancer and CVD inequalities

Configuration	Gap narrowing for: Cancer	CVD
championing — * *higher spend on cancer*	Yes (9/9)	
* *higher deprivation * higher crime * aspirational*	Yes (3/3)	
* *basic public health workforce * less frequent monitoring*		
* *lower deprivation*	Yes (7/9)	
*good/exemplary commissioning * good/exemplary strategic partnership working * good/exemplary public health workforce * aspirational*	No (6/6)	
*comfortable/complacent culture * higher crime* — * *lower spend on cancer * lower PCT rating * lower deprivation*	No (2/2)	
* *basic public health workforce * less frequent monitoring*	No (4/5)	
*PCT budget closer to target * good/exemplary primary care services*		Yes (8/10)
good/exemplary smoking cessation services — * *good/exemplary primary care services*		Yes (7/8)
* *basic primary care services * lower PCT budget * no major programmes * good/excellent leadership * lower migration*		Yes (3/4)
no major programmes — * *PCT budget further from target * higher migration*		No (7/7)
* *basic primary care services*		No (11/14)

Table 3. Conditions associated with a narrowing gap in cancers mortality (1=present; 0=absent)

	Area	Basic commissioning	Less than good strategic partnership working	Less than good public health workforce planning	Less frequent progress reviews	Champions	Aspirational	Lower IMD	Higher spend on cancers	Lower crime	3 star PCT
GAP NARROWING	1	1	No data	1	0	1	0	0	1	0	0
	2	1	1	1	1	1	1	1	1	0	1
	3	No data	1	1	1	1	1	1	1	1	1
	4	1	1	1	1	1	1	1	0	1	1
	5	0	1	1	1	1	1	1	1	1	0
	6	1	1	1	1	1	0	1	1	1	1
	7	1	1	1	1	1	0	1	0	1	1
	8	1	0	1	1	1	0	1	1	0	0
	9	1	1	1	1	1	1	0	1	0	0
	10	0	0	1	1	1	1	0	1	0	1
	11	1	0	1	1	1	1	0	0	0	0
	12	1	1	0	1	1	0	0	1	0	0
GAP NOT NARROWING	13	0	1	1	1	1	1	0	0	1	0
	14	1	1	1	1	1	0	1	0	1	1
	15	0	1	1	1	1	0	1	0	0	0
	16	0	0	0	0	0	1	0	1	0	0
	17	0	0	0	1	0	1	0	0	0	0
	18	0	0	0	0	0	1	1	1	0	1
	19	0	0	0	1	0	1	0	0	0	1
	20	0	0	0	1	1	1	1	0	0	0
	21	0	0	0	0	0	1	1	1	1	0
	22	0	0	1	1	0	0	0	0	0	0
	23	0	1	1	1	0	0	0	0	0	0
	24	0	1	1	1	0	0	1	1	0	1
	25	1	1	1	1	1	0	0	0	0	1
	26	1	1	1	No data	1	0	1	0	0	0
	27	0	0	1	0	0	1	1	1	0	0

Key:

Config 1   Config 2   Config 3   Config 4   Config 5   Config 6

Table 4. Conditions associated with a narrowing gap in CVD mortality (1=present; 0=absent)							
	Area	Better than basic smoking cessation services	Better than basic primary care services	A few major programmes	Good or excellent leadership	Higher budget allocation relative to target	Lower internal migration
GAP NARROWING	1	1	1	0	1	0	1
	2	1	1	1	1	1	0
	3	1	1	0	1	1	0
	4	1	1	0	1	1	0
	5	1	1	1	1	1	0
	6	1	1	1	0	1	1
	7	1	1	0	1	1	1
	8	0	1	1	1	1	0
	9	1	0	0	1	0	1
	10	1	0	0	1	0	1
	11	1	0	0	1	0	1
	12	No data	1	1	0	1	0
	13	0	0	No data	0	1	0
GAP NOT NARROWING	14	1	1	0	1	1	1
	15	0	1	1	0	1	0
	16	0	1	0	1	0	0
	17	1	0	0	1	0	0
	18	1	0	0	1	0	0
	19	1	0	0	1	0	0
	20	1	0	0	0	0	0
	21	0	0	0	0	0	0
	22	No data	0	0	1	0	0
	23	1	0	0	1	1	1
	24	1	0	0	1	1	0
	25	1	0	0	1	0	1
	26	0	0	0	0	1	0
	27	1	0	0	0	1	0

Key:

Config 1 ▢   Config 2 ▢   Config 3 ▢   Config 4 ▢   Config 5 ▢

Table 5. 'Bureaucratic' conditions in cancer configurations

	Public health workforce	*Partnership working at strategic level*	*The role of commissioning*	*Frequency of progress reviews*
Less than basic				Not yet done
Basic	Well skilled, staffed and resourced public health workforce to tackle the cancers gap.	Established Local Strategic Partnership with appropriate representation that receives progress reports from a health partnership/sub-group. Established cancer network.	Existing plans and contracts address inequalities. Who manages what is identified, services accommodate referral-to-treatment targets and the impact on capacity is accommodated.	Annually
Good	As 'basic' plus clear link between local plans and capacity and skill levels. Clear leadership of workforce planning. New types of worker introduced to reach high risk groups.	As 'basic' plus there is strong leadership of the agenda and mainstreaming through a local area agreement, and an evidence-based health strategy with an action plan, targets, timelines, identified roles and data sharing. Plans are aligned and delivery coordinated across agencies.	All of 'basic' plus services are commissioned and networked with cancer inequalities prioritised. Delays in patient pathways are addressed. Contracts are aligned and there is some budget pooling and joint contracting. There are lead project managers for specific tasks. User involvement, community campaigns and staff training are resourced to support appropriate use of services.	Quarterly
Exemplary	As 'good' plus there is effective pooled capacity across agencies, workforce plans embrace all sectors and long term plans develop the right skills mix and capacity. Implementation is performance managed. There is a shared intelligence function for service planning and performance monitoring.	As 'good' plus there are shared/pooled resources and joint planning and contracting. Partners account for progress. Health inequality impact assessment is used. The cancer network has developed all aspects of cancer services.	All of 'good' plus resources are clearly scaled up to narrow the cancer gap based on targets, modelling and commissioning at scale. There are joint plans, processes, contracts, and management and information systems across all stakeholders. Service standards are explicitly detailed in service level agreements.	Monthly

Table 6. Key conditions for narrowing the CVD gap

	Primary care services	*Smoking cessation services*
Less than basic		
Basic	Achievements against standards are audited and satisfactory. There are mechanisms for identifying poor performance and recovery plans.	There is a multi-agency tobacco control alliance meeting regularly. GPs and nurses routinely advise smokers to quit and offer cessation support in at least 50% of practices/community pharmacies.
Good	As 'basic' plus primary care in deprived areas meets local needs and is well organised. There is proactive development support. The PCT actively manages issues. Primary care works with other services to reach vulnerable groups.	As 'basic' plus there is an evidence-based strategy with a coordinator ensuring actions are carried out. Smoking cessation support is available in a range of care settings. Smoking prevalence data are used to target services. A wide range of practitioners have been trained in brief interventions.
Exemplary	As 'good' plus there is strong engagement from primary care with tackling the CVD gap, including actively seeking out people with disease or at risk. A variety of local data is used with prevalence models and risk scoring. There is no major variation across practices that causes concern.	All of 'good' plus a health equity audit of stop smoking services has been done and recommendations implemented. Capacity is sufficient and known to be effective. Monitoring systems ensure health professionals know the smoking status of their patients, advice offered and the response to that advice.