

WORKING TOWARDS A MORE SUSTAINABLE NHS:
EXPLORING THE ROLE OF GPS THROUGH
SURVEY AND INTERVIEWS.

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Abstract

This study examined how GPs in Wiltshire understood sustainable development and its implications for the NHS, their role as GPs and the factors that influenced their engagement with sustainability. The research took a mixed methods approach. An online survey of 34 GPs was conducted in June and July 2013 followed by one to one to one qualitative interviews with 7 participants conducted between October 2013 and February 2014.

The NHS has committed to more sustainable practices, setting a target of an 80% reduction in greenhouse gas emissions by 2050, which will require radical change in how healthcare is delivered. Proposals on how to achieve the radical transition to a more sustainable NHS are emerging in a developing literature on sustainability, health and healthcare. However there is a knowledge gap as to the extent that the analysis of sustainable development and the NHS and proposals for a more sustainable NHS are shared by a broad section of health professionals.

The findings indicated that research participants had complex and nuanced views towards sustainability and the NHS. Findings suggested broad levels of support for some sustainability activities, such as building the resilience of individuals and local communities, alongside reservations about others such as taking environmental impact into account when making clinical decisions. Findings also provide a potential explanation of why this broad support may not motivate change. Interview and survey data that suggested that sustainability was remote or an afterthought provide an indication of the leadership, resources and guidance necessary to change practices. The study contributes new knowledge about how this vital group of health professionals understand and engage with sustainability. The study suggests that sustainability should be communicated in terms of improvement in healthcare and the future viability of the NHS alongside clear commitments to sustainability in terms of leadership, strategic integration and organisational incentives.

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1 Introduction

The NHS is central to UK life, providing a high quality comprehensive health service to all UK residents on the basis of clinical need rather than ability to pay (Department of Health, 2013). The Labour government's 1948 establishment of the NHS demonstrated a commitment to welfare, equality of access and using government resources to combat social ills (Open Learn Team, 2006). Today the NHS performs well internationally, with the Commonwealth Fund ranking the NHS first among eleven healthcare systems from developed countries based on the quality of service delivered, equity and access to services (Davis *et al.*, 2014). The NHS constitution states that the NHS 'belongs to the people' and it exists to improve health and wellbeing and provide support to those that need it (Department of Health, 2013, p.2).

The prominence of the NHS in the UK is hard to overstate. The NHS received 7.9% of total national income in 2007/8 (Roberts, Marshall and Charlesworth, 2012) and has over one million employees (Barrett *et al.*, 2004, p.5). In one year in England there are 300 million general practitioner (GP) visits, while hospitals deal with over 4 million admissions and more than 45 million outpatient appointments (NHS Confederation, 2009, p.11).

The environmental impact of the NHS is considerable. It is responsible for 25% of public sector CO₂ emissions in England and 3.2% of total emissions (NHS SDU, 2009a, p.18). Significant impacts arise from the use of energy, water, procurement of goods and services, generation of waste and management of facilities and real estate (Barrett *et al.*, 2004). Growth in demand and complex conditions coupled with the expectation of constrained public finances suggest that without a significant and unprecedented increase in productivity the NHS will have funding shortfalls (Appleby *et al.*, 2010; Appleby, 2012). The long term future of the NHS very likely requires important choices about its priorities and how it delivers them (Appleby, 2013).

1.1 A sustainable NHS

A more sustainable health system is described by the Sustainable Development Unit (SDU – formerly the NHS SDU) as one that “works within the available environmental and social resources protecting and improving health now and for future generations” (SDU, 2014a, p.5). An example of working within environmental limits is the commitment by the NHS to reduce greenhouse gas emissions by 80% on 1990 levels by 2050 (NHS SDU, 2009a). To achieve this will require radical change in how care is delivered, shifting to low impact models of care that focus on early intervention, prevention and delivering care close to people (NHS SDU, 2011b). This degree of

change is described as a 'paradigm shift' (Mackenzie, 2011), transforming the thinking that underpins operations, how objectives are defined and how value is delivered and created (Huczynski and Buchanan, 2007). A sustainable NHS is both consistent with the productivity, quality and financial challenges facing the NHS (Naylor and Appleby, 2012a) and with the principle of sustainable development.

Sustainable development describes the approach to addressing environmental problems such as climate change adopted internationally and by the UK government (DEFRA, 2011). The most widely known description of sustainable development is put forward in 'Our Common Future' (UNWCED: United Nations World Commission on Environment and Development, 1987, p.41) which states that sustainable development is "development that meets the needs of the present without compromising the ability of future generations to meet their own needs". Sustainable development will be defined more fully in the literature review, but in short emphasises the need to balance social, environmental and economic factors when acting. A clear example is climate change, with current human activity changing the climate that future generations will experience and endangering their ability to meet their needs. The connection between human health and sustainability is elaborated further in the literature review, emphasising the potential risks to human health and security arising from climate change and other sustainability issues.

Working towards a more sustainable NHS therefore involves a transformation in how the NHS delivers care. This research project explores the role of GPs in the transition through an online survey and one to one interviews. The transition to a more sustainable NHS will require difficult decisions to be made in terms of how limited resources are best used, which will impact the patients and communities which rely on the NHS as well as the staff that provide these services. The developing literature on sustainable development in the NHS broadly outlines that this transformation involves adopting a new paradigm of care, which privileges prevention over cure, reduces secondary care, balances present needs against the long term needs of the population and the responsibility to act sustainably (Mackenzie, 2011). GPs will be central to this change and understanding their attitudes towards sustainability, what factors influence their engagement with sustainability and gaps and agreement with the literature proposing this change will enable a fuller understanding of the challenge of working towards a more sustainable NHS.

1.2 Background to the research project

This research project began in 2010 as a PhD studentship co-funded by NHS Wiltshire Primary Care Trust (PCT) and Great Western Research. The geographical focus of

research is Wiltshire, a rural county in the South West of England with half the population living in towns and villages with less than 5,000 inhabitants and a quarter in villages of less than 1,000 inhabitants (NHS Wiltshire CCG, 2014, p.12). The county provided an opportunity to consider how transitioning to a more sustainable NHS can be understood in a primarily rural context.

Initial contact with NHS Wiltshire strongly influenced research choices, in terms of how the research problem was understood and framed and the extent to which the researcher would have access to key individuals and information. The research design recognises the mutuality of the funding body and the researcher and is designed to ensure the research provides organisational benefit to Wiltshire PCT as well as producing an original contribution to knowledge.

Research processes and outcomes were initially designed to contribute to the PCT, with the research process itself raising awareness and profile of sustainability activities, while outcomes would contribute to policy and practices. This initial contact brought about the real world problem solving research orientation, which informed the eventual strategy of inquiry. A core policy document informing the research is the NHS Wiltshire Sustainable Development Management Plan (NHS Wiltshire, 2009) with its aim of improving sustainability performance and encouraging engagement with sustainability. The research project took the opportunity to engage with the Wiltshire PCT Sustainability Group which facilitated making organisational contacts, building understanding and sharing ideas. The initial objective was for the research to support the group's objectives of encouraging engagement with sustainability and facilitating sustainability activities and through this gain research access.

This initial approach had to be entirely changed after the 2010 White Paper 'Equity and Excellence: Liberating the NHS' (Department of Health, 2010a), which stated that all PCTs would be abolished in a far-reaching reorganisation (Ham, Dixon and Brooke, 2012). This announcement was unexpected and contradicted commitments made in the coalition agreement (HM Government, 2010b) to support and improve PCTs. The priorities of PCTs shifted to delivering the white paper objectives, which included supporting the transfer of public health to local authorities and supporting the creation of GP led consortia, called Clinical Commissioning Groups (CCGs). These new priorities existed at the same time as significant organisational turbulence with continuity of tasks and projects under threat, employees at risk of redundancy and uncertainty about how the NHS in Wiltshire would operate in the future.

As a result of the organisational upheaval the research project aims and research methods were adapted so that the research could be carried out in a context where

sustainability was unlikely to be a key priority, and organisational support was likely to be partial. The future structure of the NHS in Wiltshire was uncertain, with no information on how many CCGs would be established in Wiltshire or the composition, leadership and sustainability strategies of these CCGs. The research project adapted to these changes through the decision to focus on GPs in Wiltshire and their role in working towards more sustainable practices. The role of GPs would remain through the transition, with GPs taking an increasing role in commissioning in the future (Department of Health, 2010a). GPs and primary care services were therefore likely to continue to be relevant in the future, were crucial to the planned changes and critical to developing a more sustainable NHS (Mackenzie, 2011). Researching the role of GPs and their understanding of working towards a more sustainable NHS would enable the research project to contribute to understanding by providing new insights into how this important group of health professionals understood their role in sustainability, and how the views of this group compared to the existing literature.

1.3 The research problem

Understanding how GPs made sense of sustainability was essential because the uncertainty, complexity and challenge of working towards a more sustainable NHS suggests that this is a 'wicked problem' (Camillus, 2008). A 'wicked problem' is not just characterised by technical complexity, as in the challenge of designing low impact care pathways, but through its social complexity (Conklin, 2008) where the problem is understood differently by different stakeholders, who understand the problem and potential solutions differently. In the case of the NHS and the complexity of the services required to support health and wellbeing, the social complexity of working towards sustainable development is a barrier in itself.

Understanding that sustainability in the NHS is a wicked problem does not mean that it is a hopeless or impossible problem, but emphasises the need to better understand the problem. A wicked problem requires that the capacity to engage with sustainability in the NHS is developed, enabling emergent change as individuals and communities engage with sustainability issues and build operational and strategic responses. Understanding sustainable development in the NHS as a 'wicked problem' has guided this research project in terms of the literature and background which it builds on and the aims and objectives of the research. The thesis seeks to understand the problem of sustainable development in the health service and explore the social complexity of how we engage with this problem through the survey and interviews conducted with GPs in Wiltshire. This improved understanding is intended to provide direction on how best to engage with the problem of sustainability and work towards a more sustainable NHS.

The strategy of inquiry was influenced by the 'real world' problem solving approach proposed by O'Leary (2005). Research focused on real world problems is inherently pragmatic, with addressing the problem privileged over strict adherence to a single research paradigm or consistency in research methods. Data collection and analysis are selected on their ability to address the research questions (O'Leary, 2005). This pragmatic approach was balanced against the need to make a unique contribution to knowledge and to conduct research with academic rigour.

As noted above, the NHS has made a radical commitment to operate sustainably and within environmental limits, while delivering improvements in health for the UK population. The NHS is at the early stages of this journey and consequently the research project's primary objective is to better understand the emerging and mostly uncharted issues of working towards a more sustainable NHS through research conducted with GPs in Wiltshire. The research questions focus on better understanding the challenge of working towards more sustainable practices in the NHS through better understanding of the literature and the attitudes of GPs in Wiltshire towards sustainability.

1.4 Strategy of inquiry - Research questions and aims

Research questions and objectives were selected to understand more fully the problem (O'Leary, 2005, p.145) of working towards a more sustainable NHS, and to expand on the literature by exploring how GPs in Wiltshire understood the problem of working towards a more sustainable NHS and their role in these efforts.

1.4.1 Research questions

The overarching research question was:

How do GPs make sense of the problem of working towards a more sustainable NHS and what does this mean for the transition to a more sustainable NHS?

With the sub-questions:

- A. What is the relationship between sustainable development and health?
- B. How does the developing literature make the case for, and propose working towards, a more sustainable NHS?
- C. How can the developing literature on sustainable development and the NHS be better understood in regard to the wider literature on sustainability in organisations, debates in healthcare and organisational change?

D. What are the attitudes of GPs in Wiltshire towards sustainability in the health service, and their role in working towards sustainability, particularly in relation to the developing literature and barriers and facilitators to their engagement?

E. How do GPs understand working towards a more sustainable health service, their contribution and the potential challenges and opportunities that this presents?

These research questions were selected to meet the following research objectives:

- To examine the relationship between sustainable development and health
- To critically explore the literature that puts forward the case and form of a sustainable NHS and develop a clear understanding of the implications that this has for the future health service
- To explore the attitudes of GPs in Wiltshire towards environmental sustainability, the connections between health and sustainability and the role of sustainability in the NHS
- To establish which sustainability activities, commonly referenced in the literature, are supported by GPs and which are not
- To develop an understanding of where the developing literature and policy on sustainable development in the NHS reflects the attitudes and opinions of GPs and the extent to which there is a gap
- To identify actions that can be taken to facilitate sustainable development activities and reduce the barriers to sustainable development activities
- To contribute to the developing literature, policies and practices regarding engagement with sustainable development in the NHS

1.5 Strategy of inquiry

A sequential mixed methods strategy of inquiry with an online survey of GPs in Wiltshire followed by one to one interviews was employed to address these questions. Questions A, B and C are addressed during the literature review, while the survey addresses question D and question E is addressed by the one to one interviews.

1.6 Structure of the thesis

The thesis comprises of seven chapters including this introduction. Chapter two consists of a literature review which describes the relationship between sustainable development and health, the developing literature on working towards a more sustainable NHS and the wider literature on healthcare and organisational transition. The strategy of inquiry and research methods are then outlined in chapter three. The survey findings are set out in chapter four followed by the interview findings in chapter five. Chapter six discusses the research process, reflecting on the research methods and the significance of findings. Finally chapter seven draws conclusions on the extent that the research questions have been addressed and the contribution of the research project.

2 Literature review

2.1 Introduction

The initial step to address the ‘wicked problem’ described in the introduction was to review the developing literature putting forward the case for a more sustainable NHS and consider the arguments connecting sustainability, health and healthcare and the proposals of how a more sustainable NHS would function. This review was structured around research questions A, B and C

A. What is the relationship between sustainable development and health?

The terms ‘sustainable development’ and ‘health’ have multiple, and sometimes contested, interpretations. These contrasting interpretations are considered and terms defined in the context of working towards a more sustainable NHS. The areas of support between sustainable development and health are then set out.

B. How does the developing literature make the case for, and propose working towards, a more sustainable NHS?

C. How can the developing literature on sustainable development and the NHS be better understood in regard to the wider literature on sustainability in organisations, debates in healthcare and organisational change?

This section describes the NHS and sets out the key claims in the developing literature on working towards a more sustainable NHS. These claims are explored further in reference to the wider literature on healthcare and organisational change. This review of the wider literature covers the extent that proposals for more sustainable healthcare are consistent with other accounts of healthcare and the challenge and complexity associated with organisational change as proposed for the NHS. The literature review is thematic, covering topics and concepts appropriate to the inquiry. The review provides sufficient resources to explain and justify the positions taken, but is unable to be fully comprehensive in every topic area covered. Sources included academic and professional journal articles, single author and edited books, documents produced by key organisational actors and thinktanks, press and grey literature.

2.2 Sustainable development and health

A. What is the relationship between sustainable development and health?

Working towards a more sustainable NHS, what this entails and the rationale for doing so is dependent on what is understood by the concept of sustainable development. It is not always clear what is meant by sustainable development (Lele, 1991) with the concept open to diverse interpretations and covering different levels of environmental and social concern (Hopwood, Mellor and O'Brien, 2005). Differing accounts of sustainable development are set out below with the interpretations and key concepts that inform the research project explained. Following this intellectual account of sustainability the global, interconnected and pressing challenges, such as climate change, that sustainable development is intended to manage are discussed, along with their implications for health, healthcare and the NHS. UK sustainable development policy and its implications are then covered.

2.3 Sustainable development

As noted in the introduction, sustainable development is broadly defined as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (UNWCED: United Nations World Commission on Environment and Development, 1987, p.41). The NHS Sustainable Development Unit (NHS SDU) used similar phrasing to describe sustainability as “the balance required between financial, social and environmental factors in order that future generations do not suffer because of the way we live today.” (NHS SDU, 2011b, p.3). Sustainable development places human activity, and ultimately human health and wellbeing, within its wider economic, social and environmental context (Hopwood, Mellor and O'Brien, 2005). Human activity and wellbeing is both dependent on social and environmental conditions at the same time as altering the atmosphere, ecosystem services and biosphere (Steffen, Crutzen and McNeill, 2007). This means that for development to be sustainable a systemic and long term understanding of human dependence and impacts is necessary, with human activities adjusted to reduce environmental impact and ensure human needs are able to be met in the long term. A sustainable NHS can therefore be understood as operating consistently with these principles.

Different interpretations of sustainability vary in their account of human needs and the balance between environmental, social and economic factors. From a sustainable development perspective the environment is understood as a resource or a stock of

'natural' capital (Hueting and Reijnders, 1998) which provides for human needs, but is diminished by human activities. Arguments for 'weak sustainability' suggest that environmental degradation is acceptable if man made capital increases (Pearce and Atkinson, 1993), while proponents of stronger forms suggest that a core of critical natural capital must be maintained to ensure human needs are met (Ekins *et al.*, 2003).

The above description of sustainable development differs from environmentalism in that human needs are foremost with the environment referred to in terms of its instrumental value in meeting those needs. Human needs, and by extension human health and wellbeing, are therefore central to sustainable development. The nested circle diagram where economy is contained in the wider social sphere, which in turn is enclosed in the environmental sphere (Giddings, Hopwood and O'Brien, 2002) illustrates the dependence of economic activity on wider social and environmental domains.

Accounts of sustainable development differ in their critical take on current patterns of development and proposals around future, more sustainable, patterns of development. Mebratu (1998) notes the World Business Council for Sustainable Development sees eco-efficiency as providing opportunities for continued economic growth, while the New Economic Foundation suggests that sustainability is not compatible with growth (Spratt *et al.*, 2009). For the NHS this could mean undertaking huge efficiency improvements or rethinking how care is delivered to meet population needs within a low growth economic context as explored in the Fit for the Future report (Forum for the Future and NHS SDU, 2009).

2.3.1 Relevant concepts

In addition to the core idea of the interdependence of environmental, social and economic factors covered above there are a number of concepts closely associated with sustainable development that have significant consequences for the NHS.

Human actions are central to sustainable development, in terms of contributing to environmental degradation and being dependent on the environment for essential goods and services (Millennium Ecosystem Assessment, 2005; Royal Society, 2012). This dependency suggests human actions must take into account environmental limits, providing an upper ceiling to the human activities that would impact the environment. Human impacts are considerable, taking up an estimated 23.8% of net primary productivity over the globe (Haberl *et al.*, 2007) and estimated to be having deleterious effect on the climate, nitrogen cycle and biodiversity (Rockström *et al.*, 2009). As a result unchecked growth of organisations like the NHS is likely to be inconsistent with sustainable development.

The idea that the future will not resemble that past is central to sustainable development, as is the capacity to steer towards a future where human needs can still be met. Recognition of human impacts on the environment and degradation in the capacity of the environment to support human wellbeing indicates that the future may involve harsher and more challenging conditions or transition, involving technological change, social norms and changes to patterns of behaviour that make it possible to meet human needs. Credible discussion of current and future impacts are informed by scientific evidence, whether using what the UK government calls 'sound science' (HM Government, 2005) or the scientific consensus on climate change (Cook *et al.*, 2013). Forum for the Future (2008) have produced a range of future scenarios, each with different implications for human health and wellbeing. Working towards more desirable futures conducive to health and wellbeing is the principal aim of sustainable development. This requires taking a long term perspective, but also understanding that environmental concerns are pressing and that immediate efforts to meet sustainable development obligations are required (Romani, Rydge and Stern, 2012). Transition to a more sustainable way of life will have significant implications in the UK, for example contraction and convergence in carbon footprints would require a fivefold reduction in per capita emissions in the UK (Stott, 2012).

Social justice and human agency are also central to discussions of sustainable development, with the core principle of ensuring the needs of future generations are met. Social justice, to one degree or another, is in evidence across the sustainable development literature (Hopwood, Mellor and O'Brien, 2005) and is a key pillar of the UK's 2005 'Securing the Future' (HM Government, 2005) document.

2.3.2 Sustainability issues

Pursuing sustainable development is critical because of pressing environmental trends such as a harsher and warmer climate, resource pressures (including energy, raw materials and water) and loss of biodiversity and essential ecosystems services that interact with population growth and unsustainable production and consumption to impact human health and wellbeing (Brown, 2009). These complex, large scale problems with environmental, social and economic factors influencing the ability of future generations to meet their needs are referred to, in this thesis, as 'sustainability issues' and include challenges such as climate change, ocean acidification and mass extinction. These sustainability issues are the result of the stress that human activities place on the environment, drawing on the concept of the anthropocene, where human activities significantly influence the earth system (Rockström *et al.*, 2009). The changes caused by human activity have the potential to disrupt and change the current stable living environment in which human civilisation has evolved and on which our health and

wellbeing depends (Rockström *et al.*, 2009). Other sustainability issues include those that may not destabilise and disrupt the operation of the planetary system, but where current unsustainable practices cannot continue without jeopardising the ability of future humans to meet their needs, such as depletion of finite resources. The impact that sustainability issues have on human security and health and wellbeing will be set out in the sustainability and health section.

2.3.3 Sustainable development and policy

Sustainable development is, at least notionally, incorporated into UK policy. Policy documents (DEFRA, 2011; DETR, 1999; HM Government, 2005) state that decisions must be guided by science, take into account environmental factors, promote sustainable economic growth and social justice. The commitment to reduce greenhouse gases by 80% (HM Government, 2008) provides further evidence of the commitment to sustainable development, while a pathway analysis of meeting this commitment (HM Government, 2010a) acknowledges the behavioural and technological change required to meet this commitment. Similarly attempts to measure wellbeing, natural capital and government sustainability indicators (Natural Capital Committee, 2014; Office for National Statistics, 2010, 2014) demonstrate an attempt to consider a range of social, environmental and economic measures.

These documents indicate that the UK government utilises the language of sustainable development and incorporates some of its key ideas into practice. As noted above sustainable development is a contested concept and it is notable that the UK government holds the position that sustainable development is compatible with economic growth. The acknowledge of environmental limits (HM Government, 2005) shifted to a position to protect the environment (DEFRA, 2011) with a focus on sustainable economic growth (Environment Agency, 2014; HM Government, 2011).

Taken at face value these policy documents provide a clear position on sustainable development to guide the NHS in its own policy and transition. However the extent that long term, ambitious, policies, such as those above, influence an organisation dealing with extensive day to day challenges and competing priorities is unclear. Equally the extent that the sustainable development policy translates into practices across government and society is unclear.

2.4 Health

Health, like sustainable development, is a contested concept with a number of definitions (Beattie *et al.*, 1993; Buck, Eastwood and Smith, 1999). How we use the term health is important, in terms of the relationship between health and sustainability and the role of healthcare services in promoting health. This section sets out the

account of health that is used in this thesis and the rationale for using this particular account of health. The biomedical model of disease is that disease occurs when the physical body is not functioning correctly (Engel, 1977; mediLexicon, 2006). This emphasises the biological origins of health and disease and does not include the idea of health as a positive function or the role of the wider determinants of health.

Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity.
(WHO, 2006, p.1)

In contrast the WHO definition of health provides a positive account of health as well functioning, and has been taken up widely (Department of Health, 2010b; Lalonde, 1981). Equally the argument that wider determinants of health are important to health and well-being are well established in academic literature (Dahlgren and Whitehead, 1991; Raphael, 2006). Socio-ecological models of health emphasise the role of multiple factors influencing health (Orme *et al.*, 2010) and the importance of settings (Dooris, 2009). Within these accounts of health there are multiple debates, for example between the extent that health is determined by lifestyle or setting (Raeburn and Rootman, 1988). The health map produced by Barton and Grant (2006) illustrates how health and wellbeing are determined by a range of factors. This account of health is integral to the discussion of the connections between health and wellbeing and how the NHS can work towards more sustainable practices

2.4.1 Health needs

The current and expected health needs of the population are relevant to the relationship between health, sustainability and the future of the NHS. The health burden that the NHS manages has shifted over time with an aging population and an increase in chronic disease (Gray, 2007; Ham, Dixon and Brooke, 2012). Aging is critical to demand with those over sixty-five utilising healthcare resources at a higher rate (Oliver, Foot and Humphries, 2014; Wanless and others, 2002, p.41). Non-communicable diseases make up an increasing amount of the global burden of health (Epping-Jordan *et al.*, 2004) and are responsible for 86% of deaths in Europe (World Health Organization, 2006, p.4). Further chronic conditions in older patients often co-occur increasing the complexity of management (Marengoni *et al.*, 2011). The NHS increasingly deals with long term conditions, with a relatively small percentage of the population using a disproportionately large slice of resources, with 5% of patients using 42% inpatient beds (Crisp, 2010, p.49).

Increasing risk factors such as obesity have led to the argument that life expectancy could decline in developed countries such as the USA (Olshansky *et al.*, 2005). Inequalities in the UK further impact on life expectancy and disability-free years

(Marmot *et al.*, 2010) with risk factors often associated with deprived sections of society (Imison, 2012).

The above health needs are consistent with those of Wiltshire, with an aging population (Hooper, 2012; Wiltshire Intelligence Network, 2012), 60% of mortality due to circulatory diseases and cancer (Wiltshire Intelligence Network, 2012) and a need to focus on long term conditions (NHS Wiltshire CCG, 2014). The health of the population is a concern, with childhood obesity and low levels of physical activity highlighted in the CCG strategy (NHS Wiltshire CCG, 2014).

Demand for healthcare services is influenced by factors additional to health needs. The Wanless Report (Wanless and others, 2002) noted that increasing patient expectations in terms of access, availability and experience quality contributed to demand. Similarly a survey of health professionals in the UK, US, Germany and India indicated that increasing patient expectations were raising demand for services (Wyke and Economist Intelligence Unit, 2009). Technological advancement and the capacity to do more can increase demand for services by making treatment available to a broader range of patients (Imison, 2012). Medical advances also increase demand through effective treatment of conditions, enabling people to live with long term health conditions (Ham, Dixon and Brooke, 2012).

The NHS, like other health services, needs to adapt to these changing health needs. The prevalence of non-communicable diseases also suggests methods for addressing them. The WHO suggests that non-communicable diseases have common risk factors and that these factors can cluster around social inequality (World Health Organization, 2006). Reducing these risk factors through lifestyle change and better management and prevention practices (Department of Health, 2010b; Imison, 2012) has the potential to improve health. Models of care appropriate to chronic illnesses must be adopted to improve patient outcomes (Epping-Jordan *et al.*, 2004). Changing health needs require changes in services, for example multi-morbidity can require changes in the care processes and increase the difficulty of self-care (Fortin *et al.*, 2007). The above account of health and health needs will be explored further when considering the connections between sustainability and health and proposals for a more sustainable NHS.

2.5 Sustainability and health interaction

The above outline of sustainable development and health indicates how the two concepts are closely connected. Sustainable development focuses on ensuring that human needs are met and emphasises that these needs are dependent on broader environmental, social and economic factors. Sustainability issues, such as climate

change, have consequences for human security and health as do measures taken to mitigate or adapt to them. The positive account of health and the importance of the wider determinants of health further suggest the links between sustainable development and health. The nested sustainability circles (Giddings, Hopwood and O'Brien, 2002) could themselves contain in the centre the health map (Barton and Grant, 2006) demonstrating the close links. This section sets out the key connections between sustainability and health and the literature supporting this.

2.5.1 Sustainable development and health

Sustainable development and health are closely linked in that many actions that contribute to sustainable development can also improve health (Faculty of Public Health, 2009). The literature connects sustainable development and health through low carbon transport (Haines and Dora, 2012), diet (Macdiarmid *et al.*, 2011) resilient communities (Callaghan and Colton, 2008), sustainable settings and lifestyles and human flourishing (McFarlane, 2010). However a conventional economic account of human needs as preference satisfaction is not necessarily sustainable, whereas the case for objective human needs essential to human flourishing as put forward by Doyal and Gough (Doyal and Gough, 1991; Gough, 1994) is compatible with sustainable development. Doyal and Gough made the case for objective human needs that could be separated from economic growth and that would include social and environmental factors, which Gough connected to sustainable development (2015). The case for accounts of development that include wellbeing using at least some objective indicators is made elsewhere (Commission on the Measurement of Economic Performance *et al.*, 2009; Costanza *et al.*, 2007) as is the case for linking this to sustainable development. Daly's (2005) preference for qualitative development within a steady state economy is similar in its delinking of wellbeing from economic growth, as is Jackson's (2009). Pursuit of sustainable development, in theory, could allow for development that places wellbeing as its central objective (McFarlane, 2010).

2.5.2 Sustainability and health – security & public health

Environmental and social trends such as population growth, increased consumption, climate change, soil erosion and resource scarcity threaten human security if present patterns of unsustainable development persist (Brown, 2009). The risks to security are severe, with claims that global safe thresholds are being exceeded (Rockström *et al.*, 2009) and threats to global civilisation (Ehrlich and Ehrlich, 2013). Climate change increases social and political turbulence around the world and increases threats from food security, energy security and global tension (Department of Defense, 2014; Defense Science Board Task Force, 2011; European Commission on External Relations, 2011). Global food security will likely be impacted by climate change,

(Schmidhuber and Tubiello, 2007) increasing costs of food while climate change acts as a 'threat multiplier' increasing political and social turbulence as well as risks from conflict (Jarvis *et al.*, 2011; Morisetti, 2012). Climate change has been famously described as 'the biggest global health threat of the 21st century' (Costello *et al.*, 2009, p.1693). Global threats may not be felt as strongly in the UK, however international problems impact the UK as a globalised nation that relies on international trade for essential goods and services. The various threats to human security are challenging when considered individually, but when considered together and in interaction with one another, there is the potential for risks to increase.

However, climate change is far from the only issue that impacts human health and wellbeing. In this thesis sustainability issues are the result of the stress that human activities place on the environment, drawing on the concept of the anthropocene, where human activities significantly influence the earth system (Rockström *et al.*, 2009). The changes caused by human activity have the potential to disrupt and change the current stable living environment in which human civilisation has evolved and on which our health and wellbeing depends (Rockström *et al.*, 2009). Biodiversity is under major threat with human activities primarily responsible for a major extinction event (Rockström *et al.*, 2009). The destabilisation and destruction of ecosystems has serious consequences with ecosystem services crucial for many aspects of human health and wellbeing. Ecosystems provide food, fresh water and fibre essential for meeting human needs (Millennium Ecosystem Assessment, 2005) and the ongoing maintenance and regulation of environmental conditions necessary for human life. A stable climate, air and water quality and the provision of soil are also necessary for human life and a product of stable and operating ecosystems. Ocean acidification threatens ocean life and the viability of marine fisheries (Royal Society, 2005), while soil degradation reduces the supply of agricultural land (Jie *et al.*, 2002)

Human activities both increase pressure on ecosystem services by negatively impacting water quality, land use change, polluting the atmosphere and extracting goods unsustainably while relying on degraded services to deal with the increasing footprint arising from human activity. Other sustainability issues include those that may not destabilise and disrupt the operation of the planetary system, but where current unsustainable practices cannot continue without jeopardising the ability of future humans to meet their needs, such as wasteful use of resources that may leave future generations without access to essential resources. The limits to growth scenario raised by Meadows and colleagues (Meadows, D., Randers, J. and Meadows, D., 2005) is contested, however we cannot discount the prediction of finite resources and subsequent reductions in economic growth and standards of living (Turner, 2014).

Basic resources such as water and soil are under significant pressure (Brown, 2009), metals essential to technology are scarce and supply may be running short for many of them (Cohen, 2007).

2.5.3 Sustainability and health – local and specific issues

The UK, and Wiltshire, is likely to be directly and indirectly impacted by the sustainability and human security issues described above. Climate change will have significant impacts on health and wellbeing in the UK, directly in terms of heatwaves, increases in extreme weather and floods, while patterns of disease are also likely to change with increases in infectious disease and the spread of disease vectors (Department of Health, 2008) and potential for economic hardship. There is uncertainty regarding other health impacts that may arise directly as a result of climate change, such as a greater presence of allergens from plant life due to changing seasons (HPA, 2012). A systematic review of the climate change literature suggested an increase in risks from food poisoning, heatwaves, severe weather and air pollution (Nichols *et al.*, 2009). Although it is not possible to link specific events to climate change the heatwave of 2003 is estimated to have produced over 2,000 additional deaths in England and Wales, while the floods of 2007 caused £3,000,000,000 in infrastructure damage (Health Protection Agency, 2012, p.2). The UK's natural capital and ecosystem services are under considerable pressure (Natural Capital Committee, 2014; UK National Ecosystem Assessment, 2013). Many ecosystem services are degraded, with pressure from economic growth and an increasing population. Problems include a loss of habitat, decline in fisheries and pressure on ecosystem services that provide clean air and water. Local environmental quality such as air and noise pollution, access to green spaces and transport also have significant negative health impacts (Department of Health, 2010b)

Many of the impacts felt in the UK will be indirect. The UK is a trading nation and will therefore be influenced by sustainability impacts elsewhere in the world (UK National Ecosystem Assessment, 2013). For instance, the UK is 62% self-sufficient in food production (National Farmers' Union, 2015) relying on trade for the rest of its food needs. Global food insecurity will therefore impact the availability of food for the UK population. The global security risks described above will be felt in the UK through economic or political turbulence, migration, cost increases or other day to day pressures. These pressures have the potential to exacerbate health inequalities as the most vulnerable will have the least resources and capacity to cope.

2.5.4 Joint solutions and problems

The sustainability and health challenges described above are significant and require urgent and concerted action (Costello *et al.*, 2009) and are a consequence, for the most part, of human activities. Links between sustainable development and health have long been made in terms of risks to human health (Godlee and Walker, 1991), and the potential to work towards healthier and more sustainable societies (Hancock, 1980). UK public health bodies suggest addressing health and sustainability together (Faculty of Public Health, 2008; UK Public Health Association, 2007). Support for synergies between sustainable development and health is widespread (Porritt, 2005, 2010).

Considering sustainable development and health together provides opportunities to link lifestyles and settings to the broader social, economic and environmental context in which these behaviours and settings are produced. This is similar to Krieger's (Krieger, 2008) discussion of tobacco use and the challenge of separating the biological and chemical properties of tobacco from the wider social and economic issues that lead to the marketing and selling of tobacco. We may note the benefits of active travel and physical activity as well as the negative health impacts arising from reliance on private transport in terms of inactivity and air quality, but our analysis is incomplete if we do not consider the wider factors that drive widespread car use.

The Marmot Review (Marmot *et al.*, 2010) examined health inequalities in the UK and was clear that improving health could only be achieved in the context of sustainable development. This included a just and sustainable economy, sustainable food and nutrition, transport and taking advantage of the many overlaps between sustainable behaviours and settings and promoting health. The Sustainable Development Commission suggests that health inequalities can be addressed through more sustainable approaches to food, transport, the built environment, enterprise, a sustainable economy and a more sustainable health system (Sustainable Development Commission, 2010). Examples of the opportunities to address health and sustainable development together are set out below.

There is a significant body of literature making the case for connecting sustainable development and health through settings and place. Settings provide an opportunity to encourage social and behaviour change rooted in the locations where people live and work (Poland and Dooris, 2010). Neighbourhoods designed for sustainability and health (Barton, Grant and Guise, 2010) can promote enterprise, social capital, biodiversity and low carbon travel. There is evidence that contact with nature has health benefits (Maller *et al.*, 2005). Green spaces can improve mental and physical

health (Barton and Pretty, 2010; Faculty of Public Health, 2010). Access to green spaces was noted as reducing health inequalities for all-cause mortality (Mitchell and Popham, 2008). Active travel has the potential to reduce impacts from pollution and injuries while having considerable health benefits from increased activity (Haines and Dora, 2012). Energy efficient housing offers another joint solution, linking better health and sustainability (Goodacre, Sharples and Smith, 2002; Marmot Review Team, 2011) and reducing deaths from cold homes (Dear and McMichael, 2011).

The potential health and wellbeing benefits in countries like the UK arising from low carbon and more sustainable lifestyles are significant. Actions to reduce these risks by promoting more sustainable settings and lifestyles are likely to improve health and wellbeing with changes to diet, transport and housing, alongside social and economic fairness, having positive benefits for health and wellbeing as well as increasing environmental sustainability (Costello *et al.*, 2009; Faculty of Public Health, 2008). Mitigation and adaptation activities, particularly lifestyle change amongst those in the wealthiest countries, are required to avoid the worst impacts of climate change (Costello *et al.*, 2009). This could provide opportunities to improve health, for example changes in lifestyle and setting that address climate change and prevent non-communicable diseases (Friel *et al.*, 2011).

Reducing consumption of animal products has both environmental benefits and personal health benefits for non-communicable diseases such as heart disease (Haines and Dora, 2012). Consumption of animal products is rising globally (Kearney, 2010), with agriculture to raise animals (and feed for those animals) high impact in terms of greenhouse gas emissions, water and pressure on land (Macdiarmid *et al.*, 2011).

Sustainable development and health connections do not just stem from the environmental factors but include poor social cohesion, and social and economic inequality (UK Public Health Association, 2007). Social capital is a resource that people are able to draw on and increase their resilience (Callaghan and Colton, 2008), with some evidence that social cohesion can improve health (Lomas, 1998). Wilkinson contends that inequality itself contributes to ill health (2005). Progressive policies to reduce inequality are likely to be part of achieving sustainable development, given the high impact of wealthier lifestyles and that acceptance of these policies will be dependent on them being perceived as fair (Wilkinson, Pickett and Vogli, 2010).

It is possible that efforts to address climate change could also have negative impacts. For example imported food may be healthy and its availability encourages healthy eating, although its environmental impact may be substantial. Naylor and Appleby note

that mitigation actions could include regressive taxation (2012a), while future scenarios produced by Forum for the Future (Forum for the Future and NHS SDU, 2009) include those where health inequalities widen.

2.6 Research questions B and C

- B. How does the developing literature make the case for, and propose working towards, a more sustainable NHS?
- C. How can the developing literature on sustainable development and the NHS be better understood in regard to the wider literature on sustainability in organisations, debates in healthcare and organisational change?

The close connections between sustainable development and health described above makes a case for health systems to engage with sustainability, to mitigate their own impacts, to adapt to challenging conditions and to ensure that they can meet the needs of their population. The NHS, as will be set out below, is a unique organisation and way of delivering healthcare. Its size, prominence in the UK, and commitment to comprehensive care available to all funded through taxation influences its engagement with sustainability. NHS engagement with sustainability is then discussed. As stated in the introduction, the NHS has committed to an 80% reduction in greenhouse gas emissions from 1990 levels by 2050 (NHS SDU, 2010a, 2010c) which will require radical change in how services are delivered. Beyond a commitment to reducing greenhouse gases the NHS SDU is advocating for the NHS to transform how services are delivered to deliver improvement in health, better healthcare and meet sustainability objectives (NHS SDU, 2011b). The NHS, Wiltshire context and NHS and sustainability literature is reviewed below. The NHS and sustainability literature review first focuses on proposals for how a more sustainable NHS might operate and then considers the case for a more sustainable NHS.

2.7 The NHS

The introduction set out the NHS as the provider of comprehensive high quality health services and its centrality to public and private life in the UK. The regard for the NHS is such that it is often described using religious language, with Barbara Castle stating it embodied the principle of the 'Good Samaritan', while Nigel Lawson suggested it was close to an English religion (Delamothe, 2008). The NHS constitution states that the NHS 'belongs to the people' and it exists to improve health and wellbeing and provide support to those that need it (Department of Health, 2013, p.2). The SDU emphasises the objective of improving health, with the delivery of healthcare secondary.

The purpose of the health and care system is to continually improve health and wellbeing and deliver high quality care when necessary.
(SDU, 2014a, p.4)

The opportunity to address and improve the determinants of health that sustainable development presents is central to improving health and reducing demand for the health service.

As stated in the introduction the NHS is a huge organisation with enormous social, environmental and economic impact. In one year in England there are 300 million GP visits while hospitals deal with over 4 million admissions and more than 45 million outpatient appointments (NHS Confederation, 2009, p.11) and has over one million employees (Bartlett et al, 2004:5). The NHS requires a huge commitment of financial resources with the NHS taking 7.9% of total national income in 2007/8 (Roberts et al, 2012), increasing markedly from the 3.5% dedicated to the NHS in 1948 at its inception.

The NHS has a correspondingly enormous environmental impact. It is responsible for 25% of public sector CO₂ emissions in England and 3.2% of the total emissions (NHS SDU, 2009a, p.18). Significant impacts arise from the use of energy, water, procurement of goods and services, generation of waste and management of facilities and real estate (Barrett *et al.*, 2004). An estimated 5% of UK transport emissions come from NHS related journeys (NHS Confederation, 2007, p.2) and around 1% of domestic waste is generated by the NHS (NHS Confederation, 2007, p.2).

This brief outline of the NHS and its impacts suggests why sustainable development is materially important to the objectives of the NHS and its continued viability. The enormous expenditure, use of resources and environmental impact of the NHS mean that any reduction in impact is significant, while the scale and prominence of the NHS in UK life provides a platform to lead sustainable and healthy change. The NHS could potentially encourage wider positive mitigation and adaptation measures that benefit health and sustainability. Equally, as an organisation reliant on high levels of resources use, the NHS will need to build its resilience to some of the potential challenges arising from the sustainability issues discussed above.

2.8 Wiltshire and the NHS in Wiltshire

Working towards a more sustainable NHS must also be considered in the context of the county of Wiltshire, the Wiltshire population and its health needs and the NHS provision of services.

2.8.1 Wiltshire

Wiltshire is located in the South West of England and is predominantly rural (Wiltshire Intelligence Network, 2012, p.7). Wiltshire's environment includes chalk uplands such as Salisbury plain, heavily wooded areas and areas of historical interest like Stonehenge (Encyclopaedia Britannica, 2013). In 2011 Wiltshire had a population of 474,300 with the population of 65 increasing from 16.5% in 2001 to 18.1% (Wiltshire Intelligence Network, 2012, p.6). Around half the population live in towns with less than five thousand inhabitants and around a quarter live in villages with less than one thousand inhabitants (NHS Wiltshire CCG, 2014, p.12). Ethnic minorities made up 4.7% of Wiltshire's population in 2009 (Wiltshire Intelligence Network, 2012, p.6) whereas in England and Wales 2011 census figures indicate that 14% of the population identified as non-white ethnic minorities (Office for National Statistics, 2012). Around 6.4% of the population is composed of military personnel and their dependents (Wiltshire Intelligence Network, 2012, p.13), with potential implications in terms of serving a population that is transitory, prone to rapid increase and with unique needs (Wiltshire Community Foundation, 2014).

2.8.1.1 Deprivation

UK government measures of social and economic deprivation indicate that the average measure of deprivation for Wiltshire shows it to be relatively more prosperous than the majority of the UK (Hunter, 2011, p.4). As Wiltshire is predominantly rural it is at risk of rural disadvantage which particularly impacts remote and sparsely populated communities (Commission for Rural Communities, 2010). Rural disadvantage can include difficulty accessing services, less access to public transport and a greater reliance on cars (and subsequent disadvantage for those that do not own personal transport) (Commission for Rural Communities, 2010; Wiltshire Community Foundation, 2014). In Wiltshire lack of access to transport affects the elderly, unemployed and disabled the most, leading to challenges accessing services and problems of social isolation (Wiltshire Community Foundation, 2014, p.21). Rural advantages also exist, with rural populations generally healthier than urban ones, although this may be related to higher average incomes in rural areas (Commission for Rural Communities, 2010). This is consistent with NHS Wiltshire CCG's contention that the Wiltshire population is healthier than the average population in England (NHS Wiltshire CCG, 2014, p.13).

There is some evidence of rural disadvantage in Wiltshire in terms of higher ranking for deprivation for access to housing and services (Hunter, 2011, p.4) as well as greater need to travel and a greater reliance on personal private transport. 8.6% of the Wiltshire population were income deprived in 2010 (Hunter, 2011, p.12), with this

proportion rising to 12.1% in the elderly population. Measures of deprivation were not evenly spread across the county, with the highest levels of economic, health, disability, crime and education deprivation typically found in the more urban areas of Wiltshire (Hunter, 2011, p.15) while barriers to housing and services were more prominent in the more rural areas of Wiltshire (Hunter, 2011, p.16). Health inequalities appear to be driven by deprivation with reduced life expectancy for men of 6.6 years and for women of 3.8 years in the most deprived areas of Wiltshire (Wiltshire Intelligence Network, 2012, p.16).

The geographical nature of Wiltshire, with a large proportion of the population living outside of large urban centres suggests a need for health services that are suited to this widely distributed population. Delivering services closer to patients is particularly challenging with so many patients living outside of urban centres, requiring care delivered at home, in the community and in primary care. Centralisation of care raises potential access issues, particularly with patients that lack access to personal transport.

2.8.1.2 Health needs and health services

In 2010, when the study began, health services in Wiltshire were commissioned by NHS Wiltshire Primary Care Trust (PCT). The UK coalition government undertook a radical reorganisation of the NHS which abolished PCTs and replaced them with GP led Clinical Commissioning Groups (CCGs) (Timmins, 2012). NHS Wiltshire PCT was replaced by NHS Wiltshire CCG, with the CCG given statutory responsibility for commissioning health services in April 2013 for the area of the Wiltshire Local Authority (NHS Wiltshire CCG, 2013a). NHS Wiltshire CCG was therefore the responsible commissioning organisation during the time that the study took place and continues to be the responsible commissioning organisation in 2016. Wiltshire hospital services are primarily commissioned from the Royal United Hospital in Bath and Great Western Hospitals NHS Foundation Trust (NHS Wiltshire CCG, 2013a). In 2013 there were sixty three GP surgeries in Wiltshire (NHS Wiltshire CCG, 2013b). Life expectancy is slightly higher in Wiltshire than for England as a whole and the rest of the South West (Wiltshire Intelligence Network, 2012, p.16). In 2010 31% of mortality was as a result of circulatory diseases, 29.5% from cancers and 12.6% from respiratory disease (Wiltshire Intelligence Network, 2012, p.16). Analysis of the burden of disease in England is consistent with the causes of mortality in Wiltshire, with circulatory disease, cancer and respiratory disease identified as the leading causes of mortality across England (Newton *et al.*, 2015). Wiltshire CCG suggests that, on average, Wiltshire residents are slightly healthier than comparable groups across England with lower deaths from preventable causes, smoking related illness and premature cancer deaths (NHS Wiltshire CCG, 2014, p.13). Wiltshire's aging population is identified as a major

future health challenge (Wiltshire Intelligence Network, 2012) with significant costs to the health and social care system. The over retirement age population in Wiltshire in 2011 was 21.5% in 2011 and is expected to increase to 29.8% by 2026 (Wiltshire Intelligence Network, 2012, p.12) in contrast to 16% of residents of England and Wales aged over 65 in 2011 (Office for National Statistics, 2013).

Wiltshire CCG covers a relatively large population when compared to the average CCG population in mid-2014 of 257,400 (Office for National Statistics, 2015). CCGs budgets are allocated per head of the population, adjusted for healthcare need based on composition of population and deprivation and Wiltshire received £1065 per head in 2014-2015 (NHS England, 2013) compared to an average of £1333 (Wood, 2014). Limited data is available comparing Wiltshire to other NHS regions, with the restructure of the NHS necessitating relevant methods of comparison be developed. Health outcome data is available by CCG through the Public Health Outcomes framework data tool (Ham *et al.*, 2015) and CCG performance through the CCG outcomes indicator set (NHS England, 2015). Comparison across these indicators is problematic, given the difficulty of comparison across a huge number of specific indicators and accounting for the myriad social, economic and environmental factors that influence outcomes. Equally these indicators provide little insight into valuable aspects of performance such as how well local services work together (Ham *et al.*, 2015). Methods of measuring CCG performance are still developing. In 2013-2014 and 2014-2015 Wiltshire CCG was assessed as 'assured with support', which indicated that intervention was not required (NHS Planning and Assurance Team, 2014, 2015). In 2016 a more in-depth assurance process was undertaken with CCGs rated inadequate, requires improvement, good or outstanding. NHS Wiltshire received an overall good rating and was rated good in planning, finance, delegated functions and leadership while requiring improvement in performance (NHS Planning and Assurance Team, 2016). Of a total of two hundred and nine CCGs twenty six were rated as inadequate with nine placed in special measures (Roberts, 2016). The overall good rating achieved by NHS Wiltshire CCG was shared by eighty two CCGs, with a further ten rated outstanding and ninety one requiring improvement (The Commissioning Review, 2016). The assurance process suggests that NHS Wiltshire CCG is doing well in comparison with its contemporaries.

The above discussion of Wiltshire indicates that this study takes place in a relatively affluent rural county where the population, on the whole, enjoys good health alongside fairly similar health challenges to the wider UK. Although Wiltshire is not among the most deprived areas of the UK the above makes clear the presence of health inequalities, the challenge of an aging population, the issue of rural disadvantage and

the lower levels of diversity in Wiltshire compared to the wider UK. Wiltshire CCG is also shown to be a relatively large CCG with available performance data indicating a competent and well run organisation. Working towards a more sustainable NHS and the barriers and facilitators to this was explored in light of the above background.

2.9 NHS and sustainability literature

There is a variety of literature from official bodies, government departments, think-tanks and professional and academic journals that make the case for a more sustainable NHS and propose how it might operate. Prominent amongst this literature is the work of the SDU established in 2008. The SDU is funded by NHS England and Public Health England to support work towards a more sustainable NHS, providing expertise and guidance as to how the NHS can become more sustainable. The key literature are summarised below to provide a broad outline of proposals for a more sustainable NHS. Following this a detailed examination of the proposals for a more sustainable NHS and the implications of this are presented.

2.9.1 Policy literature

A large volume of policy literature has been produced to encourage the NHS to adopt more sustainable behaviours. These include the SDU's carbon reduction plan (NHS SDU, 2010a), a route map for sustainable health (NHS SDU, 2011b), a sustainable development strategy (SDU, 2014a), future health service scenarios (Forum for the Future and NHS SDU, 2009; Clarkson *et al.*, 2009), the Sustainable Development Commission's Healthy Futures series and Good Corporate Citizenship initiative (Sustainable Development Commission, 2003, 2009) and the Faculty of Public Health's Sustaining a Healthy Future (Faculty of Public Health, 2009). Many of these publications referred to the significant commitment to reduce greenhouse gas emissions by 80% by 2050 in the climate change act (HM Government, 2008) and the implications of this for settings, lifestyles and the function of the NHS. These documents are positioned alongside the Wanless report (Wanless and others, 2002) and Choosing Health white paper (Department of Health, 2004) and their arguments that changing health needs alongside rising demand and expectations would require greater attention be paid to health determinants and healthy lifestyles. Beyond this strategic and policy literature a range of contributions from think-tanks, professional organisations, academics and the grey literature have contributed literature outlining proposals for how a more sustainable NHS might operate, the role of health professionals and the case for a more sustainable NHS.

2.9.2 Broad vision of a more sustainable NHS

The NHS SDU considers an organisation sustainable when it can operate without damaging the environment or depleting natural resources (NHS SDU, 2011b). The NHS has committed to substantially lowering its carbon emissions by 80% from the 1990 baseline by 2050, with interim targets of 34% by 2020 and 64% by 2030 (NHS SDU, 2010c). The Good Corporate Citizenship initiative connects sustainable development principles to a range of employment practices, sustainable travel, facilities, procurement and other NHS corporate activities (Sustainable Development Commission, 2009). These actions were justified as improving health, efficiency and corporate performance (Sustainable Development Commission, Department of Health and NHS Confederation, 2007). Achieving an 80% reduction in greenhouse gas emissions will require transformational change in how the NHS operates. Gains arising from efficiency in current practices are likely to be limited, with Naylor and Appleby describing the transformation as a shift in where services are delivered, what services are delivered and how services are delivered (Naylor and Appleby, 2012b).

A sustainable NHS is not the current NHS with a set of environmental obligations that are met in a piecemeal way, but an NHS which is resilient and adapted to its future operating context. If the NHS continues to rely on models of care that depend on cheap resources and assumptions of continued environmental stability it will be challenged by rising demand, resource scarcity, growing impact from sustainability issues such as climate change, and rising expectations in regard to environmental performance.

2.9.2.1 Healthcare improvement

The current healthcare system is not fit for purpose in terms of meeting health needs or likely future challenges (Schroeder *et al.*, 2013). Modern healthcare in developed countries involves spending increasing sums of money while variation and quality issues suggest that much of this expenditure does not improve health (Schroeder *et al.*, 2013). The discussion of health needs above indicated that demand was changing due to aging and the prevalence of long term, chronic diseases and complex needs which require health services to change from an episodic model of care to one that addresses the service users' unique needs (Crisp, 2010). In addition to the above the NHS relies on heavy resource use (Pencheon, 2009a) which may not be tenable in the future (Raffle, 2010).

2.9.2.2 Evidence and quality

Sustainability objectives are complementary to the wider productivity, quality and financial objectives of the NHS (Naylor and Appleby, 2012a). Sustainability can be understood as an aspect of quality improvement (Thomas and Cosford, 2010) where

information and communication technology is utilised, human error is reduced and duplication of efforts is minimised (SDU, 2014c). Sustainability has been closely connected to lean service delivery, efficient delivery, selection of low impact ways of working and reduction in low value services (Mortimer, 2010). The environmental impact of interventions and patient pathways should be measured and assessed (Pencheon, 2009a) while choosing lower impact ways of delivering care, particularly using information technology (Forum for the Future and NHS SDU, 2009). There is significant waste inherent in many aspects of healthcare, with many opportunities for efficiency (Moynihan, 2012).

Achieving sustainability objectives will depend on lower levels of activity and delivering care in the lowest impact way (Pencheon, 2009b), which will include disinvestment in some buildings and services. Raffle (2010) suggests that peak oil may require rethinking what services are delivered to ensure that the most valuable and low impact services can be delivered. The need to reduce overall levels of activity in the health service must be managed well to ensure that the activity that is reduced is low in value and provides little benefit to patients (Naylor and Appleby, 2012b), while freed up resources are invested in high value activities.

2.9.2.3 Prioritising services

The focus on prevention and health improvement is apparent in much of the literature (Forum for the Future and NHS SDU, 2009). Shifts in 'what' healthcare is delivered will also require that some types of care and services are prioritised over others. Mackenzie (2011) describes this as a paradigm shift where resources are focused 'upstream' towards prevention and management of conditions in primary care and community settings. Low impact approaches to healthcare such as promoting lifestyle changes, personal responsibility and enabling high quality self-care by patients (SDU, 2014c) are suggested to better manage health conditions in the long term. Interventions unlikely to benefit patients and over investigation should be reduced and where possible patients managed outside of hospital settings (NHS SDU, 2010b). The NHS SDU proposes a 'proactive' health service focused on maintaining health and wellbeing rather than one focused on illness where an unplanned admission demonstrates a failure of the health service (Pencheon, 2011). This is intended to reduce the medicalisation and overtreatment of patients, which is inefficient and puts patients at risk of harm. This light touch approach extends to death, with guidance on avoiding medicalised deaths to one that reflects the wishes and needs of patients (Schroeder *et al.*, 2013).

The shift in models of care proposed above will require investment in new services and change in how services are delivered. One element of this shift will be changing the role of the NHS from a 'paternalistic' service that emphasises the active role of health professionals in providing care for the ill, to a service where health professionals work in partnership with patients to prevent illness and promote wellness and independence (SDU, 2014c). In addition a more sustainable health service requires health professionals embrace a 'long term' perspective, balancing the needs of individual patients against the needs of the wider population. Mackenzie (2011) argues that current long term concerns are future short term operational concerns. However, health professionals may find it challenging to balance immediate needs against more abstract and distant needs. Similarly, expecting that health professionals consider the wider environmental impacts of their decisions, especially when these impacts may be diffuse and difficult to understand may also require significant investment in training.

2.9.2.4 Resilience

Mackenzie describes this change in mind-set as requiring a 'mature' approach that balances short term needs against long term strategic need (Mackenzie, 2011, p.4). The focus on prevention also necessitates a shift in perspective on the part of health professionals towards the local population, rather than the patients that they are immediately presented with. Requiring health professionals to make the best possible use of limited resources requires an assessment of health needs in the community that is being served and balancing the needs of individual patients against the wider duty to serving the whole community. Focus on curative care, where patients present with an illness and resources are deployed for these patients' care, must be balanced against providing care that emphasises prevention of ill health and enabling individuals and communities to maintain and improve their own health (Mackenzie, 2011). A more sustainable NHS is likely to emphasise its public health role and take more opportunities to contribute to wider health and wellbeing, enabling individuals and communities to live healthy lives and reduce demand for health services (Naylor and Appleby, 2012b; Schroeder *et al.*, 2013; SDU, 2014b). Increasing the resilience and social capital of communities is important as a determinant of health and in enabling individuals and communities to better care for themselves (2013). Connecting the need to improve health and address the social determinants of health is made widely in the literature on the NHS and sustainability (Forum for the Future and NHS SDU, 2009; Schroeder *et al.*, 2013). This reflects the connections made between sustainability and health above, as well as the extent that population health needs are responsive to setting and lifestyle change.

2.9.2.5 *How healthcare is delivered*

Changing 'what' activities the NHS prioritises will necessitate changes in 'how' and 'where' these services are delivered. The NHS is expected to partner with social care, public health and other parts of the public sector, civil society and business to address the wider determinants of health and increase resilience to sustainability issues such as climate change (SDU, 2014b). Personal responsibility is seen as key to a more sustainable health service (Forum for the Future and NHS SDU, 2009). Promoting self-care and lifestyle change requires a shift in roles between patients and health care professionals. Diagnosis and treatment of illness will remain essential to health professionals, but a partnership role with shared responsibility for maintaining health will require a proactive approach to health and a supportive role, assisting behaviour change and wider wellbeing. Schroeder and colleagues (Schroeder *et al.*, 2013) suggest that more sustainable practices may involve giving more information to patients and less prescriptions. This will provide many positive benefits but will also require significant investment on the part of health professionals. Reducing activity is knowledge and time intensive, with healthcare professionals best achieving this by reviewing all available evidence, balancing the benefits and risks of activities and working with patients to inform their choice of treatment. Where patient expectations are not met, for instance where lifestyle changes are recommended instead of a further test or pharmaceutical prescription, health professionals will have to provide a persuasive justification for this choice. Accommodating and managing risk through active observation of conditions and reduced investigations may be resisted by some patients and health professionals who value the interventions or are sensitive to the risk of late diagnosis.

Delivering behaviour change effectively is likely to entail different patterns of care. A ten minute GP consultation may be adequate to identify a condition and provide a prescription that treats this condition, but may not be sufficient to provide a patient support to change their lifestyle. Primary care is ideally placed to facilitate more sustainable care, in particular managing people with long term conditions in the community and reducing unplanned admissions (Ballard, 2013). With more resources primary care would be better positioned to manage patients in the community and manage risk factors such as obesity (Ballard, 2013), recognised in current policy with a commitment to increase primary care funding (Triggle, 2016). NHS SDU recommendations for lowering impacts included management in the community (NHS SDU, 2011c) and avoiding over investigation.

2.9.2.6 NHS leading change

A more sustainable NHS is an opportunity to lead and model sustainable adaptation (Pencheon, 2009a), encouraging others to contribute to sustainable development. The corporate activities of the NHS and the resources that it uses allow the NHS to have a wide influence through procurement, facility and estates management, employment practices and all its wider activities. (Coote, 2002; Faculty of Public Health, 2009). NHS leadership is described through promoting energy efficiency, sustainable workplaces and process, and informing patients, staff and the public about sustainability and health connections (NHS SDU, 2011c). The 'virtuous circle' argument suggests that by positively contributing to local social, environmental and economic conditions the NHS can improve health, which will lower demand for services freeing up resources (Coote, 2002; NHS SDU, 2009b, 2011a) .

2.9.2.7 NHS sustainability journey

The NHS is still in the early stages of its sustainability journey. Many health professionals are yet to engage with sustainability (Schroeder *et al.*, 2013). Planning for climate change adaptation is not uniform across NHS providers, with only a third having plans on service delivery and climate change (Healthcare System Adaptation Report Working Group, 2015). There are still many information gaps about a more sustainable NHS, in relation to environmental impacts, how best to encourage engagement with sustainability, more sustainable models of care and how best to encourage transition to more sustainable practices (Naylor and Appleby, 2012a).

2.9.2.8 The role of health professionals

The literature argues that health professionals should lead on sustainability given the close links between health and sustainable development (Haines and Dora, 2012; Harvey, 2011; Roberts and Stott, 2010). This may include adopting and modelling sustainable behaviours (Haines *et al.*, 2009; Stewart and Maryon-Davis, 2009) and advocating for more sustainable and healthy settings and lifestyles (Draper and Crombie, 1995; Haines *et al.*, 2009; Nurse *et al.*, 2010; Royal College of General Practitioners, 2010). This advocacy involves linking local and global issues (Campbell-Lendrum, 2005), taking part in social movements (Gill and Stott, 2009), involvement in planning (Barton, Grant and Insall, 2009) and being active in the work place (Griffiths and Reynolds, 2009). Some authors suggest very active roles for health professionals, for example discussing family planning with couples (Guillebaud and Hayes, 2008). The extent that health professionals are able to involve themselves in advocacy is, however, unclear.

2.9.3 A more sustainable NHS as risk management

Developing a strategic approach to sustainability enables the NHS to manage its future risks from environmental change, environmental legislation and related sustainability issues such as climate change, resource scarcity and changing attitudes towards sustainability. The NHS itself will need to adapt to ensure that it is able to deliver services, for instance climate change may put pressure on the NHS through increased ill health as well as putting the NHS at risk where infrastructure is not up to extreme weather or in areas of flood risk (Hames and Vardoulakis, 2012).

Clinical Commissioning Groups are encouraged by the SDU to view sustainable commissioning as a way of managing these future risks, as well as managing future demand (NHS SDU, 2011a). The SDU makes a policy-linked case for sustainability (SDU, 2014a), linking sustainable development strategy, the 80% greenhouse gas reduction target (HM Government, 2008) and five sustainability principles from *Securing the Future* (HM Government, 2005). The carbon management plan addresses future risks of noncompliance with the Climate Change Act, manages organisational risk from the scarcity of fossil fuels and provides financial benefits (NHS SDU, 2010a). Risks from future legislation are likely, for example tighter waste management regulation (Naylor and Appleby, 2012b).

The above proposals also manage financial risk. The NHS is financially unsustainable with significant drivers of cost and demand alongside productivity challenges (Appleby, 2013), combined with a tight financial settlement for the public sector (Office for Budget Responsibility, 2013), with little capacity for the government to increase spending while paying down debt incurred during the financial crisis. Public spending is very unlikely to increase as bringing UK government debt down to 40% of GDP, close to the level of debt before the financial crisis, will require cuts in public spending or a mixture of cuts and tax increases (Office for Budget Responsibility, 2013:126). Growth in spending on the NHS is likely to be limited, with the IFS suggesting that spending on the NHS as a proportion of UK GDP is likely to drop to 6.9% for 2020-21 and to rise to 8.7% by 2062-63 (Institute for Fiscal Studies *et al.*, 2013:40), broadly in line with OBR predictions. Although this will keep pace with predicted economic growth and allow for a real terms increase in spending, the challenge of an aging population, rising expectation and increasing healthcare costs will require significant change to healthcare delivery. In addition, the historical problem of increasing productivity in the NHS provides a further illustration of the financial constraint the NHS is likely to experience (Appleby, 2013).

2.9.4 Transitioning to a more sustainable NHS

The summary of proposals above provides a broad outline of how a more sustainable NHS might operate. This literature emphasises the connections between sustainable development and protecting and improving the health of the UK population. The literature also provides a critical account of healthcare delivery and provides a clear argument for a more sustainable NHS that involves radical change in what healthcare is delivered, how healthcare is delivered and where healthcare is delivered. However, the above leaves a number of questions unanswered. In particular, the above sustainability proposals constitute an ambitious program of long term transformative change in the health service, where sustainability is connected to the wider challenges and opportunities that the NHS faces. This requires significant commitment and resources to achieve. Organisational ambidexterity will be required to forecast, plan and anticipate for long term change while dealing with present challenging conditions. This organisational change is also credited with better addressing the health needs of the UK population, improving the quality of services, improving productivity and significantly reducing environmental impact.

Creating more sustainable practices within organisations is a significant challenge and is likely to be particularly difficult in the delivery of complex tailored services delivered to individual patients. In addition the NHS is exceptional among organisations, in terms of its size, its prominence in the UK, the levels of political and media scrutiny it is subject to and the professional and organised nature of its employees. Large change programs can be unsettling and disturbing for many stakeholders, as present practices and ways of working are challenged. There is significant uncertainty associated with complex change, with difficulty in predicting the extent to which change will affect the provision of services and key stakeholders as well as uncertainty over the positive results of change. The above proposals are further explored below in the context of the literature on organisational change.

2.9.4.1 Attitudes and understanding

The above proposals raise questions about the attitudes of health professionals towards a more sustainable NHS. In these proposals health professionals are integral to designing, developing and delivering sustainable services appropriate to their local context (NHS SDU, 2011b). However the extent that these proposals are supported by health professionals is unclear. There is no data on whether health professionals share the assessment of the role of the NHS in sustainable development as put forward in this chapter, or if the arguments to support this are accepted by health professionals. The SDU consulted on its carbon strategy and sent a consultation document to NHS trust chief executives and other stakeholders (NHS SDU, 2009b). It conducted a survey

of the public (IPSOS MORI, 2012) and surveyed and interviewed NHS leaders (Ling *et al.*, 2012). The public indicated broad support for a more sustainable NHS while the survey of leaders indicated support for a more sustainable NHS, but reported corporate culture as a barrier and uncertainty over how to spread best practices. Within the NHS, interviews with senior managers (Grose and Richardson, 2013) indicated support for sustainable practices but the presence of internal and external barriers, while student nurses were reported to have low levels of awareness regarding sustainability and healthcare but were engaged and interested by an educational intervention (Richardson *et al.*, 2014). An educational intervention with public health registrars suggested that health professionals were not very engaged with sustainability, with barriers to engagement including competing priorities, underestimating sustainability health risks and a tendency to react rather than be proactive (Charlesworth *et al.*, 2012). Outside of the NHS Maibach *et al.* have looked at views towards climate change and public health among public health practitioners (2008). The online survey and interviews of GPs in Wiltshire outlined in the introduction chapter are intended to address this gap in our knowledge about the attitudes and understandings of health professionals in the NHS towards sustainability. This primary research with GPs in Wiltshire will enable a discussion that benefits from the knowledge and experience of currently working health professionals about the appropriateness and validity of the above proposals. This will provide data on the extent of the gap between the literature and the sample of GPs in Wiltshire, how GPs make sense of working towards a more sustainable NHS and provide insights into the barriers and facilitators to their engagement with sustainability.

2.10 Healthcare literature

The above proposals on how a more sustainable NHS can be achieved included criticism of how care is currently delivered and suggestions for significant changes in healthcare priorities and how care should be literature. These proposals reflected issues raised in the wider healthcare literature and by the strategic plans of NHS Wiltshire CCG.

2.10.1 Quality

The connection of sustainability to quality, evidence based medicine and productivity objectives reflect wider concerns about health care. The quality of health care, and the potential to harm patients or not deliver the full benefits of care is an issue for the NHS and other advanced health systems around the world (Richardson *et al.*, 2001; WHO, 2002). In NHS hospitals it is estimated that around 10% of patients experience an adverse event, with significant health and service impacts (Vincent, Neale and Woloshynowych, 2001) and a need to actively engage in learning processes to reduce

these risks (Donaldson, 2002). Around 3,000 deaths occur as a result of NHS safety per year (Campbell, 2013).

There is significant variation in expenditure, levels of activity, outcomes and quality for similar categories across the UK (NHS Rightcare Team, 2010). This suggests that the best evidence is not being put into practice everywhere, with waste and harm arising from clinically unnecessary interventions while individuals with other conditions are underserved. Over prescription and use of medicines that are unlikely to have beneficial effects is very common in the UK (Howick *et al.*, 2013). The overdiagnosis, overtreatment and medicalisation of conditions leads to both waste of resource and harm to otherwise healthy individuals (Moynihan, Doust and Henry, 2012). Overdiagnosis may occur as a result of more sensitive tests and screening picking up conditions that would be unlikely to harm a patient or the broadening of the definition for a particular illness (Moynihan, Doust and Henry, 2012). Providing treatment with limited benefits means that patients are unlikely to receive benefits while experiencing the risks and disadvantages of treatment (Grady and Redberg, 2010). Healthcare interventions can be driven by the availability of supply in care rather than evidence of effectiveness or patient preferences (Mulley, 2009). Patient preferences need to be accurately assessed and acted on, rather than assumptions made about those preferences (Mulley, Trimble and Elwyn, 2012), with well-informed patients likely to demand less healthcare (O'Connor, Llewellyn-Thomas and Flood, 2004).

Quality and variation issues in healthcare lead to broader concerns about the limitations of healthcare and the case for an optimum allocation of resources to healthcare, rather than an ever increasing amount. Gray (2015) notes that investment in healthcare has diminishing returns of benefit, while harms continue to rise. This suggests there is an optimum amount of care. International data suggests that many procedures have limited benefit and that higher spending is not always correlated with health improvement (Appleby and Harrison, 2006). The case for an optimum amount of resources for healthcare involves acknowledging where harms outweigh benefits, iatrogenic harms and when resources utilised on healthcare may make a better contribution elsewhere (Callahan, 1998; Illich, 1990). Under-treatment, where evidence is not put into practice, is also problematic with up to 24,000 avoidable deaths per year in the UK from diabetes from not following NICE guidelines (Ham, Dixon and Brooke, 2012, p.19).

2.10.2 Relevance to Wiltshire CCG

Beyond this, the sustainable model of care proposed above is broadly consistent with Wiltshire CCG's five year strategy (NHS Wiltshire CCG, 2014). This strategy includes a

focus on prevention, care closer to home, primary care led services and a reduction in 'bed based' care (NHS Wiltshire CCG, 2014, p.34). The "future care model" (NHS Wiltshire CCG, 2014, p.30) places personal responsibility, family and community support at the centre of improving health. This is consistent with proposals for a more sustainable NHS outlined above; however neither sustainable development or environmental issues such as climate change are mentioned in the document.

2.10.3 Limitations to healthcare

This future model of care is consistent with the claim that healthcare systems focus on acute care rather than prevention (World Health Organization, 2006), with potential to improve health through increased investment in prevention. The wider duty of care of health professionals is carefully balanced against those of individual patients, with the GMC stating that the first duty is towards the individual patients, followed by a wider duty to protect the wider public (General Medical Council, 2009). The BMA and Royal College of Physicians suggest that health professionals should act as community leaders and advocate for action on the wider determinants of health (BMA, 2011; Royal College of Physicians, 2010).

2.10.3.1 Structure of services

NHS Wiltshire's future model of care is consistent with suggestions to include more resources and focus on primary care outside of secondary care, with acute hospitals used only when appropriate (Goodwin *et al.*, 2013, p.17). Care could then be delivered closer to home with more specialisation in hospitals (Campbell, 2012). A focus on primary care has the potential benefit of early and long term management of conditions, personalised care and steering patients towards appropriate care and away from inappropriate care (Starfield, Shi and Macinko, 2005). This contrasts with the "episodic and linear" care cycle (Crisp, 2010, p.50) where secondary care is provided in a hospital environment where significant resources are deployed to help those who are ill enough for admission. This is consistent with the description of a more sustainable NHS provided by the SDU (NHS SDU, 2011b; SDU, 2014c).

Patient centred care is described as enabling patients to be more resilient and independent with health professionals taking a 'high-touch, low-tech' approach to patient interactions (Goodwin *et al.*, 2013, p.17). This approach involves face to face interaction with patients, understanding their needs and supporting them without necessarily medicalising their needs. A more proactive approach to care is one where at risk individuals are identified and their care invested in to avoid the need for acute unplanned interventions later (Goodwin *et al.*, 2010).

2.11 Organisational change literature

Understanding the barriers to change is necessary to engaging health professionals and successfully working towards a more sustainable NHS (Pencheon, 2009b). The literature above makes a strong case for a more sustainable NHS, linking sustainable development and health to the challenges facing the NHS. However, the extent that this change process is likely to achieve its transformational aims is unclear. The change outlined above is consistent with the idea of a paradigm shift described by Huczynski & Buchanan (2007). A more sustainable NHS involves a paradigm shift in the NHS, away from curative and reactive care to an emphasis on prevention and proactive services, engagement with public health, reducing demand for services and accounting for environmental impact. This transition in how the NHS creates and delivers value will require disinvestment in current practices, investment in new areas and change to working methods, including close partnership with social care, local communities and patients. This ambitious change program will be considered in light of the wider literature on organisational change, the healthcare and change literature, the literature on sustainability in organisations as well as the complex responsive processes approach to change.

2.11.1 Organisational change difficulty

Organisational change is problematic in that change programmes frequently fail (Kotter, 2007). The aims and objectives of change are not always achieved; the implementation of change programmes can take longer and be more complex than initially put forward and improvements are often below those expected. The organisational change literature claims a failure rate of between 60% and 90%, (Burnes, 2011, p.446). Further, the organisational change literature contains a great deal of guidance on how best to conduct organisational change, but very little empirical evidence on the effectiveness of this guidance (Doyle, 2002; Guimaraes and Armstrong, 1998). Simplified guides to effective change can be reassuring but are also at odds with the common experience of messy and complicated change (Huczynski and Buchanan, 2007).

This suggests that although there is a compelling case for a more sustainable NHS, this case is unlikely to be sufficient to drive the extensive and transformative change put forward in the developing literature. A successful transition towards a more sustainable NHS is far from certain and likely to be challenging. Change of this nature is disruptive and discontinuous with past and current practices. We should expect unintended consequences and resistance to change, as well as enthusiastic support and engagement from some.

2.11.2 Change in healthcare systems

Working towards a more sustainable NHS is described above as a transformation in how care is delivered, involving radical change in organisational structures and practices. Developing more sustainable practices may be facilitated by risk taking and innovation, which the more conformist culture of the NHS may hinder (Naylor and Appleby, 2012a). This risk aversion is cited elsewhere as creating a reluctance to trying new models of care, with risk of failure creating political challenges (Ham, Dixon and Brooke, 2012). Public sector organisations are sometimes characterised as inefficient or bureaucratic compared with private sector organisations (Buchanan and Fitzgerald, 2006). Challenging decisions, such as reducing variation in care or disinvesting in some services to invest in others, are politically challenging (Lock, 2014) with the NHS influenced by central and local political concerns (Naylor and Appleby, 2012a). The level of political and media scrutiny of the NHS, along with fatigue from organisational turbulence may also make change more difficult in the NHS (Davies, Powell and Rushmer, 2007). Buchanan (1997) notes that change in the politicised organisations is complex with the clear statement of rational change objectives upfront while political concerns are taken into account behind the scenes.

NHS structures can impede change. Crisp (2010) notes that episodic and linear models of care in hospital settings appear to be modelled around the payment system, while Naylor and Appleby (Naylor and Appleby, 2012a) suggest that payment by results is an impediment to sustainability and incentivises activity. Pencheon suggests that most health services focus on activity as outcomes are more difficult to measure (2009b). Payment systems that encourage upstream care and environmental performance could facilitate more sustainable practices (Naylor and Appleby, 2012b).

The NHS is characterised as focusing on short term objectives, whereas a more sustainable NHS requires considering long term benefits (Naylor and Appleby, 2012a). Patient and public expectations of NHS services could also drive resource use (Naylor and Appleby, 2012b) where they diverge from the lower activity model of care described above. Patient satisfaction can be related to higher levels of utilisation, but with poorer health outcomes (Fenton *et al.*, 2012), suggesting a need for public and patient engagement.

2.11.2.1 Barriers and facilitators to change in healthcare organisations

Beyond these NHS specific factors, change in healthcare itself is problematic (Coiera, 2011) with relatively little known about change and quality improvement in healthcare organisations (RAND, 2008) and addressing quality problems. Adopting new practices and the disinvestment in current practices may be more challenging in the healthcare

environment, as patients and those that deliver care may be invested in current methods. Innovation and new practices may be slowed by the need to reduce and eliminate risk in adoption as compared to other industries which can tolerate higher levels of risk. The adoption of best practice by healthcare professionals is often slower than desired, with Grol (1992) noting that even with sufficient information clinicians often do not implement guidelines in their care. A review of barriers and facilitators to the adoption of best practice and guidelines identified the below factors as relevant to engagement with sustainability and informed the data collection methods.

Evidence and information is not sufficient, in itself, to drive change (Dopson *et al.*, 2002). Grol (1992) suggests that too much attention is given to evidence and information and insufficient attention to barriers. Evidence is interpreted by health professionals according to the type of evidence and the personal experience and knowledge of the health professionals (Dopson *et al.*, 2002). Evidence of population benefit can be less convincing when considered on an individual basis (Carlsen, Glenton and Pope, 2007), reflecting a broader uncertainty related to medical evidence.

The personal attitudes and beliefs of healthcare professionals can facilitate, or provide a barrier, to change (Cochrane *et al.*, 2007). Where changes were consistent with the values of health professionals they were more likely to be supported (Burgers *et al.*, 2003). Self-efficacy, where the individuals were competent and able to carry out the change was cited as a factor in uptake of recommendations (Cochrane *et al.*, 2007; Lugtenberg *et al.*, 2009) whereas where new skills had to be learned uptake could be inhibited (Burgers *et al.*, 2003).

The motivation and attitudes of health professionals, as well as personal characteristics such as willingness to change, were important to the implementation of guidelines (Grol, 1992). Inertia of previous practice and lack of motivation were also important factors (Lugtenberg *et al.*, 2009). Berwick (2003) suggests that willingness to adopt innovations is an important personal characteristic and that encouraging early adoption and making their success visible is a sound strategy for promoting innovation. Resistance to quality initiatives in the NHS has been observed, with Davies and colleagues (Davies, Powell and Rushmer, 2007) reporting this as arising from a perception that initiatives can be ineffective and a waste of resources.

Guidelines that were unclear or unambiguous were less likely to be supported (Lugtenberg *et al.*, 2009), while easy to follow proposals (Burgers *et al.*, 2003) were more likely to be supported. Local applicability, evidence and benefits were important to the adoption of guidelines (Cochrane *et al.*, 2007; Lugtenberg *et al.*, 2009), particularly where benefits could be quickly observed (Burgers *et al.*, 2003). Barriers

included where guidelines were disagreed with, or where outcomes were not expected to benefit patients (Lugtenberg *et al.*, 2009). Resistance to quality initiatives from healthcare professionals could come from a desire to maintain independence or a perception that evidence was being used to justify cuts, increased monitoring or other undesirable aspects of change (Davies, Powell and Rushmer, 2007).

External factors such as organisational support and patient relationships also influenced the adoption of best practices. Time, human and material resources to support the change were important for adoption (Cochrane *et al.*, 2007; Grol, 1992; Lugtenberg *et al.*, 2009), as was the presence of incentives (Cochrane *et al.*, 2007) and organisational capacity to absorb the change (Dopson *et al.*, 2002). Relationships with peers and their support of change was also important (Grol, 1992) as well as leadership and local champions (Rycroft-Malone *et al.*, 2004).

Patients were also a key factor, with patient demands (Grol, 2001) and preferences (Lugtenberg *et al.*, 2009) and the extent that they conflicted with guidance influencing the adoption of guidelines. Preserving the doctor patient relationship was sometimes viewed as more important than following a guideline (Carlsen, Glenton and Pope, 2007). The capacity of patients to comply with guidelines was also important. Resistance to taking a proactive and preventative approach with patients was also noted where guidelines involved motivating behaviour change in patients (Grol, 2001). In contrast, doctors could investigate more than guidelines suggested as they were strongly motivated to not miss a diagnosis (Carlsen, Glenton and Pope, 2007).

Advantages and disadvantages of a recommendation were important characteristics, both in terms of patients and of health professionals (Stocking, 1992). Disadvantages associated with a change such as financial disincentives or personal disadvantages such as increased workload (Grol, 1992, 2001) could make change harder to accomplish.

There is some data on specific barriers and facilitators to NHS engagement with sustainability. The review of research needs conducted by Naylor and Appleby (2012a) identifies a number of knowledge gaps that themselves form barriers to engagement with sustainability. Although there is information on the aggregate impact of the NHS, there is little specific data to guide decisions. Observations from education interventions with public health registrars included suggested barriers such as competing priorities, a degree of scepticism over the health threats and opportunities associated with sustainability, and participants more used to focusing on demand rather than being proactive and focused on wider issues like sustainability (Charlesworth *et al.*, 2012). Moral offsetting, where the prosocial nature of healthcare

absolves it from wider responsibility for sustainability is also mentioned as a barrier (Charlesworth *et al.*, 2012; Moynihan, 2012). Consultation for the 2009 carbon strategy indicated 95% support for the NHS leading on carbon reduction (NHS SDU, 2009b), although this statistic was produced by a limited number of individuals that responded to the consultation. In 2012 NHS leaders were reported as strongly supporting working towards a more sustainable NHS and the belief that sustainability was supportive of corporate goals according to a survey of 172 NHS leaders (Ling *et al.*, 2012; NHS SDU, 2012). Organisational culture was seen as a key barrier. A public survey also demonstrated broad support for a more sustainable NHS, with 92% of responses indicating that the NHS should work more sustainably. The survey data however raises questions as it is unclear how respondents understood what a sustainable NHS meant or the implications for services. Naylor and Appleby (2012b) suggest that staff engagement with sustainability is challenged by low self-efficacy in regard to sustainability actions.

A more sustainable NHS involves balancing the needs of individual patients against the wider duty of care, as well as accounting for environmental and long term impacts. Considering multiple objectives is challenging and asks health professionals to act as 'double agents' (Shortell *et al.*, 1998) as they consider wider population needs. The need to involve patients and align incentives for health professionals is suggested in the literature (Jecker, 2001). However acting as a 'double agent' could be viewed as damaging to the individual patient and health professional relationship (Angell, 1993). The challenge of addressing the needs of patients and wider society, and the need for judgment when doing so to meet these is discussed by Maynard (1997).

2.11.3 Sustainability and change

The NHS sustainability proposals are consistent strategic approaches to organisational sustainability. Carroll (1991) suggests that organisations voluntarily take on ethical and philanthropic responsibilities whereas strategic approaches to organisational sustainability emphasise that sustainability strategy involve identifying material issues that relate to the organisation and develop strategies that manage risk and create value (Harmon *et al.*, 2008; Sharma, 2014). The NHS sustainability strategy outlined in the developing literature connects sustainability to a wider case for organizational change and improvement, mitigating future risks from changing demand, resource scarcity and environmental change. Sustainability is therefore integrated into the practices of the NHS, rather than an additional activity (Grayson and Hodges, 2004). The decision to focus on improving health ahead of providing healthcare (SDU, 2014a, p.4) reflects the approach of moving from product to service discussed by Hitchcock and Willard (2008), where instead of innovating around the supplied product, organisations consider how to

better deliver the value that the product offers. For example a car is a product, but independent and convenient transport is the service that cars provide.

The literature on organisational change and sustainability is open to similar criticism as the wider literature on organisational change in that it provides recommendations on how to achieve successful organisational change; however the evidence for the success of these methods is unclear. The discussion of organisational change put forward by authors such as Doppelt (2003) and Meadows (1999) suggests that change can be effectively managed through identifying key levers of change, making adjustments to these levers and further adjusting organisational practices. From this perspective working towards a more sustainable NHS can be understood as taking the proposals made in the developing literature and putting them into practice in the functioning of the organisation. This is an account of organisational change that emphasises the ability of leaders to act as system architects putting in place policies and processes to achieve desired change. This suggests that change can be achieved through astute choices and careful management, which is inconsistent with the above account of complex messy change and barriers to change in healthcare services.

2.11.4 Complex responsive processes

The complex responsive processes approach to understanding organisations and change within organisations put forward by Stacey (2007) provide a critical account of organisational change. These ideas influenced how the research problem of working towards a more sustainable NHS was understood. Symbolic interactionism, a perspective that informs Stacey's work, emphasises the extent to which meaning is a product of social interaction (Bryman, 1988). Therefore the proposals regarding sustainability made in the developing literature are given meaning in the social context in which they are expected to be carried out. Stacey's account of organisational change is sceptical of the role of managers and the tools and techniques of change, suggesting they provide a reassuring function by providing the perception of control and rationality to challenging situations (Stacey, 2011). The role of individuals as 'reflective responders' is emphasised (Stacey and Griffin, 2006) with individuals choosing how they respond to the plans and proposals of planners, with responses often diverging from those anticipated by planners.

Stacey's (2007) critique suggests that the practice of change is complex and problematic and the expectation that leaders can engineer radical change is misguided. Stacey (2007) emphasises that individuals are reflective, act independently and through their actions reinterpret any guidance made around change. Furthermore, the responses of individuals go on to influence others. This perspective emphasises the

local interactions where proposals are implemented and the reflective capacity of individuals and communities to make sense of implemented proposals.

2.12 Conclusions

This chapter has set out the close relationship between health and sustainable development, in terms of ensuring that human needs are met, the risks arising from sustainability issues such as climate change and the complementarity between healthy and sustainable settings and lifestyles. The sustainability and the NHS literature was then reviewed, setting out policy and proposals on how a more sustainable NHS might operate as well as identifying a literature gap in how sustainability was perceived and understood by health professionals. Following this the health care literature was reviewed and it was established that the proposals for a more sustainable NHS were consistent with broader concerns in the literature and Wiltshire CCG's strategic plan. Finally, the proposed radical transformation in NHS activities was considered in light of the organisational change literature which emphasised the difficulty of undertaking organisational change. In addition, barriers and facilitators to change in healthcare systems were identified. The strategic approach to sustainability put forward by the NHS SDU was then considered and found to be consistent with the approach in the organisational sustainability literature. Finally, an alternative account of change which emphasises the limitations of planning and the need to understand change proposals from the perspective of those affected by proposed change was discussed. The following methods chapter sets out the strategy of inquiry, research methods and the process used to address research questions D and E.

3 Methods

This chapter outlines the mixed methods strategy of inquiry employed to address research questions D and E. Data collection and analysis methods are outlined and justified below. The chapter begins by outlining the relevant research questions and the research position that underpins the research. The ethical consideration and process are then outlined. Following this the strategy of inquiry and data collection and analysis methods are set out.

3.1 Research questions

The strategy of inquiry was developed to address research questions D and E:

- D. What are the attitudes of GPs in Wiltshire towards sustainability in the health service, and their role in working towards sustainability, particularly in relation to the developing literature and barriers and facilitators to their engagement?
- E. How do GPs understand working towards a more sustainable health service, their contribution and the potential challenges and opportunities that this presents?

The research questions are 'what' and 'how' questions as opposed to questions focused on confirming or disproving a particular hypothesis (Creswell, 2003). These questions, although part of a mixed methods study, are more closely aligned to the qualitative research paradigm (Bulmer, 2008) as they primarily focus on describing and understanding a research problem. Question D focuses on what the attitudes of GPs are towards sustainability and is addressed through the online survey, while question E asks how GPs make sense of working towards a more sustainable health service and is addressed through qualitative interviews. A sequential mixed methods strategy of inquiry was used to address the research questions. Question D was addressed through an online survey of attitudes towards sustainability in the health service while question E was answered through one to one semi-structured interviews. Equal priority was given to the quantitative and qualitative research phases rather than favouring a particular phase.

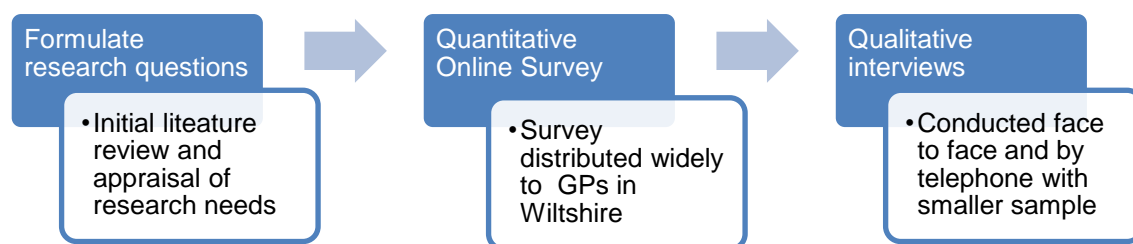


Figure 1 Research process

3.2 Research underpinnings

The strategy of inquiry was underpinned by a critical realist ontological and epistemological position, with the research centred around a pragmatic problem solving research approach (O’Leary, 2005). Research processes produce a particular description of the social world rather than a definitive description (Bryman, 2008). Critical realism proposes a ‘real’ world that objectively exists, but knowledge claims made about this world are relativistic in that they depend on the viewpoint of researchers and process by which data is gathered (Fleetwood, 2005). Bryman (2008) suggests that most qualitative researchers are located around the ‘midpoint’ of realism accepting accounts of reality produced by research as one of a number of possible representations of reality. This differs from the “natural science model” of social research and is consistent with the research questions focusing on gaining insights into the understandings and perspectives of GPs.

The critical realist stance informed how the research problem was understood, the strategy of inquiry and the selection of data collection and analysis methods. The research questions focus on how GPs in Wiltshire understand sustainability and its impact on health, healthcare and the NHS. Centring the research on the beliefs and attitudes of GPs stemmed from the conviction that these would shape the engagement of GPs with sustainability, which was compatible with the critical realist position. From a critical realist perspective things are real if they have causal efficacy (Fleetwood, 2005), that is they are able to influence and cause other things to change.

The mixed methods strategy of inquiry is consistent with the combination of ontological realism with epistemological relativism (Johnson and Duberley, 2000) fundamental to critical realism. The different research methods provide differing descriptions of the world (Lipscomb, 2008), with accounts expected to be incommensurable. These differing accounts are not problematic, but allow for a broader and more plural account of the research problem from differing perspectives. The critical realist perspective both suggests that research data describes the 'real world' while acknowledging the role of research methods in generating the description of the world. A critical realist stance is compatible with a pragmatic research approach (Johnson and Duberley, 2000; Morgan, 2007). A pragmatic research approach was appropriate for this project as researchers draw from diverse traditions to find approaches to data collection and analysis that produce the desired results (Creswell, 2003).

3.3 Ethics

The sections above show how the strategy of inquiry was a product of underpinning ideas and a challenging research context, however the final strategy of inquiry was also shaped by adherence to the ethical research practices and processes. This involved considering the potential of the research to benefit and harm participants and eliminating, as far as possible, risk to participants (Bryman, 2008). The research was developed in line with broad ethical principles put forward by the Economic and Social Research Council (2005). The research procedures were reviewed and advised by the supervision team of two experienced academics, with research proposals for the survey and interviews formally reviewed by the UWE research ethics committee and the regional NHS research and development office. These ethical principles and processes guided the research, in particular the relationship with participants, and ensured that they were treated with respect and did not come to harm through their participation in the research. This extended from their direct participation in the research to ensuring that all data was managed securely.

A broad understanding of harm was used, including physical harm, psychological harm and more ambiguous risks such as reputational damage. Overall the study was low risk, with the topic of sustainability unlikely to be distressing for participants, the GP participants all competent adults able to give their consent, the data collection methods unlikely to cause harm or burden participants, and the collected data unlikely to cause harm to participants.

3.3.1 Survey considerations

Planning the survey required considering the potential risks and benefits. Although low risk there were a number of risks that had to be managed when conducting the

research, arising from the process of taking part in the survey and the management of data gathered during the survey.

A self-completion survey put neither participants nor researcher at any risks arising from direct contact with other individuals or travel as with face to face research. Any risks incurred by participants either stemmed from the survey itself and issues raised during the survey or how survey data was handled. These risks were managed by creating a survey that took the needs of participants into account and would not be distressing or intrusive to participants and by putting in place robust data management procedures. Working towards a more sustainable NHS is not a sensitive or highly emotive subject that is likely to be distressing for participants to discuss; therefore it wasn't difficult to ensure that participants would not be at risk from completing the survey. Further working towards a more sustainable NHS is an emerging issue which will influence how the NHS operates in the coming years. Regardless of their participation in the survey GPs in Wiltshire will need to engage with working towards a more sustainable NHS in the coming years.

Participants were potentially at risk from the data gathered during the survey, although this risk was low. Responses to the main survey were neither personal data, in that individuals could not be identified, nor were responses sensitive and likely to compromise individuals. Data consisted of anonymous responses to closed questions, with a very few open items where participants were unlikely to have written extensively. Identifiable data was gathered from some participants in terms of a contact information and communication preferences, however this data was not linked to the main survey responses. Risks from this data were managed through ensuring participants' anonymity, the responsible use of data and data management procedures.

The anonymity of participants was safeguarded through the survey content and the how the survey was administered. The final survey item did ask participants to indicate if they wished to be contacted by the research team with this option leading participants to a second survey that was unconnected to the original survey, ensuring that contact details were kept separate from survey responses.

Participants could potentially be harmed by irresponsible use of the data, for example misrepresenting the views of participants or publishing data in a way that could allow individuals to be identified. This risk was managed through a transparent data analysis process, with interpretation of the data taking care to not overstate conclusions. Care was taken when publishing data to ensure that individuals were not identifiable. Data management was put in place to protect the participant data, and the anonymity of

participants. Participants were informed that anonymity would not be guaranteed in the unlikely event that they revealed criminal or harmful behaviours.

Participants were given contact details for the researcher and academic supervisory team and were encouraged to ask any questions they had about the research. The four week period from initial contact until close of the survey ensured that participants had sufficient time to consider the participant information sheet and make a valid judgment about their participation. The first survey item asked participants to provide their informed consent, indicating that they had read the information sheet and understood it. This was required before the rest of the survey could be accessed.

3.3.2 Interview considerations

Interviews involved direct contact with participants and the researcher, either face to face or over the phone, which created risks not present in the survey. Direct contact required that the researcher be honest, respectful and transparent in their communication with participants. As with the survey, the small risk that participants would be distressed discussing sustainability issues was reduced by ensuring that sustainability issues were presented in a balanced and non-emotional way. Although the interview did not include topics likely to be distressing for participants, ensuring that participants were not harmed required that interviews be managed professionally.

Face to face interviewing of unfamiliar individuals in unfamiliar locations introduces risk from travel and from the conduct of an unfamiliar person. These risks are not high, but procedures were put in place to manage them. Travel to interview locations was by public transport and bicycle, therefore locations were only considered based on them being safely reachable by these means. In the event of a problem affecting travel on the day, for example cancelled public transport or extreme weather, interviews would have been rescheduled. It was assumed that participants were of good character and there would be no risk from contacting participants and conducting interviews, however to ensure that participants were who they say they were an internet search was conducted to establish the interviewee's identity and background. Interviews also took place in public spaces, usually the workplace of the GP, attended by staff, patients and the public. Further security came by providing interview and travel details to trusted individuals and contacting them before and after the interview took place.

Interview data required slightly different management procedures to survey data, although the storage and further use of data was handled in the same way. Research data included audio recordings of interviews, verbatim transcripts of these interviews and contact details of interview participants. Potential risks arising from the data included the identification of participants from the data, the data including controversial

or damaging statements that could be attributed to participants or that findings and extracts from the data could be included in the final report in a way that participants felt was unfair. These risks were not great as the topic was not particularly sensitive and were managed in a number of ways. Interview participants were contacted directly by the researcher and storing these contact details alongside the interview data could have led to the identification of participants. Personal data, where participants could potentially be identified, was converted to 'linked anonymised data'. Transcripts were labelled with identifier codes and any information that would allow individuals to be easily identified removed from the transcript. Identifier codes were kept separate to the stored data in a password protected document which could be used to link the identifier code to a particular individual. As before, transport of data was kept to a minimum, with PCs password protected to prevent access to research data. As with the survey, participants had the right to withdraw themselves and their data from the study, although no participants did so.

When reporting findings, consideration was given to the potential reputational harm that could come of associating a participant with a controversial opinion. Findings were reported in a way that would not allow participants to be identified, for example biographical or contextual details which would allow the identification of individuals was not included. Further findings were presented in a balanced way and were very unlikely to cause reputational harm to participants.

3.3.3 Joint considerations

Reducing the risk to participants was consistent with ensuring that participants were fully informed and given sufficient information to make a fully informed decision about their participation. Participant information material reflected this objective. The participant information sheets were prepared in line with guidance from UWE (UWE, 2014), itself informed by NHS guidance. The guidance helped produce a sheet that included the purpose of the research, what research participants would be expected to do and comprehensive details on the benefits and risks associated with the research. The sheet also stressed the need for participants to weigh these risks and benefits carefully and that participation was entirely voluntary. Withdrawal procedures were put in place for both survey and interview.

Data management procedures were shared between the survey and interview and were conducted in line with UWE guidance (Elliott, 2014). Access to the data was only granted to the research team, with computers password protected. Physical copies of data were either kept in sight or stored securely. Transport of data was kept to a minimum, with sensitive data kept on the UWE network drive and a secure back up that

was password protected. Following completion of the project, data will be stored securely for six years, before permanent deletion. Participants consented to further use of their data by the research team in future projects, with assurances that their data would be treated in the same way as with this project.

In the unlikely event that participants revealed information of illegal or unethical activities that put others at risk, participants were informed that confidentiality may be broken. This would be on advice of the supervision team and UWE research ethics committee. This was considered extremely unlikely given the nature of the research topic.

3.3.4 Ethical process

The survey and interview research phases were reviewed separately by the ethics committee of the University of the West of England and the local NHS Research and Development board, with the NHS application processed through the Integrated Research Application System. The UWE ethics application involved detailing the selection methods for human participants, a consideration of the ethical and health and safety issues for participants and research and a discussion of data storage and confidentiality. In addition research materials including the research instruments, the participant information sheet and consent forms were included for review. The NHS ethical review process was more involved than the UWE review, requiring significant detail on the research process and final versions of documents that would be seen by participants.

3.4 Strategy of inquiry

This strategy of inquiry is based on the explanatory and exploratory mixed methods strategy described by Creswell (2003) in which an initial quantitative research phase is expanded by a qualitative research phase and results are integrated at the interpretation stage. Creswell prioritises the quantitative data with the qualitative phase interpreting and illuminating quantitative results, however in this study approximately equal priority was given to the quantitative and qualitative research phases. The strategy utilised here further differs in that the quantitative survey is descriptive and exploratory, investigating the extent to which the attitudes and understandings towards sustainability in the health service put forward in the developing literature are represented in the GP population in Wiltshire. This type of survey is in contrast to an explanatory survey, narrowly focused on proving or disproving a hypothesis or determining the relationship between key variables. This section outlines the strategy of inquiry and the key decisions and considerations, for example decisions relating to the sequence and priority of methods and the rationale for making these decisions. The

benefits of the strategy are then put forward, followed by a discussion of potential drawbacks and alternative strategies of inquiry. As a whole the section makes the case for the selection of this strategy of inquiry and the key issues that influenced this decision.

3.5 Mixed methods strategy of inquiry

The decision to utilise a sequential mixed methods strategy, with equal priority given to the survey and interview phases, is set out in this section. Equal priority is given to research phases as they address different research questions and the qualitative interview objectives are not limited to expanding on the quantitative research. Research questions were written around this model, with the survey addressing research question D, which focused on measuring the attitudes of GPs in relation to the wider literature on sustainable development in the NHS. Quantitative data collection was suited to measuring the extent to which GPs' attitudes and understandings of sustainability were reflective of the attitudes and opinions in the research literature. Survey items were written based on the background literature, in which the case and proposals for a more sustainable NHS comprised the 'theory' that the research engaged with. The objective of research question D was to explore how the attitudes and opinions of GPs related to the developing literature and a more open ended, qualitative, approach would not have reflected the developing literature as well.

The qualitative interviews, sequenced after the survey, were intended to expand and explore on the survey findings. The qualitative data is primarily collected to further explore the research questions, but can also be used to look further into findings from the quantitative data and to confirm or disprove conclusions made from the quantitative data. In their review of mixed methods studies Palinkas and colleagues (2011) suggest that sequential quantitative to qualitative strategies are suited to testing and generating hypotheses, appropriate to the exploratory and problem research orientation.

In addition to providing opportunities to explore interesting findings and better understand the data that has been collected in the first phase, the follow up qualitative research addresses research question E which focuses on how GPs understand sustainability in the NHS and their role in relation to sustainability. In contrast to the survey, focused on measurement of attitudes, a qualitative interview provides opportunities to talk about process (Bryman, 2008). For instance, when participants discuss the barriers to sustainable behaviour they can further discuss why these barriers exist and how they come about and impact them. The qualitative data both addresses a different set of questions as well as facilitating the interpretation the survey data (Bryman, 1988) by providing rich contextual data. In the case of

sustainability in the NHS speaking with participants allows the data to reflect the drivers of behaviours and reflect on the rationale that participants utilise when making decisions.

Quantitative and qualitative methods are integrated at the design stage, through the development of research questions that are appropriate to different data collection methods. The design and implementation of the second phase of the research is facilitated by the experience and early findings from the initial research phase. Research findings are reported in separate chapters and then discussed together, in line with the sequential explanatory paradigm as put forward by Creswell (Creswell, 2003). The use of multiple methods is not for triangulation purposes where confirmation of findings is the purpose (Creswell, 2003) but for complementarity (Greene, Caracelli and Graham, 1989), where multiple methods provide alternative perspectives and enrich the understanding of a phenomenon.

3.5.1 Benefits of approach

The advantages that the mixed methods strategy of inquiry offered to the research project are set out below. A primary benefit of a mixed methods approach is the breakdown of the divide between quantitative and qualitative research paradigms, enabling research methods to draw from multiple traditions and focus on the research problem itself (Morgan, 2007). The flexibility afforded by mixed methods meant that the research tools could be used creatively and boundaries between quantitative and qualitative methods broken down. This was appropriate to problem solving research, where research questions were privileged above adherence to a particular methodological orthodoxy.

The mixed methods strategy was well suited to research conducted by an outsider to complex and unfamiliar professional environment. The survey was derived from the researcher's understanding of the literature and measured attitudes towards proposals within this literature. The qualitative interviews allowed participants to put forward their own views in relation to sustainability and provide contextual and background data essential for interpreting and discussing the quantitative data. This included a deeper understanding of day to day activities of participants as well as the terminology, professional language and rationales used by GPs. The two data sets were intended to complement each other and provided insights to an outsider that a single data set could not. Combining data collection enables a fuller and richer picture of the social world to be constructed (Bryman, 1988). Weaknesses in one method could be offset by the strengths of the other method (Bryman, 2008).

A sequential approach allows for a flexible research approach, with revision and improvements to the second research phase in light of the experience conducting the first phase. The first research phase facilitated recruitment for the second phase, with participants invited to register their interest in further research opportunities. The second phase also provided an opportunity to investigate findings of particular interest from the first phase. Concerns about a low response rate (covered below) also contributed to the desire to diversify the data and include quantitative and qualitative data. Two research phases permitted two separate recruitment phases, maximising recruitment opportunities while research questions were designed that did not depend on high response rates to be successfully addressed. The sequential mixed methods process allowed for two different sampling approaches to be utilised, with survey invitations issued as widely possible to all contactable members of the population, while interview recruitment relied on snowball sampling where recommendations from peers would precede invitations. A survey with a low response rate would not be sufficient to produce a generalizable description of GP understanding or to confirm a particular hypothesis, but integrated with qualitative data the survey could produce valuable insights about the attitudes and understandings of GPs in Wiltshire.

3.5.2 Drawbacks

The benefits outlined above illustrate why the strategy of inquiry was selected, however there were drawbacks to this approach. The freedom to choose the most appropriate research methods is a considerable advantage, but also brings the risk of inappropriate research choices with method combinations not best addressing the research questions or being incompatible. Considerable thought went into the selection and combination of data collection methods to reduce this risk. A mixed methods project is open to criticism that emphasises the incompatibility of combining research approaches (Teddlie and Tashakkori, 2003), however the problem-centred and pragmatic traditions that the project draws upon opposes this view, prioritising the benefits discussed above.

A sequential mixed methods approach requires additional effort compared to a study where a single research method in a single research tradition is used. Beyond the doubling of work there is also additional complexity in terms of integrating these two research phases, ensuring that initial findings contribute to the second phase and integrating the data in the discussion.

3.6 Alternative strategies of inquiry

The discussion above conveys how the research questions, research context and strategy of inquiry integrate closely. Alternative research strategies were considered

before settling on the final strategy and this section briefly explores these alternative choices and the reasons why they were not selected. The initial discussion focuses on strategies of inquiry broadly similar to the selected mixed methods approach, including strategies that combine methods differently and strategies that utilise a single research method. Following this, there is a discussion of 'transformative' strategies, where the research process goes beyond learning about a situation to attempting to change the situation by instigating action. Finally, the rationale for rejecting these alternative methods and choosing the sequential mixed methods approach is discussed.

Alternative mixed methods strategies were considered. A sequential exploratory approach (Creswell, 2003), with the qualitative research element followed up by quantitative research, was considered. This would have fit with the exploratory research objectives and ensured that the viewpoints of participants were prominent in the research; however, beginning with a qualitative research process would not have allowed the research instrument to reflect the content and key issues of the developing literature to the extent that the survey did. The ability of the survey to reflect the literature was one reason for its selection. Concurrent mixed methods strategies, where quantitative and qualitative methods are employed at the same time were also considered. This would have allowed data collection to be conducted in a short period of time, however this would pressure a single researcher to produce and support two different research strands simultaneously and not enable the second research phase to expand on the first.

Using a single quantitative or qualitative research method would have simplified the research process and enabled more resources to be employed on a single research phase. In addition, operating within a single research paradigm would be simpler, with the research process adhering to standard practices within that paradigm and no need to integrate findings from different methodological traditions. Working within the qualitative or quantitative paradigm would have provided more guidance for the research methods, but would also require that the research take on board the assumptions and objectives of these paradigms. The priority of addressing a real world research problem above methodological orthodoxy and adherence to a research paradigm could have been undermined by this. The challenging research context would have remained, and in particular the challenge of recruitment and subsequent risk of collecting insufficient data.

Early discussion with contacts within NHS Wiltshire focused on the extent to which the research might take on a transformative role, actively enabling and furthering the engagement of research participants with sustainability. O'Leary (2005, p.189)

describes this as research that “moves from knowledge to action”, where the objective of the research process is to change practices. A strategy of inquiry drawing on the action research tradition was considered. This would have involved a small co-operative inquiry taking place over a number of learning cycles (Reason, 2002) to consider their engagement with sustainability. The objectives of the co-operative inquiry would be subject to negotiation with participants, but would have likely been connected to the on-going sustainability work in NHS Wiltshire and the recruitment of a co-operative inquiry group that had common experiences facilitating inquiring into sustainability together.

An action research strategy of inquiry was carefully considered, however the changing organisational context, need for extended commitment from participants and challenge of an outsider facilitating a co-operative inquiry process all contributed to this decision. Recruitment for the group would likely have been challenging, particularly with hard to recruit health professionals.

3.7 Data collection and analysis

The sequential mixed methods strategy described above consists of an online quantitative survey, followed by a series of one to one qualitative interviews face to face and over the telephone. This section describes the data collection decisions and the rationale for selecting these methods, as well as a brief outline of methods that were not selected. The process of data collection, from the preparation of research instruments, to data collection and data analysis, involved a host of further decisions as to how the survey and interviews would be conducted. These decisions were guided by the same concerns that guided the selection of the strategy of inquiry; ensuring that data collection methods were appropriate to research objectives and the research was achievable and practical with the resources and skills available to the researcher. Beyond these concerns it was also necessary to ensure that the research process was rigorous and academically robust, was congruent with organisational needs of the NHS in Wiltshire and consistent with the standards required by the ethical review process in UWE and the local NHS R&D board. Data collection and analysis processes were planned together. Furthermore the survey and interviews had to complement each other with initial findings from the survey informing the interviews and interview data expanding on survey findings.

The research process involved two phases of data collection and analysis, followed by integration through the reporting of findings and discussion. The survey phase is discussed first followed by the interview phase. Following the separate discussion of

the research phases, the common tasks relating to ethics and data storage will be given.

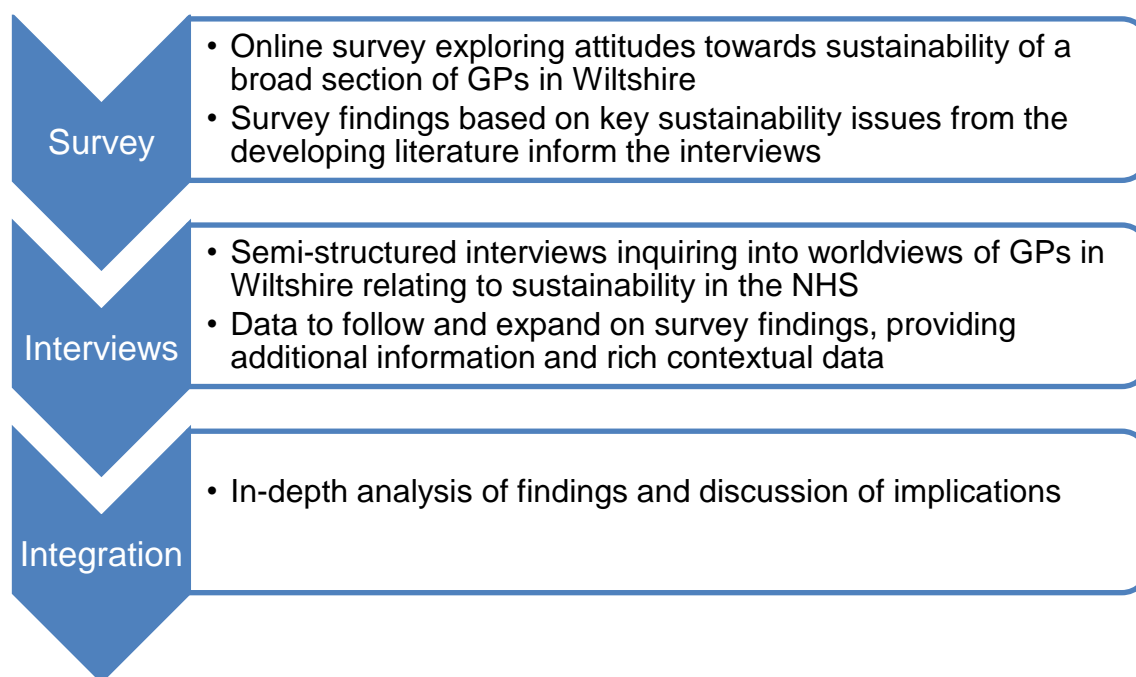


Figure 2 Sequential mixed methods model

3.8 Survey

Conducting an online survey of GPs working in Wiltshire about their attitudes towards sustainability in the NHS and the barriers and facilitators to their engagement with sustainability was an extended and complex process. What was done, how it was done and why it was done, from initial planning and development of the survey instrument, through to the distribution and analysis of the survey data is discussed below. Particular attention is paid to how the research objectives of were met, the fit with the overall strategy of inquiry and ensuring that the research process was appropriate to the research context. The discussion below provides an outline of the survey research process which allows the work to be appraised and the findings considered in light of the process that generated them.

The first section is a brief overview of the survey planning process, and the issues and assumptions that influenced the development of the survey. The second, and largest, section focuses on the development of the survey itself. The key decisions here include the survey content and length, the type and format of survey items and the kind of data the survey would generate. The third section sketches the development process and the changes of the survey over several drafts and the piloting process. The sampling, distribution and recruitment strategy is then discussed, followed by the analysis

process. Each section considers why these research decisions were made and how they impacted the research process and gathered data.

The survey instrument is discussed throughout this section. The survey contains twenty eight items, with some items containing sub-items. When discussing the survey sub-items will be sequentially signed by letters of the alphabet. This means that the third sequential sub-item of item twenty three is item 23c, with the fourth 23d and so on. The survey instrument is available in the appendices. Creating, distributing and analysing the survey is broken down into five phases in the figure below.

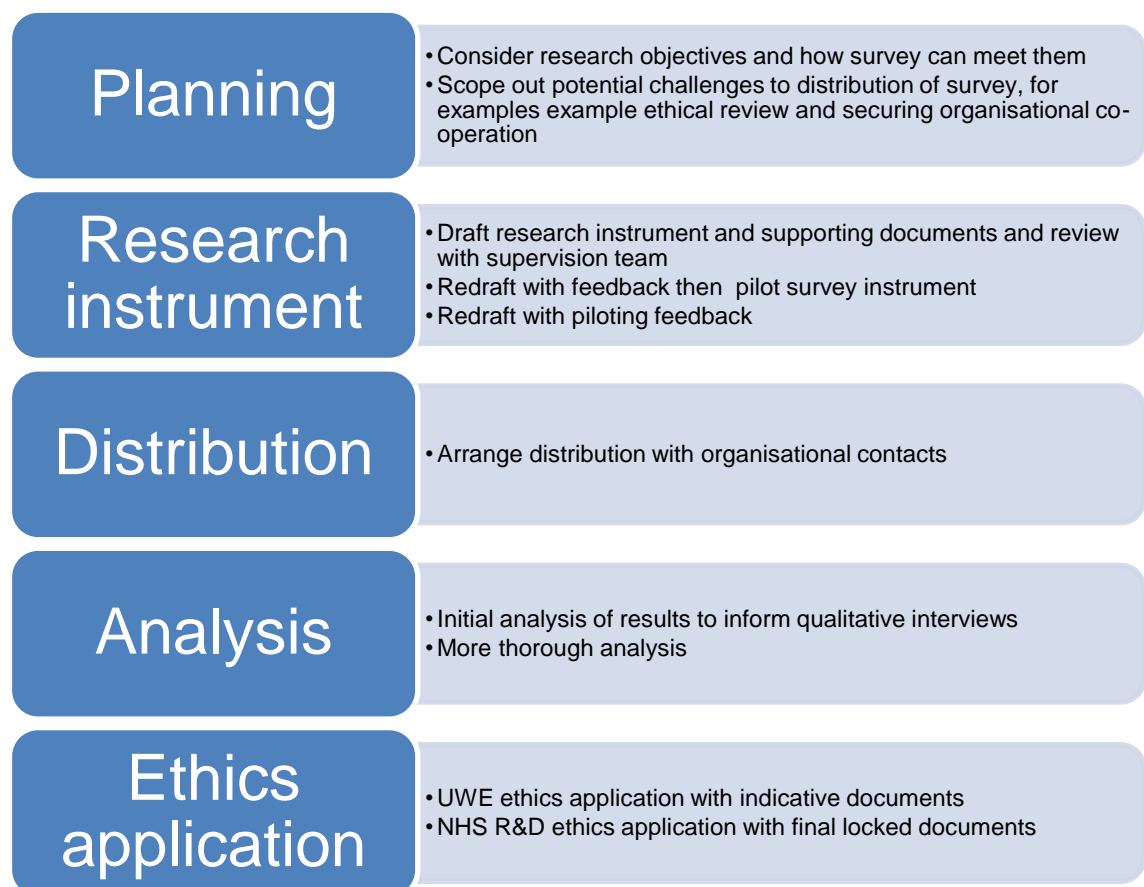


Figure 3 Survey process

Planning the survey involved taking the research objectives and considering them alongside the survey audience and the context in which the survey would be distributed. Initial guidance on creating the research instrument came from the supervision team, textbooks and examples of surveys present in the literature. General research textbooks such as Bryman (2008), Babbie (2005) and Gilbert (2008) provided an outline of the process of conducting a survey. More in depth information on creating a survey instrument and writing survey items came from de Vaus (2002) and Oppenheim (1992).

A number of assumptions about GPs in Wiltshire and their attitudes and knowledge towards sustainability informed the survey. Survey items had to be relevant to the audience, to refer to things that the audience could be expected to understand and know and maintain the interest of that audience. For example asking participants to assess the NHS SDU carbon plan would not be appropriate if participants were unlikely to have read the NHS SDU carbon plan. It was assumed that GPs in Wiltshire would have diverse understandings of sustainability and expectations about how sustainability would influence their role. It was also assumed that the sustainability proposals covered in the literature review would be unfamiliar to the broad section of GPs at which the survey was aimed. Consequently the survey had to provide sufficient information about the proposals so that participants could make a judgement on them. Items were therefore written as simple, easy to understand statements drawn from this literature with which participants would be able to agree or disagree.

3.8.1 Online distribution

This section covers the creation of the research instrument and discusses what decisions were made and the reasons for these decisions. The choice to conduct an online, rather than postal, survey is first discussed. This is followed by a discussion of the survey topics and content. The decision to use Likert items for the bulk of the survey is then discussed, alongside how the items were written. The format of the survey instrument is then covered, followed by the process of iterating and piloting the survey. Measures to increase quality and reduce bias are discussed throughout, as are measures to ensure that the survey was conducted in adherence to ethical standards.

Self-completed surveys present all participants with identical information and the same research instruments, giving participants a consistent experience and allowing for responses to be compared across the sample (Bryman, 2008). This means that survey findings indicate the variety of attitudes that are held across a population. The process is transparent and replicable, with the research instrument and participant information made available for review.

An online cross sectional survey was selected as it was convenient, quick and relatively inexpensive (Bryman, 2008) to disseminate to all contactable GPs in Wiltshire. This method was suited to collecting data from a broad section of participants and it was economical to include the whole population of GPs in Wiltshire, with the marginal cost of adding survey participants zero (Schonlau, Fricker and Elliott, 2002) after paying the initial fee. Online distribution facilitated rapid distribution and collection as well as simplifying the analysis of data. Survey Monkey was chosen as the online survey provider due to its prominence, reputation and features. Key benefits of the

Survey Monkey platform were its prominence and familiarity, which it was hoped would reassure participants. Survey Monkey included basic analysis features and allowed data to be exported in the SPSS format for further analysis, which would both save time and reduce potential errors.

Online distribution was also judged to be more convenient for busy participants, who would be able to receive emails and complete the survey on phones, tablets and computers. Discussion with contacts confirmed that the population would have email access, but there was no data on the attitudes of the sample population towards information technology and their preferred methods of communication. The decision to undertake an online survey was based on the assumption that GPs in Wiltshire would be amenable to completing an online survey and that this would not be a barrier to participation. An online survey also reduced the risk of unreturned surveys as responses were recorded as the survey was completed.

There were some disadvantages to undertaking an online survey. There are mixed views on the response rate to online surveys. Edwards and colleagues' (2009, p.385) review of methods to increase survey response reviewed a study which included an optional online response which did not indicate an increase in response rate over a postal response only study. Schonlau et al. (2002) found surveys distributed over the internet tended to have lower response rates than surveys distributed by mail. A 2004 survey distributed to surgeons (Leece *et al.*, 2004) comparing the responses on those who received an email invitation versus a postal invitation found a 13% higher response rate to the postal survey. A more general review of response rates of online surveys in comparison to postal surveys conducted from 1999 to 2005 suggests that response rates are similar to or lower than postal surveys (Pan, Woodside and Meng, 2014). However the extent that this effect would be felt in a more contemporary environment with the increasing ubiquity of information technology was unclear. Conducting an online survey would be an opportunity to contribute more data to this debate, providing information on the response rate only achievable with an online survey.

3.8.2 Survey content

The survey was exploratory, in that it was a wide ranging survey focused on exploring the attitudes of participants towards a more sustainable NHS, as required by research question D. This enabled the survey to reflect the developing literature and the issues identified in the literature review. Measuring a broad range of attitudes meant that the survey was intended to produce indicative findings, rather than narrowly focusing on measuring a limited set of attitudes with great precision. An exploratory survey was

well-matched to the mixed methods strategy of inquiry, with the initial open exploratory survey providing the basis for further exploration through interviews. Surveys are often thought of as explanatory in that they seek to measure and understand the relationships between variables, but they also serve to describe populations and are used by researchers to explore the attitudes and opinions held by that population (Bryman, 2008).

The survey measured variables using a single item or indicator, when a more valid and reliable measure would come from utilising multiple items or constructing a scale to measure an attitude (de Vaus, 2002). Using multiple items to measure variables would have increased the length and complexity of the survey and undermined the exploratory objective of the survey.

The process of developing the survey followed the steps outlined by Passmore and colleagues (2002), proceeding from the research objectives and review of the literature to the development of survey items, with the survey piloted before being administered. In well researched topics it is possible to use or adapt an existing survey, or utilise single items from an existing survey. However there were no existing surveys which could be adapted to address the research questions.

The survey covered four broad topic areas of attitudes towards sustainability and health, the NHS and sustainability, sustainability activities and barriers and facilitators to engagement with sustainability. A small number of demographic questions and questions relating to their role were also included. An unskippable question, asking participants to indicate that they had read the participant information sheet and provide their consent to taking part in the survey, began. The four topic areas were selected following the literature review as areas where attitudes would be likely to significantly impact engagement with sustainability.

The research questions, objectives and literature review findings were used to draw a mind map from which the four topic areas extended. A broad number of possible concepts and sub dimensions to these concepts were added to the mind map, with additional notes on the concepts, the rationale for their inclusion and from where ideas to include the concept had stemmed. The mind map was then reviewed and concepts to be included in the survey were put into a document along with the indicator for the concept, the type of data that the survey item should produce and additional notes on the concept.

The selection of variables was guided by the research questions and the points of interest in the developing literature encountered during the literature review. Variables

were therefore selected to measure that extent that key proposals and claims made in the literature were shared by GPs working in Wiltshire. The selection of variables were also a consequence of the decision to present sustainability in terms of specific and concrete proposals present in the literature, rather than an abstract idea. As a result the survey included items that measured support for specific sustainability proposals, for example GPs modelling sustainable and health behaviours in their work role. The extent to which a proposal was central to the overarching sustainability strategy and the case for a more sustainable NHS made in the literature was also a reason for its inclusion in the survey. These included issues such as focusing on health improvement, upstream prevention of ill health and other measures to improve health and manage demand for the NHS. Survey topics were also selected to include issues that were potentially challenging or contentious, illustrating some of the difficult decisions associated with sustainability. For example, the proposal that health professionals balance the needs of the present against the needs of future patients (Mackenzie, 2011) and the case for investing in health improvement is compelling and persuasive, but may be challenging for health professionals to put into practice.

Variables did not just reflect the literature, but were also selected to be relevant to the intended audience. Items were therefore written to be relevant to GPs working in Wiltshire and only be included if it was reasonable to expect that GPs were well placed to answer the items.

3.8.3 Moving from concepts to indicators

After deciding the broad concepts that would be measured, the broad concepts were reviewed, refined and operationalized. These broad concepts were broken down into dimensions and sub dimensions (de Vaus, 2002). Survey items do not attempt to directly measure concepts, but rather use an indicator to indirectly measure a concept (Kent, 2001). Indicators for these concepts were developed and items that would measure these indicators written. Potential indicators for the concepts were drafted and discussed with the supervision team before survey items were written to measure these concepts.

An example of this process was the objective of measuring support for the leadership and advocacy actions of health professionals that were proposed in the developing literature. The broad concept of support for leadership and advocacy activities was broken down into dimensions such as advocating for interventions to promote sustainable and healthy change or modelling sustainable and healthy behaviour. Modelling sustainable and healthy behaviour, for instance, was then broken down into the sub dimensions of modelling behaviour as part of the GP role and in their private

lives. Indicators for these sub dimensions were established and items written to measure these indicators.

GPs and their practices, in their day to day activities, should provide highly visible examples of sustainable behaviour to their local communities, such as using active travel when visiting patients in the community.

GPs, as private citizens, should not be expected to provide a clear example of sustainable and healthy choices, for example in their personal travel and transport choices.

The criteria used to select concepts were also used to select the indicators that measured these concepts, particularly the concern that participants should be able to give an assessment of the indicator. For instance early drafts asked GPs to estimate the views of their practice population or colleagues towards sustainability which, on reflection, were not questions that participants could answer confidently. Items that required impossible levels of recall were also included in early drafts, for example asking participants to estimate the number of sustainability communications they had received in previous months. Items that were included in the final survey took on board these limitations, focusing on the perception, attitudes and beliefs of participants towards statements presented to them, rather than specific knowledge of these issues. Surveys require participants to respond to many items in a short space of time, which means that survey items must be short, clear and easy to understand and that participants are not able to reflect at length or consider a nuanced and complex proposition.

The survey mostly included closed questions. Closed questions were preferred as they would be less taxing for participants to answer than open questions and could be answered quickly by participants (de Vaus, 2002). Closed items are tightly controlled by the researcher, with items created, selected and formatted based on the issues identified in the literature review. Closed items allowed the survey to reflect the developing literature and address the research objective of better understanding the attitudes of GPs towards the key points raised in the developing literature. Closed questions were also straightforward to code and conduct a quantitative analysis of in comparison to open questions (de Vaus, 2002). A small number of open items were used in the survey. This was in situations where it was preferable to not specify or predict the response of participants, such as items 18 and 19 where participants were asked to give the advantages and disadvantages of engaging with sustainability. It was hoped that these answers would reflect how participants understood their engagement with sustainability. Open items were also used to gather qualitative data. After a number of items on support for sustainable development activities, open text items were included so that participants would be able to qualify their responses and provide

an opportunity for respondents to clarify their position or respond if they felt that the research item response options were not appropriate to them. This was an opportunity to gather qualitative data by asking participants to provide the rationale for their attitudes and discuss the barriers and facilitators towards working towards a more sustainable NHS. Only a limited number of open items were included as a high number of these items would burden participants by increasing survey complexity and length.

This section covers what items types were chosen, why these types were choices and the process of writing survey items and producing the survey instrument. The account of writing the survey and utilising best practices is particularly important as this was the primary method of increasing quality, reducing bias and ensuring that findings were as valid as possible in a newly created research instrument.

3.8.3.1 Likert items

Likert format items, where a statement is given and participants are asked to indicate their agreement or disagreement with that statement producing an ordinal result (Babbie, 2005), made up the bulk of items measuring attitudes and beliefs in the survey. A five point scale, typical to Likert items, from strongly agree to strongly disagree with a neutral 'neither agree nor disagree' option in the middle was used. Shorter and longer response scales were also considered, however a shorter scale of three would have only measured agreement or disagreement with no opportunity for participants to indicate the extent to which they agreed with a statement. Longer scales, for example a seven or nine point scale would have enabled finer measurement of responses, but requiring participants to consider their response more could both confuse and fatigue respondents (de Vaus, 2002).

The Likert items did not include a 'don't know' option, with the neutral option and the ability to skip questions considered sufficient to ensure participants were not forced to provide a response. Forcing participants to provide a response may mean that participants given a non-representative answer (de Vaus, 2002), although no opinion response options may reduce data quality by discouraging participants from reflecting on their true opinions (Krosnick *et al.*, 2002). A 'don't know' option was included for items where participants may not know the answers or be unable to form an opinion (Brace, 2008), such as item 10 where participants are asked to give a priority for sustainability.

Likert items are well suited to measuring attitudes and beliefs, are straightforward to use and as one of the mostly commonly used indicator types (Babbie, 2005) are likely to be familiar to participants. Likert items allowed statements about specific and relatable aspects of sustainability to be put to participants, encouraging GPs to apply

their own local knowledge and experience to them. This met the research objective of putting forward sustainability in the NHS in terms of concrete and specific proposals, as opposed to presenting sustainability as an abstract concept. The use of Likert items also assisted transparent and clear communication of results. Each item was designed to measure a particular concept, however results could be presented along with the statement that participants responded to so that a reader could be aware of how the data was generated. Likert items were also supported by the Survey Monkey platform, with a simple drop down menu system for participants.

Items offering a number of ordered attitude statements were used in the survey where a Likert item would be inappropriate, such as item 3 where participants are asked to choose the statement that best describes their current lifestyle. This type of item was used where it was the simplest and clearest option, with the attitude statements providing a clearer range of responses than agreement or disagreement with a single statement. A 'don't know' option was included where appropriate. Items 7 and 8 included a horizontal rating scale where participants were asked to indicate the extent to which there would be a negative impact on health and wellbeing in their local area from sustainability trends. Demographic items at the end of the survey asked participants to describe themselves by selecting nominal categories to describe their sex, to indicate their age and length of time working as a GP.

Likert items did have some disadvantages. Negative statements, used in the survey to offset acquiescence bias, can be confusing for participants (Podsakoff *et al.*, 2003). Likert items measured attitudinal direction, but did not measure the intensity with which attitudes were held.

Alternative item types were considered, with horizontal and semantic differential rating scales (de Vaus, 2002, p.105). These item types have opposing statement or adjectives placed at either end of a scale, with participants indicating which statement reflects their opinion. This item type would have allowed participants to reflect on opposing statements and indicate their preference clearly. Including opposing statements would have allowed for two distinctive positions to be included in a single item and encouraged reflection on these statements. This item type was not supported by the Survey Monkey online Service. Furthermore, the familiarity and ease of use of Likert items remained an advantage over these item types.

3.8.3.2 Writing items

Following the selection of concepts and indicators and settling on the type of items that would be used to measure the concepts, the survey items were written. Writing appropriate survey items was critical to generating valid data and keeping participants

engaged with the survey. As the survey involved developing a new instrument which would only be piloted once, ensuring that items were produced in accordance with best practice was essential to ensure the quality and validity of the survey. Survey items were prepared and reviewed in line with the best practices in the guiding literature mentioned above and with the guidance of experience in the research supervision team. Producing an entirely new survey involved writing multiple items for each concept and indicator, reviewing these items, selecting the best item with the advice of the supervision team and further refining the survey with regards to best practice. A near final version was then piloted before going through a further revision and submission to the NHS R&D office as the final version.

A few items were based on prior survey items. Items 3 and 9 drew on DEFRA's 2009 attitudes and behaviour survey (DEFRA, 2009), while items 7 and 8 measured the perceived health risks posed by sustainability issues and drew on items produced by Maibach and colleagues (Maibach *et al.*, 2008).

Survey items were written to be consistent with the guidance found in the research methods literature and following useful examples from other surveys. Items were written to be as simple as possible (Babbie, 2005), to ensure that participants would be able to quickly understand and respond to items and that responses would be consistent across participants. Shorter items were preferred, with care taken to ensure items were not 'double-barrelled' (de Vaus, 2002) and did not contain multiple propositions where participants could have different levels of agreement with different propositions (Bryman, 2008). Where possible, difficult to understand items were avoided, as were items that could be considered irrelevant or repetitive (de Vaus, 2002) although some items measuring similar and related concepts could have been viewed as repetitive by some participants. Ensuring that items were relevant to participants (Babbie, 2005) was challenging in that the survey was intended to introduce concepts that may not have been familiar to the majority of participants or associated with sustainability by them.

Where possible more general questions were avoided (Bryman, 2008) due to the difficulty of understanding what more general questions are measuring. This difficulty and a preference for clear, specific items was the methodological rationale for presenting sustainability in the NHS in terms of specific activities, rather than focusing on the general concept of working towards a more sustainable NHS. Items were written to provide definitive and clear statements (Passmore *et al.*, 2002) to encourage participants to use the range of responses available from them. For example item 23 ask participants to agree or disagree with the statement "Sustainability in the NHS is

very relevant to my day to day activities”, with “very relevant” selected instead of “relevant” to provide a clearer and more definite statement for participants to agree or disagree with. Czaja’s and Blair’s (1996) recommendation that qualifiers be used to produce accurate and clearly defined items to guide participants in how to answer was also followed. Qualifiers include providing specific time periods and directing participants as to what should be considered when responding to an item. Item 17 asks participants to consider their activities over the past two years while item 20 asks participants to consider the ‘overall’ impact of sustainability on the health service. Items however took care to avoid extreme statements which would prompt near universal agreement or disagreement (de Vaus, 2002). Item responses were reviewed to be exhaustive and exclusive (de Vaus, 2002) in that item responses were intended to include all possible responses and multiple item responses from the same participant would not be appropriate.

Items were only included if participants were likely to be competent to answer the items (Babbie, 1990). Although the items were based on the developing literature there were no references made in the survey to the source of items as this may have influenced participants through a prestige bias (Babbie, 2005; de Vaus, 2002).

Best practice was followed where possible, but also balanced against the need to reflect the research literature, reduce bias and meet the research objectives. It was not always possible to keep items short and simple with some items requiring long accompanying explanations (such as 21 and 22) while items describing sustainability activities could be long themselves. Where possible unambiguous terms were used, however the central discussion of sustainability and sustainable practices was likely to have been understood differently by different participants. General questions about this topic relied on the individual interpretations of participants. Some items were phrased negatively in order to reduce acquiescence bias, even though this could have confused some respondents (Bryman, 2008). To reduce confusion bold text was used for ‘not’ in negatively phrased items so that participants would be more likely to notice it. This was a case of balancing the need for clarity against the risk of acquiescence bias.

Items asking GPs about their support for sustainable development activities included, where appropriate, examples that illustrated challenging aspects of supporting these activities. Item 16f, for example, asked participants if they supported lowering levels of activity in the NHS and mentioned that this could include reducing the healthcare real estate. This was an example of not following de Vaus’s guidance, with a ‘gratuitous qualifier’ (de Vaus, 2002, p.99) used to highlight aspects of this statement that could be challenging. To meet the research objective of reflecting the developing literature many

items used language that was reminiscent of terms used in the developing literature, for example item 6a describes possible linkages between long term health conditions and environmental factors using similar terms to the Sustaining a Healthy Future document produced by the Faculty for Public Health (2009). This may have undermined the objective of using simple and clear language on occasion, but was intended to reflect the developing literature and arguments with which GPs were expected to engage.

3.8.4 Survey instrument

The final stage in producing the survey was putting the items into the Survey Monkey online tool and deciding on the format and sequencing of items. The information included with the survey, including the text introducing and providing guidance on how to complete items was also written and finalised at this stage.

The survey instrument was produced using the Survey Monkey platform. The standard Survey Monkey template was used as this was an uncluttered, simple and effective layout that would be familiar to many participants. The survey format was reviewed on a desktop computer, with care taken to ensure that items were easy to scan and read. A progress bar was included to give a sense of progression to participants as they completed the survey and also transparency around the length of time that would be required to complete the survey. Drop down boxes were chosen for Likert item responses, partly because this allowed the statement to be read easily on a computer screen and partly because Brace (2008) reported that drop down boxes could encourage a greater variation in responses.

Early items were selected to be relevant to participants and the survey topic and easy to answer (de Vaus, 2002). The sequence of the survey was intended to introduce key concepts from the developing literature and help participants think about how sustainability might impact the NHS. Items referring to barriers and facilitators were placed after the items on sustainable development activities so that participants would be able to consider some of the potential sustainability activities that they may undertake and consider the potential barriers and facilitators to these activities. Demographic questions were kept to the end as, although interesting, they did not directly address the research questions and some participants may have felt they were irrelevant. The sequencing of items also recognised that many participants would not complete the survey; therefore items that provided the most fundamental information were included earlier in the survey.

3.8.5 Iteration process and piloting

Reviewing and redrafting of the survey by the researcher with guidance from textbooks and the example of published surveys shaped the survey into a usable form. The final stage of review was conducting a pilot where a near complete survey was distributed to pilot participants, who had a similar background to the intended audience of GPs working in Wiltshire, who were asked to complete the survey and provide feedback to ensure that the survey was usable by participants, the layout was clear and that the items were easy to understand (Bryman, 2008). Pilot participants were asked to complete the survey as participants and provide feedback on the experience of completing the survey, the flow of the survey and the clarity of instructions and items. In addition to the feedback, item responses were reviewed to check that responses were consistent and demonstrated understanding of survey items and that the data was suitable for analysis. Earlier, exploratory pilots and pilots intended to develop and refine items significantly (Oppenheim, 1992), for example reviewing responses to an open question to construct a closed item, were not conducted as this would have been extremely time consuming and required access to a group of willing participants with similar characteristics to the population.

3.8.6 Quality and bias

A key concern when preparing the survey was ensuring that the generated data was as high quality as possible, that is that it addressed the research objectives, provided a valid and reliable measure of the intended concepts and that sources of bias were reduced as far as possible. It is impossible to ensure quality or eliminate bias completely, but the careful selection of concepts to be measured, the use of best practices in writing and preparing the survey and accompanying materials and processes of review and piloting were put in place to maximise quality.

The survey was designed to reduce potential bias as far as possible. Acquiescence bias, where participants have a tendency to agree with statements (de Vaus, 2002) was managed by offering a balanced mix of items. A participant who was largely in agreement with the positions held in the developing literature would find it necessary to agree and disagree with items. Negatively phrased statements were written to be as straightforward as possible with 'not' written in a bold font, due to concerns that confusingly worded statements could cause more problems than the initial acquiescence bias (Podsakoff *et al.*, 2003; Sauro and Lewis, 2011). Acquiescence bias was a particular concern as it associated with agree/disagree scales and where participants have not previously formed an opinion on the topic (de Vaus, 2002). As a survey primarily made up of Likert items with a five point rating scale there was a potential issue of central tendency bias, where participants choose mid-point

responses rather than more emphatic agreement or disagreement. Items were written in accordance with best practice to put forward a clear and definitive statement that it was hoped that participants would engage with and agree or disagree with depending on their viewpoint.

A survey of attitudes and values towards sustainability has the potential for social desirability bias where participants give what they believe to be socially desirable responses. To mitigate this some items included 'excuses' (de Vaus, 2002) to encourage participants to give non socially desirable responses, for example item 17 asking about the sustainability activities of participants acknowledged that sustainability in the NHS was in its early stages and health professionals were extremely busy. Survey information used to introduce items and instruct participants how to respond will have influenced the response patterns of participants. Supplied information was intended to make the items relevant and understandable to participants, describing sustainability in terms applicable to health and healthcare. This was necessary to equip participants to respond, but may have encouraged participants to make connections between their role and sustainability that they may not have done so otherwise.

A number of biases could not be eliminated, but will be featured in the discussion of findings. Common source or rater biases (Podsakoff *et al.*, 2003) which stem from the respondent are difficult to manage through the survey and will be mitigated through discussion of findings. In particular the potential for consistency and implicit theory biases (Podsakoff *et al.*, 2003) where respondents attempt to provide consistent responses, for example if they state early on that they are environmentally motivated later responses may be selected to be consistent with this earlier answer, even if not reflective of the true attitude of the respondent.

Testing stability by administering the survey to the same group of participants (Procter, 2008; de Vaus, 2002) twice after a period of time in between was not done as it was not possible to identify a sufficiently large and willing group to make this possible. Careful review of survey items to reduce ambiguous wording (de Vaus, 2002) and pilot reviewer comments were used to improve reliability as much as possible.

The main measure of validity was 'face validity' (Procter, 2008), that is assessment by the researcher and supervision team that items would measure the concepts they were intended to measure. Validity was established through observing best practices when writing items, careful review of items and taking on board feedback from partner and pilot participants. Validity concerns informed the construction of the survey, for instance the decision to consider multiple dimensions of sustainable development activities rather than a single 'support for sustainable development activities' construct. This

provides a limited assurance of validity, but was considered appropriate to an exploratory survey intended to produce indicative findings, rather than provide generalizable findings or establish relationships between variables.

Testing for validity is challenging and requires both a significant number of willing participants and a substantial commitment of research resources. Recruitment for the survey was difficult and extensive piloting and testing of items was not possible. Bryman (2008) observes that in many studies validity testing is restricted to face validity. Findings will be reported transparently with the item content and statement that participants have responded to presented alongside the results. Providing this context ensures that the extent to which the survey provides a valid measure of the concepts is not overstated while readers are able to form their own judgment whether items provide a valid measurement of the stated concept.

3.8.7 Sampling

As noted in the strategy of inquiry discussion, a low response rate was anticipated as GPs are a challenging group to recruit into research studies. These concerns informed the development of the strategy of inquiry and the sampling process. The survey was intended to be accessible to all GPs in Wiltshire, with no previous sustainability knowledge required. The decision to distribute the survey online was to lower the cost of sending to the entire population and maximise response by increasing convenience for participants. The success of the survey was not wholly reliant on the quality of the research instrument, but on sampling the target population. This involves identifying the target population, contacting this population and persuading them to respond to the survey. This sampling approach is outlined below, beginning with the decision to focus on the population of GPs in Wiltshire and inclusion and exclusion criteria. Following this the creation of the sampling frame and the recruitment process is outlined. Finally the sampling process and its strengths and weaknesses are reflected on.

The sampling frame (Bryman, 2008) was intended to be as close to the total population as possible. The inclusion criteria extended to all GPs working in Wiltshire contactable via email, with no GPs working in Wiltshire excluded. Contacting these GPs was dependent on the assistance of the CCG and practice managers, who operated as gatekeepers to the GPs in this study. There were no GPs excluded based on identifiable personal information or personal characteristics. The sample, the group within the sample frame that were invited to part in the survey, comprised of the entire sample frame with a survey invitation sent to every possible participant. This was in effect a probability sample, in that participants were not selected based on any particular criteria and every individual in the sampling frame had an equal chance of

receiving a survey invitation. The research was facilitated by contacts within the CCG and a more complex sampling strategy, such as conducting a smaller random sample or stratifying the sample based on relevant criteria, such as demography, location or work experiences, would have required a greater commitment from these contacts and could have discouraged co-operation. It would also have been challenging to ensure that the recruitment process was conducted exactly as requested.

The sample population was contacted through GP practice managers whose contact details were supplied to the researcher. An email was written as a draft in Outlook and saved as an Outlook item. Gatekeepers were asked to open the attached outlook item, which would open to produce the email exactly as written by the research team. Gatekeepers were asked to then send to practice GPs. This process was intended to ensure that the email was presented as written, such as the specific subject line, inclusion of university logo and signature, and ensure that the participant information sheet was attached. It was also intended to be simple for gatekeepers to complete and inconvenience them as little as possible. Gatekeepers were not always able to distribute the survey in this way and this meant that it was not possible to be certain as to the final format and presentation of invitations. Also, as contact with potential recruits was dependent on the co-operation of practice managers, additional steps such as pre-survey notifications were not taken in order to not fatigue practice managers.

The recruitment process was designed to maximise response and fulfil ethical obligations to ensure that participants could make an informed decision about their participation. Participants received an initial survey invitation with two follow up reminders spaced over a four week period, in line with recommendations for postal surveys conducted with GPs (Barclay *et al.*, 2002). Each reminder contained a link to complete the survey and an attached participant information sheet, in line with recommendations that postal survey reminders include a stamped addressed envelope and additional questionnaires (Edwards *et al.*, 2009).

The content of survey invitations was designed to engage participants and increase response, following best practices established in the literature. Emails were short and included the university logo as university associated research has been shown to have a higher response rate (Edwards *et al.*, 2009). Each invitation email was signed by a different figure, including a well-known and active local GP, a public health consultant and the researcher. The endorsement from locally respected and credible peers were hoped to encourage participation. The invitations letters attempted to present sustainability as relevant and salient to participants (Barclay *et al.*, 2002). Sustainability was presented as closely connected to health and wellbeing of local communities,

while NHS commitments to substantially reduce carbon impact were mentioned. The support that the research had received, including funding from NHS Wiltshire, was mentioned in the hope that participants would be minded to respond to part NHS funded research. Potential benefits from participation were put forward in the invitation, including the opportunity to receive a participation certificate and the potential for the survey to contribute towards continuing professional development points. Invitation letters also assured confidentiality for participants (Edwards *et al.*, 2009).

3.8.8 Data analysis methods

Data analysis was guided by the research objectives of better understanding the attitudes of GPs towards sustainability and the type of data generated by the survey. Survey data was analysed using SPSS with guidance from research methods textbooks (Babbie, 2005; Bryman, 2008; Oppenheim, 1992; de Vaus, 2002), the supervision team and other sources mentioned below. The analysis process is described below beginning with the initial review of data, using descriptive statistics to describe the data, investigating possible relationships between variables and consideration of undertaking multivariate analysis.

Analysis did not simply involve applying a battery of statistical techniques to the data generated by the survey, but selectively applying techniques that were appropriate to the collected data and that would address the research questions. The selection of techniques was guided by the research objectives to explore and better understand the attitudes of GPs towards sustainability in the NHS, but also by the available data. At the outset a range of analyses were considered, including univariate analysis, bivariate analysis, factor analysis and tests of statistical significance. The number of survey responses however meant that univariate analysis to describe survey responses were the most appropriate technique. The survey generated primarily non-parametric ordinal data through Likert format items and analysis techniques had to be suited to this data type.

The first analysis step was to review and clean the data to make sure it was ready for analysis. The initial review also served to pick out any surprising or interesting results that could be analysed further. The survey was designed with most of the coding of closed questions in place, which reduced the coding work (Babbie, 2005; Fielding, 2008; Oppenheim, 1992). Survey results were downloaded directly from Survey Monkey. The data matrix was reviewed in SPSS and variables were assigned as categorical, ordinal or interval data. Data was reviewed for errors and to ensure that the data was ready for analysis. This included things such as making sure that variable numbers corresponded to the correct survey items, any obvious errors in the data set,

that preselected codes for closed questions were appropriate and that no data was missing.

Where appropriate, categories were collapsed to make the data clearer and cleaner for both analysis and presentation (Babbie, 2005; de Vaus, 2002). In a Likert item this involved collapsing the strongly agree and agree categories into one agree category and similarly the strongly disagree and disagree categories (Babbie, 2005). The original data and variables were maintained, but the new variable was used where it better illustrated the responses. Neutral responses were used as midpoint responses while 'don't know' responses were viewed as a separate response that did not indicate an attitude related to the statement. 'Don't know' responses were reported alongside the data, although where it made data clearer 'don't know' responses were excluded from frequency tables, with this omission made clear (Babbie, 2005).

The initial data review was the first step in analysis, with initial review enabling trends to be seen or if particular items had strong or weak support. The variance across cases could also be seen, as well as the extent to which responses are similar. Data was also checked for discrepancies and surprising responses in particular in case these responses suggest that an item had not been understood as intended.

3.8.8.1 Descriptive analysis

Univariate statistics, where analysis is conducted of individual variables, were used to better understand the data set. Summarising variables in the form of frequency tables or graphical charts (Bryman, 2008) is a relatively simple but insightful way to process the data as it allows patterns in the data to emerge. Insights from univariate analysis form the basis of further analysis of relationships between variables and defining subgroups (Oppenheimer, 1992). Measures of central tendency were also calculated to provide a single figure indicating the typical value of a variable. Variables were analysed using techniques appropriate for the data type, for example the data produced by individual Likert items was analysed using techniques appropriate to ordinal data.

The description of the analysis process and analysis choices is intended to transparently demonstrate a rigorous analysis process where appropriate research methods are used across the data. Findings and interpretation of these findings is dependent on demonstrating that analysis processes were fair, were not selective in terms of the data that was analysed and that all relevant findings were considered.

The univariate analysis followed the guidance of de Vaus (2002) to describe the data in terms of frequency and central tendency. Measures of central tendency, including

mean, median and mode were produced to better understand the response mid points. The data was primarily ordinal so calculations of the mean were viewed with caution as it was not entirely appropriate for ordinal data (Bryman, 2008).

3.8.8.2 Qualitative analysis

The survey included a number of open text items that were analysed as qualitative data (Fielding, 2008). This small amount of data will not be suitable for in depth analysis, but will be used to provide context and expand on the quantitative data. The data will be viewed as a whole and coded in light of the research questions and the literature. This analysis will be reviewed with the supervision team and alternative analysis and interpretations considered. Qualitative data was analysed both in terms of the individual response case and across the cases. This means that insights from the qualitative data were considered and compared to the quantitative data responses, as well as reviewing responses across the data set for similarities and differences.

3.9 Interview process

The second phase of the mixed methods research strategy involved a small set of one to one semi-structured qualitative interviews. These followed on from the survey and incorporated the experience of conducting the survey and initial analysis of the survey. The interviews were designed to address research question E:

- E. How do GPs understand working towards a more sustainable health service, their contribution and the potential challenges and opportunities that this presents?

This question focuses on how participants understand the challenge of working towards a more sustainable NHS in contrast to the survey which measured the attitudes of participants towards preselected items. The objective was to elicit the worldviews of participants in the form of rich, qualitative data which would complement and add to the data gathered from the survey. Interviews were intended to be more participant led than the survey, with participants free to respond as they wish. Interviews allow longer, more reflective responses which can be qualified and nuanced in contrast to the selection of a simple discrete category in a survey. The interviews are also intended to generate rich contextual data, useful in helping an outsider researcher understand the challenges of engaging with sustainability and aiding interpretation of survey data.

This section first outlines the decision to conduct semi-structured interviews. The interview process is then described to provide a clear account of how the interview data was collected.

The choice to undertake interviews was motivated by a number of factors. A survey followed by interviews is a common mixed methods research approach (Creswell, 2003). The two research methods were selected to jointly address the research problem, in that they were both appropriate to the research context, addressed the weaknesses of the other method and produced complementary data. Qualitative interviews were also a match to the research objectives, the practical challenge of conducting research in a challenging organisational context and compatible with the ideas that underpinned the research. The match between research objectives and interviews was not entirely coincidental, with objectives and research methods developed in tandem with objectives tailored to the research approach.

Qualitative interviews were chosen as they addressed the research objective of better understanding how GPs in Wiltshire think about sustainability and health, sustainability activities within the health service and potential barriers and facilitators to a more sustainable health service. The interviews were semi-structured with a research topic guide used to steer the interview through preselected topics (Bryman, 2008). Semi-structured interviews are flexible and enable participants to have some control over the interview process and provide a personal and contextualised account of their views, with preselected topics set aside when appropriate. Interviews are an interaction between interviewer and interviewee (Babbie, 2005), with topics adapted to enable interviews to flow naturally and focus on topics most relevant to the participants. Semi-structured responsive interviews allow researchers to access other perspectives, and to gain insights into the complex and nuanced activities of others (Rubin and Rubin, 2012). Contextual data is also provided by the interview process, including notes made when visiting participants in their workplace, the personal biography and experience of the participant and the tone, humour and manner of discussions. Interviews also allow the researcher to probe into topics, for example addressing sustainability in the NHS by asking participants the extent to which their values or approach to their role as healthcare professionals influence this engagement.

3.9.1 Semi-structured interview process

Following the decision to undertake semi-structured interviews with GPs working in Wiltshire it was necessary to develop a research topic guide, prepare to conduct the interviews and put in place a process to analyse interview data. The process and sequence is outlined below, although the ethics application took place alongside the development of the research instrument and was submitted before recruitment began.

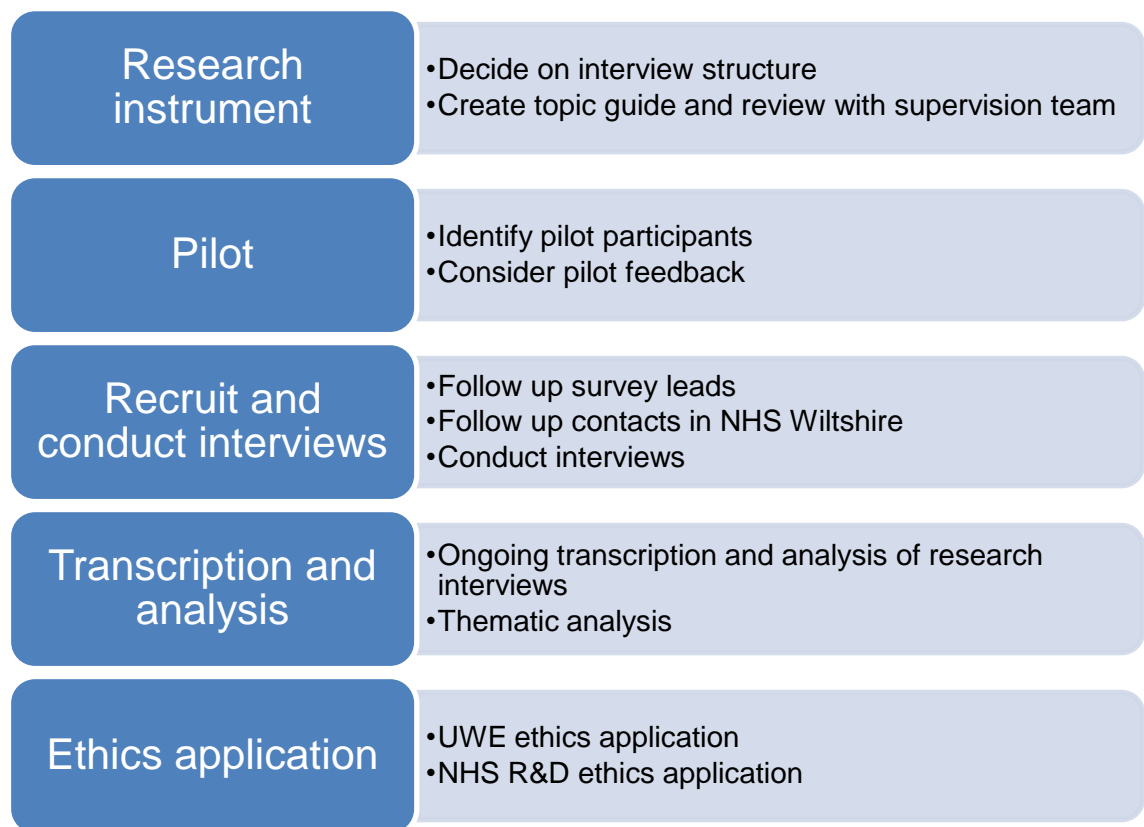


Figure 4 Interview process

3.9.2 Research instrument

The interview topic guide provided a loose structure and sequence to the interview, without demanding that interviews follow a rigid predetermined path. The guidance ensured that research objectives were met, while encouraging flexibility in the interview so that interviewer and interviewee could adapt questions and responses to the situation in order to generate the most useful data (Rubin and Rubin, 2012). Interviews were intended to be somewhat naturalistic (Rubin and Rubin, 2012) and replicate the feel of a conversation, rather than an interrogative research interview tightly focused around a few narrow points.

The interview topic guide covered seven sections in total, although the section of vignettes was optional and only to be used if the interview questions were unproductive. The first two sections were a pre-interview introduction that covered the interview process and the introductory interview section where participants were asked questions on their background and attitudes towards sustainability. The following two sections focused on sustainability and its connection to health, in particular the health of the community served by the practice, and the connections between sustainability and the delivery of healthcare. The final topic covered was the engagement of participants with sustainability; that is sustainability activities that they had taken part in,

potential future engagement with sustainability and potential barriers and facilitators to engagement with sustainability.

Within each section a number of 'main questions' (Rubin and Rubin, 2012) were included along with follow up questions and probes for additional detail and clarity. Initial questions were broad and open (Bryman, 2008) so that participants would be able to draw on their own experiences and knowledge, rather than narrow questions focused on very specific aspects of sustainability in the health service. The follow up prompts were intended to assist participants in drawing on their wider knowledge and experience, in particular to encourage further elaboration of statements or to clarify what had been said (King and Horrocks, 2010). Questions were not intended to be read verbatim, but provided a template for questions that utilised straightforward language, which were not leading and not overly complex with multiple meanings (King and Horrocks, 2010).

3.9.3 Conducting interviews

The topic guide described above provided the basic content and structure of the one to one qualitative interviews. However, how the interviews were conducted was key to meeting research objectives and ensuring that data generated was high quality and participants had positive interview experiences. In order to generate the rich data and contextual data required to meet these objectives, interviews followed the guidance in research textbooks (Bryman, 2008; Gilbert, 2008), interview texts (King and Horrocks, 2010; Rubin and Rubin, 2012) and guidance from the PhD supervision team. Interviews were conducted to be open and naturalistic where following the topic guide was balanced with the need to respond to the particular opportunities offered by each interview. Interviews therefore addressed the research objectives while recognising that each participant had unique experience, knowledge and attributes and that interview data was strongest when participants were able to utilise these when addressing research topics.

Before each interview the interview location was assessed, recording equipment set up and participants briefed on what the interview would involve and their consent formally taken. The pre-interview discussion with participants fulfilled ethical obligations, ensuring that participants are informed about the nature of the research, have opportunities to ask questions and are clear about expectations. Recording equipment was tested and demonstrated to participants during the pre-interview discussion, with the recording device then put in an unobtrusive location where it could pick up the conversation. It was important that participants were aware that the interview was

being recorded, but also that the recording did not unnecessarily increase the anxiety of participants or the formality of the interview process (King & Horrocks, 2012).

The social desirability effect, where participants are more likely to give responses that they perceive to be more socially desirable (Bryman, 2008) is encountered in interviews (Collins, Shattell and Thomas, 2005). Social desirability may even be heightened beyond that in surveys, with interviews analogous to everyday social interactions where people present themselves in a positive light where possible (Collins, Shattell and Thomas, 2005). To try and reduce social desirability bias participants were told that it was expected that interviewees would have diverse viewpoints in relation to sustainability and it was hoped that the research would reflect these diverse viewpoints. When discussing sustainability, judgment of participant responses was withheld as much as possible; for instance, a negative position on sustainability would not have been challenged but would have prompted further questions from the researcher.

The research instrument included a closing discussion which reflected on the main points raised in the interview provided an opportunity for participants to reflect on the interview content and asked if there was anything that they would like to say but hadn't had the opportunity to cover. For example, if there were questions that they should have been asked, but were not (Rubin & Rubin, 2012). Participants were given the researcher contact information and were told that a transcript of the interview would be sent for review.

3.9.4 Piloting process

Before the topic guide was finalised and interview participants recruited, two pilot interviews took place with GP participants from Wiltshire who had been helpful with the study. Pilots are essential to the development of the interview process, testing the topic guide and interview conduct with participants similar to the group that will be recruited (Arksey and Knight, 1999; Barriball and While, 1994; Turner, 2010). The topics and sequence were checked against the response of participants, as was the extent to which questions were well understood and generated appropriate responses. Completing the pilot process allowed amendments to be made to the topic guide, prompted reflection on how better to conduct interviews to achieve research objectives and provided useful practical experience that informed subsequent interviews.

3.9.5 Sampling/recruitment

The sampling approach for qualitative research differs markedly from that of quantitative research, focusing on recruiting a smaller number of participants that are willing to take part in the study and a good source of data (Coyne, 1997). A non-

probability theoretical purposive sampling strategy was employed with participants recruited through snowball sampling relying on contacts in Wiltshire and survey participants who provided contact details. Theoretical sampling involves the recruitment of participants by the researcher based on criteria (Bryman, 2008), in this case the willingness to take part and breadth of experiences and background.

Theoretical purposive sampling ensured the sample addressed the research objectives and provided useful and interesting data that complemented the survey data. Recruitment was focused on 'typical' cases that would provide insights into how GPs understood sustainability in the NHS and cases of particular interest including GPs who would have unique insights and experiences. There were no exclusion or inclusion criteria. Criteria for selection included the qualities of participants, for example the extent to which their experience is relevant to the research objectives or their abilities to reflect and provide information in an interview situation.

Participants were contacted by personalised emails which included the potential participants' name and an explanation of why that participant was being contacted. Emails were standardised, with all emails checked against criteria set out in the ethical applications which ensured participants were fully informed in line with the ethical research principles described above. All initial emails included an introduction to the research project, a participant information sheet and an invitation for participants to ask follow up questions. Emails also included standard arguments to increase research participation, for example emphasising the importance of the research project and the association of the research with an independent university. Participants were given a fair summary of the risks and benefits associated with the research and guidance on what taking part in an interview would mean for them.

There was no specific sample size targeted, with recruitment objectives following Guest and colleagues (2006) suggestion that sample size should depend on what the analysis is intended to achieve, in this case complementing, expanding and deepening understanding of an existing data set. Their conclusion, after documenting theory saturation in their own study, was that initial interviews were the most important in generating codes with data saturation mostly achieved by twelve interviews, with as little as six interviews necessary to describe the overarching themes. Data saturation is often given as the point at which no further interviews are necessary however there is no agreed definition of when data saturation has been achieved (Francis *et al.*, 2010; Guest, Bunce and Johnson, 2006). Given the existing data it was expected that lower numbers of interviews would be sufficient to meet research objectives and produce

reasonable conclusions. Five interviews were initially planned, with the need for further interviews to be reviewed.

3.9.6 Transcription and analysis

The interview data was transcribed and thematically analysed using NVivo 10. Thematic analysis involves the systematic review and coding of interview transcripts, where 'themes' within and across transcripts are identified (Bryman, 2008). These themes are then organised to better understand the themes within the data set, with findings being the account of the data set provided by these themes. Thematic analysis is a widely applied analysis technique (Braun and Clarke, 2006). Although flexible in its application there is substantial guidance on how to conduct rigorous and transparent thematic analysis (Braun and Clarke, 2006). Drawing on an established analysis method was appropriate to a research project conducted by a PhD student developing their qualitative analysis skills by providing guidance and examples of best practice.

Each case was analysed separately, with later analysis looking across cases. Thematic analysis was selected as it enabled analysis to incorporate insights from the literature review, survey findings and expectations and ideas held by the research team about the data, with analysis searching for expected themes as well as unexpected themes that emerged from the data. Thematic analysis was also appropriate to data produced by semi-structured interviews, with a set topic guide expected to produce data that could be grouped according to themes. The process of thematic analysis was supplemented by taking time to consider the data as a whole, both in the initial review of data and during later review of the data. This was to consider the meaning of the transcript as a text, as opposed to discrete codes and to appreciate the broader meaning of the transcripts, the narratives contained in the transcript and the context in which codes are generated.

Thematic analysis was not the only available analysis option and there were some disadvantages associated with this approach. The flexibility offered by thematic analysis is an asset, but this flexibility requires that the analysis process must be documented clearly and findings carefully justified (Braun and Clarke, 2006). The process of coding and chopping up interviews into themes eliminates the unity of the interview text and the understanding of the interview as reflecting the views of the participant. Braun and Clarke (Braun and Clarke, 2006) discuss this and the insights that can arise from considering a single interview and its contradictions and complexities.

Alternative methods for analysing the research data, such as a grounded theory approach and narrative analysis, were considered. A grounded theory analysis, where

theory is inductively generated from the data gathered (Bryman, 2008), was not appropriate to this research project where the literature review and survey findings contribute to the analysis of data. Narrative analysis was also considered. Narrative analysis refers to understanding texts such as interview transcripts as containing stories where people make sense of events and issues and narratives (Bryman, 2008). Narratives in organisations can highlight, give meaning to and emphasise different aspects of an agenda (Brown, 1998). A narrative approach however was not suited to the research questions or the data collection methods.

3.9.7 Thematic analysis process

The analysis process was informed by the account given by Braun and Clarke (2006). Analysis was theoretical/deductive, in that preselected themes were derived from the literature, research questions and survey data, while other themes emerged as they were encountered in the data. The identification and selection of themes drew on inputs from multiple sources and worked towards an analysis that was the best fit for data and the research problem. Themes and sub themes were derived from the research questions, research literature and survey research findings and used when reviewing data. Emergent themes were also identified from the data by making notes on themes that arose during data collection, transcription and initial reading of data.

Interview recordings were transcribed using Word and analysed using the computer program NVivo 10. Transcriptions took place as soon as possible after the interview (Rubin and Rubin, 2012). Notes from the interviews about the context, impressions and thoughts were written up at the same time. Themes were coded inductively, arising from the data itself and deductively, with a priori themes suggested by the research questions and prior research. Coding was initially very liberal, with data coded according to the a priori codes or emergent codes, with some pieces of data coded multiple times. Following this, data was reviewed, with similar coding categories collapsed and codes reviewed and revised. The coding process followed the three stage thematic analysis described by King and Horrocks (2010) of an initial descriptive phase followed by an interpretive phase and finally an organising phase that develops the overarching themes and sub themes. Initial coding was descriptive and involved reading through a transcript and, while reflecting on the research questions, coding the text freely (King and Horrocks, 2010). Assigning codes to the text involved interrogating the data and asking what a particular piece of data means in a more general sense (Bryman, 2008). For instance a discussion on sustainability and how the delivering healthcare in a more sustainable way might require rethinking what care is delivered could be coded as “Sustainability – context” with sustainability concerns constraining and shaping the delivery of healthcare in the future. Codes were both ‘bottom up’ being

formed from the data itself and 'top down' reflecting the theory, understanding and values held by the researcher (Braun and Clarke, 2006).

Codes were then developed into themes. Themes are defined in a number of ways, but are usually something that is either of particular relevance to the research questions or something that is repeated within interviews or across cases (King and Horrocks, 2010). Themes can be viewed as unifying concepts that group together or stand above individual codes, either relating to the research questions and key literature (Bryman, 2008) or the ideas that emerge from the data.

The final stage of analysis was the organisation of themes. Themes were combined where there was significant overlap, or grouped together under overarching themes with sub themes. The organisation of themes was assisted by the use of mindmapping software, such as FreePlane, which enabled the construction of different visualisations of the relationships between themes. This was an iterative process, with themes and codes reordered and named and frequent references back to the literature in light of the emerging understanding. Themes were considered in terms of the hierarchical relationships of themes, where themes are nested in one another, how themes cluster together and the relationships between different themes (King & Horrocks, 2012).

The thematic analysis described above was selected for its flexibility and adaptability. It was suited to an exploratory research project in that insights from the literature and survey could be used in the analysis of interview data looking for themes suggested by these sources. Identifying emergent themes within the interviews was also suited to the exploratory research objectives, with themes that were not anticipated or expected emerging from the data.

3.9.8 Quality

Quality and validity in qualitative research is not a settled matter, with schools of thought including that quality is roughly analogous to the measures of reliability and validity in quantitative research that were discussed above or that qualitative research requires different criteria (King and Horrocks, 2010). This discussion draws on Guba and Lincoln's (1994) proposal of quality and validity criteria which include the extent to which research is trustworthy, credible, dependable and can be confirmed by others. As a result quality in analysis and findings was ensured through rigour and transparency of the research process (King and Horrocks, 2010; Ryan and Bernard, 2003). Quality and validity were primarily assured by following a rigorous and documented process that demonstrates how data was generated, analysed and conclusions formed. The discussion of findings will contribute to the quality by fairly representing conclusions, not overstating the certainty of these conclusions and

considering alternative explanations. Although the conclusions and findings are difficult to demonstrate as valid, it is possible to clearly document and present the process by which conclusions were reached for wider review as recommended by Koch (2006).

3.10 Integration

The survey and interview research phases are conducted separately, with the survey findings presented in Chapter 4 and interview findings in Chapter 5. The two sets of findings are then discussed together and integrated in Chapter 6.

4 Survey findings

The findings from the online survey of GPs in Wiltshire are presented below. The chapter begins with an overview of the data and response rate. Univariate statistics are then presented giving an account of how participants responded to individual items, followed by a summary of the qualitative data gathered through open text items.

4.1 Response rate

Thirty four (34) valid questionnaires were received. Not all questionnaires were complete, with some participants exiting the survey early. This section provides an overview of the survey response and what this means for the findings. Thirty five participants clicked on the link to take the survey, with one participant answering the initial question on consent negatively and not recording any valid responses. Thirty four (34) responses out of a total sample frame of two hundred and forty (240) gave a response rate of 14%. The reasons and consequences of this response rate were discussed in the methods chapter. Survey times ranged from 1 minute to 53 minutes.

4.2 Presentation

Findings are presented using tables. The text of the item that participants responded to will be included, as far as possible, to provide a clear indication of how data was generated and the item that participants encountered. Tables will include numbers and percentages, with numbers illustrating where participants may have chosen not to respond to an item and how the number of responses to items reduced as the survey progressed.

4.3 Univariate/descriptive statistics

4.3.1 Individual factors and demographics

The survey asked participants to provide basic demographic details and answer items that indicated basic attitudes towards sustainability and their role. Demographic details were recorded at the end of the survey, with some participants exiting the survey before this point.

Table 1 Demographic data and time worked as a GP

What is your sex? (Item 24)	What is your age group? (Item 25)		How many years have you worked as a GP? (Item 26)		
Male	10 (52.6%)	30-34	1 (5%)	0-4	1 (5%)
Female	9 (47.4%)	35-39	3 (15%)	5-9	3 (15%)
Total	19	40-44	2 (10%)	10-14	1 (5%)
		45-49	6 (30%)	15-19	5 (25%)
		50-54	3 (15%)	20-24	2 (10%)
		55-59	3 (15%)	25-29	6 (30%)
		60-64	2 (10%)	30-34	2 (10%)
		Total	20 (100%)	Total	20 (100%)

Participants were almost evenly split between male and female. Age ranged from the 30-34 age group to the 60-64 age group, with the median and mode of participants in the 45-49 age group. Only one participant had worked as a GP for 4 years or less, with all other participants reporting over 5 years of experience. On the whole respondents were a relatively experienced group with only 5% (1) having fewer than 5 years' experience.

4.3.2 Individual factors

Table 2 Well informed about climate change

I am well informed about sustainability issues such as climate change. (Item 2)					
Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	Total
1 (3.2%)	5 (16.1%)	10 (32.3%)	15 (48.4%)	0 (0%)	31 (100%)

Table 3 Environmentally friendly lifestyle

Please indicate which of the following statement best describes your current lifestyle. (Item 3)	
I don't really do anything that is environmentally friendly	0 (0%)
I do one or two things that are environmentally-friendly	3 (9.7%)
I do quite a few things that are environmentally-friendly	20 (64.5%)
I'm environmentally-friendly in most things I do	8 (25.8%)
I'm environmentally-friendly in everything I do	0 (0)
Total	31 (100%)
Missing	0 (0%)

Table 4 Involvement in commissioning

Please indicate which of the following statements best describes your level of involvement in commissioning. (Item 4)	
I am proactively involved in GP commissioning and seek out opportunities to take the initiative in GP commissioning	1 (3.2%)
I am engaged in GP commissioning and am involved whenever I have the opportunity	5 (16.1%)
I am engaged in GP commissioning when I need to be, but do not seek out opportunities to be involved	10 (32.3%)
I am not really engaged in GP commissioning and only take part if it necessary	15 (48.4%)
Don't know	0 (0%)
Total	31 (100%)
Missing	4

48% (15) of participants considered themselves well informed about sustainability issues, while 19% (6) did not, with 32% (10) neither agreeing or disagreeing with the statement. No participants stated that they were environmentally friendly in all their activities or that they didn't do anything that was environmentally friendly. The majority of participants reported that their lifestyle involved doing 'quite a few' environmentally friendly things, including 26% (8) that suggested they were environmentally friendly in most of the things that they do. These responses indicate that a large minority of participants assess themselves to be informed about sustainability issues and the vast majority undertake environmentally friendly behaviours. In contrast reported engagement with GP commissioning was mixed with just under 20% (6) of participants reporting seeking out opportunities to be involved, with just under half only taking part in commissioning activities when necessary.

4.4 Health and sustainability

This section focuses on attitudes towards health and sustainability, drawing on arguments and language used in the literature. Variables measured concepts from the more general proposition that climate change was a major threat to public health to specific questions about the impact of sustainability issues on health in the local area and impact on health service demand. Items 7 and 8 asked participants to consider sustainability impacts on the health of their local communities both in the recent past and their expectations for the future.

Table 5 Environmental and health links

Strongly disagree	Disagree	Neither agree/disagree	Agree	Strongly agree	Total
Climate change is a major threat to public health. (Item 5)					
0 (0%)	2 (6.7%)	11 (36.7%)	15 (50%)	2 (6.7%)	30 (100%)
Increases in major long-term conditions such as asthma, obesity, diabetes and high blood pressure are, in part, caused by environmental factors such as poor air quality, a lack of healthy food choices, a badly designed environment and inadequate facilities for safe walking and cycling. (Item 6a)					
0 (0%)	5 (16.7%)	6 (20%)	9 (30%)	10 (33.3%)	30 (100%)
In the area served by my practice efforts to improve sustainability, for example better infrastructure to support increased active travel (walking and cycling), would not have health and well being benefits for the local population. (Item 6b)					
5 (16.7%)	17 (56.7%)	4 (13.3%)	4 (13.3%)	0 (0%)	30 (100%)
If my local community were more sustainable, demand for the local health service would be reduced. (Item 6c)					
2 (6.7%)	10 (33.3%)	9 (30%)	7 (23.3%)	2 (6.7%)	30 (100%)

Responses show mixed attitudes towards the connections between sustainability and health put forward in the developing literature. Although a majority (57%/17) agreed that climate change was a 'major' threat to public health 37% (11) were neutral and 7% (2) disagreed. 63% (19) of participants agreed that ill health and unsustainable lifestyles are connected. Item 6b attempted to measure the concept that more sustainable local environments could be linked to improved health and wellbeing. 73% (22) supported this link, although the example given of infrastructure to support greater levels of physical activity will have influenced participants. Consistency in responses to 6a and 6b suggests that the respondents were able to respond appropriately to negatively framed items. 6c indicates that opinions were split over the statement that more sustainable communities would reduce demand for the health service, a key proposal in the developing literature.

Items 7 and 8 asked GPs to assess the extent to which they believed that the population served by their practice had been and would be negatively impacted by 'environmental sustainability trends' which were briefly explained in the participant information and survey content. Participants were asked to rate the negative impact between 1 and 5, with one indicating no negative impact and 5 significant negative impact.

Table 6 Local environmental and health links

Rating	1	2	3	4	5	Don't know
Direct impacts from sustainability trends. These are experienced directly by your local population. Examples include extreme weather events (heatwaves, flooding etc), change in disease vectors as the climate changes and reduced air quality. (item 7a)						
Frequency	3 (10.7%)	12 (42.9%)	5 (17.9%)	7 (25%)	1 (3.6%)	0 (0%)
Indirect impacts from sustainability. These are experienced by your local population as a result of direct impacts experienced elsewhere. Examples include food insecurity from decreased agricultural productivity, economic and political turbulence, resource shortages and unpredictable patterns of migration (item 7b)						
Frequency	5 (17.9%)	6 (21.4%)	9 (32.1%)	5 (17.9%)	3 (10.7%)	0 (0%)
Direct impacts from sustainability trends. These are experienced directly by your local population. Examples include extreme weather events (heatwaves, flooding etc), change in disease vectors as the climate changes and reduced air quality. (item 8a)						
Frequency	1 (3.6%)	4 (14.3%)	9 (32.1%)	6 (21.4%)	5 (17.9%)	3 (10.7%)
Indirect impacts from sustainability. These are experienced by your local population as a result of direct impacts experienced elsewhere. Examples include food insecurity from decreased agricultural productivity, economic and political turbulence, resource shortages and unpredictable patterns of migration. (item 8b)						
Frequency	1 (3.6%)	3 (10.7%)	10 (35.7%)	7 (25%)	5 (17.9%)	2 (7.1%)

Item 7 asked participants to consider negative impacts over the previous five years, with responses indicating that 89% (25) of respondents believed that their local population had been negatively directly impacted by environmental sustainability trends in the past 5 years. Indirect impacts were assessed differently by participants. More participants stated they perceived no negative impact from indirect issues, but greater numbers of participants indicated that they perceived more significant negative impacts.

Item 8 asked participants to consider the same question, but in regard to the next 20 years. Responses indicated that participants believed that negative impacts to health would be greater over the next 20 years. Responses also indicated that participants believed that the health and wellbeing of their practice population would experience more negative health impacts from indirect sustainability issues, such as political and economic turbulence than from direct impacts. Item 8 also included more don't know responses than item 7, which could indicate that respondents found it more difficult to speculate about future impacts than assess the past 5 years. It is notable that for both

the past 5 years and for the next 20 years that respondents considered the greater risk to health and wellbeing to arise from indirect sustainability impacts.

4.5 NHS and sustainability

Items 9 through 12 measured knowledge, attitudes and beliefs related to sustainability in the NHS. Item 9 asked GPs to indicate their level of awareness of key sustainability documents while 10 and 11 measured the priority that should be given to sustainability and the personal commitment of respondents to sustainability. Item 12 presented a range of attitude statements relating to sustainability in the NHS, derived from the literature review, that were likely to influence engagement with sustainability.

Table 7 Awareness of sustainability documents

To what extent are you aware of... (Item 9)				
	I have never heard of it	I have heard of it, but do not know much about it	I know a fair amount about it	I know a lot about it
The NHS Carbon Reduction Strategy	11 (40.74%)	16 (59.26%)	0 (0%)	0 (0%)
The NHS SDU's 'Route Map to Sustainable Health'	24 (88.89%)	3 (11.11%)	0 (0%)	0 (0%)
The NHS Wiltshire Sustainable Development Management Plan	20 (74.07%)	7 (25.93%)	0 (0%)	0 (0%)

Table 8 Priority of sustainability for the NHS

For the NHS sustainability should be... (Item 10)								
The lowest priority	A low priority	A medium priority	A high priority	The highest priority	Don't know	Median	Mode	
1 (3.70%)	6 (22.22%)	13 (48.15%)	7 (25.93%)	0 (0%)	0 (0%)	A medium priority	A medium priority	

Table 9 Personal commitment to sustainability in the NHS

Please indicate which of the following statements best describes your level of commitment to sustainability in the NHS. (Item 11)	
I am highly committed to working towards sustainability in the NHS. I would create new sustainability initiatives and work to move the sustainability agenda forward.	0 (0%)
I am committed to sustainability in the NHS. I would proactively support sustainability initiatives that are taking place.	3 (11.11%)
I am supportive of sustainability in the NHS. I would take part in sustainability initiatives and work for their success.	11 (40.74%)
I am neutral in my support of sustainability initiatives. I would take part in sustainability initiatives that directly affect me, but only do what is asked.	11 (40.74%)
I do not really support sustainability initiatives. I would take part in sustainability initiatives, but do the minimum that was required.	0 (0%)
I do not support sustainability initiatives taking place in the NHS. I would oppose taking part in them.	0 (0%)
I am not really interested in sustainability in the NHS.	1 (3.70%)
Don't know.	1 (3.70%)

The NHS carbon reduction strategy was the most well-known of these documents with 59% (16) of participants having heard of it. In contrast only 11% (3) of participants had heard of the more recent Route Map and 26% (7) of the Wiltshire Sustainable Development Management Plan. No participant indicates anything more than a passing knowledge of any of these documents.

Items 10 and 11 measured the priority that participants gave to sustainability in the NHS and their personal commitment to working towards a more sustainable health service. These items were located early on in the survey so that participants would not be influenced by later discussions of specific sustainable development activities. A 'Don't know' option was included for both items, while item 11 included a further 'disinterested' option to include participants that did not feel motivated to be supportive or in opposition to sustainability initiatives. 48.15% of participants (13) stated that sustainability should be a 'medium' priority for the NHS with equal numbers of participants (26%/7) giving sustainability a lower priority and a higher priority. Over half of survey participants (52%/14) declared themselves 'supportive' or 'committed' to working towards more sustainable practices in the NHS. 41% (11) of participants were neutral in their support, while 3.7% (1) of participants were disinterested and 3.7% (1) did not know their level of support for sustainability initiatives.

Item 11 asked participants the extent to which they would be 'proactive' in their support of sustainability initiatives. 41% (11) of responses indicated active support for

sustainability initiatives, while 41% (11) chose the 'neutral' option, that they would take part in sustainability initiatives that directly affected them but only do what was required. This 'neutral' option was supportive to the extent that participants stated they would take part in initiatives and do what is asked. 11% (3) stated that they would be proactive in their support. One participant stated that they were disinterested in sustainability in the NHS, while no participants chose an option that indicated they were unsupportive of sustainability, in that they would do the very minimum required or would oppose taking part in sustainability initiatives.

4.5.1 Item 12 – attitudes towards sustainability in the NHS

Item 12 consisted of 14 separate statements, discussed here in terms of items 12a-12n in a Likert item format. These statements represented key points made in the literature, for example the contention that the NHS should lead the public sector in terms of sustainability. Discussion of responses will not include every statement, but pick out a few key results selected in terms of their relevance to the research questions, significance of the result and the extent to which they are prominent in the analysis and discussion of findings. Responses that are relevant to further analysis are also mentioned.

Table 10 Attitudes towards sustainability in the NHS

Strongly disagree	Disagree	Neither agree/disagree	Agree	Strongly agree	Median	Mode
12a. The NHS should lead the public sector as a sustainable and low carbon organisation.						
1 (3.7%)	1 (3.7%)	9 (33.33%)	13 (48.15%)	3 (11.11%)	Agree	Agree
12b. I am uncertain how sustainability in the NHS will influence my role as a GP.						
0 (0%)	2 (7.41%)	5 (18.52%)	14 (51.85%)	6 (22.22%)	Agree	Agree
12c. Working towards sustainability in the health service will involve compromises in the health care services delivered to individual patients served by your practice.						
0 (0%)	8 (30.77%)	12 (46.15%)	5 (19.23%)	1 (3.85%)	Neither agree/ disagree	Neither agree/ disagree
12d. The working practices of a GP like me will change very significantly as a result of sustainability in the NHS.						
1 (3.85%)	9 (34.62%)	13 (50.00%)	3 (11.54%)	0 (0%)	Neither agree/ disagree	Neither agree/ disagree
12e. It is not essential that the NHS reduce greenhouse gas emissions by 80% by 2050.						
3 (11.54%)	13 (50.00%)	8 (30.77%)	2 (7.69%)	0 (0%)	Disagree	Disagree
12f. The NHS has less of a responsibility than other sectors of the economy to lower its environmental impact and contribute to sustainability in the UK.						
3 (11.11%)	19 (70.37%)	4 (14.81%)	0 (0%)	1 (3.70%)	Disagree	Disagree
12g. The high environmental impact of the NHS is inconsistent with the values of the health profession to protect and promote health.						
1 (3.70%)	3 (11.11%)	8 (29.63%)	13 (48.15%)	2 (7.41%)	Agree	Agree
12h. There is clear leadership taking sustainability forward in the NHS.						
1 (3.85%)	15 (57.69%)	9 (34.62%)	1 (3.85%)	0 (0%)	Disagree	Disagree
12i. Among my peers there are no examples of individuals taking the sustainability agenda forward.						
2 (7.41%)	3 (11.11%)	5 (18.52%)	14 (51.85%)	3 (11.11%)	Agree	Agree
12j. Working towards sustainability in the health service will lead to improvements in the health and wellbeing of the population served by your practice.						
0 (0%)	2 (7.69%)	13 (50%)	10 (38.46%)	1 (3.85%)	Neither agree/ disagree	Neither agree/ disagree
12k. GPs do not have a greater responsibility than individuals of other professions to contribute to sustainability.						
1 (3.85%)	6 (23.08%)	2 (7.69%)	15 (57.69%)	2 (7.69%)	Agree	Agree
12l. Working towards sustainability in the health service will require significant additional work from GPs.						
0 (0%)	2 (7.69%)	14 (53.85%)	10 (38.46%)	0 (0%)	Neither agree/ Disagree	Neither agree/ disagree
12m. The NHS must significantly reduce its current level of environmental impact.						
0 (0%)	0 (0%)	9 (34.62%)	14 (53.85%)	3 (11.54%)	Agree	Agree
12n. The case for sustainability in the NHS has been communicated to me.						
1 (3.85%)	16 (61.54%)	2 (7.69%)	6 (23.08%)	1 (3.85%)	Disagree	Disagree

Item 12, with its 14 Likert statements, produced a significant amount of data providing information on the attitudes of participants in relation to the developing literature and the potential presence of barriers and facilitators. The data is summarised and reflected on in order to note trends in the data, interesting results and where results give us some insights into the attitudes of the participant group. This is a basic discussion reflecting on the responses and one possible single interpretation, a fuller exploration in light of other research data and other possible interpretations will be considered in the discussion chapter.

Survey responses reflected the diversity of opinions of participants with no cases where participants responded unanimously, or near unanimously, in a particular direction. Responses indicated some support for key messages from the literature for example items 12a, 12e, 12f, 12g and 12m. Among participants there was majority agreement for the NHS to 'lead' the public sector as a sustainable organisation and very little support for the proposition that the NHS has less responsibility to manage its environmental impacts than other parts of the economy. Less than 8% (2) of participants agreed that it was not essential that the NHS make substantial cuts to greenhouse gas emissions, while 55% (15) agreed that the high environmental impact of the NHS was inconsistent with the values of the NHS. A majority of participants agreed the NHS must significantly reduce its current environmental impact, with no participants disagreeing. Although 50% (13) were neutral, far more participants (42%/11) agreed that more sustainable practices would lead to improvements in health and wellbeing for their practice population than the 8% (2) who disagreed. These results indicate support among respondents for a more sustainable NHS, however significant numbers of responses were not supportive. For example, although a majority of respondents agreed that the environmental impact of the NHS was inconsistent with the values of protecting and promoting health, 15% (4) disagreed while 30% (8) remained neutral.

Not every response indicated agreement with key messages from the developing literature. Responses to 12c demonstrate uncertainty over the positive impacts of sustainability with 23% (6) agreeing, and 46% (12) neutral, that more sustainable practice could lead to compromises in services received by individual patients. Other findings were difficult to interpret, but suggested that the key messages of the developing literature may not have been accepted or understood by a proportion of participants. Only 11.5% (3) of participants agreed that their role would undergo very significant changes as a result of sustainability, with 38.5% (10) disagreeing. This may

indicate that the radical changes set out in the literature are not understood or appreciated by many of the participants, although this finding is difficult to interpret without an understanding of how GPs in Wiltshire think about their current role and the changes outlined in the literature. It is possible that more sustainable practices are viewed by participants as consistent with their current role and not consistent with changes. The response to 12k was similarly challenging to interpret. The majority of respondents (65%/17) agreed that GPs did not have a greater responsibility than other professionals. This may mean that participants did not agree with the case made in the literature for the particular responsibility of health professionals; however it could equally indicate the attitude that sustainability should be equally important for all professionals. These ambiguities highlight the benefits of the mixed methods approach, where subsequent interviews allow exploration of questions raised by the survey response.

Responses further suggested that participants perceived significant barriers to their engagement with sustainability. The great majority of participants (74%/20) agreed they were uncertain how sustainability would influence their role, with only 7% (2) disagreeing. Participants mostly disagreed (61.5%/16) that there was clear leadership on sustainability in the NHS, with only 4% (1) agreeing there was clear leadership. Similarly a majority (63%/17) agreed there were no examples of peers taking the sustainability agenda forward, although 18.5% (5) disagreed with this. Further evidence of the uncertainty felt by many participants, the perception of little leadership and few examples of peers working on sustainability can be seen in the response to item 12n. 27% (7) of participants agreed that the case for sustainability had been communicated to them against 65% (17) who disagreed. Furthermore 38.5% (10) of GPs taking the survey agreed that sustainability requires significant additional work for GPs, while only 8% (2) disagreed. These responses may indicate significant barriers to engagement with sustainability, with uncertainty over the implications of sustainability, little perception of leadership or of peer activity on sustainability and a perception among some participants that sustainability is likely to involve significant additional work.

Data did not show uncontested support for any statements, rather a spectrum of opinion on each statement with the neutral response sometimes the most chosen response. Items 12c, 12d, 12j and 12l all ask participants to form a view based on their expectations of what sustainability will mean for the NHS, patients and GPs, and in all these cases the neutral option was the median and mode response. In contrast, where participants were well placed to agree or disagree with a statement, such as taking a view on whether the case for sustainability had been communicated to them the neutral response was lower at 8% (2).

4.6 Sustainability activities – items 13-16

As noted in the literature review and methods chapter previous research suggested that support for sustainability in the NHS was high, however this support was often based on limited information and with sustainability presented as an abstract concept rather than a program of significant change that individuals would need to support and work towards. Items 13, 14, 15 and 16 present sustainability to survey participants in terms of specific, relatable activities put forward in the developing literature. As with item 12, each item consisted of a number of statements with Likert format item response types. In addition a free text box was included at the end of the item so that participants could provide further information on their response. The rationale for selection of items was included in the methodology discussion. Statements were written to provide realistic and credible accounts of sustainability activities in which GPs in Wiltshire could be expected to participate and illustrate some of the ways that more sustainable practices would influence the day to day activities of GPs.

Frequency tables for items 13-16 are presented below, along with limited commentary on the findings and their significance.

4.6.1 Item 13 – Leadership and advocacy

Table 11 Leadership and advocacy

Strongly disagree	Disagree	Neither agree/disagree	Agree	Strongly agree	Median	Mode
13a. GPs and their practices, in their day to day activities, should provide highly visible examples of sustainable behaviour to their local communities, such as using active travel when visiting patients in the community.						
3 (13.64%)	4 (18.18%)	4 (18.18%)	8 (36.36%)	3 (13.64%)	Agree/Neither agree or disagree	Agree
13b. GPs, as private citizens, should not be expected to provide a clear example of sustainable and healthy choices, for example in their personal travel and transport choices.						
0 (0%)	10 (45.45%)	5 (22.73%)	5 (22.73%)	2 (9.09%)	Neither agree or disagree	Disagree
13c. In routine interactions with patients GPs should not be expected to promote healthy and sustainable behaviours, for example discussing active travel with patients.						
2 (8.70%)	11 (47.83%)	3 (13.04%)	6 (26.09%)	1 (4.35%)	Disagree	Disagree
13d. GPs should be advocates in their local community for measures which support sustainability and health, for example infrastructure to promote active travel.						
1 (4.55%)	2 (9.09%)	6 (27.27%)	13 (59.09%)	0 (0%)	Agree	Agree
13e. GPs should not be expected to influence provider organisations to adopt sustainable practices through the inclusion of sustainability criteria in contracts.						
1 (4.55%)	13 (59.09%)	5 (22.73%)	3 (13.64%)	0 (0%)	Disagree	Disagree
13f. GPs should commonly encourage the uptake of sustainable practices within all parts of the NHS, for example measures to decrease impacts from staff commuting.						
1 (4.55%)	1 (4.55%)	10 (45.45%)	10 (45.45%)	0 (0%)	Neither agree or disagree	Agree/Neither agree or disagree
13g. GPs should not be expected to be knowledgeable on the links between sustainability and health and to communicate this whenever possible and appropriate.						
0 (0%)	10 (45.45%)	6 (27.27%)	6 (27.27%)	0 (0%)	Neither agree or disagree	Disagree
13h. GPs should actively engage with stakeholders, such as patients, local communities and NHS staff, about what a sustainable NHS will mean for them and the changes that will take place.						
1 (4.55%)	2 (9.09%)	11 (50%)	8 (36.36%)	0 (0%)	Neither agree or disagree	Neither agree or disagree
13i. Please let us know why you support, or do not support, GPs in Wiltshire undertaking the above mentioned activities.						
Valid responses			13			

Item 13 attempted to measure support for leadership and advocacy activities suggested in the developing literature. Support for GPs taking an active role promoting or advocating for more sustainable behaviours, settings or actions was evident in the survey responses. 56.5% (13) of the sample supported GPs promoting sustainable and healthy behaviours in routine interactions with patients, however a significant proportion of participants (30%/7) did not support this. 59% (13) of participants agreed

that GPs should advocate for local community measures that were supportive of sustainability and health with 13.5% (3) disagreeing. 63.5% (14) of participants supported GPs influencing provider organisations to take up more sustainable practices, while 45.5% (10) of participants agreed that GPs should encourage the uptake of sustainable practices in the NHS, with 45.5% (10) of participants neutral. Together these responses indicate that a significant proportion of the sample were supportive of GPs advocating and encouraging sustainable behaviours with patients, staff, providers and within the local community. Interestingly the greatest negative response to attempting to influence the behaviours of others was in the case of patients with 30% (7) of participants agreeing that GPs should not be expected to promote these behaviours with patients.

There was mixed support for other leadership and advocacy activities. 50% (11) of respondents agreed that GPs and practices should provide highly visible examples of sustainable behaviour in their day to day activities with 31% (7) disagreeing. 45.5% (10) supported GPs providing examples of sustainable behaviour and healthy choices in their private lives with 32% (7) not in support. It is notable that these two items indicate similar levels of support for modelling sustainable and healthy behaviour both in the professional role and private choices of GPs. 13g had a similar response pattern with 27% (6) of participants agreeing that GPs should not be expected to be knowledgeable and actively communicate the links between sustainability and health with 45% (10) disagreeing. These results suggest that mixed support for GPs playing an active role in regards to sustainability, with a majority or near majority of respondents supportive but a significant proportion of participants unsupportive.

Some variables received considerable neutral responses. For example 45.5% (10) of participants agreed that GPs should encourage the uptake of sustainable practices throughout the NHS, while 36.5% (8) agreed that GPs should actively engage with stakeholders around sustainability. However there was a significant neutral response to these items of 45.5% (10) and 50% (11) which may suggest that in these cases that a significant proportion of participants were cautious about GPs working as leaders and advocates for sustainability.

There were 12 valid responses to the open text item that asked participants to give reasons for their above responses.

6 responses expressed support for the principle underpinning the leadership and advocacy activities expressed above, although support was qualified in 4 of these responses. Support for GPs and their wider community role was evident in two responses.

I support it because we should be setting an example to the local population and because I believe everyone has a responsibility to do what they can we are community [sic] roles whether we like it or not

Support was qualified in terms of the workload of GPs and the extent to which sustainability seemed to be separate from the day to day activities of GPs.

I think this is probably very important but in truth it seems remote to my life and work. I would support local democratic changes because social problems are key to health.

Participants expressed concerns about their capacity to take part in sustainability activities mentioned in section 13. 6 responses suggests that time constraints and the current burden placed on GPs made engagement with sustainability a low priority. Even where participants were sympathetic to the case for engagement with sustainability and the potential benefits of GP engagement, time was a major constraint.

Because I'm run off my feet already and doing this fucking survey isn't helping

I will answer this honestly, I am so burnt out that even though I understand why all this is important and makes sense I simply cannot take on another cause, there is no time in our consultations to do half of what is expected /demanded now.GP's are ideally placed to do so much ...we simply cannot do it all ,yes of course you can justify a health link, but that should not make us automatically responsible.

It is a good idea, but not top of GP priorities at present

Two participants suggested that GP engagement with sustainability was constrained by a lack of wider leadership and investment from the government.

So much to do so little time - when governments start taking this seriously I'll do more.

The infra structure would need to be in place before we could make it part of our discussions with patients - otherwise it is meaningless and irritating

Even among participants who demonstrated, in their responses, a strong commitment to sustainability a lack of investment and the potential of declining income were factors that reduce support for engaging with sustainability.

We have considered the carbon footprint of our practice and would be willing with some central support to invest in solar panels for instance. We would be willing to engage and should engage in more sustainable activities but the tension in times of plummeting profits is the balance of investment against personal income.

Other participants questioned the extent that sustainability was relevant to the day to day activities of GPs, or where barriers existed as a result of Wiltshire being a sparsely populated rural area.

I think this is probably very important but in truth it seems remote to my life and work. I would support local democratic changes because social problems are key to health

Three participants expressed concern over making the case for sustainability in their role as GPs. This was compared to promoting a political or religious point of view, while another cautioned that although sustainable and healthy lifestyles were linked they should not be forced on patients.

I don't have the time, the skills, the knowledge, or the interest in this. Simply - it's not my job.

These responses suggested a divergence in opinion among respondents, with some supportive of GPs playing a wider role promoting connections between sustainability and health with patients and the wider community, while others view this as separate to their role as GPs.

4.6.2 Item 14 – health improvement

Table 12 Health improvement

Strongly disagree	Disagree	Neither agree/disagree	Agree	Strongly agree	Median	Mode
14a. GPs should not move resources to prioritise services that reduce demand for services in the long term.						
1 (5.26%)	12 (63.16%)	5 (26.32%)	1 (5.26%)	0 (0%)	Disagree	Disagree
14b. GPs and their practices should not routinely use NHS resources to identify and promote actions that have joint health and sustainability benefits for their practice population. An example would be using NHS resources to improve housing to be warm and energy efficient.						
0 (0%)	4 (21.05%)	7 (36.84%)	8 (42.11%)	0 (0%)	Neither agree or disagree	Agree
14c. GPs and their primary care teams should principally focus on maintaining the health and wellbeing of their practice population.						
0 (0%)	0 (0%)	0 (0%)	15 (78.95%)	4 (21.05%)	Agree	Agree
14d. GPs should not be expected to routinely work with other professionals in social care and other public services to improve health in the area served by their practice.						
2 (10.53%)	15 (78.95%)	2 (10.53%)	0 (0%)	0 (0%)	Disagree	Disagree
14e. In their commissioning role GPs should shift NHS resources to commission services that address the ‘systemic causes of ill health’ in their local population, for example supporting more active travel among the most vulnerable.						
0 (0%)	0 (0%)	8 (42.11%)	10 (52.63%)	1 (5.26%)	Agree	Agree
14f. Please let us know why you support, or do not support, GPs in Wiltshire undertaking the above mentioned activities.						
Valid responses			8			

Section 14 included statements that related support for sustainability activities related to health improvement. There was 100% (19) agreement that GPs should principally focus on maintaining the health and wellbeing for the population, while 89.5% (17) of participants indicated support for routine working with social care professionals, with 10.5% (2) neutral. 68.5% (13) of participants suggested their support for shifting resources to meet the long term objective of reducing demand for healthcare services with 26% (5) of participants neutral. A smaller majority of 58% (11) agreed that resources should be shifted to services that addressed the ‘systemic’ causes of ill health with 42% (8) neutral responses. Item 14b attempted to measure support for a key proposal from the literature that the NHS should use its resources to support actions that have both sustainability and health. 21% (4) indicated support for this, 37% (7) were neutral and 42% (8) opposed.

The eight open text responses were broadly supportive of the objective of improving health, but this support was frequently qualified. Support was expressed in terms of the extent that health improvement 'seemed important', observations that changes to lifestyle offered an opportunity for many patients to make the biggest improvement to their health and general support for undertaking activities that would benefit the most vulnerable patients.

So much of the ill health of my population is related to poor lifestyle that the biggest eventual gain to their health will be to live more healthily.

Qualifications, however, were significant, suggesting that although the principle of supporting health improvement linked to sustainability was supported, the reality of achieving this was much more difficult. Resources were raised by a number of participants and the concern that choosing to invest in health improvement could put other services under pressure. Shifting how resources were allocated was viewed as extremely difficult and requiring political leadership.

My concern would be that the resources needed would be diverted from areas that are already stretched. But in theory i [sic] support anything that would improve the health and well-being of the most vulnerable of our patients

There would need to be a great deal of political leadership if resources were to be shifted away from immediate needs into 'investments' for the future. More appropriate, probably, at a time of growth, when there can be decisions to be made on the use of additional resources that become available. Obviously this is a pragmatic answer, and it would be better if there were a trimming of less valuable (to whom?) services so resources could be shifted now. I just can't see it happening.

The appropriateness of the reallocation of NHS resources was alluded to in two responses, with the debate considered one that is "important but starts to be political" and one that required political leadership to be successful. Two further responses suggested that allocating NHS resources in the ways proposed in section 14 was not appropriate. One respondent suggested that councils and public health should use their resources to focus on the wider determinants of health rather than the health budget, while another suggested that focus on health improvement would require joint funding and working with social services.

These ideas will only work if there is joint funding and working with social services. Then it makes sense.

Two responses indicated support for the principle of shifting resources to 'high value' activities, but suggested achieving this would be difficult. Shifting resources could 'stretch' current services and services would be valued differently by different stakeholders (see comment above). One participant suggested that they would find it

difficult to know what level of support was appropriate to services that promote sustainability.

I would want to promote [sic] services that have sustainability but it is difficult [sic] to know where one draws the line

4.6.3 Item 15- Clinical practice

Table 13 Clinical practice

Strongly disagree	Disagree	Neither agree/disagree	Agree	Strongly agree	Median	Mode
15a. GPs should customarily consider the environmental impacts of the clinical decisions they make with patients and prefer options that have lower environmental impact.						
1 (5.56%)	4 (22.22%)	7 (38.89%)	6 (33.33%)	0 (0%)	Neither agree or disagree	Neither agree or disagree
15b. GPs should reduce 'low value' activities. For example reducing diagnostic tests or prescriptions that are likely to offer little benefit to patients.						
0 (0%)	0 (0%)	1 (5.26%)	13 (68.42%)	5 (26.32%)	Agree	Agree
15c. GPs should increasingly support patients to manage conditions through sustainable and healthy behaviour change. For example increased physical activity and reduction in the use of pharmaceuticals.						
0 (0%)	0 (0%)	0 (0%)	11 (61.11%)	7 (38.89%)	Agree	Agree
15d. GPs should not be expected to choose ways of working that reduce environmental impact, for example reducing travel by consulting with patients over telephone.						
2 (11.11%)	11 (61.11%)	5 (27.78%)	0 (0%)	0 (0%)	Disagree	Disagree
15e. Please let us know why you support, or do not support, GPs in Wiltshire undertaking the above mentioned activities.						
Valid responses				5		

All participants (18) agreed that GPs should increasingly manage health conditions through behaviour change and reduce use of pharmaceuticals, while 95% (18) agreed that 'low value' activities should be reduced. 72% (14) of participants indicated support for choosing ways of working that reduced environmental impact, with 28% (5) selecting the neutral response and no participants indicating opposition. Responses were mixed to the statement that GPs should consider the environmental impacts of clinical decisions, with 33% (6) of participants agreeing, 28% (5) disagreeing and 37% (7) selecting the neutral option.

Three of the five qualitative responses link more sustainable services to improving health care delivery. These synergies are suggested in terms of increased efficiency and reduction in waste, encouraging patient behaviour change and local provision of

care. Three comments are supportive of adopting sustainable working practices, but are clear that this should be subordinate to patient care.

4.6.4 Item 16 – Management and commissioning role

Table 14 Management and commissioning

Strongly disagree	Disagree	Neither agree/disagree	Agree	Strongly agree	Median	Mode
16a. When developing and commissioning services GPs should favour models of care that have a lower environmental impact.						
0 (0%)	0 (0%)	4 (22.22%)	11 (61.11%)	3 (16.67%)	Agree	Agree
16b. GPs should be responsible for and evaluated on the environmental impacts of their clinical, referral, commissioning and management decisions.						
0 (0%)	7 (38.89%)	5 (27.78%)	5 (27.78%)	1 (5.56%)	Neither agree or disagree	Disagree
16c. GPs should not be expected to lead contentious decisions that are necessary to reduce environmental impact. For example decisions about the availability of services and how they are delivered.						
1 (5.56%)	7 (38.89%)	5 (27.78%)	4 (22.22%)	1 (5.56%)	Neither agree or disagree	Disagree
16d. GPs, working with their clinical commissioning group, should take steps to understand how the health of the population served by their practice will be influenced by sustainability trends, such as increases in extreme weather events or reduced energy and food security.						
0 (0%)	0 (0%)	6 (33.33%)	12 (66.67%)	0 (0%)	Agree	Agree
16e. GPs, working with their clinical commissioning group, do not have a responsibility to take action to increase the resilience of the population served by their practice to sustainability trends that could influence their health, such as increases in extreme weather events or reduced energy and food security.						
0 (0%)	10 (55.56%)	6 (33.33%)	2 (11.11%)	0 (0%)	Disagree	Disagree
16f. GPs should work towards lowering overall levels of activity in the health service. This may include actions such as reducing the healthcare real estate and the number of healthcare interventions.						
0 (0%)	2 (11.11%)	6 (33.33%)	9 (50.00%)	1 (5.56%)	Disagree	Disagree
16g. Please let us know why you support, or do not support, GPs in Wiltshire undertaking the above mentioned activities.						
Valid responses			6			

78% (14) of participants supported developing low environmental impact services with 22% (4) neutral and indicating no opposition. 67% (12) of participants supported taking action to better understand how the health of local populations would be influenced by sustainability trends, with the remaining 33% (6) of participants selecting the neutral option. Similarly 55.5% (10) of responses supported GPs and clinical commissioning groups taking action to increase the resilience of their local populations to health risks arising from sustainability trends, with 11% (2) not supportive. 55.5% (10) of

participants agreed that GPs should work towards lowering overall levels of activity in the health service, which could include reducing the real estate, with 11% (2) disagreeing. 44.5% (8) of participants were supportive of GPs leading contentious decisions about the availability of services, with 28% (5) unsupportive. Responses to the statement that GPs should be evaluated on the environmental impacts of their decisions, including decisions related to the treatment of patients were mixed with 33% (6) agreeing, 39% (7) disagreeing and 28% (5) selecting the neutral option.

The five open text responses provided a range of views on the role of GPs in working towards more sustainable practices. Three respondents pointed out that individual GPs may not be best placed to meet the management and commissioning challenges connected to sustainability, and may instead focus on the areas for which they are directly responsible. Wider concerns such as extreme weather provision or the overall activity levels of the NHS were not viewed as within the power of individual GPs and better handled through the CCG level or through other parts of the public sector. A further response suggested a wider responsibility for sustainability and health, with the population required to 'think differently'. It would be incorrect to read too much into a single sentence, but it does suggest some support for a radical rethink of how health and wellbeing are supported in the UK.

I am not sure it is plausible for GPs to contribute to reducing real estate and activity levels in the NHS, we can though commission services with lower environmental impacts, change our behaviour regarding tests and prescribing (drug production has a massive carbon footprint but this data is not routinely available- a carbon tariff next to cost might alter prescribing decisions). Statement 2 (GPs responsible for and evaluated on...) is a bit big brotherish, we have enough sticks to be beaten with without adding another. We need to focus on the quick wins to engage our colleagues, adding a stick about sustainability is more likely to result in disengagement.

I think GPs should be proactive about areas that we can effect - service delivery, prescribing, working in an environmentally freindl [*sic*] way - but struggle to extend that to extreme weather etc. I am already stretched to the extreme - surely that are people better placed within the public sector to do this?

Decisions such as these will need to be taken at CCG level rather than individual level and need close working with other agencies such as social services

because medicine cant asnwer [*sic*] everything and the population need to start thinking differently.

One response suggests that more sustainable working practices should not require reductions in activity, in contrast to the more radical position put forward in the literature. It is unclear what drives this belief and provides a further example of the need to explore the reasons that attitudes are held during the interview process.

Other responses indicate that participants are taking a thoughtful and nuanced approach to working more sustainably and the potential barriers. It's noted that information on the carbon impact of prescriptions is not available and its availability could influence behaviours. Another response discusses the need for careful evaluation of the impact of different choices, using the example of centralised care versus care closer to home. The response indicates that there is no simplistic answer, rather a range of impacts on different stakeholders that must be considered.

4.6.5 Item 17 – Current and past sustainable development activities

Table 15 Current and past sustainable development activities

17. Please indicate if you have taken part in any sustainability activities in the past 2 years.	
I have taken part in many sustainability activities in the past two years	2 (10.53%)
I have taken part in some sustainability activities in the past two years	2 (10.53%)
have taken part in few sustainability activities in the past two years	4 (21.05%)
I have taken part in no sustainability activities in the past two years	11 (57.89%)
Valid open text responses	6

Current and past participation in sustainable development actions was approximately measured by asking participants to describe their involvement over the past two years using the broad terms of many, some, few and none. Guidance suggested that participants use a wide definition of sustainability activities, while the item was placed after items on sustainability activities so that participants could draw on these examples when considering their own participation in sustainability activities. The majority of participants (58%/11) stated they had taken part in no sustainability activities in the past two years, with 21% (4) stating they had taken part in a few, 10.5% (2) some and 10.5% (2) many. 43% (8) of participants in total had therefore undertaken some form of sustainability activity in the past two years.

Six participants provided further description of their sustainability activities over the past two years. Two participants mentioned attending meetings and talking to colleagues about sustainability. Two responses described the integration of sustainability into clinical and practice management decisions. Examples included reducing referrals, better management of prescriptions, conducting telephone triage, using text messages instead of sending letters, installing solar panels and recycling. Two responses mentioned behaviour change, where patients were encourage to live healthier lives.

4.6.6 Attitudes towards sustainability/barriers and facilitators

Items 18, 19, 20, 21 and 22 were intended to measure the extent that participants perceived a more sustainable NHS to have benefits and drawbacks and the potential barriers and facilitators to GP engagement with sustainability. These items were placed later in the survey so that participants would be able to consider the various aspects of sustainability already covered by the survey in their responses. Item 20 asked participants to indicate which attitudinal statement best described their position, while other items were open text and asked participants to list the three main advantages and disadvantages of working towards a more sustainable NHS and the three main barriers and facilitators to their engagement with sustainability.

Table 16 Positive or negative impact of sustainability on the NHS

Item 20. When you consider the advantages and disadvantages of sustainability in the NHS, do you believe it will have an overall positive impact or an overall negative impact?	
Significant negative impact	0 (0%)
Some negative impact	1 (5.3%)
Neutral	2 (10.5%)
Some positive impact	9 (47.4%)
Significant positive impact	4 (21.1%)
Don't know	3 (15.8%)
Total	19 (100%)

Only 5% (1) of participants indicated that they believe sustainability will have an overall negative impact, while 68.5% (13) believe that sustainability will have a positive impact. 10.5% (2) believe that sustainability will be neutral in its impact, with 16% (3) choosing the 'don't know' option. This response only indicates broad attitudes towards sustainability in the NHS, with no information on what the nature of these impacts may be, where they may be felt or how positive and negative impacts may be balanced against each other.

4.7 Advantages and disadvantages of sustainability

Items 18 and 19 each had 12 valid responses where participants indicated what they perceived to be the main advantages and disadvantages of a more sustainable NHS. Advantages were expressed mostly in terms of long term benefits and benefits accrued to patients and the wider health service through improved health and wellbeing. Disadvantages were primarily discussed in terms of short term challenges of additional pressures on resources and time as well as the uncertainty involved in engaging with sustainability.

Advantages of a more sustainable NHS included efficiency and reduction in waste which would benefit taxpayers and the health service through cost savings such as

cheaper to run premises and a reduction in waste. Waste was viewed more widely than financial waste with four participants stated that reducing waste was important, one participant stating that “the wastage upsets me more than anything else in the health service”, while another participant stated that they “hate” waste. The benefits from efficiency were various and included more accountability to taxpayers, savings for GPs in terms of premises costs and the ability to use resources in other areas for patient benefit. Efficiency was also referred to, in terms of long term benefits to health and finances in one response, indicating the long term perspective required to consider sustainability activities in the NHS.

Health improvement was cited as a benefit by 9 respondents, with the potential to promote more active lifestyles and improved diets among patients. Health improvement activities were also discussed in community led terms. One participant talked about ‘community adhesiveness’ and the potential to support through transport links and local exercise groups, with social benefits as important as increased physical activity. Another participant discussed group based activities, such as gardening clubs and the potential to refer patients to these activities for mental health benefits as well as increasing vegetable consumption. The more general health benefits that would arise from more sustainable settings and lifestyles were also discussed, for example increased provision for cycling enabling patients to live more active lifestyles. One participant discussed a benefit of sustainability to ‘change the mindset of people to a healthier one’ positioning sustainability as a wider opportunity to influence settings and lifestyles.

A number of participants recognised the need to rethink how services are delivered to meet challenging objectives of improving care for an increasing and aging population with fewer resources as a benefit. One participant suggested that a sustainable approach to healthcare could encourage “primary and secondary care to work together to improve the delivery of services to patients rather than each working to their own ends”, suggesting that a driver to be more efficient in the use of resources could have benefits for patients. A number of comments discussed the potential to reorient the health service and the purpose of the health service, perhaps discussing what the proper role of the health service is and ensuring that the best use of limited resources is made.

I hate unreasonable expectation, this could lead to real debate on rationing I hate social unfairness, I know this impacts on health but lack a way forward

Two participants indicated that sustainability was a long term project, with long term benefits, alluding to the need to balance short term needs against longer term goals. A

number of specific advantages were mentioned, including the provision of care close to patients, one participant mentioned a decrease in travel as a result of electronic communication and another reduction in facilities. These changes were discussed in terms of patient benefits, for example reducing the strain on elderly patients to travel to hospitals.

A more sustainable NHS was also perceived as having considerable disadvantages. The long term benefits discussed above were contrasted with the near term challenge of increase in costs mentioned by four participants, likely referring to the financial and resource cost of committing to sustainability activities. Other participants discussed cost in terms of the additional work involved for them. These near term costs were referred to as 'investment up front', an understandable disadvantage when many services are under financial pressure and GPs are stretched to provide services to their patients. Challenging decisions about resources, such as reducing previously provided services was also put forward as a disadvantage.

A more sustainable approach to healthcare requires considering the environmental impacts of services and the best use of limited resources for the whole population. This requires that GPs change their relationship with patients, and survey participants observed a number of disadvantages that arose from this. There was concern that health professionals may sound sanctimonious and discussion of sustainability will take up time in a consultation. This participant also suggested that patient expectations may be a barrier to sustainability activities, providing the example of patients expecting home visits and face to face consultations rather than communications by alternative means. The potential for discussion of the environment to be viewed cynically by patients was also raised, with patients believing that changes in practice, such as reducing travel by using telephone appointments and electronic communication would be understood as money and time saving measures, with the environment as an excuse. Two GPs suggested that the limited time available in consultations was a disadvantage, with sustainability being another thing to deal with in a short period of time. One participant mentioned a "lack of patient engagement" which was described by another participant as "Battling away with prevention and encouragement when many patients don't want to know". The language used clearly suggests that engagement with patients is viewed as challenging.

The decision to work towards a more sustainable health service and commit significant resources for the long term does not rest with individual GPs, but requires leadership and agreement and good will from multiple stakeholders. Two participants discussed the challenge of getting this political engagement to work towards a more sustainable

health service. A key disadvantage was the changing priorities of different political groups with the perceived solution to 'Take the NHS away from the influence of political parties and then sustainability will become a real possibility.' This was echoed by another response that discussed the challenge of securing the additional investment required and securing the 'agreement of politicians, commissioners, practitioners and the public'. One participant discussed the challenge of relating their individual decisions to the wider sustainability challenge, given the minor impact of decisions taken at the practice level, or even the wider NHS.

The realities of my practice's decisions (and even wider NHS decisions) within the wider effects of national or global politics and economics

A further disadvantage was the required change to operate more sustainably disadvantaging some stakeholders who receive the most benefits from how the system currently operated. Disadvantages also arose where survey participants did not feel some sustainability activities were suitable for their patients and local area. One participant discussed the challenge of accessing health facilities in a rural area with poor public transport and the suitability of public transport for ill patients.

One participant mentioned the uncertainty and lack of evidence for sustainability claims. It is unclear if the response was referring to uncertainty in terms of the challenges to health and the health service, perceived controversies around key issues such as climate change or the stated benefits connecting health and sustainable development, but regardless this perceived lack of evidence means that investing in sustainability activities runs the risk of 'wasting time and money for little benefit'.

4.8 Items 21 & 22 - Barriers and facilitators

Items 21 and 22 were formatted similarly to items 18 and 19 and asked participants to consider a range of factors that could act as barriers or facilitators to engagement with sustainability and indicate up to three of each in open text boxes for items 21 and 22. As with items 18 and 19 there were twelve valid responses for each item.

10 of the 12 responses suggested that increased leadership was necessary to enable them to work towards sustainability in the health service. Leadership in this case means clear signals about how to proceed and the provision of support in terms of resources and knowledge. When a source of the leadership and guidance was mentioned it was from a position of authority, described in terms such as 'central', used by two participants or 'those leading sustainability'. There appeared to be an expectation that the agenda should be owned by an organisation or group, rather than being a general aspiration. Reasons for leadership were also given, with one

participant stressing the need for local and national political leadership, in particular if there were “short term disbenefits”.

Leadership was not just discussed in terms of words or guidance, but in terms of resources and support available for sustainability activities. Funding to support sustainability was mentioned by five participants. Funding was mentioned in regard to expanding services that could have sustainability and public health benefits, investing in infrastructure necessary to support sustainability activities and covering the time of GPs spent on sustainability. Two participants mentioned time to be put aside for sustainability activities, which could send a clear signal of the importance of the agenda. One participant suggested a reward system related to sustainability to incentivise sustainable activities.

Participants also suggested that relevant and easy to apply information was required. Terms such as “practical”, “direct”, “realistic”, “simple” and “ready made solutions” were used. Specific information mentioned also included ‘quality’ information about the impacts related to health interventions, which would enable participants to make more sustainable decisions. This discussion of “quality” information was echoed by two participants who discussed the need for an “evidence” base and “peer reviewed evidence”. A number of claims about sustainability and health are made in the literature and it is reasonable that health care practitioners would like to see the evidence for those claims to ensure that they are credible.

Responses also indicated a number of ways in which participants could be enabled to work towards more sustainable practices. This would link with the on-going theme of ‘leadership’ exhibited in many of the comments, where participants seemed to require clear and unambiguous signals related to sustainability.

The need for an enabling environment outside of the NHS was also discussed. Two participants discussed that a perceived demand from patients and local communities would facilitate sustainability activities. One participant discussed this in terms of ‘adding support to an enthused community’ which may refer to connecting NHS activities to wider public health initiatives. Another discussed patient demand for more sustainable services, such as telephone consultations. Specific aspects of sustainability in the health service were discussed, such as the joint funding of health and social care, presumably as this participant believed that this would enable work towards sustainability in the health service. Specific initiatives such as locally funded community health projects, public health behaviour change initiatives and electric car infrastructure support were discussed providing insights into initiatives that could

capture the interest and support of GPs in Wiltshire, as well as indicating where GPs see the greatest opportunities for sustainability in the health service.

Barriers mentioned by participants in item 22 reflected the facilitators discussed above. Sustainability was viewed as not receiving the necessary leadership and participants were unable to commit sufficient time and energy. Participants were under time pressure and stated that the sustainability agenda will be hard to deliver unless comprehensively supported through clear leadership and the provision of resources.

Responses suggest that participants did not have sufficient time, energy or capacity to engage fully with sustainability. Nine of the 12 GPs mentioned lack of time as a factor and five mentioned lack of energy. Additional costs were raised by three GPs.

No time No energy The expectation of what GPs should do/what our responsibilities are is already rather eye watering - I don't think I could cope with being asked to don yet another 'hat'.

Can we really meet escalating demand, run the NHS and now save the world- really there is no end to GP talent and energy.

cost, time and lack of energy

too much paperwork no support services lack of time

TIME - not enough time to do everything

lack of time and energy and investment. being demoralized by the press and government

Responses were unequivocal emphasising the demands made on GPs and the potential difficulty in coping. Financial barriers were mentioned by 6 participants; however it is unclear if financial barriers were being used in the same way by different respondents. Financial barriers referred to available resources to utilise for sustainability projects where outcomes are uncertain or distant, but finance was also mentioned in terms of falling profits for GPs. Participants also stated there was inadequate support to enable them to engage with sustainability, such as 'no support services', a 'Lack of information' and the 'inadequate evidence base'. Participants discussed some of the challenges associated with this:

Hard to see the benefit on day-to-day basis; one project at a time It's rather boring

Long timescale for outcomes to be measurable.

A number of organisational barriers to more sustainable activities were also discussed. One participant discussed the challenge of an increasing workload requiring time that could not then be used to work towards more sustainable practices. This was also the

concern of another participant who stated that there was 'not enough time to do everything'. One participant indicated that there was a 'Lack of available more sustainable options', suggesting that participants who wished to adopt more sustainable practices would be unable to do so in many cases.

Other barriers included health and safety concerns, particularly in regard to single-use instruments which were in conflict with sustainability. Another response agreed, stating that infection control could 'lead to more waste and inefficiencies'. The cultural climate in which GPs operated provided challenges, with the perception of negative portrayals of the NHS by government and the press making it more difficult to engage with sustainability.

being demoralized by the press and government

Scepticism and negativity in the press.

Barriers related to how GPs understood sustainability and its relation to their work were also mentioned. Some GPs stated that sustainability was a distraction from their primary role.

I am first and foremost a doctor - these extra roles mean that my focus moves further and further away from the job I am actually employed to do - which will have an impact on the care/support I can provide to my local population"

4.8.1 Item 23 – Barriers and facilitators

Item 23 consisted of 10 Likert format items asking participants to agree or disagree with statements intended to measure the extent to which GPs in Wiltshire perceived the presence of key barriers and facilitators to organisational change, based on the organisational change literature.

Table 17 Barriers and facilitators to engagement with sustainability

Strongly disagree	Disagree	Neither agree/ disagree	Agree	Strongly agree	Median	Mode
23a. Sustainability in the NHS should be mostly the concern of ‘enthusiast’ GPs, not every GP.						
1 (5.88%)	11 (64.71%)	4 (23.53%)	1 (5.88%)	0 (0%)	Disagree	Disagree
23b. Sustainability in the NHS is very relevant to my day to day activities.						
1 (5.88%)	6 (35.29%)	3 (17.65%)	7 (41.18%)	0 (0%)	Neither agree/ disagree	Agree
23c. I believe patient expectations of NHS services will be a considerable barrier to carrying out changes to NHS services that lower the environmental impact of the NHS.						
0 (0%)	1 (5.88%)	4 (23.53%)	9 (53.54%)	3 (17.65%)	Agree	Agree
23d. At present, I am able to begin incorporating sustainability into my day to day activities.						
1 (5.88%)	3 (17.65%)	9 (52.94%)	3 (17.65%)	1 (5.88%)	Neither agree/ disagree	Neither agree/ disagree
23e. It is unlikely that the target of an 80% reduction in NHS greenhouse gas emissions by 2050 will be met.						
0 (0%)	0 (0%)	4 (23.53%)	11 (64.71%)	2 (11.76%)	Agree	Agree
23f. At present there are no organisational incentives to incorporate sustainability into my activities.						
0 (0%)	1 (5.88%)	1 (5.88%)	9 (52.94%)	6 (35.29%)	Agree	Agree
23g. I believe that my patients and local community will be very supportive of the aspiration for a ‘low impact, sustainable health service’.						
0 (0%)	4 (23.53%)	7 (41.18%)	5 (29.41%)	1 (5.88%)	Neither agree/ disagree	Neither agree/ disagree
23h. In my practice there are not enough resources available to concentrate on sustainability.						
0 (0%)	0 (0%)	2 (11.76%)	12 (70.59%)	3 (17.65%)	Agree	Agree
23i. I can easily access support to enable me to become more sustainable in my work and practice.						
4 (23.53%)	11 (64.71%)	2 (11.76%)	0 (0%)	0 (0%)	Disagree	Disagree
23j. Working towards a sustainable health service will require challenging decisions to be made about current health service activities.						
0 (0%)	0 (0%)	1 (5.88%)	13 (76.47%)	3 (17.65%)	Agree	Agree

Responses indicate support for working towards more sustainable practices, with 70.5% (12) of participants disagreeing that sustainability should be mostly the responsibility of enthusiast GPs. Responses were divided as to the relevance of sustainability to their day to day activities as GPs. 41% (7) agreed that sustainability was very relevant, 41% (7) disagreeing and 17.5% (3) neutral.

Other responses indicated the presence of barriers to engagement with sustainability, in terms of attitudes towards sustainability and organisational barriers such as the availability of resources. 94% (16) participants indicated that they believed working towards a more sustainable NHS would require challenging decisions be made about current health service activities. The target of reducing NHS greenhouse gas emissions by 80% by 2050 is considered unlikely to be achieved by 76.5% (13) of participants. 71% (12) of survey participants also agreed that patient expectations would be a considerable barrier to carrying out changes to NHS services that would lower the environmental impact of services. 35% (6) of participants agreed that local communities would be 'very supportive' of the aspiration for a more sustainable NHS with 23.5% (4) disagreeing and 41% (7) choosing a neutral response.

Responses also indicated that participants perceive significant organisational barriers to their engagement with sustainability. A majority of participants agreed there were no organisational incentives to incorporate sustainability into their day to day activities (88%/15), there were not enough resources to available to in their practices to concentrate on sustainability (88%/15) and they could not easily access support to help them become more sustainable (23i) (88%/15). Only 23.5% (4) of participants agreed they were able to begin incorporating sustainability into their day to day activities, with 23.5% (4) disagreeing and 53% (9) choosing the neutral option.

4.9 Discussion and conclusions

The above findings address the research questions, broaden understanding of the topic and provide insights into the research methods. These findings must be understood in terms of the how data was generated, the wider literature and the qualitative data collected as part of the research design. The discussion chapter will consider the implications of findings such as the diversity in opinions related to sustainability in the NHS, the suggestion of sympathy towards the case for sustainability in the NHS, mixed views about different sustainability activities and the presence of significant barriers to engagement in the wider context of the research findings and literature.

5 Qualitative findings

The thematic analysis of the interview data is presented below. Data is presented thematically, according to the major themes and sub themes that were found in the data with quotations used to illustrate diversity and consensus across the data. Quotation also allows the words of participants to be represented in the project and to gain the benefit of their clarity and experience. Themes are interpretive and used to illustrate aspects of the data that are important and address the research questions. Themes were not selected as summaries of the whole data set nor are they intended to imply that the areas that they draw attention to are unanimously supported by the data.

Interview data is presented thematically, with data from across the interviews presented under the relevant theme. The first theme is “Sustainability/NHS challenge” and covers how interview participants understood sustainability and its potential impact on the NHS. The introduction and literature review described working towards a more sustainable NHS as a ‘wicked problem’, to which this data provides insights from participants on how they understood the challenge that sustainability presented for the NHS. The second theme is related to a ‘sustainable model of care’. This organises data where participants discussed the relationship between sustainability and the delivery of care. This data provided further insights into the shift in practices required to deliver healthcare more sustainably and the complexity of doing so. The above themes are presented first to provide an overview of interview data related to sustainability and the NHS. Following themes build on this initial overview. The theme of ‘engagement factors’ is where participants drew on their wider experiences, knowledge and values to discuss the factors that would facilitate and constrain their engagement with sustainability.

The final section organises data under the three themes of “balance”, “demand” and “responsibility”. These themes represented key ideas that emerged from the data analysis. Increasing demand was a key challenge faced by the health service, and the complexity of factors driving demand illustrated the need to rethink the priorities and role of the NHS.

5.1 Data outline

The snowball sampling method described in the methods chapter involved following up survey respondents that provided contact details along with their survey response and referrals from contact in Wiltshire. A total of seven interviews were conducted using this method, with interviews recorded, transcribed and analysed to produce the data presented below. This section outlines information on the sample and source of data to provide a transparent account of the process and context for the interpretation of data.

The broad characteristics of the sample are presented below. The characteristics included in the table are those relevant to the data, the research questions and which provide a descriptive account of the diversity and similarities in the sample. Sample characteristics are presented in summary for the whole sample, rather than characteristics after each individual interviewee. This preserves the anonymity of participants, as providing details on the individual characteristics of a small sample of participants could allow identities to be deduced.

Table 18 Interview sample characteristics

Interview data	7 interviews between 30 minutes and just over an hour 5 face to face interviews/2 telephone interviews Audio recordings made which were transcribed and thematically analysed Additional data included notes made during and after interview and memos produced during the analysis process
Participant information	5 male participants/2 female participants Age range included 30s, 40s, 50s and 60s
Practice information	Participants primarily worked in rural practices located in small villages or market towns, with one participant now working outside of Wiltshire. Issues associated with working in rural locations included remoteness, transport and difficulty accessing services. Areas served by practices were described as mixed in terms of advantaged and less advantaged populations, with the impacts of poverty exacerbated by rural location in some cases.
Function/role	6 GPs and 1 GP registrar who worked, or had recently worked, in Wiltshire 3 participants had roles in their CCG 1 participant had a leadership role in a professional organisation Prior relevant experience 2 participants had held medical roles in developing countries 1 participant was involved with a charity which promoted wellbeing
Sustainability experience	2 participants have engaged with sustainability in their role as GPs Other participants reported mixed levels of interest in sustainability. Examples of behaviours taking sustainability into account included installing solar panels, selection of cars, purchasing secondhand items where possible and recycling. Participation in these activities was mixed, but no participant was openly dismissive or opposed to engaging with sustainability

5.2 Overview of thematic analysis

The thematic analysis produced six key themes which are outlined here and presented in more detail below. The three themes of ‘Sustainability/NHS challenge’, ‘Sustainable model of care’ and ‘Engagement factors’ bring together the views of interview participants on working towards a more a sustainable NHS, in particular the challenges

faced by the NHS and presented by sustainability, the connections between sustainability and the NHS and the barriers and facilitators to engaging with sustainability. In contrast the three themes of 'Balance', 'Demand' and 'Responsibility' demonstrate some of the implications of working towards a more sustainable NHS as put forward by interview participants. The table below introduces and summarises these themes.

Table 19 Key themes

Sustainability/NHS Challenge	Data that suggested participants understood working towards a more sustainable NHS as a complex undertaking. The theme included participants consistently describing sustainability in terms of taking a long term view and conserving limiting resources, however personal commitment to sustainability differed among participants. The extent that sustainability was compatible with the challenges facing the health service, the needs of patients and delivery of primary care were also covered.
Sustainable model of care	Data that addressed the current model of care and what a sustainable model of care might look like. The theme included a critical discussion of current care practices, the objective of promoting health and the wider duty of care of health professionals. Less intensive care delivered with fewer resources outside of secondary care (where possible) was put forward as a more sustainable model of care.
Engagement factors	Factors that enable and constrain engagement with sustainability. These included the consistency between improving sustainability, health improvement and improving healthcare. Conflicts between sustainability and healthcare were also considered, as were barriers and facilitators to working towards a more sustainable NHS in wider society, the NHS and the workplace.
Balance	The data suggested that balancing complementary and competing objectives was essential to the GP role and that a more sustainable NHS would involve GPs integrating and balancing sustainability alongside other objectives.
Demand	Demand for healthcare was viewed as the key challenge facing the NHS and key to a more sustainable NHS by interview participants. This theme collected data on the drivers of demand and ways to manage demand.
Responsibility and Resilience	The theme of responsibility and resilience cut across data on the role of the NHS, GPs, patients and local communities. A more sustainable NHS was put forward as an organisation that moved away from paternalistic models of care to supporting patients and communities to better care for themselves. NHS and GP engagement with sustainability was also understood as part of the wider duty of care of health professionals and taking responsibility for the impacts of the health service.

5.3 Sustainability/NHS Challenge

Interviews initially focused on what participants understood by sustainability and what sustainability meant for the NHS, for health and their role as GPs. Interviews did not focus on asking participants to provide a formal, abstract definition of sustainability, but to apply their knowledge and experience to the potential repercussions of sustainability for health, the NHS, and their role as GPs. This data was aggregated under the theme of 'Sustainability and NHS challenge' to illustrate that working towards a more sustainable NHS was not understood as a simple proposition, but rather a complex problem to solve. This reflected the earlier discussion of sustainability as a 'wicked problem'. Interview data indicated that working towards a more sustainable NHS was consistent with the challenges that the NHS as a whole, and GPs in particular, encounter in terms of ensuring that in the face of growing demand the NHS would remain a viable service, the danger posed by limited resources and the need to develop long term solutions while providing services that meet current demand. Sustainability was both familiar and an added dimension that heightened complexity and emphasised the long term challenges facing the NHS.

5.3.1 Sustainability challenge

Interview data included overt discussion of how sustainability was understood by interviewees and reflections on sustainability in terms of its relevance to health, the NHS and the role of GPs.

Sustainability was described using similar and compatible terms by interview participants. For many sustainability meant taking a long term view and the extent to which something could continue or remain viable. Sustainability in the NHS was taken to refer to the environmental issues and resource use, and the extent that impacts of the health service were consistent with maintaining a healthy environment in the long term.

RP5: I think it... It comes in different ways. I don't know a neat... a neat definition but basically I supposed it is something about, using resources of any... of any sort in a way that they're not going to run out on you... And so whether we're talking about... The... the world's resources, mineral resources and that sort of thing or energy or ecology or... or the economics I suppose you.. you want to leave things as they were not... not degrade the... the... the environment in the widest sense.

RP6: Keeping going for the long term I guess.

RP1: Well I.. I think it's quite a broad concept but... In essence it means something that can continue and on a wider scale I don't think that the way we live in this society and the way that we use energy and the way that we use resources can continue. Well it definitely can't continue so I suppose sustainability is looking at what's... How we can live in a way that can continue.

RP2: I think sustainability is more than just about the carbon, you know you've got the whole ethical thing. You know trading off illness that... that... I think it is morally unacceptable for us in our society to want to manage a miniscule risk for things like disposable surgical instruments and then trade that off to the ill health of children who work in sweatshops in Pakistan to make those instruments.

The complexity of engaging with sustainability was discussed, and the difficulty of understanding how sustainability issues were likely to impact at the local level.

RP1: That the whole thing about this agenda I think is that it's completely non-linear and it's chaotic and... The changes have unpredictable outcomes.. Unpredictable effects... So I think it is really, really hard to give sort of specific examples of how climate change is affecting people as individuals within a practice like this... I think it's really hard

A number of participants extended their discussion of sustainability to include social and economic trends. This included disapproval of throwaway culture where goods were used briefly and thrown away without being repaired. Compatible with personal values and preferences was also mentioned, in terms of a dislike of waste or a preference for simpler and practical choices rather than extravagance.

RP5: I mean we... we certainly... certainly we recycle although I don't know how people do it. We've got 4... bins in the garage we're privileged enough to have a large garage with room for that. I don't know how people... manage... certainly in Wiltshire because we all have these... these... whatever it is 250 litre is it, bins which are, which are really big... There... we've got quite a good recycling service and it becomes a sort of... a middle class liberal religion doesn't it, to make sure that everything goes in the right bin... And we've got quite big garden and we compost and so on. That's... that seems to be sensible...

Economic sustainability was mentioned, in terms of conserving economic resources, the value that needed to be placed on human resource and the economic consequences of unsustainable resource use.

RP7: Well I think of both aspects. Basically resources. So for me a sustainable NHS is about finance and people... But I... am aware that sustainable finance links also into... renewable and whether we chuck everything away one time we use it and being wiser with the use of physical resource as well.

Inequality and social sustainability, in terms of the ethical sourcing of goods was also mentioned, as was a rationale for sustainability in terms of intergenerational equity and ensuring that future generations would have resources.

Participants discussed sustainability formally when asked to define what sustainability meant for them, but also throughout the interview in the context of other questions

about the relevance of sustainability to their work/personal life. Interview data indicated a similar intellectual understanding of sustainability among participants, however there was different emphasis on the importance of sustainability to themselves, the broader impact on health and the NHS and the extent it shaped their conduct and choices. Although no participants took a view that sustainability was unimportant or irrelevant, the impact of sustainability on their activities differed greatly.

RP3: Yeah yeah. In terms of sustainability do I walk? When we recycle I always try and walk to the village hall with my recycling rather than drive, so... I'm pretty embryonic in...

Participants described a number of sustainability actions such as recycling, energy efficiency, growing vegetables and home energy generation.

RP7: Yes, well I'm married to a man who has a ghastly electric car because it's a gee whiz... which is an awful thing but anyway he likes because he's saving the planet.

A number of participants described sustainability as compatible with their values, in terms of a dislike of waste

RP4: I'm quite fanatical about turning lights off that other people have left on... Both at home and at work... I can get.. I get irritated if people just leave the light on. And I...

RP1: I don't like the kind of throwaway culture... Where everything's disposable and things are seen as waste before they've actually reached the end of their useful life.

There were a number of ways that participants interpreted sustainability within the broad framework set out above, meaning that different levels of engagement with sustainability could be easily justified. Even if sustainability was understood to be important it was also something that was not necessarily prioritised.

RP1: I don't think that the way we live in this society and the way that we use energy and the way that we use resources can continue.

RP3: Well it's an interesting one, isn't it. Because... It's... Until you contacted me I must say... It's something that .. It's in the back of your conscience but it's not the forefront of it.. And I think it is something that is vitally important. Especially the NHS because obviously we have a big footprint.

For instance the magnitude and global nature of an issue like climate change could be used to argue that individual responsibility was low. The uncertainty as to when and where people would be impacted by sustainability also served to diminish interest in sustainability. For other participants an understanding of sustainability as important on

a global level did not translate into its importance in their everyday life, with sustainability regarded as annoying.

RP5: Yeah. Sort of wider value in that... that's right... We're quite comfortable... comfortable with that and... Oh, you know we try and turn... I really... really find it difficult to think that the future of the world is... is dependent on whether I remember to turn off the standby on the television at night time, but we do our best.

RP4: No, to be honest I don't have a... I don't have much of an interest in it. I get very irritated... By the fact that I have to sort through my rubbish into different things. And, you know, if it's tin it goes in that one, if it's glass it goes in that one. If it's rubbish it goes in that one... Um. I'm a bit... that does annoy me sometimes... But I do it therefore that's... No I don't feel that I'm particularly interested in...

In contrast other participants suggested that a personal concern for sustainability had shaped their conduct and choices in personal life.

RP1: I think I gradually realised that every little choice that I make, especially in terms of what I buy and how I travel and all of that kind of thing has an impact. On other people and on future generations so yes I have.. I do think about it in terms of day to day behaviour.

5.3.2 Health beliefs and sustainability

Participants discussed the factors that influence health and the role of healthcare in reference to the connections between health and sustainability. The importance of broader wellbeing and the role of settings and lifestyle in determining health were raised during interviews by a number of participants. The 'biomedical model of health' was explicitly rejected by one participant, with interview data indicating a preference for a more holistic model of health that takes into account the social and psychological factors that contribute to health and demand for healthcare. Health needs and intervention were considered in light of the overall needs of the individual and their capacity to cope and benefit from an intervention. This was contrasted with the secondary care and the tendency to focus on conditions, rather than the overall needs of the patient. Personal experience of primary care was also drawn on to justify caution in healthcare interventions, and the need to carefully consider benefits and risks to health. A reluctance to refer was justified in terms of the negative impacts that could arise from over-investigation and overtreatment.

These health beliefs were raised implicitly when discussing sustainability and the challenges facing the NHS. For example, a reluctance to rush referrals was explained in terms of a belief that illness tended to progress slowly and that many things improved by themselves. Along with the potential negative impacts from over-investigation and overtreatment this led to a preference for watching and waiting in

many cases. Similarly discussion of demand highlights the extent that psychological factors and wellbeing contributed to demand.

RP5: ...I tend to be a fairly conservative prescriber and referrer. Simply because I know from experience that people... do tend to get better from things so I've... I'm not in a huge hurry unless there is good reason for it to bounce people into secondary care...

RP2: Probably generally... people with a generalist approach to healthcare who... look more at holistically at problems than...

They don't look.. When someone comes through the door with angina they don't look at somebody as though they are 3 coronary arteries profusing a heart like a specialist cardiologist would. They look on them as somebody whose wife has also got breast cancer, who's living in poor circumstances, you know what I mean, see them as a whole individual, and they see them as someone who will either find going through investigations a very, very traumatic thing to do or a bit of a breeze.

The health needs of the population were also discussed in terms of how this would impact the sustainability of the NHS. Issues such as aging, diet, inequalities in health, isolation, access to services, obesity and air quality were mentioned. The extent that the health service was able to meet health needs was discussed, for example 'heartsink' patients who presented frequently in primary care with health needs that were related to wider wellbeing issues were discussed. Health needs and demand were presented as not always equivalent with patient expectations about necessary treatment not always consistent with the assessment of health professionals. These issues and the impact on demand are explored further in the themes of demand and resilience.

RP7: They're the ones that keep returning no matter what you seem to do for them. You can't make them better and GPs use this term because they find it... It's someone you can't help, and your role as a GP is to help. So if they keep coming back and you keep not helping them colleagues can find that quite distressing.

I: Oh, but you've sort of made it a speciality..?

RP7: Yeah, I don't mind that. Yeah. I find ways around it. So we've developed some stuff in Wiltshire called CHAT which is... community health awareness teams and care co-ordinators so... because... which help patients basically get a life in the nicest possible way... if they're lonely, depressed, miserable, housebound... These other things help them find a better way of living rather than looking to medicine for their answer... So it all kind of links in.

Participants put forward a number of ways that they expected the health, wellbeing and security of their local communities to be impacted by core sustainability issues such as climate change and resource security. Increases in extreme weather, such as flooding and heatwaves or insecurity caused through rising fuel bills were mentioned. The link between healthy and sustainable lifestyles and settings were also mentioned, referring

to diet, obesity and impact on local health through issues such as air quality. The role of settings was specifically mentioned, with dangerous roads and the availability of unhealthy food mentioned as constraints to more sustainable and healthy lifestyles. Sustainability and health were also described as conceptually similar by some interviewees. Personal responsibility for health was associated with a broader social responsibility motivating sustainability. It was also suggested by one participant that GPs in particular would be particularly receptive to the connection between sustainability and health, due to their appreciation of the determinants of health from remaining in one community for an extended period and the primary care approach of improving health by modifying long term risk factors.

RP1: I mean we're already seeing a huge furore over energy prices this winter. It's in the news all the time and so it's... It is a real concern that in the medium term fossil fuels will not meet our energy demands at the current levels so that... we have to either choose nuclear power or reduce our energy consumption dramatically.

RP6: I mean yeah. I think particularly, well I remember in the summer, when we had that heat wave...

I: This summer?

RP6: Yeah. I was... quite a lot of the elderly patients were suffering... You know their various health problems were getting worse and I was quite concerned that... but luckily the heat wave only lasted a few days but you could tell if it had carried on a long time probably there would have been quite a lot, possibly, you know, illness, more hospital admissions.... Even people dying, you know

I: Do you see in the near future... Do you think that there may be some negative impacts in Wiltshire?

RP3: Oh, I'm sure there will be. I'm sure. I'm sure. You say that climate change.. I mean we're already seeing different changes in weather patterns... Now whether that's climate or whether that's to do with sustainability, I guess. You know better than I."

Although the above analysis indicates support for the link between sustainability and health, these concerns were not a high priority for some participants. A number of participants were clear on the difficulty of connecting local events to broader sustainability trends. Some participants were clear that although they appreciated the links between sustainability and health they found it hard to prioritise these links, or that negative impacts were likely to be distant and experienced some time in the future.

RP2: I think that the direct cause and effect thing... that the sort of linear... That the whole thing about this agenda I think is that it's completely non-linear and it's chaotic and... The changes have unpredictable outcomes... Unpredictable effects... So I think it is really, really hard to give sort of specific examples of how climate change is affecting people as individuals within a practice like this... I think it's really hard

RP5: whatever we do isn't really going to make that much difference, but I think... so I very much doubt that... the patients that I am seeing at the moment are going to be hugely and dangerously impacted within their lifetime but perhaps within their children's lifetimes we're going to see changes and quite clearly that's a very parochial view because... that... if you live on an island somewhere and the... you don't have much clearance above the sea, rising sea levels will have a very major impact... So... I'm aware of these things... I don't know how they... very much impact on my daily practice.

5.3.3 NHS and sustainability

The subtheme of the NHS and sustainability included a broad acceptance of the relevance of sustainability to the NHS. This relevance stemmed from the high impact of the NHS, recognition of the connection between sustainability and health, and concern about the continued viability of the NHS. The understanding of sustainability and its impact on the NHS was the primary research question, therefore analysis of the data is distributed among a number of relevant themes. This subtheme provides a broad outline of attitudes towards sustainability in the NHS, with the influence of sustainability on the model of care and factors that influence engagement with sustainability explored.

Data showed participants understood how sustainability would influence the NHS in different ways and assigned different priorities to engagement with sustainability. Although sustainability was understood to be significant there was uncertainty and a lack of clarity over the implications of working towards a more sustainable NHS.

RP1: Apart from that all drugs have high carbon footprints and you know that, you know, that hormonal drugs go into the ecosystem and they're excreted in urine and faeces. And there's all this talk about it being in the water and making male fish sterile and things so you have some vague inclinations that these drugs are not good for the environment but don't really know that or know how to quantify it in anyway so I think that's what NICE should be... That's the next step for NICE really [inaudible]

RP2: In a low... in as low tech a way as we possibly can and to...you know... not... not necessarily use pharmaceuticals which are very... They've got a high impact haven't they and I don't think we take due account of the true cost of pharmaceutical interventions. We look at the pound price of it but I don't think we look at the wider environmental damage... that... You know, the mass production, the mass shipping and use of pharmaceuticals actually has on individuals. The way that,, the way that medicines are... The way that medicines are adopted into guidelines by NICE... You know the National Institute of Care Excellence. What they do is their current model is to look at the cost of an intervention or the cost of a medicine and... then discount that over time. So the argument goes that if a medicine costs X and produces this amount of benefit, you know, it is likely to save somebody's life in a year say

that that's... The calculation that comes out as quality added life years. You've come across the QALYs? [I: Yes] Yes. So they've got a value that they put on a QALY, but then what they do is they discount it over time because you might die of something else unrelated to the thing that you are trying to intervene with over time they say well after 10 years something else might have got you so it's a less valuable intervention that we've made now rather than in 10 years' time. Sorry in 10 years it's less valuable. It may be less valuable. For every 10 people we save 1 will die of something else again. So they discount it and I think what we should be doing is the opposite. We should be saying no, no, no, no, no. For every ton of carbon that is produced by these antibiotics that's going to be hanging around for a hell of a long time and is going to have deleterious impact on health for the next 100 years and you need to actually do the opposite. You need to sort of not discount it over time but actually build up the effect over time. So we start to take into account the longer term. And I think it's very challenging area to actually be in, but one that NICE is slowly coming round to the need to think more widely and holistically about the impact of using medicines.

There were different interpretations as to the significance of these impacts for the NHS. Awareness of sustainability and its influence on the NHS was markedly different across participants, along with a perception that sustainability was not a mainstream concern with those who were most engaged with sustainability indicating that their colleagues were often less engaged.

RP2: At the moment it seems to be still... The sort of... the territory of the zealots really.

A number of participants were not aware, or at least were only aware on being reminded, that the NHS had made substantial sustainability commitments such as the commitment to an 80% reduction in greenhouse gas emissions by 2050. The priority of sustainability and beliefs about the actions necessary as a result of sustainability differed across the participants. Some participants closely integrated sustainability into the delivery of care and future direction of the NHS, while others were less certain about the role of sustainability and expressed concern about the impact of sustainability on the quality and delivery of services. Different views on the responsibility of the NHS to engage with sustainability are covered in the engagement factors theme.

I: Okay, well... So the NHS... The 80% reduction is in line... that's a government... target... part of policy and it's something that should be applied to all sectors and... Do you think the NHS has... does it have an equal responsibility with every other sector of the economy or does it have more of a responsibility as publicly funded organisation or...?

RP4: Well I think it probably, if anything, I would say, perhaps, it has less of responsibility, unless you can come up with... ways of remodelling the service that don't impact adversely on the user. I mean the general population, I think, generally, regard their health care as being, you know, up there with...

I: Priorities...

RP4: Priorities there are bits of... society that I would think they probably would feel where we could do without that bit... or we could change that bit, or we

could reduce, you I know, what we do. You know we could manage with one car rather than 2 for example. But I think if it were going to impact significantly on their... their healthcare they would be a bit anti, so it's in some ways... I mean I think it's... Again it requires a bit of discussion doesn't it? About exactly how that reduction, or increase in sustainability, is going to affect the way healthcare is delivered.

I: Ok. So.. So sort of an endorsement the target like that would be dependent on... I guess... keeping quality or...

RP4: Yeah

I: Or...

RP4:Quality. Safety. Reliable. You know. The essentials for good healthcare.

Sustainability and the perspective of considering broader impacts and long term viability were drawn on by participants to talk about the future of the NHS. Current practices, processes and demands on the NHS were viewed through the lens of their contribution to the long term sustainability of the NHS itself. This view informed discussion on the extent to which current practices were sustainable and consideration of what a more sustainable NHS would look like.

5.3.3.1 GPs and primary care

Sustainability and the role of GPs was perhaps the most contentious subtheme of the NHS and sustainability theme. There were a number of clear, coherent arguments connecting sustainability to the role, practices and values of GPs. However, the complexity and diversity of the role of GPs suggested a number of ways in which the professional values and role of GPs may not be supportive of sustainability. Equally the GP role, workload and diverse responsibilities complicated potential engagement with sustainability. The findings below outline these connections, with further exploration of the relationship between the GP role and sustainability in the model of care, engagement factors, balance, responsibility and demand themes.

Interview data suggested a number of connections between the values, beliefs and practices associated with the GP role and working towards a more sustainable NHS. One respondent indicated their belief that the personal values of most healthcare professionals were consistent with pro social values of equality and social justice and support for sustainability would be consistent with this. The professional value to 'do no harm' was also relevant, with participants considering the conflict between delivering healthcare to individuals and inflicting broader harm through environmental impact. This observation was taken further across the data set through discussion of the consistency between the characteristics and role of GPs and working towards a more sustainable NHS. General practice involved the delivery of care within a community over a long period of time. Data showed that views on health and healthcare were informed by seeing a diverse range of patient and health problems, with relationships built up with patients over an extended period of time. Primary care practices were also

described as consistent with a more sustainable model of care, in that interventions were often simple, low tech and involved tackling risk factors that were most relevant in the long term. The GP perspective gave participants an appreciation of patient needs and a nuanced view on the capacity of the health service to meet those needs. The generalist perspective was contrasted with the condition orientated perspective of secondary care, and the potential for interventions that provided little benefit, or even harm, were discussed as was a tendency for over-investigation and over treatment. GPs were therefore well placed to consider how best to fit the health service around the needs of patients and acknowledge where these needs were not met. This is further discussed in the sustainable model of care subtheme.

RP2: Yeah. I think it's really interesting when that... To do it as an overt thing... To do things overtly because you understand the sustainability argument what people... the penny drops then the majority of people sort of get it and... agree with the proposition that it's a... it's sort of a virtuous thing to do and that it does chime with the wider social responsibilities of being a GP and being a clinician in that... If you.. The majority of people who do medicine do it because their heart's in the right place with a minority who do it because, you know, it's a way to a profession, a professional life within society and it's a good income and things... But the majority of people do it because they've got sort of a shared set of values about... Those usually... They chime with equality and sort of fairness in society about wanting to minimise health inequalities. About wanting to look after the... the people who often get the worst deal in society. And I think that is particularly true for specialities like general practice and psychiatry and paediatrics rather than something like cardiology where somebody's specialist subject.

Data across interviews also covered the tendency of GPs to take a wider view of their role, considering public health and best use of NHS resources. Some participants integrated sustainability into these objectives through public health concerns, considering their wider duty of care and the future viability of the NHS. This was recognised across the data set, as was the challenge of both meeting the needs of individuals and the wider needs of the population. This indicates that GPs are familiar with considering multiple objectives during their decision making. Data also indicated that GPs were well placed to address sustainability, in terms of being 'problem solvers' who steered their patients through the health system and through their increasing responsibility for commissioning services.

RP5: ...you can't be a good GP if you only think about the person about the person sitting in front of you. You also have to think about the people in the waiting room. In other words the wider population. Which is a public health viewpoint but equally you can't be a good public health doctor unless you also have a GPs viewpoint, in other words you can't hide behind the whole population. You have to remember the whole population is made up of individuals... And. And you need that balance so it's... it's a combination that I've enjoyed very much.

RP3: Prioritising it I think. That's why you need the champions... To make... To put up the priority for them. .. Cause I don't think any of them would object to it.. In any which way. Whatever priorities you came up with... And I think working with GPs is always good. It's good to let them come up with priorities and say these are the problems, how are you going to solve them. Because you've got any problem a group for GPs will manage to solve it for you because they're bright people. But they just got to make sure... They've just got to understand that A It's a problem and B That it's something that can do something about.

The relationship between the GP role and sustainability is further analysed in the themes below, however data also indicated that in many circumstances the principal focus of GPs was their individual patients and meeting their needs. This short term perspective was described as taking precedence over wider considerations or long term considerations. Engagement with sustainability would in many cases be secondary or contingent on this principal objective. The focus on individual patients was justified in terms of professional values and the absolute requirement that quality and safety be maintained. Personal values and the intense experience of personal consultation with a patient were also mentioned as factors motivating GPs to focus on the immediate needs of patients. The extent of engagement with sustainability was also influenced by beliefs about the proper and effective role of health professionals. These included reservations over the appropriateness and effectiveness of encouraging patients to adopt more sustainable behaviour. These broad observations will be further covered in the engagement factors, balance and demand themes.

RP6: Personally I just try and be as efficient as I can, however I just... act with the patient as my priority.

I: Ok

RP6: So if they need something I will do my best to organise it and provide it and I won't ration what I give them because I've got some idea of something else. Because I think my main role is to provide them what they need. That's not always what they want...

RP3: Because of you see, it's a fairly intense process, consultation isn't it? You know, it's only 10 minutes or 15 minutes or whatever it is, but during that 10 or 15 minutes you are the most important person... To me. You come to me with a problem and it's up to me to help you solve that problem, so that my priority is you as an individual. And I think getting that priority to be on a system wide basis will involve changing the thought process...

5.4 Sustainable model of care

The 'sustainable model of care' theme covers data relevant to current practices and the model of care. This is presented below in five subthemes that include a critical account of current practices and suggestions on how the NHS could become more sustainable. Sustainability refers to meeting environmental objectives and ensuring that the NHS remains viable. These are presented thematically with observations from across the

data, however the interviews themselves were less focused. Interviews were broad discussions of the challenges facing the NHS, opportunities to be more sustainable and trends that could be built on. These drew on the earlier discussion of sustainability and the personal experience of participants.

Sustainability discussions involved considering the wider impacts of NHS activity, the effective use of limited resources and ensuring the long term viability of the NHS. This encouraged participants to be critical of unsustainable aspects of the services and identify opportunities to deliver a more sustainable service. Findings reflected the personal and professional experiences of participants, particularly the principles and practices of primary and secondary care. A sustainability perspective allowed participants to integrate their concerns about challenges facing the NHS with proposals to improve services and efficiency. The critical account of the current model of care is informed by this perspective as are the proposals relating to a more sustainable model of care.

5.4.1 Critical account of the values, judgments and objectives that underpin care

A critical account of the mind-set and habits that underpinned the delivery of healthcare and contributed to the unsustainability of the NHS emerged from the interview data. This critical account covered inefficiencies or failings in care where resources were not used effectively, or where the long term viability of the NHS was put at risk. This included where care was not optimal and where care exacerbated future challenges, such as failing to address growing demand. The long term viability of the NHS was potentially at risk over its capacity to meet demand and the need to take effective steps to manage demand and prioritise services. Broadly, care was described by interviewees as unsustainable when it was paternalistic and condition and producer led ahead of patient led.

Healthcare practices were criticised for paternalism, where healthcare was viewed as something done to, or for, patients and placing little individual responsibility on patients to help themselves. This was described as encouraging unhelpful expectations in patients. Expectations were described as the idea that most health problems could be solved with a prescription or referral, an optimistic belief that health interventions would solve most patient problems. GPs were described as 'colluding' with patients in these beliefs in the past as supply increased, while others remarked that providing a prescription could be simpler and quicker than talking patients through the benefits and risks of treatment options. Encouraging patients to expect referral for reported conditions had the potential to lead to over-investigation and overtreatment, with negative impacts for patients themselves and poor use of resources.

RP3: ...And, you know, when I started in general practice it was “don’t worry I’ll look after your health for you”. I think the message now is... I can give you the tools you’ve got to look after your own health, so it has... There has been a paradigm shift I thinking and I think that’s going to have to continue. Because... Because the paternalistic view just generates this... um... Public perception that it is my right to have free healthcare, but there is no responsibility attached to that. So I think... actually... putting the responsibility back.

RP4: Ok... That’s a good one... I think it’s really about trying to empower people, to some extent, to take a bit more responsibility for their own health... And... not to expect necessarily that we as a medical profession can... can cure everything. People seem to think we can...

RP4: I have a... I have an 85 year old chap come to see me only the other week who... He’s... He’s a good 85 year old. I mean he’s [inaudible] independent, mobile, drives to the surgery. And he comes to see me and he said “So, this breathlessness that I’ve got. It’s not any better.” And I said “Okay”. And he said “I’ve been taking the inhalers you’ve given me and I’ve stopped smoking a year ago”. [I: Wow...] Ok. So I said “Well OK, when did you start smoking?” He said “Well I was about 14.” So I said “You’ve got quite a few years of damage. You’ve got 70 years of damage before you stopped smoking.” But it was really quite hard work, he was... almost being aggressive and saying “So. So you can’t do anything more for me?” And I Said “Well no. I think you’re in, you know, all the right stuff. And I’m afraid that the damage has been done.” But he was not... He wasn’t happy. And I think, you know, it... it... A lot of it is to do with patient expectation and what people think we should be able to do, and we can’t do everything.

RP7: Yeah indeed. If the... If we don’t get the balance right.. currently the population are requiring more and more and more from a beleaguered NHS which can’t give more and more and more. If they want to have an NHS at all the balance has to shift back from them taking some responsibility because the current model is not sustainable. By that I mean you will run out of human resource, you may well run out of financial resource to pay for human resource and treatment but I think we... the balance has to move backwards rather than “the NHS will solve all my problems and and pain that I have will be removed...” People need to learn to be resilient otherwise... They need to learn to be sustainable themselves but they can’t just expect the NHS to do it all for them.

This assessment of paternalism and its drawbacks offered by participants reflected the health beliefs put forward during interviews. Weaknesses in the ‘biomedical’ model of health were suggested, with secondary care physicians sometimes focusing more on conditions than the overall needs of patients. This could lead to the needs of patients themselves not being served. The tendency of secondary care to over-investigate and overtreat patients was also inconsistent with the health beliefs put forward during interviews that suggested a more considered approach to intervention. Participants emphasised that many conditions improved by themselves, that treatment was often not required, disadvantages of medicalization and overtreatment and that progress of illness was usually slow and afforded sufficient time to avoid unnecessary investigation.

These observations were built on the primary care experience of participants. Interviews discussed the potential of investing more in primary care and delivering as much care as possible outside the secondary care environment. Although the disadvantages of secondary care were discussed, participants did acknowledge the specialism and advantages of secondary care treatment where it was appropriate. In particular this referred to the practice of defensive medicine and the over-investigation and overtreatment of patients in secondary care. This was connected to the above discussion of secondary care having a tendency to focus on conditions ahead of people as well as other aspects of secondary care covered below. These tendencies were not viewed as in the best interests of patients, with the approach to risk management taken in primary care which sought to avoid unnecessary procedures preferred.

5.4.2 Impact of current care models on practice

Negative impacts arising from the current model of care were discussed during interviews. Implications for sustainability included environmental impacts as well as examples of where care was not of sufficient quality, which was a poor use of limited resources and had the potential to harm patients. The pressures on the long term viability of the health service discussed earlier involved both inappropriate use of resources and rising demand and a number of participants identified where NHS actions could both contribute to rising demand and opportunity cost where actions to manage demand were not taken.

The environmental impacts of the NHS were discussed in terms of what the impacts of the NHS were and how impacts were generated. Participants did not put forward a clear and specific picture of the extent of NHS environmental impacts, but acknowledged the scale of NHS impacts and mentioned a number of areas that were potentially high impact. These areas included pharmaceuticals, estates and single-use instruments. Delivering healthcare was mentioned as intrinsically high impact, with impacts from the supply chain of drugs, high levels of waste to reduce infection risk and as an important activity to which people were willing to support and contribute resources. Environmental impacts stemmed from resource use, but also included wider impacts such as the potential for pharmaceuticals to interfere with ecosystems, antibiotic resistance, social injustice in the supply chain and the contribution of the NHS to travel and consequent air pollution and road safety issues.

RP6: Yeah, and also let's face it a lot of healthcare requires waste... I know that sounds controversial but when you're dealing with... when you're taking blood for instance from someone you don't want to take it... you don't really want to have to put your syringe and some needles in a paperback, because that wouldn't be sterile. So really they do need to be in sterile plastic packaging and

you know, yeah you could recycle every needle you use and you use it... however that's extremely expensive and possibly not very hygienic [I: Yeah...] so a lot of the requirements of using you know instruments and so on requires that either they're very expensively recycled or they are unsafe to recycle you know...

The significance and importance of the negative environmental impacts mentioned above differed among participants. Some participants argued that the overall contribution of the NHS to environmental degradation was limited, given that sustainability was a global issue or that impacts on local health and wellbeing were limited and likely to take place relatively far in the future. Other data acknowledged the links between sustainability and health, identifying relevant issues such as air quality, local climate change impacts and associations between health and sustainability in settings and lifestyle. The understanding of these relationships between health and sustainability also led to data where participants argued the need for a long term perspective on the impacts of the NHS, accounting for the likely impacts on future health.

RP6: Well I don't want to be moralistic like... It's... kind of bad to not be sustainable, however if you're being a... I suppose you could... It's better to frame it as a... sort of looking at everything and around that... Part of the NHS's activity may actually be making health worse, you could say, by contributing to climate change, maybe pollution which at some point is going to come back to interact with the patients that it's serving. I don't know how much petrol the NHS uses in terms of all of its journeys, both within its own structure and also the patients... but you're probably talking about a very large... A sizable proportion of all the journeys made in a year in Britain are made around the NHS aren't they? I expect.

Beyond these outcome orientated discussions the duty of the NHS to improve health was also mentioned. This was cited as a potential justification for the environmental impact of the NHS and a particular reason for the NHS to engage with sustainability, with delivering quality healthcare a priority for the public and health professionals.

RP2: The same thing happened to me with the sustainability agenda that first of all I was, you know, bowled over with, you know, early the [inaudible] and the Lancet article on climate change which was November 2010 I think wasn't it that came out and I'd read stuff before that about resource use and I was thinking like everybody else was about... the the importance of... of not profligately using resources now so that resources ran out in the future or using carbon resources so that they actually damaged the health of future generations by damaging the climate and wanting to actually... sort of proselytise really, I suppose is the right word, about the impacts of climate change on health, you know, I was... When I read about it I was sort of persuaded about the arguments but then... Where are we with that?

Data also covered a number of negative impacts associated with the current model of care. These included harm to patients, or at least non-optimal outcomes. These

outcomes were associated with secondary care practices which did not fully take into account the needs of patients. This included the tendency to practice defensive medicine and over-investigate and overtreat patients. Interview data also alluded to the tendency of secondary care to focus on conditions ahead of individual patients, leading to interventions that may not be warranted or have significant benefits for patients. Supply or producer led care was also discussed, with the availability of equipment and skills encouraging intervention when it may not be in the best interests of patients. Incentives to medicalise patients, outside of their best interests, were also mentioned. The target of reducing the death thirty days after admittance was described as leading to highly medicalised deaths, which were unlikely to benefit patients and would have been a low quality experience compared to a less medicalised death. Structural factors that limited continuity of care, taking management of patients away from individual GPs to out of hours services were also described as increasing admittance to secondary care, and potentially providing non-optimal care by exposing patients to the more intense standard of care present in secondary care.

RP7: Well basically.. If.. Let's say patient X has problem Y. If patient X goes to see a GP, then they're much... Then that GP is much more likely to make a decision based on talking to them and examining them.. And may or may not feel that they need to order investigations.. Whereas if that patient goes to A&E you know they're almost certainly going to have blood tests, X-rays, whatever just because they're there in the hospital and it's easy for those doctors to do those tests and hospital doctors like to do the tests and they feel it's their job to do the tests whereas GPs feel it's their job to do as few tests as possible. You know, and not subject people to unnecessary investigations so GPs are a lot more cost effective in terms of NHS resource use. They're more prepared to accept risk than hospital doctors.

I: And by risk you mean...

RP7: As in just making a... Trying to make sensible decisions instead of doing every investigation under the sun to exclude obscure but serious conditions... Trying to make a sensible decision about does this patient have something serious or do they not, rather than we must do x and y tests in order to prove that they don't have anything wrong with them...

RP3: we're all trying to keep... people at home and we're trying to get people to die in the appropriate place. Be it a nursing home or at home. Rather than in secondary care. So we're putting in a lot of, extra support, into nursing homes to come with advanced planning for end of life... and to support patients through it, if, inadvertently, a patient gets admitted by out of hours to secondary care, secondary care will over investigate, they will over treat, and they delay discharge, because actually they don't want their death rates to rise up. Once you've gone in to hospital you're patient dies within 30 days of being in... Either in there or within 30 days of being in there, they hit the radar of CQC [Care and Quality Commission].

I: Oh, really?

RP3: So there are real national barriers preventing what we're trying to do locally, and so it's... So they do over investigate, and they do over treat, because they don't want people to die on their watch as it were...

The data illustrated an appreciation across the interviews for the limitations of healthcare and support for the conservative and prudent use of healthcare interventions. Interview participants acknowledged the healthcare environment itself was dangerous, with iatrogenic harm through errors, transmission of infection or inappropriate care. Beyond patients directly experiencing harm there was an acknowledgement that some interventions had little benefit and the risks and drawbacks of interventions needed to be carefully balanced.

RP2: Oh much better. Yeah. Hospitals are dangerous places.

I: I mean how would you... If you consider me just a naïve outsider.. I mean. Does that mean they're more likely to get infections or..

RP2: If you go to hospital... Yeah. Well more likely to have drug errors made... More likely to pick up hospital acquired infections, more likely to have.. we said about medication errors. What happens is that people.. people find things wrong with them and then get referred on to somebody else. A very good example of that was the patient of mine, in his 90s was admitted with one thing... They found that he's got a heart murmur so the next thing he's off to see the cardiologist who done these invasive tests to actually look at why he'd got the murmur and ... then wanted to know what his coronary arteries would be like in case he wanted a val... And in his 90s gets listed for a heart valve repair.. that had he just gone to the local nursing home nobody would really have actually gone down that route at all and I... you know.... I'm unconvinced that it will significantly improve .. That interventions like that, especially in late old age, have a significant chance of improving people's quality of life. And quite the opposite. Quite often when we over medicalise the very old we do them a disservice.

5.4.3 Sustainable model of care

The proposals for a more sustainable model of care outlined below are closely related to the above critical account of care. The critical account emphasises the need for a nuanced approach to health and wellbeing and the delivery of healthcare. The complex factors that influence health and wellbeing, the need to go beyond the biomedical model of health and the potential for inappropriate healthcare to cause harm are central to the discussion of a more sustainable health service. Consequently proposals for a more sustainable NHS were evidence and patient led with producer and supply pressure reduced. A more sustainable health service was described as primary care led, with interventions reflecting the evidence, the holistic needs of patients and the potential disadvantages of medical intervention. The expertise and benefits of secondary care were not dismissed, but the need to carefully consider when and how these interventions should take place was stressed, in order to benefit patients and make best use of limited resources.

The thematic analysis of the sustainable model of care presented below drew together data from across the interview set, where participants put forward proposals on how the NHS could become more sustainable. The ideas reflected their personal

experience, but also built on prior discussions of what was understood by a more sustainable NHS.

Proposals for a more sustainable NHS appeared to be based on the broader beliefs and experiences of participants that reflected their experience as general practitioners. The more sustainable model of care described during interviews was aligned with the principles and practices of primary care and required a shift in emphasis from secondary care. The assumptions that primary care consultations lead to prescription or referral for patients was challenged. The more sustainable model of care described a situation where secondary care was increasingly reserved for where particular expertise and resources were required, with the bulk of care taking place in primary care or closer to home and under the supervision of primary care teams. This was driven by the perceived disbenefits of secondary care, in terms of not meeting patient needs and for not making best use of limited resources.

RP2: what I think that commissioners should be saying is that we need to have a really good argument as to why a service should be delivered from a district general hospital or a teaching hospital and why it can't be delivered in the community rather than the standard model which is that all hospital specialists are hospital based. But I just think that hospital specialists and the whole secondary care. Doctors are hospital based and there's no reason for it at all really.

The prominence of primary care in discussion of a more sustainable model of care was justified by the suggestion that this would lead to improved care for patients and would benefit the sustainability of care. Primary care was described as best placed to manage future demand, build the resilience of patients and lead the development of a simpler, more frugal, patient centred model of care. Primary care was described as less resource intensive than hospital based care and where investigation and treatment techniques are frequently low tech and simple. Primary care also addressed the need to manage demand, rather than exacerbate demand, that would be essential to a more sustainable model of care. This was based on the understanding in primary care that too much healthcare, in the form of over-investigation, over treatment, and inappropriate care were not in the best interests of patients and the wider duty of primary care professionals to make best use of limited healthcare resources.

RP3: In general practice we tend not to do that, so much, and in fact there's an interesting story about a GP trying to help out in an A&E department, a casualty department, because... because of winter pressures. You know obviously with winter pressures... GPs trying to do everything to keep people out of hospital, and, and the consultants said in the A & E couldn't handle the brisk management the GP was handling, because there'd be a sort of twisted ankle and they'd say... Well you know it's weight bearing, it's twisted, it's a bit

swollen, but it'll settle down. Whereas the hospital consultant, or the hospital junior would have x-rayed it. GPs will manage that risk.. So actually... Actually there was a bit of a conflict between secondary care and primary care, with primary care saying 'actually, I don't think we need an x-ray... it's fine, you know. Or something like, what's a good example? Say a metatarsal, a bone in the foot, even if it's broken management is going to be the same. We're not going to do anything, so there's no point in x-raying it. Or a cracked rib, or something like that. So I think primary care does manage risk quite well. While secondary care, I think, will always default to over investigating.

This approach was consistent with the data on health beliefs collected during interviews. Monitoring and prudent risk management was presented as often best for patients, supported by the belief that many health conditions improved over time and advance in illness was usually slow enough to catch. Reluctance to refer also reflected the critical account of healthcare, with referral potentially leading to harm by distressing and inconveniencing patients and potentially exposing them to overtreatment, inappropriate healthcare or failings in quality.

A number of primary care methods were used to manage and limit demand. These included consideration of the holistic needs of patients, their potential to benefit from interventions and the possible drawbacks from intervention. Interview data described decision making as patient and evidence led and contrasted this with a condition led assessment in secondary care that could encourage interventions that may not have significant benefit. Risk management procedures were utilised to avoid unnecessary referral and potential harm resulting from this. This risk management was compared to the practice of defensive medicine in secondary care. The role of primary care in managing people long term and managing demand by reducing risk factors was another aspect of primary care appropriate to a more sustainable model of care.

RP2: The... Yeah. I do. The evidence is that high quality primary leads to better health outcomes, fewer interventions, earlier... early is the wrong word but.. A lot of the stuff that we do in primary care is about.. is of the prevention agenda isn't it? A lot my work that I spend time doing is identifying people with risk factors and trying to modify those risk factors for people and trying to do it in as.. In a low.. in as low tech a way as we possibly can and to...

5.4.4 Wider duty of care

The wider duty of care was interpreted differently across the data set. Broadly it referred to the duty of GPs to consider the health and wellbeing of the whole community and the need to make best overall use of limited NHS resources. The wider duty of care was discussed in regard to allocation of resources, in particular ensuring that resources were available to meet the health needs of the whole community. The wider duty of care was considered in terms of the long term viability of the NHS and the continued ability to meet the health needs of the population. The wider duty of care was therefore relevant, for some interview participants, to the managing demand,

encouraging resilience and personal responsibility in patients and allocating resources so that essential resources were prioritised.

The wider duty of care, along with the 'do no harm' principle, was also utilised during interviews to suggest that the NHS reduce its environmental impact and subsequent negative impact on wider health. This was used to build the case for NHS engagement with sustainability, in particular commissioning and clinical decisionmaking careful account of wider social and environmental impacts. The wider duty of care was therefore extended in time and geography, to consider the long term impacts of NHS actions on the environment and health in the future and impacts from issues like climate change that would take place around the world.

RP2:... holistic care isn't just about the total person or the person and their immediate family or even the person and their immediate family and their social circumstances, it's bigger. You know. The thing that you wrap around is bigger and you know, it includes public health and it includes public health and it includes sort of wider sustainability in the now and in the future. Because I think one of the other things about family medicine is we do look after sort of generations of people as well. We look after grandparents parents and children. Rather than just a snapshot of people within one specialty, at one interval in their life. You have longevity of care as well in that GPs are often in the same practice for a long period of time and... Which I think is ... Off on a tangent is one of the things that upsets the politicians that we're here for the long haul...

RP3: I mean yeah. If you chat to GPs, their view would be "I am concerned about the individual sitting in front of me" and that's... That's been the historical perception so actually changing the way of thinking in general practice is rather... Because I think the view of GPs... And they always say... You put any system in place... [inaudible – interference] healthcare and GPs will always find a way of working around it because of the individual. So they always say "I want the best I can for that individual sitting in front of me at the time". So when we start thinking about system... You're going to have to change the way of thinking in general practice...

I: OK. So that a practitioner would be considering the... The whole...

RP3: The greater good yeah. The greater good for the most... The greatest number...

RP6: I think, I think to keep it simple doctors have got a responsibility to their patient, you know that's... that's the core of what we do. So... That probably is the most important of all of our responsibilities but within that, yes, sustainability has an effect you know. And you've been sending someone off to an outpatient appointment, you know, they've got to undertake a journey which carries a degree of risk and all the rest of it so... you're doing it for their... Some of the... I've always felt the best way to deal with all issues of what you should do as a doctor is to bear the patient at the centre of it. But yeah. You know any decision you make will have an impact but I always... So I don't think... I think clinicians at the... at the front line of healthcare seeing patients their first responsibly is to their patient...

5.4.5 Sustainability and improvement

Interview data also included more detail on what a sustainable model of care might look like, with specific proposals on what sustainable practices might be and examples of things that participants had already done. Sustainable practices were motivated by a variety of factors which included improving care, efficiency, building resilience in the NHS and the proper role and best use of healthcare. These factors were often related to sustainability in the narrow sense of improving environmental performance, but also in the broader sense of contributing to the resilience and capacity of the NHS to continue operating. The proposed practices along with accounts of some of the challenges faced when trying to change practices are discussed below. The factors that shape how GPs engage with sustainability are explored in greater detail during the engagement factors theme.

Specific proposals regarding a more sustainable model of care depended on how participants understood this challenge and the extent of change that was required to meet sustainability objectives. Data pointed to a mixed understanding of the impact of sustainability on the NHS. In instances where the sustainability objectives of significant reduction in greenhouse gas emissions were raised with interview participants the majority acknowledged the principle and that this would require radical change in how care was delivered; however, awareness and support for this was not at the forefront of their thoughts. There was considerable scepticism as to whether this was possible.

RP3: Well it's an interesting one, isn't it. Because... It's... Until you contacted me I must say... It's something that .. It's in the back of your conscience but it's not the forefront of it.. And I think it is something that is vitally important

I: Ok. And um... Probably... You may be aware that the NHS has a goal to cut its carbon footprint, I think by 80% of 1990 levels by 2050...

RP7: Yeah

I: I just wondered whether you were supportive of that target.

RP7: Oh I don't mind supporting it [laughs]. Perhaps a little... I wish it luck... I shou.... I have not seen anything that has made me think 'Oh that's really good it's going to make it.'

There were multiple perspectives on the impact that sustainability should, or would have, on the NHS. Even where the theoretical importance of sustainability was accepted it was unclear to some participants if resources should focus on sustainability given the uncertainty and distance of negative sustainability impacts. There was also some cynicism as to the extent of commitment to sustainability and whether objectives would be met in a substantive way, or through manipulation.

RP5: Ok. Let me first say of course, an 80% cut in NHS emissions you can do that really quite easily. You just simply privatise large chunks of the NHS and

then... it's it's the same way as.. as.. you know if you... if the.. you know, the privatisation of large amounts of catering, of cleaning staff and that sort of thing. It means the NHS doesn't have any low paid workers, so, so there is... there is a slightly cynical view and I would be worried that if pushed too hard the government would just simply resort to that sort of.. of use.

These understandings provide context for the sustainability proposals suggested below. These go from relatively straightforward minor changes in practice to more radical approaches to the sustainability agenda. The multiple justifications made for the below proposals, in terms of improving care or managing demand, may indicate the need to associate sustainability with a broader case for improvement and resilience of the health service.

5.4.6 Efficiency

A number of sustainability proposals were relatively straightforward in that they would have sustainability benefits without requiring significant shifts in practice. These included actions such as energy efficiency, upgrading buildings, more efficient administrative procedures, better waste management and promoting recycling. Actions discussed during interviews included those participants had done, and those that they had thought about or would like to do in the future. It was notable that participants had not been able to do as much as many would have liked, and that there were perceived to be significant barriers to these actions which will be further explored in the engagement factors themes. Further some participants were aware that these actions would likely form a small part of reaching more ambitious sustainability objectives. Discussion of the rationale for these activities was also revealing, with reduction in waste and financial savings mentioned as motivators, however the wider issues of quality improvement and demand management suggested in regard to other sustainability changes were not brought up.

RP1: Yeah. Well one of the main things is that I've tried to interest every practice I've worked in and... There's a charity called intercare based in Leicester that recycle drugs and... It's not all drugs. They have to be in date and they have to be in unused strips and there's certain drugs that can't go in. But I try to get them all starting to recycle drugs and have a box to put the relevant drugs in that the charity can then collect so...

RP5: In terms of general practice okay let's come to.. to the nitty gritty. I think. The.. The.. Probably , because budgets are tight, the... the priorities ought to be around things where there is... a saving.. a financial saving that goes hand in hand with an environmental or sustainability saving. And... that would be around power and heating, usually within general practices.

RP6:...about the only thing I've achieved was to get loft insulation put it...

I: Into...

RP6: Into the surgery. Into the surgery. I did look at solar panels... the grant,

as you know, you know the tariff was reducing so that's made it uneconomic. And persuading my partners, you know, it wasn't sort of.. I probably am more... the most... one of the most ecologically motivated here in terms of... the others I'm sure do think about it and care about the environment however I do like to try and turn off lights."

5.4.7 Sustainability and the delivery of care

Proposals to work towards a more sustainable NHS also involved the kind of care delivered, how care was delivered and where this care should be delivered. These proposals drew on an understanding that working towards a more sustainable NHS could be associated with other challenges facing the NHS, such as growing demand, shifting health needs, making best use of limited resources and the long term viability of healthcare free at the point of use covering the entire population. More sustainable services were also associated with more general trends in the delivery of services such as addressing quality issues or moving care closer to home. Therefore although these proposals involved more significant changes than some of the more straightforward actions covered above, the case for undertaking them was robust as it could include improvement in patient care. This will be discussed further in the engagement factors theme below.

A key thread during interviews was that it would be possible to provide more effective and beneficial care by ensuring that interventions were always well supported by evidence and that patients would, on balance, benefit. This acknowledged the limitations of healthcare interventions, in that benefits may be limited, patients undergo risks from the intervention and the intervention can serve to medicalise patients. Proposals to improve care included ensuring that decisions were evidence and patient led, with both evidence and a holistic understanding of the patient indicating real potential benefits. Data included examples of where this had not happened and the view that patients often did not benefit from interventions. Examples included the unnecessary prescription of antibiotics which could harm individual patients and contribute to the growing problem of antibiotic resistance. Effective risk management was also mentioned as essential to improvement and a more sustainable NHS, reducing NHS resources use and keeping patients, where possible, away from over-investigation and overtreatment in secondary care.

RP1: So I think the big changes will be in pathways of patient care and having it as streamlined.. Patients not having to go for one appointment in one place then another in another place then a test in another place and you know.. Being a bit more... Done a bit less higgledy piggedy.

RP2: It's about risk stratification and risk management a lot of the time. And.. You... A good example is somebody who presents with quite bad abdominal pain. How.. There are various options of managing that. We can actually say.. I think this is going to settle on its own without doing anything... You can think to

yourself 'Oooh. I need some more information than I've got, than I can get by feeling, touching and listening and I'd like to know what someone's white cell count was and what their inflammatory markers are' and historically the only way to get that was to then move the patient to A&E or a medical admissions unit and get them to bleed them there. But we changed that round so well, if I see somebody at 12 O' clock why don't I do the bloods, if there in that zone of me having reassurance if the blood tests all look normal then the overwhelming probability is that their symptoms will settle down and not require hospital admission, so why not just move the blood sample to the lab and the same afternoon get the blood results back. If they're really abnormal the patient goes in, but they would have gone in anyway, but if they're ok you keep them out of hospital. And one of the things that happens when people get into hospital is that people risk manage things very differently.. You end up with X-Rays, CT scans and all sorts before people are even.. You know... Seen really. So that's another example of prescribing... Delivering more sustainable health care on the back of what everyone accepted was high quality and everybody loves it.. You know this second path. All the practices absolutely love it.

RP2: I think CCGs are thinking about commissioning better services and they are thankfully,... a lot of the stuff they are doing is accidentally more sustainable... [I: Ok.] Because, you know... Going back to what we were saying there's a massive overlap between. So lots of the stuff that they are doing about providing better out of hospital care, about minimising the number of people who die in hospitals compared to dying at home, you know all of those are more sustainable ways to deliver healthcare. You know if you look at resource use to die in a district general hospital and dying in your own bed at home it's much better to die in your own bed at home... [I; Probably from a patient perspective as well...?] Absolutely. Across the board. Yeah. But resource use is better. But that's not the reason it's done. The reason it's done is that people prefer it and you know, the evidence is that the quality of the dying experience is better for the individuals and their families, so that's why it gets done. It just happens to be a bit more sustainable. I mean that's true for lots of things.

Proposals to improve care and outcomes for patients by intervening less were closely connected to the critical account of secondary care that emerged from interviews. A number of proposals were made to limit the exposure of patients to secondary care and the attendant issues of over-investigation and overtreatment. Broadly, the shift away from secondary care was conceived as taking place through an emphasis on primary care and challenging the assumption that interventions should be carried out in secondary care, and not primary or another setting closer to the patient. Services would need to be commissioned and invested to support this. Broadly participants supported delivering care closer to home where possible. This, along with better management of patient health and careful management of risk would allow secondary care to focus on the cases where it was most appropriate.

RP2: It's the things that never happen. You know. It's... I know I've done a really good job when an elderly person say to me 'look doc..'. You know they come for medication review and you... you know... you've got things just right for them and they say 'I don't know why I've taken these tablets for the last 20 years because nothing's happened' they haven't had their stroke. They haven't

had their heart attack. They haven't developed cancer or whatever and, so you never know, and that's the art of primary care really. It's sort of very low tech and...

RP7: Yes, and that's what we're trying to... we're doing a 5 year strategic plan in Wiltshire at the moment talking about bringing care closer to home, doing more things closer to home. Using hospital beds less because hospital beds are expensive and use a lot of resource and then of course you end up with using the resources at hospital and having the patient's home heated and lit as well. So if we can achieve this, including a sense of wellbeing which we're writing into it, you never know we might make a difference.

RP3: Definitely. Definitely. Because I think at moment secondary care... Kind of say well you know this is what we're offering so this is what you get. The trick with commissioning is to be sensitive and specific enough that actually you say 'we don't want that. We want this.' I think historically commissioning has been, you know, you go into a sweet shop and ask for a jar of jelly babies and you get a jar of... Smarties. Because that's what they've got and it's been a bit like that but I think now we're trying to get a bit smarter and say you know 'we don't want smarties, we want jelly babies and we want this number of jelly babies'

I: So you have to, sort of, redesign the...

RP3: Yeah, so you've got to redesign the thought... The thought process of secondary care... Because they've... they've always been in the driving seat, historically and that's now shifting

I: So it's almost very supply led...

RP3: Absolutely. Absolutely.

Interview data also covered some of the possibilities opened up by adoption of technology and closer integration between health and social care. Information technology was viewed as having the potential to increase efficiency and enable different forms of interaction with patients, such as remote monitoring, as well as moving information around between healthcare professionals. Closer relationships between health and social care also created possibilities to address the wider determinants of health.

RP3: think it does kind of fit in with the changes that we're proposing in community transformation and looking after people in their own homes and... supporting. And I suppose with technology. If you use tele-surveillance and stuff in homes then... that's another way of monitoring people at home without actually physically having to go in and see them.

5.4.8 Resilience and patient relationship

Changes to the model of care outlined above were contingent on patient support and co-operation. Rising levels of demand and patient expectations of the health service were understood by interview participants to contribute to the unsustainability of the NHS (covered further in the demand theme). The resilience and expectations of patients were mentioned as part of the complex drivers out of demand outside of health needs. Interview data indicated that the NHS moving away from a paternalistic approach to delivering care towards supporting patients and communities to be resilient and enabling them to draw on personal resources and resources within their

communities was necessary to improve health and to manage demand for the health service. Addressing patient expectations about the NHS and the limits of what the NHS could provide and address were also put forward as contributing to sustainability and health. These were viewed as consistent with the low impact model of care described above, where unnecessary interventions and defensive medicine were avoided where possible.

Interview data suggested that the paternalistic approach to care, short consultations and a tendency to give patients what they wanted, often a prescription or referral, had contributed to the present situation. Participants suggested that the NHS should play an active role in enabling patients to be more resilient. This was described as requiring a significant investment in time and human skills, to deliver care that would enable patients to be more resilient and improve their own health. Moderating expectations about health interventions, in terms of what the health service could be expected to do, the responsibilities of patients and the limitations of interventions was mentioned by a number of participants. It was hoped that this might support healthy lifestyles and reduce inappropriate care, with patients fully informed of treatment options and the drawbacks of these options.

Behaviour change, particularly where health and sustainability could be addressed together, was mentioned by a number of participants, to address demand and improve health. Although participants were supportive of these practices they also acknowledged the difficulties in doing this, noting the additional length of time required to discuss wider issues with patients and the prospect of dissatisfied patients. Equally, the difficulty of changing behaviour, for health professionals and patients, was acknowledged. Resilience was also related to broader wellbeing, recognising where the biomedical model of care was not always appropriate to the needs of patients and supporting individuals to alter behaviour.

RP1: I think the biggest area that needs to change, but I think that it would be difficult to effect the change in would be drug use... Because... Because that comes to the heart of the whole that I've talked about with NICE guidelines and drug company lobbying and I think the NHS must completely... It needs to divorce itself from... accepting gifts and bribes from drugs companies. You know going to drug sponsored lunches and things like that. I just don't think it's right and I think it results in us prescribing the latest x,y or z just because some nice person told us it was a good idea. As opposed to actually knowing the evidence, genuinely. I think that... As I say we want to prescribe drugs for patients because that makes us feel like we're doing something for them, and I think one of the challenges is, really, to learn how to care... you know, how to sort of manage people and care for people without prescribing for them.

RP2: But it takes time and expertise to tease out what the... you know what the health beliefs are at the individual, why they want the antibiotics... To actually

spend time unpicking the evidence with them, about talking.. Maybe using a decision aid tool about what the benefits and risks of antibiotics are... How often they're likely to get diarrhoea. Overall it's only prescribing antibiotics is going to help 1 in 20 or whatever the figures for people with sore throats... And to do all that is very time consuming and ... I suspect that the... The biggest impact that GPs actually can have on sustainability is just delivering the evidence that there is out there and having time and the space and the capacity to do it really well.

5.4.9 Wider duty of care and sustainability impact

There were mixed views in the data on the extent that GPs should take account of the environmental and social impacts of their decisions. The significant reductions in environmental impact for the whole NHS, discussed during interviews, implied that it would be necessary to account for the environmental impact of decisions, however participants differed on the extent that they would wish to do this. The argument that environmental responsibility should be seen as part of the wider duty of care of GPs was felt strongly by some participants and less than others. The close relationship between sustainability and health was used to suggest that environmental sustainability should be an essential value of health professionals, taken into account in every decision. The wider duty of GPs to use NHS resources wisely to benefit the health of the whole community was also cited as a reason for environmental sustainability to be incorporated into the wider duty of care. The incorporation of sustainability concerns however was complex, with consideration of sustainability impacts to be balanced alongside other objectives of delivering safe and effective care, as well improving care. Other interview participants were more equivocal about the inclusion of environmental responsibility in the wider duty of care, with data that was both supportive and in conflict emerging from interviews.

RP2: It's not that big a step to actually say well holistic care isn't just about the total person or the person and their immediate family or even the person and their immediate family and their social circumstances, it's bigger. You know. The thing that you wrap around is bigger and you know, it includes public health and it includes public health and it includes sort of wider sustainability in the now and in the future.

RP6: If you've got two hats on... If you've got trying to reduce referrals because it's sustainable and yet you're trying to treat the patient you can get into tricky water and I've decided myself not to do that, and I've decided just to treat the patient in front of me... that's what the General Medical Council expects... of a doctor. So that's what do...

RP6: I'd refer the patient if I thought they needed it. I wouldn't be constrained... by that. I would like to, with a separate pot of money... A separate... I would like to try and... I would be very happy to put my energy into working out how I could reduce the carbon cost of the referral, however I would not reduce my referrals because of that...

I: Ok, so...

RP6: Unless I could provide the... the same healthcare in a more carbon effective way. Like bring it closer to home or improving... the insulation of the hospital, whatever it is, then yeah I'd love to do that, however I wouldn't not refer someone because it costs carbon. Because that's not my job.

I: So you would only see yourself as, challenging a referral, or talking about a referral if you... thought it wasn't really going to benefit that patient or...

RP6: Yeah, so...

I: So only you would challenge a referral but not for...

RP6: It's only on a clinical basis, on a.. what the patient needs. Not what society needs...

Environmental responsibility as part of the wider duty of care of health professionals was accepted on a conditional basis. Data indicated support and opposition for the concept with examples of where it may be appropriate and others where it would not be. Safety, quality and effectiveness of interventions were put forward as the most important considerations for a GP, with environmental impact considered when all else was equal. The wider duty of care was also acknowledged in terms of the need to consider the wider needs of the community or the long term viability of the NHS. Other data acknowledged environmental impact, but suggested the impact was uncertain and hard to quantify and the role of a doctor was to expend resource on a patient. The duty of healthcare professionals to individual patients was also invoked. Sustainability was also viewed as something outside of the remit of doctors, and potentially political.

RP6: I mean I bear that in mind you know, as sustainability. I would like the patient to be as sustainably as perhaps I am, but I accept that people aren't, and it's not my... I'm not the appointed one so to kind of change everyone's lives. You know I'm a... at the end of the day just here as their doctor and... so... I would like to help them make a sustainable choice or... but I ultimately... yeah. Otherwise you end... end up to.. to conflicts of interest.

However, there were indications of attitudes that attached more importance to the environmental impact of decisions. The connections between health and sustainability led one participant to note the contradiction between delivering healthcare while also negatively impacting the environment. Other participants suggested that access to timely information on the environmental impact of different treatment options could aid decision making. The balance between environmental impact and clinical concerns was also queried by participants, with the example of single-use instruments and whether this could be justified against reusing sterilised instruments. Environmental decision making was also discussed in terms of aspects of care that did not directly influence patients, such as buildings, efficiency and waste management. Of course these choices do impact patients, but the choice for GPs was not as stark as considering individual treatment options.

RP6: A lot of our prescriptions are now electronic, a lot of our, letters from the hospital are online, so that's helping. It would be nice if the hospitals sent us even less paper. And... More of it was online but they still don't, but I guess they'll get there eventually. We still send referral letters on paper but we're now starting to send referrals online, by email so I suppose the change is happening. And it's driven by efficiency as... as well as sustainability.

The above findings illustrate the complexity of viewpoints towards a more sustainable model of care. The sustainable model of care related above was not a clear and unproblematic consensus, but rather a complex set of viewpoints as to how a more sustainable model of care might work. Relative accord over issues such as the critical account of secondary care was accompanied by differences over issues such as the extent that GPs should consider the environmental impacts of their decisions. Aspects such as embracing a wider duty of care or utilising risk management to avoid defensive care had the potential to be problematic in their application as they were dependent on the judgment and experience of practitioners.

5.5 Engagement factors

The sustainable model of care described above illustrates some of the ways that interview participants envisaged a more sustainable NHS. The theme of 'engagement factors' set out here covers the elements that participants believed, or had experienced, would influence their engagement with sustainability. Many of these factors have data relevant to them located elsewhere in the chapter. Where this is the case the data will not be repeated here, but the interpretation of the data will be given. Discussion of engagement factors can be problematic, with many specific to persons, situations or particular sustainability activities. What this theme attempts to do is draw out these factors and make the case that engaging with sustainability is challenging for many participants, however there are significant facilitators that can be drawn on and meaningful interventions that could enable further progress.

5.5.1 Barriers

A key barrier to engagement with sustainability was that many aspects of how care was delivered were perceived to contribute to high levels of resource use, little benefit for patients and jeopardise the long term viability of the NHS. Much of this was covered in the sustainable model of care theme above. A paternalistic approach to care and patient/doctor relationships made it challenging to manage expectations and facilitate behaviour change acted as barriers to engagement with sustainability.

There were a number of conceptual barriers to engagement with sustainability. Even when participants demonstrated intellectual sympathy and support for working towards a more sustainable NHS, there were moderating beliefs that made this more difficult. These beliefs were particularly evident when there was a perceived risk that

commitment to sustainability might compromise another objective, such as the quality of care or the availability of resources. Examples included the acceptance of broad links between sustainability and health not leading to acceptance that people would be impacted locally. Health impacts were understood by some participants as likely to be distant in location and time. The contributions of the individual decisions and actions of GPs could also be minimised when considering the global scale of emissions. These arguments, based on local health outcomes and individual contributions, could be used to diminish the case for a more sustainable NHS, to the extent that it relied on these outcomes. Some participants did suggest that the broad connection between health and sustainability was relevant to the NHS, while others made arguments that it was possible to envisage local environmental impacts.

RP5 I am conscious with places like India and China developing greatly it actually... They're starting from a low base but they're expanding very rapidly so there's always the feeling that well... whatever we do isn't really going to make that much difference, but I think... so I very much doubt that... the patients that I am seeing at the moment are going to be hugely and dangerously impacted within their lifetime but perhaps within their children's lifetimes we're going to see changes and quite clearly that's a very parochial view because... that... if you live on an island somewhere and the... you don't have much clearance above the sea, rising sea levels will have a very major impact... So... I'm aware of these things... I don't know how they... very much impact on my daily practice.

RP4: Again it requires a bit of discussion doesn't it? About exactly how that reduction, or increase in sustainability, is going to affect the way healthcare is delivered.

I: Ok. So.. So sort of an endorsement the target like that would be dependent on... I guess... keeping quality or...

RP4: Yeah

I: Or...

RP4:Quality. Safety. Reliable. You know. The essentials for good healthcare.

Sustainability was not a mainstream concern, rather something that many participants were aware of without giving much thought. Sustainability was described as the 'territory of the zealots', which suggested that the case for sustainability as a core organisational value relevant to the improvement of services and long term viability of the NHS was not recognised throughout the interview sample.

The discussion of sustainability and the sustainable model of care emphasised areas of consistency between sustainability and health, particularly the values and practices associated with primary care. However there were conflicts, particularly when balancing the wider duty of care against the needs of individual patients. The preference, and duty, of GPs to put the needs of individual patients first was mentioned by a number of participants. The discussion of balancing the needs of individual patients against wider needs did not provide clear guidance on how best to do this, and

the quality, safety and effectiveness of options offered to individual patients was emphasised by all participants. The notion of balancing the duties of a GP was therefore somewhat ambiguous, as was the overall form that this balance would take. The tension between these duties was clear, with one interviewee indicating that their duty was to act as an advocate for the patient. Other interviews discussed the intense and personal nature of the consultation process, and the motivation of GPs to assist patients.

Changes to the patient relationship, such as the shift to promoting resilience, was likely to be challenging, with one participant noting the need for sensitivity with patients. The suggestion that GPs could act as wider advocates for sustainability, by connecting the health and sustainability agenda and within consultations with patients was also viewed as problematic by one interviewee with concern that support for sustainability could be seen as taking a political or inappropriate stance with a patient.

5.5.2 Workplace barriers

Interview data pointed to a number of perceived practical barriers to engagement with sustainability. Different aspects of sustainability, such as improvement in waste management or considering the sustainability implications of different treatment decisions, often had different barriers although some barriers were common. The scarcity of resource was the most immediate and extensive barrier to engagement with sustainability. Time, human and financial resources were all stretched, with the availability of resources closely linked to high levels of demand and consequent pressure on health professionals.

Resources formed a barrier to a number of sustainability activities. Financial barriers hindered the improvement of waste management and installation of solar panels in some practices. The workload of GPs also made it challenging to take a long term perspective, given the challenge of meeting present day needs. Actions such as promoting the resilience of patients or reducing the use of pharmaceuticals would require significant investment of time and human resource with patients, which were not available for this purpose.

RP6: Funds are the barrier, yeah. So, but yeah, I would... To me personally I would be prepared to take a 20 year view and pay for the solar panels to go on saying it's going to pay for themselves in 20 years, however I'm not sure my colleagues would do that...

RP7: Yeah, well I think also it is... we're busy... Right, for example one of our surgeries is still on night storage radiators. We said wouldn't it be lovely to be able to put in an air pump heating source. The barrier to that is going to be money because we're going to have... you know it will cost us to do it, so I think time is short and doesn't always lead to best environmental decisions. I

think money is short, so you don't always choose the best decision for the environment. You can choose to do it at home but not necessarily... with partners in the workplace.

I: Ok and why do you think... why would you be sceptical about it... achieving that target?

RP7: Because we're all rushing around like mad things just trying to keep it going. I do not believe that an acute hospital, well there will be one or two, but people are not going 'Well I tell you what, let's look at how we can recycle more and save more and build something different so that we can change our carbon footprint'. They're all just trying to survive.

I: So there isn't that time to take the strategic long term view on...?

RP7: Correct. That's it.

Contextual and organisational barriers were also discussed during interviews. There was little perception of wider sustainability leadership. Clear leadership, signalling the priority and direction in regards to sustainability was as stated as a potential facilitator of sustainability action. There was little perception of leadership being taken on sustainability, beyond the example of one peer who was engaged with sustainability. Participants mentioned the attitudes of colleagues and the need to maintain relationships as a further barrier to engagement with sustainability, with colleagues disinterested or unwilling to make a long term investment in sustainability. Maintaining relationships with colleagues was important, and trenchant commitment to sustainability was noted as potentially alienating.

RP5: But I believe if there was a firm, you know, if we had a secretary of state for health "I want not only to improve the health of the population and save as much money as possible but I also want to do this in the greenest possible way and as such I am putting the forward the following plan". Some people would pooh pooh it, but if he was a... if it was done well, he or she might be able to have quite an impact.

The more sustainable model of care, described above, involved the reduction of low value investigations and interventions which required GPs to carefully manage risk. Risk management procedures were described as influenced by the perception of media and political scrutiny. One participant described this approach to care as open to criticism, with defensive medicine practiced to avoid this. Criticism of failures in care were described as sometimes overwhelming and not taking into account the surrounding factors that could guide a health professional's judgment.

There were related concerns about the political management of the NHS, guided by the media and public sentiment, where decisions may be based on emotion or compelling stories rather clear evidence. Political leadership was also viewed as not always conducive to tackling sustainability and other long term issues facing the NHS, instead focused on near term issues. This was contrasted with the position of GPs who would

expect a long term relationship with the NHS and may be more minded to consider long term impacts.

RP2: You have longevity of care as well in that GPs are often in the same practice for a long period of time and... Which I think is ... Off on a tangent is one of the things that upsets the politicians that we're here for the long haul... Politicians come and go and that's why they've got a problem in particular with GPs and they come in with ideas about changing the health and care system.

RP5: The difficulty is you only have to have one... case where there is an infection or something like that and the Daily Mail, and I choose my papers with care, the Daily Mail says, you know this is... this is disgraceful because this happened and the patient suffered because they were trying to save money or they were trying to save the world or whatever it is... I can well understand that in a nationally managed and politically directed service that there isn't going to be a lot of pressure for this sort of risk assessment to go on because people will be unhappy about taking the risk and being accountable for it.

Public and patients attitudes were also described as potential barriers to actions such as reducing the real estate. Public opinion was described as very attached to buildings and resistant of closures, even if a strong case could be made for this closure.

RP3: Shutting buildings is always a very contentious issue. Because they hold dear. I mean I was involved in shutting a hospital in Trowbridge that was built as a private house in 1825 and it was being used as a 21st century hospital and it just was not fit for purpose... And yet the community vehemently did not want it shut, and actually they blocked... The blocked it shutting to such a degree that by the time it was shut there was new money to develop other services that we... wanted to develop at the time in terms of primary care centres. So... Buildings are always contentious. Services are... So this is going back to what I was saying if you can get services in place before you shut buildings. So we are talking about services rather than estate... It does help.

Data also indicated a number of ways that the local environment formed a barrier to engagement with sustainability. The local setting and experience of a pleasant rural environment was suggested by one participant as a factor that kept the risk of climate change and other sustainability impacts in the background. Conversely, possible connections between local extreme weather, such as flooding, and climate change were also noted. Local conditions also influenced engagement with sustainability, with the perceived danger of local roads discouraging recommending active travel to patients.

RP3: I think the trouble is.. The thing in a county like Wiltshire it's easy to go well, you know, we're ok here. Rather than... So I still think it's early days. I still think we're... you know... We're learning and developing.

The structure of the health service and some targets were also described as shaping how care was delivered, on occasion leading to services that were not suited to patient

needs and unsustainable. Out of hours services and a loss of continuity in care were described as contributing to higher levels of secondary care referral. This was also described as leading to higher levels of medicalised and unsatisfactory deaths, with the observation that a focus on reducing mortality rates to meet targets was not always in the best interests of patients.

The more sustainable model of care described above was dependent on a primary care led structure, with sufficient time and resources to invest in patient relationships to enable the delivery of care using fewer resources. The short consultation periods and time demands on GPs were described as incompatible with the more human and soft skilled model of care and more suited to the high impact model of care reliant on pharmaceuticals and referral, rather than supporting the resilience of patients, more management in primary care and lower use of interventions. These aspects of care were noted as forming barriers to working towards a more sustainable approach to care.

5.5.3 Facilitators

A subtheme of facilitators of engagement with sustainability also emerged from the data. These included the values, practices and beliefs of GPs, and the extent that these were compatible with the case for a more sustainable NHS and more sustainable models of care. Facilitators also included links between health needs, the growth in demand and trends in the delivery of healthcare such as delivering care closer to home. Organisational shifts such as the increasing commissioning role of GPs through CCGs and the challenge posed by austerity, in the short term and the long term need to deliver care to a more demanding population with large increases in resource unlikely.

Interview data showed participants accepting many aspects of the case for a more sustainable NHS. These included the broad connection between sustainability and health and the potential to save money through cost effectiveness and efficiency. The case for a more sustainable NHS was further expanded in the interview data with the belief that GPs would be facilitated in engagement with sustainability through sympathetic values, particularly the values and practices of primary care physicians. Personal and professional experiences were also drawn on to support engagement with sustainability. These facilitators include the observation that healthcare professionals tended to have pro social values and were likely to support a more sustainable NHS. Beyond this broad support the health beliefs of primary care physicians and experience of the healthcare system were described as sympathetic to delivering a lower impact service, less reliant on and encouraging of intervention. The

GP role itself, with individuals providing primary care in a community for an extended period of time, seeing a variety of patients and steering these patients through the health service was viewed as providing insights supportive of sustainability. The description of viewing patients and their needs holistically, rather than focusing on a specific condition provided an example of how primary care attitudes were consistent with a cautious and low intervention strategy, which sought to protect patients from over investigation and overtreatment. Interview data described practices of risk management, conservative referral and prescription and where possible reducing patient risk factors to improve health in the long term. The critical model of care theme above illustrates some of the problems with over investigation and over treatment, and the potential to harm patients.

The role of GPs, situated in communities for the long term, with the need to consider both individual needs and the needs of the wider community was a potential facilitator, with the challenge of achieving multiple objectives critical to working as a GP. This was contrasted with secondary care physicians and their focus on single conditions and practices, rather than the wider health service, best use of resources and long term viability. The increasing role for GPs in commissioning services, consequent of the introduction of CCGs and GP led commissioning, was noted as increasing the potential role for GPs in working towards more sustainable practices. One participant considered the role of GPs in relation to sustainability and noted that GPs acted as problem solvers, with a capacity to address problems when giving clear information, guidance and capacity to act.

RP1: Yeah. I think it's really interesting when that... To do it as an overt thing... To do things overtly because you understand the sustainability argument what people... the penny drops then the majority of people sort of get it and... agree with the proposition that it's a... it's sort of a virtuous thing to do and that it does chime with the wider social responsibilities of being a GP and being a clinician in that... If you.. The majority of people who do medicine do it because their heart's in the right place with a minority who do it because, you know, it's a way to a profession, a professional life within society and it's a good income and things... But the majority of people do it because they've got sort of a shared set of values about... Those usually... They chime with equality and sort of fairness in society about wanting to minimise health inequalities. About wanting to look after the... the people who often get the worst deal in society.

5.5.3.1 Sustainability and improvement

Engagement with sustainability was also understood by a number of participants as consistent with improving health and the delivery of healthcare. This included the broad connections between health and sustainability, the viability of the health service and improvement in quality in the provision of services. Data indicated a belief that more sustainable services could often provide better experiences for patients while making

better use of limited resources, particularly avoiding over-investigation and overtreatment.

RP2: ...to be successful sustainability needs to be a second order priority with clinicians and if you say it becomes a first order priority over and above quality of care for patients you will just... lose the argument every time. I mean I think that's a good thing actually. So it needs to be high quality patient care. It needs to be at the top of the tree and then the next order of priority needs to be delivered in a safe sustainable... minimally environmentally damaging way.. So... Then you tend to win the arguments if you look at the... you know. If you address.. the enormous overlap between, you know, these Venn diagrams. There tends to be an enormous overlap between what is high quality sustainable delivery of care. You know measuring that and measuring high quality care. They often operate the same territory.

RP5: Well the... I think.. the the general sort of policy is care closer to home... And... That is better for most people. There are some people who go to hospital... and this is a bug bear of GPs. They go to casualty, they may see a doctor is actually pretty junior but because it's a hospital doctor and he's wearing blue pyjamas they... believe that that... Everything that is said to them must be exactly right and they sort of come back and tell GPs what... You know, what should be done. Well sometimes that's appropriate because hospital doctors have got their own particular expertise and fairly readily available to them.. Availability to them of investigations and so on, so they may have a better position, but sometimes it's... it is just a waste of resources and a waste of the patient's time to be perfectly honest with you. And a waste of the... yeah... The carbon driving to Bath, so I think... I personally would like to see more, as much as possible being done within the context of general practice locally... locally, but obviously you have to be aware if there are safety issues of any sort, you know, then it's appropriate for people to escalate up to the hospital.

RP3: So I think the immediate here and now is the elderly population and how do we after those nearer to home...

RP3: Well, I don't think so. I think you'd be pushing against an open door to be honest, I really do. Because it is so interlinked with improvement of health to a degree. I don't... I think the barriers will not be the conceptual, strategic view, it would be the operational delivery of it. That would be the hardest thing. I think. I: Ok. So just the...

RP3: Making it work. Making it happen. And then there's always the, you know, there's always going to be delay between strategic view and then operational delivery but I think that would be.. Harder. But you know, I think you would be pushing at an open door.

5.5.3.2 Personal and professional experience

The personal and professional experiences of participants were often supportive of the working towards a more sustainable NHS. Personal sustainability actions such as recycling, choosing more environmentally friendly options or a dislike of waste were mentioned as relevant and informative of attitudes towards sustainability in the NHS. Specific professional experiences such as working in developing countries, operating wellbeing services, public health practice, management and commissioning experience

and improving services all informed discussion of sustainability in the NHS. In particular the objectives of using less resource to meet growing demand, and the process of moving away from a paternalistic model of care centred around provision of care in a hospital environment to a model promoting resilience and delivering care closer to home.

RP6: Yeah, I put panels on our roof. And got... added insulation to the roof. Looked at the kind of, the water usage, you know tried to get higher efficiency appliances like dishwashers and fitted those things on your... in the look that reduce the amount of water you use to... So that kind of thing I've tried to do... You know all those kind of things... You know I find it interesting... I like, my mind is naturally interested in being... I wouldn't say being frugal with energy but just being efficient with energy. Not wasting it basically, but when it has to be used, it has to be used. So... Yeah.

RP3: Yeah... And actually what they wanted was a big central hospital.. And we were saying.. 'No you don't need that. Actually you've got a really good system here. You want to keep the hospital as small as possible and keep care closer to home', so actually this is exactly what we're trying to do here now.

5.5.3.3 Broad trends

Other factors noted in interviews that facilitated engagement with sustainability included the broader trends that promoted the consideration of resource use, the long term viability of the NHS and sustainability as a topic. Interview data noted the organisational shifts that put GPs at the centre of commissioning, and their role shaping the long term priorities for the NHS in their area. Participants noted that this included the need to manage rising demand and develop care that was suitable to an aging population. Topics such as resilience, wellbeing and prioritisation of services were applicable to these trends and working towards a more sustainable NHS. The experience of austerity, both the present experience and the expectation of its continuation alongside growing demand, also brought these issues to the fore.

Although data indicated little awareness of sustainability leadership, where it had been visible, through the actions of peers or reported public interest this had encouraged interest in sustainability.

RP1: Well it's all happening at the moment with commissioning ... It's just a matter of time. And it's because the government... It is because the government have asked the GPs to reorganise things and it's because of cuts etc. So it's not because of... It's not because of the sustainability agenda specifically.. But that is what will happen...

RP1: Don't know really. I'm not sure other than what I've said, how exactly that will be impacted. I mean, I can see that there are changes that need to be made within individual practices and that could be made to be... To use less resources. Both in terms of personal time and paperwork... On the level of paperwork and whatever. Things like electronic prescriptions and electronic referrals and all of that kind of thing I think will need to come in. And that's partly

cost effectiveness as much as anything else. But... I mean.. There's a lot of changes going on in terms of commissioning and trying to reduce spending in the NHS and I think that probably all of that, in a way, will have benefits on sustainability, because it's all aimed at trying to keep patients out of hospital. And if they can stay out of hospital they can stay away from unnecessary investigations and intensive therapy and all of the rest of the things which they may or may not need... Yeah. I think in terms... I think that simply austerity and funding cuts will actually have benefits for that in terms of sustainability.

RP7: up until this new.. let's say... 2 years ago we have been colluding with the patient in the fact that they all need to be seen higher up the chain and they all need this and not teaching the patient to be resilient it... is a growing... agenda item now. And as we look to link health and social care in the future to try and increase the sustainability of both provisions this concept of people doing more and communities doing more and the aging population volunteering to help others... Is... Is coming up time and time again in the commissioning world

5.5.4 Potential engagement factors

Interview data also covered factors that, although not currently present, could facilitate engagement with sustainability. This subtheme is closely related to the barriers subtheme in providing potential solutions to those barriers. Facilitators connected to leadership on working towards a more sustainable NHS were suggested during interviews. This included top down leadership and a clear direction of travel and the need for local champions to lead the agenda. Other aspects of leadership such as resources for sustainability, financial incentives to reward sustainable behaviour that saved the NHS money and clear information about the environmental impacts of different pharmaceutical options were all raised. Another approach linked leadership to empowerment of GPs, with the clear communication of sustainability objectives and giving GPs the responsibility of addressing these issues. This view was supported by the observation that the need to promote resilience was an issue of increasing prominence, as GPs took control of commissioning budgets.

Building on the links between sustainability, health and health improvement initiatives it was suggested that sustainability may be best placed as a secondary priority alongside improving health or healthcare provision. Similarly considering the wider context and matching sustainability actions to times when they are likely to be successful was also suggested.

RP6: No, no, I don't think so at all. Because if I was given a lump of money to spend on environmental changes I'd be really happy. I'd be very happy to spend it on... so if it was ring fenced and it was said "This is your money to spend on something to change the environmental impact" I would love it. I would be really up for that. But the money doesn't exist at the moment.

I: Oh, ok.

RP6: But I'd be really enthusiastic to.. to do that. It'd be great.

RP2: The clinical waste recycling was that... it's on a... I checked across the county. It's on a sort of weight and volume contract with the... With the waste management company and clinical waste... The most expensive that you can get are the sharps bins and then after that it's that [gestures at bin in the room] and then after that it's general waste and... and... that's on, as I say, on some sort of weight volume contract and I came up with an idea with the people at the PCT that we, incentivise the practices by sharing the saving that we would make by getting people... because people throw all sorts of non-clinical stuff, hence the clinical waste only thing that we've put up, you know people will throw.. they'll examine someone on the couch and then screw the couch roll and put it in there rather than put it in the ordinary bin or in the recycling or whatever. And if you were to incentivise practices and say over a year if you halve your clinical waste, or... you could probably easily halve it that would save £20,000 say across the county and we'll share half of it with the practices and the wider NHS will save half of it and there was just no appetite to be bothered to do it. In spite the NHS being really short of money. Could not get anybody to buy in to it.

RP1: you know, I think it would be easier to make those kind of decisions if, for example, nice were to consider the environment when they produce their guidelines. So do you know what NICE is? [!: Yeah. Clinical excellence...] Yeah. So that would help doctors to make decisions about individual patients if. You know... the individual doctor isn't likely to be able to weigh up the environmental benefits of one treatment over another because we're not likely to really actually know or have data on that. But NICE could get data on that and I think that's what should be happening and it would be easy for doctors if, you know, somebody else would have already done the thinking about it.

5.6 Balance, demand and responsibility

The above themes of the NHS and sustainability challenge, the sustainable model of care and engagement factors are used to outline the range of data regarding how sustainability is understood, how sustainability relates to the provision of care and the factors that constrain and enable engagement with sustainability. The following themes of balance, demand and responsibility involve an additional level of analysis, drawing out the three elements from the data that best characterised the responses of the participants, in terms of the key issues impacting the sustainability of the NHS and how best to deal with it.

5.7 Balance

The themes above indicate the extent that working towards a more sustainable NHS was not understood as a discrete activity, but something negotiated alongside the complex role of a GP. Across the data it was clear that 'balance' was integral to the GP role, with clinical and care decisions taking multiple objectives into account. This was apparent through interview discussions of the wider duty of care, the need to make best use of limited resources and of taking a holistic view of patients and the extent to which they would benefit from a particular course of action. Risk management was also discussed and the extent to which GPs would need to balance the risk of not undertaking an early investigation against patient anxiety, poor resource of medical

resources and the danger of over investigation. Sustainability considerations provided an additional, complex factor to decision making and emphasised the need to consider resource use and plan long term.

RP5: No I was just saying, but you know, I think a lot of different things come in together because... although you're probably interested in resources in terms of ecology and... material resources, but of course an awful lot is driven in terms of economic sustainability and that's a huge concern within the NHS at the moment and... so there is the risk of that we 'Oh you are not referring me because you're trying to save money" or something like that so we... we do need to be able to justify professionally the decisions we make.

I: Oh so that's interesting... So... So as a GP you can kind of feel in the middle of,... pressures from the public, pressures from individual patients and your stewardship in terms using the economic resources of the NHS sustainably?

RP5: I think that's right. Yes.

I: Ok and is that sort of an everyday... that's an everyday occurrence for you as a GP or.. ?

RP5: Oh yes... It... It is. It's... I mean it... It runs in the background basically it is... It is part of the context of... of... doing general practice in this country at the present time.

Balance was intertwined with the other themes and subthemes. The sustainable model of care, for example, relied heavily balancing the needs of different groups and the need to balance the use of resources. The critical account of secondary and appreciation of the rounded holistic approach to care given by primary care physician was associated with balance. Primary care included an appreciation of the risks inherent in over treatment and the need to ensure that patients' needs were taken into account when considering treatment options. Barriers to engagement with sustainability such as competing priorities underscored the challenge of taking a 'balanced' approach. 'Balance' as described in the literature involved managing these priorities. For instance deciding how best to allocate resources, taking into account present demand and the potential to invest in health improvement and manage long term demand. Interview data suggested sympathy with this principle alongside the recognition that there were significant barriers to this approach. High levels of demand made it challenging to take a more 'balanced' approach as defined in the literature, instead focusing on short term needs of individual patients. A more balanced approach to healthcare was likely to require additional support.

5.7.1 Balance as everyday role of the GP

Across the data it was clear that 'balance' was integral to the GP role, with clinical and care decisions taking multiple objectives into account. This was apparent through interview discussions of the wider duty of care and the need to make best use of limited resources. Participants described their practice of primary care as considering the needs of the wider community and the long term viability of the health service. However

regard for the wider duty of care was balanced with the need of individuals, particularly standards of quality and safety. Views differed as to the appropriate balance, with one participant stating that only the needs of individual patients should be considered and others suggesting the need to encourage GPs to consider the most appropriate balance.

RP5: One of the things that my supervisor when I was doing my membership in public health said to me was that you can't be a good GP if you only think about the person about the person sitting in front of you. You also have to think about the people in the waiting room. In other words the wider population. Which is a public health viewpoint but equally you can't be a good public health doctor unless you also have a GPs viewpoint, in other words you can't hide behind the whole population. You have to remember the whole population is made up of individuals... And. And you need that balance so it's... it's a combination that I've enjoyed very much.

Balancing the needs of individuals against the wider duty of care was complemented by taking a balanced approach to the care of individuals. This involved taking an evidence and patient led approach to the provision of care which would not lead to over-investigation and overtreatment of patients. This approach was justified for clinical, patient led and economic reasons. The risks and benefits of procedures, including the risks attendant to treatment in secondary care were considered, as was taking a holistic view of patients and the extent to which they would benefit from a particular course of action. Risk management was also discussed and the extent to which GPs would need to balance the risk of not undertaking an early investigation against patient anxiety, poor resource of medical resources and the danger of over investigation. Caring for an individual patient therefore involved balancing a number of complex factors while considering the broader use of healthcare resources.

RP5: I mean the interesting thing about general practice is that somebody comes with a symptom... It... almost any symptom might be the first sign of something really serious, we know perfectly well that it isn't... Most headaches do not need a CT scan and that sort of thing.. One of the things that we have to do to balance the reality of the situation, the risks against the benefits of whatever treatment or investigation we do and defensive tends to over... well especially over investigate, but sometimes over treat as well because then you can't be blamed for having missed something or not treated something.. Something like that. And it's one of the... it's one of the skills I think that doctors learn as they go through their careers in general practice to.. to get the balance right and there are... there are good economic reasons why... we are encouraged not to refer too much, not to treat too much, not to investigate too much but equally as we've seen... on many occasions the public and the politicians are very happy to say that people have got it wrong and if if something goes wrong they have the benefit of the... of... of... a retrospective view so... It's always you know... There's always a risk assessment going on but.. but... that was what I meant by that."

5.7.2 Balance and sustainability

Sustainability considerations provided an additional, complex, factor to decision making and emphasised the need to consider resource use and plan long term. The use of balance, as described above, was often consistent with a more sustainable approach to care. A number of participants suggested that sustainability impacts should be a consideration in decision making. This position appeared to be informed by the above themes acknowledging the broad connections between sustainability and health. However there was not agreement of clarity on how sustainability concerns could, or should, be factored into decisions. There was a clear view that the safety of patients and quality of interventions was unconditional, however the principle of taking environmental and social impacts into account, or considering the future viability of the NHS was also supported by a number of participants. Other participants were clear that the needs of individual patients would outweigh any sustainability consideration.

Data relating to balancing sustainability objectives against other needs was found across the data set. Over prescription of antibiotics was an area where sustainability concerns bolstered an already strong case to reduce antibiotic prescription. Single-use instruments and the infection control benefits were compared to the sustainability challenges they raised and the extent they could be justified.

I: And they now talk about, practitioners considering environmental harms, well would... Would you be supportive of that?

RP3: I'd be supportive of it but I wouldn't say I'm actually involved in it. But I would be supportive of it definitely.

I: So would you, as a GP, if you had competing interventions, or options for a patient, would you say it was a good idea to try and prefer the environmentally friendly option or is there a balance that has to be...

RP3: Depends on the gain for that patient doesn't it...

RP2: You know there's been an acceptance from the GMC that we should use healthcare moneys in a wise way and should not be profligate with NHS money but it was really in quite an unsophisticated form really and it was about not spending... You know that there was a duty to balance the duty of care to an individual with the duty of care to the wider NHS budget but that was just in coarse financial terms and no one has ever actually really developed it further than that... Thinking about waste and the idea of the impact on future generations and the resource use... So that's the tack that I've taken really.

Although 'balance' may be consistent with the wider duty of care held by GPs, considering the wider sustainability and health impacts of decisions was complex and challenging. The links between sustainability and health were broadly understood, but the extent that demand could be moderated through these links was unclear, as was the extent to which it would be possible to balance wider impacts against individual benefits. There was little accessible and credible evidence available that GPs could use to assist these decisions, such as information on the environmental impacts of

different treatment options. The immediate needs of patients were likely to be better understood than distant sustainability impacts and data showed that GPs felt a strong duty of care to their individual patients.

5.8 Demand

Demand emerged from the interview data as a major theme. Demand was central to discussion of working towards a sustainable NHS, in the amount and kind of demand posed a sustainability challenge, the more sustainable model of care proposed above was intended to better manage demand while many of the engagement factors were related to the level of demand and the impact of this on available time and resources. Demand for health services from a growing and aging population and the subsequent pressure on the NHS and health professionals to meet this demand was mentioned across the data set. Demand was understood not only as increasing environmental impact, but putting the long term future of the health service at risk. Demand is explored further through the subthemes of understanding demand and managing demand.

RP1: It's... It's quite unlimited, general practice. Because it's free at the point of care and you have an obligation to see your patients, basically, in a timely manner whenever they want to be seen. And there's a lot of them. The workload is.. Can be... Fairly unlimited and.. you know... and sometimes can get a bit... Feel a bit unmanageable so I think that's probably the least enjoyable.

RP6: Change... Well yeah I think the NHS is and has to become more and more efficient... You know it's going to have more and more demands. Every year there are people past the threshold where they start generating work, you could say. So every time someone passes the age of 60 they're more likely to have high blood pressure, diabetes, all the rest of it. Arthritis. And so year on year the kind of... amount of illness or morbidity in the community is increasing and so.. you've got to try and be able to manage that in new ways and that is happening but it's... Yeah it's, it does seem quite, almost insurmountable.

5.8.1 Understanding demand

Throughout the interviews demand was not presented as solely being the product of the health needs of the population, but a complex description of how the population drew on the health services. The volume of demand was cited, as well as the nature of demand and the effects of demand on the health services. Multiple drivers of demand were also presented, which included the resilience of the population, external drivers and the actions of the health service itself.

The volume of demand was high and expected to increase over time. The GPs felt under pressure, with loaded schedules. Participants noted that this was the nature of primary care work, with patients self-referring to services and the expectation that they would be seen in a timely manner. The nature of demand was complicated, with

interview data indicating that patients had high expectations of the health service, in terms of expecting referral or prescription and the expected immediacy of interventions. It was believed that demand for services was often related to psychological and broader wellbeing factors, as well as beliefs about the effectiveness and benefits of interventions that may not have been accurate in every case. This observation was particularly relevant to the group termed 'heartsink patients' by one participant, who were a group of patients who needed additional support to address wider wellbeing issues rather than medically driven interventions.

Lifestyle and setting were also described as drivers of demand. Lifestyle and the promotion of behaviour change discussions acknowledged the difficulty that many patients had changing behaviour and the need to be non-judgmental and sensitive to the needs of patients. However participants did suggest the need to encourage personal responsibility and enable patients to be more resilient, which is more fully explored in the responsibility theme. External factors such as the availability of unhealthy foods and dangerous roads were mentioned as making behaviour change recommendations more difficult to follow.

RP7: Immediacy. Immediacy. So people expect immediate... access. And immediate response and immediate healing and the mobile phone facebooky culture simply fuels that and until recently it's been politically ok to tell people to get what they want from the NHS and their doctor and make them work all the hours that god sends but actually it's not sustainable our... because I've been practicing for 25 years I remember when there were no clinics between finishing morning surgery and restarting again about 4. Then we started putting clinics in at 2. Now we just see patients all the time. We squeeze visits in and there is no time discuss with patients, so we're definitely busier. Demand has definitely gone up. Partly because we can definitely do more but that isn't sustainable either. What we can do... we won't be able to afford to continue to do all the new things that people develop because it costs too much.

RP5: Yeah. Yeah I mean there's also... There's is also quite a lot of patient... patient pressure or... treat you know... everything should be treated whether we're talking about antibiotics for viruses or anti-depressants when people are just generally feeling a bit unhappy about something... And... again I mean these are... aren't... daily occurrences which we just have to manage. It's part of the job.

RP7: Yeah. I think, you know, define unnecessary, well if you looked... we were not doing this level of operations let's say 15 to 20 years ago, so what has actually changed? The fact that we can do more? It certainly isn't that they're cheaper so it's that people want them and their expectation is that they should be having them? In the old days if you had a shoulder with arthritis you just lived with it. Now you can have various reconstructions. And this is great. So nice for the individual except that every operation comes with risk and I think that we, I just think we've gone too far the other way. If you want the NHS to survive people will need to learn not to go forward. Now I think patients are hearing this. Patients are... There are articles in the... newspapers that patients read... People understand there isn't enough money within the NHS and it's

cutting all the time in real terms. And we need to be looking at that. I think one of the things that threatens sustainability is the fact that consultants, of course they do, but consultants always seek to improve, seek to drive things forward, but then the rest of the NHS ends up having to follow on and pay for the new procedures.

In addition to these patient led drivers of demand participants discussed a number of external drivers of demand, some of which were covered in the critical account of care above. A number of participants were critical of the paternalistic aspects of care, where the objective of solving the patient's problem for them could drive expectations of referral or prescription rather than equipping the patient to better manage their own condition. In addition the structure of care, consisting of short appointments, could make prescription or referral more tenable than a longer discussion of the patient's problem and considering lower impact interventions or non-intervention. One participant described GPs as 'colluding' with patients by referring them rather than more fully exploring the problem with patients.

Demand was also driven by secondary care with participants suggesting that defensive medicine and the practice of focusing more on conditions rather than the holistic needs of patients. Secondary care was also described as potentially risking harm to patients, through secondary infections or harm through non-optimal care. Much of this data was discussed in the critical account of care. Medical progress and technological development also increased demand by increasing the range of available treatments.

5.8.2 Demand solutions

Data indicated that demand was understood as one of the central challenges facing the NHS, and one that was closely related to sustainability in terms of resources use, environmental impact and the long term viability of the NHS. The potential methods of managing demand were discussed above during the sustainable model and balance themes, but the specific findings related to demand are further reviewed here. A number of ways to shape and manage demand were raised by participants during interviews, with mixed views on the likely impacts of these measures. Supporting public health and behaviour change was understood as a significant opportunity to improve health and manage demand, but there was a uncertainty as to the capacity of GPs and patients themselves to realise these benefits. Interview data indicated that where possible GPs already raise behaviour change and monitor patients to prevent future ill health. Although there was acknowledgment of the potential to improve health it was also uncertain as to the extent that demand could be damaged. The final theme of responsibility and resilience covered the potential to manage demand by emphasising personal responsibility for health and supporting personal and community resilience.

RP5: We can't... We can't... We can tell them what would be good for them. We can't tell them what to do. Oh you know we can't [inaudible] in the way that they're going to be able to... that they're going to necessarily follow... Some will. Some will say "Oh yes doctor, that's a good idea I'll do that" and they follow slavishly and they come back and see you and they... they've lost weight and they've improved their diet and they're taking exercise and so on which.. all of which is good but... Some people find it far more difficult to... to... to follow that sort of advice.

RP6: We try to do that. We give advice on diet and weight and smoking, that's one of our primary roles. Primary healthcare, trying to stop it getting to secondary health care where they need something doing to try and try to... reduce that. So I think, we do that quite a lot. We do that quite a lot. Sometimes people don't listen so... We can't, we can't make them...

I: No, I guess...

RP6: You can't sanction them... So... But yeah I think we do that already. I do that already.

Many aspects of the sustainable model of care described above were intended to manage demand. The critical account of secondary care stemmed from the understanding that secondary practices frequently increased activity without benefitting patients. The sustainable model of care described above was largely about efficiency and effectiveness and included risk management procedures to prevent over-investigation and ensuring that interventions were always in the best interests of patients after considering potential disbenefits. Discussion of managing demand also included a discussion of prioritisation and rationing, whether indirectly through recommendations of withdrawing from paternalistic care models to a more supportive and enabling role, or through direct discussion of the need to prioritise available services in the face of growing demand in order to ensure that the NHS would be available for those most in need. Managing demand through increasing personal responsibility for health and the resilience of patients will be primarily covered in the responsibility theme.

RP3: Yeah. Absolutely. I do. I mean I couldn't agree more. Because... it's got to be the sensible way forward, I think. It's just barn door obvious that actually the way forward is to... whether you call it sustainability or whether you call it health promotion, I mean it's the same kind of thing really, isn't it? I suppose they are interlinked, but yeah, I do.

RP1: Well, it's very difficult. Because it's um.. Sustainability and health sort of hand in hand. I mean somebody who cycles regularly and eats local organic food and doesn't smoke then that person's likely to be a healthy person, but that's always the battles isn't it? Getting people to change their habits. And it's hard enough getting people to change their habits for their own benefit let alone the benefit of other people and future generations and the planet in general. So it's quite a challenge. Yeah. You could call it an opportunity though. So you could say there's a massive opportunity.

5.9 Responsibility and resilience

Responsibility and resilience was selected as a major theme due to the concepts of responsibility and resilience cutting across discussion of a more sustainable NHS. Working towards a more sustainable NHS appeared to be dependent on patients taking an increased personal responsibility for their own health and the wider responsibilities of the NHS and healthcare professionals to include sustainability concerns. Resilience of individuals and the NHS was also key to enabling better management of demand and ensuring that the NHS would be viable in the long term.

Shifts in responsibility have profound implications for patients, health professionals and local communities. Increased levels of personal responsibility for health would require patients adopt healthy behaviour patterns, reconsideration of patient expectations about the role of the health service and that individuals and local communities become more resilient and better equipped to manage health without drawing on the health service. This radical shift, suggested by interviewees as ways to address sustainability and demand concerns, would also require changes to the model of care and relationships between patients and health professionals. A number of participants stated that the current patient relationship was paternalistic and moving the NHS towards co-producing health outcomes with patients and encouraging personal responsibility would be required. Interviewees also discussed sustainability in terms of the duty of care of health professionals and their responsibilities towards all patients, the local community, the equitable use of NHS resources and considering the long term sustainability impacts of NHS activities.

RP3: This gets back to what I was saying about personal responsibility really. I think, because the public health message will be... Don't smoke. Don't drink too much. Lose weight, exercise... Which is exactly the personal responsibility message that I was getting back to. So I think yeah, that kind of fits in with that really...

RP7: Yeah indeed. If the... If we don't get the balance right.. currently the population are requiring more and more and more from a beleaguered NHS which can't give more and more and more. If they want to have an NHS at all the balance has to shift back from them taking some responsibility because the current model is not sustainable. By that I mean you will run out of human resource, you may well run out of financial resource to pay for human resource and treatment but I think we... the balance has to move backwards rather than "the NHS will solve all my problems and and pain that I have will be removed..." People need to learn to be resilient otherwise... They need to learn to be sustainable themselves but they can't just expect the NHS to do it all for them.

Working to increase the resilience of individuals and communities was also discussed and the extent that this would enable people to meet their own needs rather than relying on the health service. This linked closely to the idea of the NHS as paternalistic

and the objective to move to a service that empowers and enables people to improve their own wellbeing. This could enable the withdrawal of services as people are better able to address their own needs, but would also require the introduction of services to encourage resilience and address wellbeing issues. This was discussed explicitly by participants in terms of services that would address wellbeing issues and implicitly in terms of investment in primary care to enable sufficient time to care for patients and attend to their wellbeing without making use of prescription and referral to move patients through consultations quickly. The sustainable model of care theme included a discussion of resilience and measures that could be taken to support resilience in patients.

However there were also challenges related to empowering and enabling patients. Behaviour change could be challenging for GPs to support, while engaging with patients about their expectations of health services and responsibilities could be problematic. These issues were covered in the demand theme.

5.9.1 Increasing GP responsibility

Along with the emphasis on personal responsibility for individual patients, data also indicated that a sustainable NHS would involve a wider definition of responsibility, emphasising the broader duty of care of the NHS and healthcare professionals. This wider duty of care was discussed above and included in the responsibility for the sustainability impacts of NHS activities, taking into account the environmental impacts of commissioning and treatment decisions. Additionally, discussions on working towards a more sustainable NHS included the necessity of using limited resources carefully, the need to manage growing demand and consider the long term future of the NHS. These multiple responsibilities were not new to GPs, but considering them in terms of sustainability did emphasise the need to address them.

Across the interview data support for taking on this wider responsibility was mixed. Support for taking a wider duty of care was based on the need to take a long term view, the consideration of wider environmental and social impacts and the future viability of the NHS. Some participants were motivated by environmental concerns, while others considered the viability of the NHS and the continued provision of services to be critical. However there were significant barriers to taking on a wider duty of care, many of which were covered in the engagement factors theme. Of particular interest was the focus of many participants on the needs of individual patients and the barrier that this presented to taking on a wider duty of care.

5.10 Conclusion

The six themes, multiple subthemes and various aspects of these subthemes presented above illustrate how the interview data addresses the research questions and research problem. The thematic analysis above indicates the range of opinions among interview participants. The following discussion chapter examines the methods used to produce these findings and how the findings relate to the research questions, the literature and quantitative data.

6 Discussion

6.1 Introduction

The survey and interview findings provided an account of the attitudes of the sample of GPs in Wiltshire towards sustainability in the NHS and how they made sense of their role. The influence of the data collection process on the findings and the validity of the data is explored below. Following this the findings are summarised and the extent that these findings address the research questions and contribute to the existing literature is discussed.

6.2 Methods reflection

This reflection on the methods and collection of data is undertaken, in part, to be consistent with the critical realist research position. The methods chapter stated that research processes provide a particular description of reality rather than a definitive description of reality. Research processes are therefore key to what data is generated and the conclusions that can be reached from this data. This reflection considers how the findings were influenced by the research process and the extent that the research processes conformed with best practice and can be said to have produced valid findings that contribute to knowledge.

6.2.1 Background

The following reflection on the research context and role of the researcher is intended to illustrate how the research context influenced the research process, enable understanding of the assumptions that underpinned the research, acknowledge the influence of the researcher and provide a transparent account of the research process (Finlay, 2002).

6.2.2 Organisational research

The primary resource for this research project was the time of a single researcher, backed up by the expertise and support of the research team and additional support from the NHS in Wiltshire. The research was dependent on the support and good will of the organisation, in this case NHS Wiltshire PCT and later NHS Wiltshire CCG. Completing the research project required negotiating access and organisational support, as well as discussion of the project outcomes and how these could benefit the organisation. Conducting research with human participants within an organisational setting necessarily limits the independence and impartiality of research, with organisational support necessary to conduct the research (Buchanan and Bryman, 2009). Research objectives are therefore negotiated with organisational gatekeepers.

In addition the qualitative research orientation of accessing the understandings and world views of research participants (Bryman, 1988) requires empathy towards participants, rather than impartiality. This was addressed by positioning the research as a 'critical friend' (Costa and Kallick, 1993) to the NHS in Wiltshire with the research focused on enabling improvement and honest criticism, rather than condemning or assigning blame. This approach was essential to build trust and secure co-operation with the organisation and participants. The 'critical friend' approach was also consistent with the qualitative research paradigm of empathising and working with participants, which assumes that progress can be made through consensus (Bulmer, 2008).

Initially the close relationship with the sustainability group within NHS Wiltshire PCT provided considerable organisational access and the potential to call on organisational resources. Following the restructure the 'home' of the research project was lost as the meeting of the sustainability group were wound down. It was no longer possible to conduct the project alongside these activities and there were fewer opportunities to draw on organisational resources. The organisational restructure was unanticipated and adapting to changes in the research context required significant modification of the strategy of inquiry. Research methods were selected and adapted to be appropriate to the organisational research context (Buchanan and Bryman, 2009).

Already busy health professionals were further stretched by the organisational transition. The research objectives and research audience shifted from a focus on the PCT to a more general audience and the incoming CCGs. The mixed methods strategy of inquiry was selected so that research participation would be straightforward for participants, not require an ongoing commitment, while survey and interview techniques would be easy to explain to organisational partners and potential participants. The decision to focus on GPs in Wiltshire was both due to the perceived relevance of GPs both before and after the organisational restructure with the creation of CCGs and the relative continuity of their role.

The selection of research methods reflected the experience of the researcher and the outsider status of the research (Buchanan and Bryman, 2009). The researcher came to the project with an undergraduate degree in sociology and a master's degree in sustainability. This background led to framing the research problem in terms of organisational transition to more sustainable practices, while the decision to gather the attitudes and opinions of GPs through a survey and interviews reflected the social science background of the researcher. The researcher did not have previous experience in public health or healthcare and on beginning the project familiarised

himself with the developing literature on sustainable development in the NHS and the arguments connecting health, healthcare and sustainability.

Coming to the research without a health or NHS background meant that the research project was planned from an outsider, rather than an insider perspective. As an outsider to the NHS the research problem was initially investigated through the developing literature connecting sustainable development and healthcare and proposals for working towards a more sustainable NHS. This was the starting point, with research questions and methods selected to collect data to answer questions posed by this literature. An NHS insider would likely have understood the problem very differently, drawing on their own experience and particular knowledge to investigate sustainability in the NHS. An outside perspective however provided an opportunity to view the challenges the NHS faced and its opportunities without prior commitment to a particular structure or set of practices.

Preconceptions about the role of the NHS and the importance of sustainable development influenced the research objectives. The research project was approached from a centre left perspective, with full support for funding a universal service through taxation and accepting the prioritisation of resources towards health inequalities. Attitudes towards the delivery of NHS services by private and third sector providers were initially sceptical, but this position softened on further reflection in situations where this could enable improvements in service delivery. Sustainable development, with its critical assessment of current unsustainable patterns of development and the need to address pressing social, environmental and economic issues was strongly supported by the researcher. The research was therefore framed with the assumption that it was critical that the NHS become more sustainable and that a more sustainable NHS should continue to offer a universal and comprehensive health service. A sceptic of publicly funded universal healthcare or the need to address sustainability issues may well have developed an entirely different research agenda.

6.2.3 Shared research process – ethics and piloting

The ethical review process benefitted the research by ensuring that key ethical issues were considered and attention was directed towards how best to manage these issues before research was conducted. Review provided oversight from experienced academics and the expertise of the R&D office. This improved the quality of the research and ensured that the needs of participants were considered, but significantly influenced the research in other ways. The IRAS application focused on clinical research and putting forward social research in the terms that the IRAS system required was occasionally challenging. Preparing an application for more open ended

research, or research with an action research element would have been difficult within the institutional review process. This further steered the data collection methods towards conventional data collection methods of survey and interviews which were straightforward to explain and justify through the IRAS system. Lincoln and Tierney (Lincoln and Tierney, 2004) note some of the challenges of gaining approval for research through institutional review boards and that institutional review boards encourage research take on conventional forms.

NHS R&D and ethics processes ensure that research conducted in the NHS is subject to scrutiny, but also have the effect of eliminating spontaneity and development of the research process. This compromise in flexibility is noted by Buchanan and Bryman (2009). For instance materials given to research participants were locked to a version number and could not be changed without the permission of the R&D office. If it had been possible to easily amend process and materials it may have been possible to take steps to increase recruitment at a later stage, such as producing advertising materials and taking steps to ensure that these materials were more widely seen. The NHS R&D board itself was very helpful throughout the whole process.

A near final survey was piloted with four participants who had a similar background to the intended audience, while the initial two interviews were conducted as pilots. Pilots provided insights and refinements to both research instruments. The survey pilots generated data on the extent that items were understood, while the data was checked to see if responses were appropriate and consistent. Feedback was also received on the layout and usability of the survey. The piloting process provided an outside look at the survey from a perspective close to that of the target population. The recommendations from this group contributed to improving the quality and accessibility of the survey. It was not possible to make every suggested change, but all changes were considered. Pilots reported that the 20 minute completion estimate was realistic and in line with their experience of completing the survey.

The interview pilot process consisted of two interviews, in which data was collected, with GP participants who were previously known to the researcher. This enabled valid data to be gathered while also developing interview skills and ensuring that topics, timings and interview techniques were appropriate for the interviews. The pilots confirmed the potential of semi-structured interviews to generate appropriate data. The pilot interviews also allowed the recording and transcribing process to be tested and an initial analysis of the transcripts to confirm the suitability of the data to the research question.

6.3 Survey

The survey addressed attitudes towards sustainability in the NHS, measuring these attitudes primarily using Likert type items. As an exploratory survey the survey used single indicators to measure and provide an indication of attitudes towards sustainability in the NHS, links between sustainability and health and factors that could facilitate or inhibit engagement with sustainability. The survey does contribute valid new knowledge, but the strengths and limitations of the data must be considered.

Surveys measure specified attitudes, but do not give a complete picture around those attitudes. For instance the response to item 12g indicates that the majority of participants agreed that the environmental impact of the NHS was inconsistent with the values of the health profession. However this does not tell us how strongly this was felt by those who agree or provide any context with which to interpret this data. This was one reason for the selection of a mixed methods strategy of inquiry. It was hoped that mixed methods would produce a fuller picture of attitudes towards sustainability.

Although items measured specific concepts that exact interpretation of these concepts is not always clear. For example item 12h asks participants to agree or disagree with the statement that there is 'clear leadership taking sustainability forward in the NHS' which is a measure of perceptions of leadership rather than the actual presence of leadership and which depends on how different participants view and define 'leadership'. The decision to use these general, self-reported measures of perceptions, reflected the challenge of conducting an exploratory survey of a complex and challenging topic. Any discussion of findings must acknowledge these limitations and the need for further research to expand on this initial work. The decision to focus the survey on producing 'indicative' findings on a wide range of concepts rather than very precise measurement of a narrower range of topics was based on the need to improve understanding of this research problem before conducting more focused research.

How items were presented and their content was also potentially problematic in some cases. Item 6a attempted to use similar language to that in the literature, but on reflection the examples given in the item could lead responses. The balance between providing information and leading responses was difficult, with items 7 and 8 similarly trying to provide sufficient information for participants, but at the risk of priming participants to respond in a particular direction.

There are reasons to suppose that the survey data was valid. As noted best practice was observed when writing the items and items were checked for face validity. The majority of items produced a range of responses, suggesting that items were discriminating survey participants with different attitudes as intended (de Vaus, 2002).

Items 9a, 9b and 9c had a majority of participants indicating low levels of awareness of sustainability documents, suggesting that participants were answering survey items honestly. Survey responses to items were broadly consistent with the qualitative responses and the later interview data.

6.3.1 Response rate and recruitment

Thirty four valid questionnaires, out of a total population of two hundred and forty, were received giving a response rate of 14%. Burns et al. (2008) suggest that response rates of 70% are appropriate for external validity. The low response rate is problematic in that it increases the risk of sample bias where responders are not typical of the population (de Vaus, 2002) and means that survey results cannot be generalised to the population. However low response rates were anticipated and planned for as covered in the literature review, as GPs are a challenging group to recruit into research studies, with McAvoy and Kaner (1996) noting low participation in surveys and Creavin and colleagues (2011) review of postal surveys of GPs finding an average response rate of 61%. Young and colleagues (2014) suggest that response rates with GPs are declining, with response rates of lower than 30% common among GPs. Young and colleagues own study looking at the effectiveness of incentives in increasing response rates illustrates the challenges of gaining a high response among GPs, with a 7% response rate in the control group without incentives, with response rates of 11% and 15% for groups that received conditional and unconditional incentives.

In addition to the challenges of recruiting GPs stated above the survey and interviews took place during a time of organisational upheaval where GPs may have had more demands on their time than usual. The topic of sustainability was likely to be a further barrier to a high response rate. As noted in the background and literature review sustainability in the NHS is an emerging agenda requiring that decisions be made now in order to achieve medium and long term benefits. Given this it is likely that current levels of participation in sustainability activities are low and the sustainability may not be perceived as a salient issue; both key factors in research participation (Barclay *et al.*, 2002; Pit, Vo and Pyakurel, 2014). Templeton and colleagues suggests that non-response can indicate low participation in the activity being surveyed. Comparable surveys looking at sustainability in the NHS reported low response rates, further suggesting the topic itself may be a barrier to participation. The Environment Council's 2008 evaluation of the good corporate citizenship model utilised phone interviews and an online survey and recorded a 14% response rate (43/317 invited organisations) (Environment Council, 2008).

The low response rate was anticipated and the choice of research questions and methods accommodated this. The research questions and objectives were to explore and better understand the attitudes of GPs towards a more sustainable NHS. A research strategy to confirm a particular hypothesis or to generalise from a sample would have been unachievable given the likelihood of a low response rate. Further the mixed methods strategy with the use of two different methods over two phases of collection providing two sampling opportunities and the chance to develop and improve the sampling process. This would increase participation, as well as extending and expanding the data collection. Survey and interviews were flexible research methods that could fit around the needs of participants in order to maximise participation. In contrast data collection methods which placed a high burden on participants, requiring extended commitment or travelling to and attending an event at a set time and location were not chosen. These could have provided barriers to participation and in the case of a group event, low recruitment could have led to no data being collected at all putting the research at risk. Although non-response bias is a factor Cockburn and colleague's (1988) study of Australian GPs found few significant attitudinal differences among respondents and non-respondents and a comparable UK study found some evidence of non-response bias but that surveys with a low response rate were still valid (Templeton *et al.*, 1997). Barclay and colleagues' study of GP survey respondents (2002) suggest that the only significant predictors of response in UK GPs are graduation from a UK institution and membership of the RCGP.

6.3.2 Recruitment process

Survey recruitment was challenging and likely contributed to the low response rate. Ideally recruitment would have been co-ordinated by the researcher, with control over the recruitment materials and presentation of the research. Direct contact details would also have enabled low recruitment numbers to be boosted through alternative contact methods such as post or phone calls. Contacts within the CCG provided an introduction and contact information for 67 GP practice managers who covered a total 57 practices or management groups in Wiltshire. This created an additional layer of gatekeepers who had to be contacted to recruit the GPs that worked in their practices. Of the 57 distinct GP practice managers contacted 42 practice managers agreed to pass on the survey, 6 refused and 9 did not respond. Some practice managers were too busy to take part while other reported that they did not pass on research requests to GPs to protect their time. The initial response by the practice managers, who operated as gatekeepers was therefore 73.7%. Practice managers who were willing to assist in recruitment reported the number of GPs that the survey was forwarded to as 240.

Practice managers were essential to distributing the survey and very helpful, however they were themselves very busy and the survey was not their priority. Final control over the presentation and timing of emails was lost, while having no direct contact with participants precluded personalisation of emails. Busy gatekeepers were unable to respond to every request from the research team therefore the multiple invitations intended to be sent to all members of the sample were not received by all members of the sample, however each member of the sample received at least one survey invitation.

The low response rate was not ideal, but given the established difficulty of recruiting GPs, the NHS reorganisation and the challenges of the recruitment process it is to be expected. The low response rates themselves are of interest, suggesting that sustainability may be perceived as a low salience issue by GPs in Wiltshire. A survey addressing what was perceived as a more current or pressing issue may have garnered a strong response. Further the challenge of distributing the survey through an additional layer of gatekeepers is also notable and suggests further research should recruit directly.

6.4 Interview

The interviews addressed the question of how GPs understood sustainability in the NHS, their process of making sense of a more sustainable NHS and the factors that influenced their engagement with sustainability. In contrast to the survey the semi-structured interviews allowed GPs to interpret topics themselves, to shape the conversation and provide nuanced responses with qualifications, detail and explanation. Additionally interviews were social and reflective spaces where the presence and conduct of the researcher and participant formed the data. This reflection considers the ways that this social process formed the data and the interpretation of the data.

A total of seven interviews were conducted. This was sufficient to gather a range of opinions and to thematically analyse transcripts and see patterns emerge over the data set. A greater number of interviews may have allowed for more themes to arise, or confirmation that the interview set was complete and the themes exhausted.

The interview process and transcription and analysis was dependent on the judgment and conduct of the researcher, with data generated in collaboration between researcher and participant. During interviews the context and presentation of the researcher influenced the data, in that participants were aware that audio was being recorded and they were put in the somewhat unnatural position of being asked to provide comment on issues that they may or may not have previously considered. The

status and perception of the researcher as an outsider with an interest in sustainability appeared to influence the interviews. The interviews topics required the researcher to pass on information relating to sustainability in the NHS, while participants would direct questions at the researcher about his views and opinions. This dynamic may have suggested a pro-sustainability orientation on the part of the researcher and the influence on the data will need to be taken into account. During interview the 'outsider' status of the researcher was also used to prompt further reflection and explanation from participants in order to make requests for more information natural and conversational rather than interrogatory.

Interviews operated as reflective spaces between interviewer and participant. This is consistent with insights from the critical realist position which underpins the research and Bryman's (1988) claim that qualitative interviews are suited to symbolic interactionism, a linked concept to Stacey's complex responsive processes description of organising (2007). The interview provides a reflective space in which the social interaction between interviewer and interviewee can approximate how participants might enact their engagement with sustainability, although the extent of this approximation is likely to be limited.

Surprising and unexpected data was generated during interviews. Findings such as the identification of sustainability with the viability of the NHS or the focus on patient resilience were not anticipated. The qualitative data allowed participants to provide context for their attitudes, present explanations and provide compelling stories and anecdotes to support their points. Data was therefore much more nuanced and rich, with probes during interviews allowing for more clarification over compelling points. Personal interactions, particularly visiting participants also provided a sense of place and role that informed the interpretation of data.

Data were analysed thematically which enabled a look across the data and themes to incorporate the views of multiple participants. This was both a rigorous process of reading across the data and interpreting codes and produced insights into the research questions that were not anticipated. However this also ran the risk of presenting a homogenised account of a diverse data set and some of the insights arising from individual transcripts, anecdotes and narratives could be lost.

As noted during the methods chapter the reliability and validity of qualitative data can be understood as the extent that the research is trustworthy and credible (Guba and Lincoln, 1994). The researcher is central to the generation of data through interviews influencing participants, the interview process, and subsequent interpretation of the data (Roulston and Lewis, 2003). The researcher sets the research questions, devises

an interview topic guide, specifies and recruits interview participants and then convenes and conducts a conversation with this interviewee. The interview is recorded, transcribed and made sense of by the researcher. As with the survey the phrasing and delivery of questions influences the response of participants and interviewers must be clear and unambiguous in meaning (Roulston and Lewis, 2003). Data collection and analysis must take account of researcher and participants effects, with steps taken to minimise these impacts where possible and carefully document them when reporting findings to try and ensure that the findings are as valid as possible.

The interviews were planned to access the world views and understandings of participants, however it must be remembered that a qualitative research interview is an artificial construct which actively generates data, rather than merely collecting data. The structure of the interview, the relationship between interviewer and interviewee and the strong focus applied to a particular topic all serve to create the interview and ensuing data (Miller and Glassner, 2004). Interviewees are active participants in the construction of data in a structured and purposive context (Holstein and Gubrium, 2004) while the data analysis creates meaning through intense scrutiny and the process of assigning meaning and grouping together similar themes (Miller and Glassner, 2004). Research interviews also draw on and encourage the construction of narratives around the topics discussed (Miller and Glassner, 2004).

This does not invalidate interview data, but is a reminder that all data produced through the interview process must be treated carefully, with due regard given to how the process influences findings. Although the objective of the interviews is to access the worldviews and understandings of participants any discussion of the data must take into account the extent to which the data and conclusions drawn from it do not perfectly represent the world views of participants.

6.5 Mixed methods

The mixed methods strategy of inquiry facilitated the collection of data, by enabling the research to draw on qualitative and quantitative research paradigms flexibly, to use the most appropriate methods to the organisation and research problem. However the use of mixed methods did have drawbacks in terms of additional workload and combining data generated using different methods.

Data collection methods blurred paradigm boundaries. The online survey was not designed to prove or disprove hypotheses derived from the literature, only to gather data that would indicate how attitudes among GPs were supportive of key points from the developing literature or where they diverged. Similarly the qualitative interviews were both an exploration of the world views of participants, but by covering and

expanding on the topic areas addressed in the survey they could be used to support or undermine findings from the survey. In this sense the qualitative research overlapped with the quantitative tradition of supporting propositions or contradicting them.

Research objectives took the potential low response rate into account by positioning the research in the qualitative paradigm of exploratory research, rather than the quantitative paradigm focusing on confirming a set of hypotheses. A survey with the objective of confirming an existing hypothesis would be unlikely to succeed, given the expected low response rate. An exploratory survey, focused on describing attitudes and better understanding the population, was a better fit to this research context.

Exclusively adhering to a single paradigm would have limited the areas that the research could address, as well as the potential to combine methods to address different research questions and strengthen research findings. Mixed methods research provides an opportunity to loosen the restriction of strict adherence to a single paradigm, both in terms of utilising research methods from opposing paradigms and acknowledging the benefits of each paradigm and incorporating insights from these paradigms into different research methods. The flexibility afforded by mixed methods meant that the research tools could be used creatively and boundaries between quantitative and qualitative methods broken down. This was appropriate to problem solving research, where research questions are privileged above adherence to a particular methodological orthodoxy. The use of multiple research methods to best understand complex real world problems is advocated by O'Leary (2005), with methods selected according to the research questions. Privileging the research question is also consistent with the pragmatic tradition, as described by Creswell and Plano Clark (2007), which accepts combinations of quantitative and qualitative methods based on their ability to address the research questions.

The flexibility offered by the mixed methods approach facilitated the close fit between research questions, research context and research methods. The two phase research process also allowed for the research to adapt to unpredictability, for example if the survey revealed something entirely unexpected or if there were unexpected barriers to the research taking place the second phase of the research could adapt to these challenges. A sequential mixed methods approach was therefore suited to the organisational context, able to revise and adapt recruitment and research methods based on the experience of conducting the survey.

The initial survey was primarily informed by the researcher perspective while the qualitative interviews were conducted to elicit the participant perspective, corresponding to the account of qualitative and quantitative research given by Bryman

(1988). Combining the two provides a fuller picture of the topic than research conducted within a single paradigm. Multiple research methods provide different viewpoints on the same problem, revealing different aspects of that problem consistent with the relativist epistemological position discussed in them methods chapter

The mixed methods approach increased the workload considerably. Two research phases required two ethics applications, two recruitment stages, the development of two research instruments and preparation for data collection and analysis in two separate research traditions. Beyond the doubling of work there is also additional complexity in terms of integrating these two research phases, ensuring that initial findings contribute to the second phase and integrating the data in the discussion. Handling and working with quantitative and qualitative data requires knowledge of the analysis techniques for both data types and the nVivo and SPSS computer programs. The integration and discussion of findings is a challenge in terms of managing the different data types as well as explaining potential discrepancies or differences between the data.

6.6 Limitations

Alongside the discussion of the contribution of the new knowledge generated by the research project it is also necessary to consider some of the limitations of the project. The earlier reflection on research methods covered many of these weaknesses.

Both survey and interview recruited small samples of GPs and as such the findings cannot be generalised to all GPs in Wiltshire nor can response bias be ruled out. Furthermore, although working towards a more sustainable NHS is a vast research topic this research project focused on GPs in Wiltshire. This was necessary to ensure that the research project was manageable, but does require us to consider that research projects looking at other aspects of sustainability would produce different findings. In addition the research project focused on better understanding the problem of working towards a more sustainable NHS, rather than identifying potential solutions or ways forward. This was necessary given the current state of knowledge, but does mean that the research did not confirm a particular set of hypotheses or beliefs about sustainability in the NHS. Rather the research served to suggest differences between the literature and understanding of GPs and prompt future research.

Both survey and interviews focused on attitudes and perceptions of GPs in Wiltshire, rather than observing actual behaviour. The extent that the behaviours expressed are indicative of wider issues that participants described is unknown, as is the extent that attitudes and perceptions influenced behaviour.

6.7 Strengths

Granting the above limitations the research did extend and expand knowledge of the gaps between the developing literature on sustainable development and the NHS and the attitudes and beliefs of GPs. New data on how GPs made sense of sustainability and the factors that influenced their engagement with sustainability contributed to understanding the research problem and potential ways forward. The mixed methods approach allowed for the survey research instrument to reflect the literature while interviews allowed for participants to reflect and express their own world views. Further a particular strength of the interviews was the extent they allowed separate participants to present diverse viewpoints about key sustainability issues, providing a reminder of the complexity of working towards a more sustainable NHS.

6.8 Summary of key findings

The survey and interviews produced a range of findings relevant to the research problem, that addressed the research questions, provided new information on the attitudes of GPs in Wiltshire towards sustainability and expanded on the literature review. These findings are summarised below, centring on the most significant and original contributions of the data.

6.8.1 Survey

The survey findings indicated that many of the sample agreed that the NHS should lead on sustainability, that there were key connections between sustainability and health and overall that working towards a more sustainable NHS would have positive impacts on the NHS. However different aspects of sustainability were not evenly supported, with mixed support for proposals such as GPs taking into account the environmental impacts of their decisions and being monitored on their environmental impacts. Further responses indicated an extensive number of barriers to working towards a more sustainable NHS.

6.8.1.1 Attitudes of GPs in Wiltshire towards the broad claims made in the developing literature

Attitudes towards sustainability and health were mixed and did not show universal support for claims made in the literature. 57% agreed that climate change was a major threat to public health, with 7% disagreeing and the rest neutral. Attitudes towards long term health issues and causal links with environmental factors and the potential role of settings were similar, with sizable minorities neutral or disagreeing with these connections. Data suggested that links between local health and sustainability were accepted, with indirect impacts considered more significant and greater predicted from future impacts. The claim that demand for health services could be reduced through a

more sustainable local community was not supported by a majority, which could indicate that the 'virtuous circle' (Coote, 2002) where sustainability is part of demand management was not supported by the sample.

6.8.1.2 Support for a more sustainable NHS

A majority of survey responses to broad questions about a more sustainable NHS indicated support for statements such as the NHS leading the public on sustainability, the need to reduce impacts and high levels of impact being inconsistent with NHS values of the health profession. The survey indicated that there were perceived advantages to a more sustainable NHS, with the majority suggesting this would have a positive impact on the NHS. Claims made in the literature such as sustainability leading to improvements in healthcare (Mortimer, 2010; SDU, 2014c; Thomas and Cosford, 2010) were supported by some participants, although not a majority. Advantages mentioned by participants included reduction in waste and health improvement opportunities, including those associated with sustainable communities (Barton, Grant and Guise, 2010). Data also indicated that sustainability was linked to improvement in the delivery of care, including more patient centred care, care closer to home, use of technology and long term benefits.

6.8.1.3 Sustainability activities

Beyond the broad support for a more sustainable NHS reported above individual survey items attempted to measure attitudes towards specific sustainability activities. A number of sustainability activities were supported by the majority of respondents. This included reducing low value activities, working with social care, investing in services that managed demand and addressing the systemic causes of ill health. Commissioning and designing lower impact models of care, promoting self-care, and adopting more sustainable ways of working were also supported by a majority. Support was far more mixed, with some disagreement, for activities that suggested GPs would be asked to model more sustainable behaviours, be well informed advocates or utilise NHS resources on issues such as health which would have joint health and sustainability benefits. Further suggestions that GPs be asked to consider environmental impacts with individual patients, that GPs be monitored and assessed on their environmental impacts and lead contentious decisions had mixed responses.

These responses indicate that there is not blanket support for a more sustainable NHS, with preferences in how the NHS should work towards more sustainable care. Some of these activities, like environmental impact, were critical to meeting sustainability targets and transforming the delivery of care and low levels of support for them need to be carefully considered.

6.8.1.4 Significant barriers indicated by the data

Survey data also suggested clear barriers to engagement with sustainability. Data indicated that much of the sample perceived a lack of leadership, were uncertain over what NHS would mean for their role, had not had the case for sustainability clearly presented and had few peer examples of sustainable practices to draw on. Few respondents reported involvement in sustainability activities in the past two years. Resources, low levels of support and few incentives were all mentioned as barriers.

Further a number of participants indicated that sustainability was not very relevant to their day to day activities, could involve additional work and could involve challenging decisions. Qualitative responses indicated a number of significant barriers. These included resource barriers, competing priorities and lack of time. External barriers such as leadership and financial costs were also cited. The relevance of sustainability to GPs was also contested, with it being remote and outside the job of a GP. Press and political criticism were mentioned. Other data showed mixed support and reservations about working towards a more sustainable NHS. Responses were divided about whether sustainability would involve compromises in care.

Data indicated a number of disadvantages associated with sustainability, in contrast to the case for a more sustainable NHS covered in the literature review. Concerns about patient relationships included lecturing patients during consultations and the lack of time in consultations to cover sustainability. There were reservations about the effectiveness of behaviour change with many patients disinterested. Political and infrastructure barriers were also raised. Participants mentioned potential facilitators such as clear, credible evidence and guidance. Leadership was again mentioned as well the need for broader support from the public.

6.8.2 Interview findings

The interview findings were similar to the survey findings, in that they suggested that much of the literature on working towards a more sustainable NHS was relevant to the GPs in the interview sample. However interview data also showed many cases where views diverged from those in the literature, as well the presence of significant barriers to engagement with sustainability. Interview data formed six broad themes within which there was a considerable range of views. Interview data was more involved than the survey data, with explanations of processes, examples and nuance. Views were frequently nuanced and qualified. For example support for considering the environmental impact of treatment decisions would be accompanied with a discussion of the implications of this for patients.

The summary below concentrates on where the findings addressed the research question and objectives and where data illustrated how GPs made sense of a more sustainable NHS.

6.8.3 Sustainability understandings

In contrast to the unidimensional survey data, interview data provided a richer description of how participants understood sustainability. Consistent with the literature sustainability was described in terms of environmental, economic and social impact (NHS SDU, 2011b). Sustainability was associated with the long term, resource scarcity, viability and fairness. When talking about sustainability and the NHS, participants drew on the sustainability concept to talk about the long term viability of the NHS, and in this way used sustainability to talk about the transformational change of how the NHS delivered care and the challenges faced by the NHS.

One participant described their relationship with sustainability as 'embryonic' and developing. This described the variation in priority and importance attached to sustainability among the interviewees and their levels of engagement with sustainability. Although the intellectual importance of sustainability was understood the extent that this was a priority for participants was mitigated by a number of factors such as the competing priorities, the complexity of cause and effect related to sustainability and the global nature of the problem leading to diffuse responsibility. For some participants sustainability was a prime concern, whereas for other sustainability was at the back of their minds or of low interest.

6.8.3.1 Sustainability and health

Similarly the broad connections between sustainability and health posited in the literature, in terms of global risks to health and security, local issues such as air quality and the connections between sustainable and healthy lifestyle and settings were understood. The priority and importance attached to these issues depended on a range of mitigating beliefs, such as the extent that local patients were likely to be impacted, the global nature of sustainability issues and the likelihood that individual actions would make a difference. The complex causal pathway between sustainability and health impacts was acknowledged, as well as the extent that this could contribute to demand.

6.8.3.2 Sustainability and the NHS

The high impact of the NHS and the need to reduce this impact was understood by participants, however again there were a range of opinions around this. Some participants agreed that the NHS needed to take steps to deliver care sustainably and that this was consistent with the duty to protect health and do no harm. In contrast other participants suggested that healthcare was a relatively good use of resources,

with healthcare a high priority for many individuals. The extent that sustainability should be integrated into clinical decisions was nuanced, with agreement that safety, quality and benefit for patients was central to these decisions. However there was also the acknowledgment, from some GPs, about the wider duty of care and best use of resources also being factored in.

The case for a more sustainable NHS was articulated in terms of compatibility between sustainability objectives and NHS objectives, as in financial savings and quality. A strong case emerged in terms of the viability of the NHS, with the connection between longevity and continued operation in the sustainability concept made in regard to the NHS. The challenges of growing demand and making best use of limited resources that the NHS faced in terms of population and funding were consistent with sustainability challenges with similar needs for radical transformation in the delivery of healthcare. The link between broader, long term, objectives and working towards more sustainable practices emerged from multiple interviews.

6.8.4 Sustainable model of care

The account of care produced during interviews was consistent with that put forward in the literature. Secondary care in particular was criticised for over-investigation, overtreatment, the medicalisation of patients and conditions and on occasion causing harm to patients. Interview data suggested a model of care that was, where appropriate, outside of secondary care with care delivered closer to home and orientated around primary care. Secondary care was not devalued, but was reserved for where it was needed most. This was consistent with the clinical model put forward by the SDU (2014c)

Primary care was described as both more suited to patient needs, better placed to manage demand and consistent with more sustainable care. Aspects of primary care such as the long term relationship with patients and a referral and treatment decisions focusing on patient needs, rather than conditions, were suggested as more appropriate use of health resources. Similarly the early engagement with patients and risk management in primary care which often involved watching and waiting rather than intervention were described as usually preferable to intensive investigation. Health beliefs that took into account the wider determinants of health and the resilience of patients, with one participant noting that many things improved on their own and there was usually time to ensure that patients got the care they needed.

The wider duty of care was raised in relation to sustainability in terms of responsibility for environmental and social impacts of decisions and in terms of stewardship of the health system. These aims were consistent in terms of ensuring the viability of the NHS

and responsibility for ensuring that limited resources were used wisely. The balance of population needs and individual needs and short and long term was acknowledged, but was very complex and nuanced. Descriptions included considering the waiting room while dealing with individual patients and ensuring that resources would be available for those in most need. This view was contrasted with the duty of GPs to individual patients, acknowledgment of the intense nature of consultation and the desire of GPs to do the best for individual patients. The need to focus on individuals was put forward by some participants with the need to consider the greatest good articulated by others. Again this appeared to be 'embryonic', without consensus on what the wider duty of care was and applied informally and carefully by participants.

Interview data was supportive of a more sustainable model of care structured around primary care. In particular the need to move away from a paternalistic relationship with patients to enabling patients to better manage their own health, to draw on community resources and practice self-care was recognised in the data. This was a response to growing demand, patient expectations and concerns about the viability of the NHS in the long term. This more sustainable model of care appeared to be modelled on sufficiency over efficiency, discussing what patients needed to meet their health needs and the aspects of demand that the health service was not equipped to meet.

The role of primary care in this more sustainable model of care has the potential to be significant. However there were reservations about the availability of resources to invest in primary care to enable stronger relationships with patients, time to care for individual needs and to better manage patient needs. Time to care for patients was essential to deliver the low impact, resilient services described above. Participants described the need to spend more time with patients to meet their needs without providing a prescription or referral. This practice was described as 'collusion' by one participant, when what was needed was an honest discussion about the wellbeing of patients and the benefits and risks of treatment options. It was noted that patient needs and patient requests were not equivalent. Further investment in primary care was necessary to ensure that people could be managed in primary care and that continuity of care could be maintained.

The more sustainable model of care proposed in the literature was consistent with concerns raised during the interviews. Sustainability was described as consistent with quality improvement (Thomas and Cosford, 2010), delivering care closer to home and an account of care that was both patient centred and recognised the limitations of care (SDU, 2014c). Examples of this included ensuring that care was suited to the aging population, care closer to home suited to rural locations, ensuring that patient needs

were carefully taken into account and medicalisation and overtreatment avoided. The example of medicalised death in secondary care was given, with the alternative that more patients would prefer less medicalised deaths.

Interview data indicated that support for a more sustainable NHS was not entirely consistent with the literature which emphasised the need for the NHS to lead on sustainability (Haines and Dora, 2012; Harvey, 2011; Roberts and Stott, 2010) and consider environmental impacts of decisions (Mackenzie, 2011; Pencheon, 2009a). Quality, safety and the needs of individuals were regularly cited as the most important aspects of delivering care. Although there was support for a more sustainable model of care some participants suggested that the NHS was a better use of limited resources than some other areas of the economy. Some aspects of delivering care were likely to remain high impact according to some participants and it was appropriate to use resources for this. Although the wider duty of care was acknowledged, the extent that environmental impact should be taken into account when considering the needs of individual patients was limited, although there were discussions over the extent that disposable instruments provided enough benefit to offset their increased impacts.

Further proposals for a more sustainable NHS in the literature were challenged during some interviews. The extent that advocacy and involvement in sustainability was appropriate was questioned, with questions over the extent that this was appropriate. Suggesting sustainable options in consultations was perhaps inappropriate with patients not visiting healthcare professionals for this kind of advice. Although behaviour change offered opportunities for health improvement there were many barriers in terms of local infrastructure and context, the capacity of individuals to change behaviour and the need for sensitivity.

6.8.5 Demand

Interview data suggested that current levels of demand were unmanageable and increasing, with an expectation of huge growth in demand driven by an aging population, technology and increasing expectations. Managing this demand was critical to the viability of the health service. Demand was not simply a product of health need, but described in terms of patient and community resilience, psychological factors and expectations about the immediacy of the benefits of care. Supply was important in increasing demand, in terms of over-investigation and overtreatment as well as 'collusion' between health professionals who would facilitate the demand of patients for further referrals rather than focusing on resilience and the need to limit some forms of care.

The picture of demand was complicated, with management of demand about far more than health improvement but requiring addressing patient expectations, resilience and supply driven demand. Health improvement could manage demand, but could also shift demand to other conditions. Managing demand appeared to require increasing investment in patient relationships, resilience and dialogue about the limitations of healthcare.

6.8.6 Barriers to engagement with sustainability

The data also suggested significant barriers to engagement with sustainability. Although sustainability was understood as an important objective its relevance to individuals and local situations were contested and the extent that sustainability objectives were achievable was unclear. There were clear organisational barriers in terms of leadership, the capacity to take a long term view and few incentives to engage with sustainability. Participants who had attempted some sustainability activities noted financial disincentives, competing priorities and the challenge of getting colleagues on board. Further the long term strategic view required to engage with sustainability, where short term disbenefits were balanced by thinking about the population in the long term was not supported by an organisation focused on the day to day. The political and media scrutiny faced by the NHS, where criticism was often driven by particular incidents rather than considering the big picture or mitigating factors was also noted. Public opinion and expectations of the NHS was also not viewed as conducive to engagement with sustainability. The lack of funds for investment was also a factor.

A number of facilitators and potential facilitators were identified. The broad arguments for a more sustainable NHS were compelling, as was the connection to the long term viability of the NHS. Interview data indicated that participants understood the challenges that the NHS faced and the need for reform. Austerity and the creation of CCGs provided some impetus for this restructure, with the knowledge that care would need to be delivered outside of secondary care for both clinical and financial reasons. Participants were able to draw on their prior experience and related this to sustainability, whether this was management experience, experience in developing countries or their day to day activities as GPs. Provision of evidence, better information through NICE and opportunities to be more sustainable were considered sympathetically by participants.

6.9 Discussion

The literature review and findings, considered together, provide insights into the problem of working towards a more sustainable NHS. In particular how sustainability is understood by the GPs in Wiltshire who participated in the research and the extent that

the ideas put forward in the literature resonate with this sample. The project aids our understanding of how GPs in Wiltshire understand the challenges facing the NHS, what they view as key sustainability issues and how compelling they find the arguments for a more sustainable NHS. The data provides insights into the factors that provide a barrier to engagement with sustainability and those that facilitate this engagement. The data furthers understanding of the proposals for a more sustainable NHS made in the developing literature.

6.9.1 Wicked problem

Working towards a more sustainable NHS was described as a wicked problem in the introductory chapter. The literature review and data supported this initial suggestion. The complexity of sustainability and divergence of views among the two samples of GPs in Wiltshire was consistent with the account of complex wicked problems (Conklin, 2008; Head, 2008). The data indicated that working towards a more sustainable NHS was a problem with many parts, with GP participants stressing the importance of stakeholders such as the public, service users, other healthcare professionals and politicians. The multiple understandings of how the NHS could work towards more sustainable practices and the factors that would influence the engagement of GPs further strengthen the case for working towards a more sustainable NHS qualifying as a wicked problem. These will be discussed further below.

Understanding that working towards a more sustainable NHS is a wicked problem is necessary to engage with the problem appropriately. The developing literature on sustainability and the NHS provides a compelling, rational case for engaging with sustainability. Working towards a more sustainable NHS is consistent with protecting health, addressing organisational challenges and the viability of the NHS and there is a broad vision of how the NHS will operate. Taking all of this at face value could suggest that a more sustainable NHS is relatively certain, as rational actors respond appropriately to this compelling case. Emphasising the complexity of working towards a more sustainable NHS and the diversity of views, stakeholders and barriers suggests that a more sustainable NHS can only be achieved through consistent engagement and investment of time and resources. Wicked problems require unique solutions appropriate to their local context and situation (Conklin, 2008), which necessitate building the capacity to engage and create solutions at the local level.

RP3: It's good to let them come up with priorities and say these are the problems, how are you going to solve them. Because you've got any problem a group for GPs will manage to solve it for you because they're bright people. But they just got to make sure... They've just got to understand that A. It's a problem and B. That it's something they can do something about.

6.9.2 Beliefs and mitigating factors

The literature review put forward the compelling case for a more sustainable NHS based on the long term risks to human health, close links between health and sustainability and the complementary objectives of a viable, efficient, effective and sustainable NHS. As noted above, the survey and interview data showed support for these arguments and support for a more sustainable NHS. However the data also suggested that sustainability, for many research participants, was not the highest priority. Support for a more sustainable NHS was mediated by complexity and nuance, with participants expressing a range of attitudes relevant to their engagement with sustainability.

In a wicked problem complexity, nuance and multiple interpretations are commonplace. This section discusses where the data indicated close agreement with the case for a more sustainable NHS and where the data suggested mitigating beliefs that would make engagement with sustainability more challenging. The nature of the case for a sustainable NHS, relying on professional values and long term outcomes is deliberated below.

Research data illustrated an apparent acceptance of the close connection between sustainable development and health and the importance of sustainable practices. Interview data showed sustainability understood in terms of reducing negative environmental impact and supporting the long term wellbeing of humanity and the connections between sustainability issues and health. Survey data indicated agreement by the majority of respondents that climate change was a threat to public health and impacted on local health and wellbeing. Both phases of data analysis indicated support for the NHS meeting challenging sustainability objectives. An interview participant described their engagement with sustainability as 'embryonic' and the notion of a developing response to sustainability issues, with the importance and priority attached to sustainability mediated and influenced by other factors. This provided an account of how attitudes towards sustainability were represented in the data. Some participants were very developed in their thinking towards sustainability, incorporating it in their day to day roles, while others had only briefly considered the impact of sustainability.

Interview data had participants acknowledging the importance of sustainability while stating that it was at the back of their mind or something that they were not personally engaged with and interested in. Survey data was similar, with many participants demonstrating clear support for the NHS taking a more sustainable role, leading the public sector and significant reduction in greenhouse gas emissions, while reporting

low levels of participation in sustainability activities. Open text survey items had participants stating the importance of sustainability objectives alongside suggestions that it was remote from them, or they had time to engage with it.

Data showed a number of mitigating beliefs that appeared to diminish commitment to sustainability in the NHS. Acknowledgement of the importance of sustainability was frequently qualified. Sustainability was understood to be a global issue and interview data indicated that some participants felt that this diminished the impact of their individual actions, particularly with the global growth in emissions and environmental impact. Although data did not show participants denying the existence of climate change or other sustainability impacts, the uncertainty relating to how these would be felt locally and the length of time before serious impacts would be felt diminished responsibility for sustainable behaviour. Other participants noted that Wiltshire had a pleasant natural environment which further made predictions of environmental damage seem remote from everyday life. Although not identical to the moral offsetting described in the literature review (Charlesworth *et al.*, 2012; Moynihan, 2012), the importance attached to delivering healthcare and meeting patient needs was described as justifying the utilisation of resources. Other data showed more supportive beliefs, emphasising connections between local health and sustainability issues such as air quality, the potential to connect extreme weather to climate change and the proper role of the NHS to address these.

6.9.3 Sustainable model of care

The literature review outlined a critical account of current healthcare practices and proposals about how a more sustainable NHS would operate. This model of care was described as transformational, in terms of changes in the priorities of the healthcare system, how care was delivered and a move to deliver care closer to patients. Beyond this, an active role for health professionals incorporating sustainability into their professional and everyday lives was proposed. Data collection was undertaken to learn more about the extent that these proposals were supported by the research sample and how participants made sense of these proposals.

6.9.4 Critical account of care

Interview data both supported the critical account of care in the literature review and indicated that those interviewed associated overtreatment, medicalisation and iatrogenic harm with secondary care. Although secondary care was described as necessary in some circumstances, interview participants suggested that as much care as possible should be delivered outside. Secondary care was associated with driving demand through over investigation and often viewing conditions ahead of the needs of

individuals. This account was reminiscent of the limits to healthcare proposed by Callahan (1998).

Interview discussions about sustainability and the NHS were connected to the long term viability of the NHS, which focused on rising demand and the capacity of the NHS to cope with this. This concern was complementary to the sustainability objectives of the NHS and among some participants was the main drive for change in the NHS.

6.9.5 Demand

Consistent with the literature review, interview data supported growing demand as one of the chief challenges faced by the NHS (Gray, 2010; Ham, Dixon and Brooke, 2012; Wanless and others, 2002), with participants suggesting that the long term viability of the NHS depended on managing demand. The critical account of healthcare went beyond the literature review to suggest that growth in demand was not just a consequence of demographic change, health needs, technology and patient expectation but driven by supply. Interview participants identified the structure and practice of defensive medicine, over-investigation and readiness to refer and prescribe as driving demand. The health service was described as paternalistic by a number of participants and failing to enable patients to be resilient and reduce their reliance on care.

RP7:...we have been colluding with the patient in the fact that they all need to be seen higher up the chain and they all need this and not teaching the patient to be resilient it... is a growing... agenda item now. And as we look to link health and social care in the future to try and increase the sustainability of both provisions this concept of people doing more and communities doing more and the aging population volunteering to help others...

Interview data suggested that demand was only partially a result of health needs, with patient expectations, wellbeing and psychological needs key, as well as the failure of health services to both provide the support that patients needed.

This account of demand contrasted with the account of demand in the literature review and the suggestion that demand could be managed primarily by improving population health. The 'virtuous circle' put forward by Coote (2004), which suggested demand may be addressed by the NHS contributing to a more sustainable local setting, did not account for this interpretation of demand. Survey data that asked if sustainable settings would reduce demand for the health service similarly showed relatively low agreement at 30%. The central role of the health service in encouraging demand and failing to

manage demand was consistent with the support for adopting more sustainable models of care described below.

6.9.6 Support for a sustainable model of care

The research findings indicated that alongside broad support for a more sustainable NHS there was particular support for care that met the needs of patients and addressed the viability and demand issues faced by the NHS. Some aspects of a more sustainable NHS proposed in the literature were less supported, with interview and survey data indicating that barriers such as increased workload, impracticality or conflict with the duty to individual patients. The following section explores the insights provided into adopting more sustainable models of care and how GPs in Wiltshire who participated in the research viewed their role.

6.9.6.1 Primary care orientated model of care

Data indicated support for a primary care orientated model of care, consistent with the proposals in the literature. The criticism of secondary care detailed above contrasted with the idea of primary care as providing a more sustainable service. Primary care was viewed as more sustainable in that risk was managed differently to secondary care, with greater reluctance to over-investigate or refer. Primary care tended to see patients earlier, to manage their conditions over the long term and take a holistic view of patients and their needs rather than focusing on a condition first. Primary care services were described as low tech and low impact, with less reliance on investigations and a reluctance to refer patients that would not need these services.

Primary care was not described as perfect and a more sustainable approach was described as contingent on increasing investment in primary care services to enable more conditions to be managed in primary care. Further delivering low impact care would require more time with patients to develop supportive relationships. Survey participants also indicated support for helping patients to manage conditions through behaviour change, although other data suggested that behaviour change was perceived to be difficult and challenging to accomplish. Prescription and referral were described by GPs as ways to please patients and to move them out of consultations, reflecting the use described by Howick and colleagues (2013) and meeting patient expectations. These findings were supported by the wider literature which suggested that patient satisfaction increased with healthcare utilisation (Fenton *et al.*, 2012). Interview data suggested that participants wished to practice care in a way that reduced over-diagnosis and overtreatment, but were restricted from doing so by not having sufficient time and resource to invest in patient relationships and building resilience. The type of personal and human care described here was reminiscent of the

'low tech, high-touch' approach suggested to manage complex conditions (Goodwin *et al.*, 2013, p.17).

6.9.7 Resilience and responsibility

Building patient relationships to manage conditions with fewer prescriptions and referrals was connected to support for increasing personal responsibility for health and individual and community resilience. Survey data indicated this through support for addressing the systemic causes of ill health while interview data included the stress on personal responsibility and empowering people to self-care and draw on individual and community resources. This was partially framed through discussion of health needs and acknowledging that many patients had wider wellbeing issues that were not being addressed by medical care. The turn away from paternalism to empowerment is reflected in the wider literature (1999). In addition the demand and viability observations above suggested that demand for services needed to be managed. Interview data contrasted personal responsibility with paternalism, the right to healthcare and patient expectations of immediacy. These concerns reflected documents such as the Wanless report (Wanless and others, 2002)

The support for increased personal responsibility and resilience has significant connotations for the future of the NHS. Personal responsibility was connected to the right and expectation of healthcare during some interviews, with the suggestion that responsibility should be emphasised. The commitment to free at the point of use healthcare is significant (Department of Health, 2013) and any move away from this would be controversial. Equally an emphasis on personal responsibility may be charged with neglecting the wider determinants of health, the capacity of individuals to exercise responsibility or jeopardising the relationship between service users and health professionals. The Fit for Future scenarios indicated a number of ways that personal responsibility could be incorporated into future publicly funded health services (Forum for the Future and NHS SDU, 2009).

Demand management therefore differs from the literature review by being supply orientated rather than mainly focused on health improvement. A lower impact health service is one that is sufficient for patient needs and takes into account the potential for over investigation, overtreatment and iatrogenic harm. As noted above, this requires engagement with patients to ensure that their needs are met and for resources to be invested in primary care and patient relationships.

6.9.8 Divergence

Other proposals for a more sustainable NHS made in the literature review were not so clearly supported. Survey and interview data contributed new information as to what

activities were supported and provided indications into the challenging aspects of these proposals. The literature review proposed that a more sustainable healthcare system would require health professionals taking environmental impacts into account and balancing their decisions (Mackenzie, 2011; Pencheon, 2009c) in terms of individuals and the wider population and short term and long term objectives. The data suggested that there was some support for these suggestions, connecting this notion of balance to the wider duty of care of GPs, however the principle of focusing on individual patients, the emotional connection to individual patients and the difficulty of how to achieve a balance was considerable.

6.9.9 Advocacy and behaviours

Advocacy and behaviour change were challenging for some participants. Survey data indicated mixed support for GPs modelling sustainable behaviour and advising patients on sustainable and healthy behaviour. Some participants did support this and indicated that they felt that GPs had a role of responsibility in the community. Other participants suggested that behaviour change was difficult, risked patient relationships and may not achieve the expected outcomes. There was uncertainty expressed by some interview participants about the politicisation of their roles and lecturing to patients.

6.9.10 Balance

The data was supportive of GPs taking a wider view of their decisions and suggested that this was part of the GP role in regards to making best use of NHS resources. Evidence based medicine and quality was one part of this, but also considerations of the wider population and public health. This concern also tied into the long term viability of the NHS and ensuring that services would be available in the future. Considering environmental impact was related to the 'do no harm' principle and this wider duty of care. Support however was qualified, with participants focused on quality, safety and patient benefit. The wider duty of care was balanced by the equally strong principle of caring for individual patients, with data indicating the emotional intensity of the consultation. Survey data was split on whether GPs should take environmental impact into account and some interview participants outright rejected the idea that they would take environmental consideration into account

RP6: It's only on a clinical basis, on a.. what the patient needs. Not what society needs...

Although data indicated sympathy to taking environmental impact into account, there were clear conflicts of principle with the duty felt to individual patients. The data reflected wider concerns about health professionals acting as 'double agents' (Shortell *et al.*, 1998), both focused on the needs of individual patients and the population.

Balance and taking environmental impact into account was also challenging for practical reasons, with little knowledge about the impacts of pharmaceuticals and care options reported in interview. This agenda was conflicted, with clear support for moving resources to take account of long term impacts and acknowledgement that the environmental impact of the NHS was inconsistent with the values of the health profession in survey and interview data.

6.9.11 Barriers and facilitators

As noted above, the data showed support for the broad case for a more sustainable NHS based on the connections between sustainability and health, the potential to improve the delivery of care and the need for a viable NHS. However the data indicated that there were significant barriers to engagement with sustainability.

RP3: I think you'd be pushing against an open door to be honest, I really do. Because it is so interlinked with improvement of health to a degree. I don't... I think the barriers will not be the conceptual, strategic view, it would be the operational delivery of it. That would be the hardest thing. I think.

The literature review included a discussion of the challenges of organisational change and specific factors that acted as facilitators and barriers to change. This section outlines what the data tells us about the factors that influence engagement with sustainability.

Data indicated that participants understood that the case for a more sustainable NHS relied primarily on long term benefits that would accrue to the whole population. The discussion of the wider duty of care indicated sympathy for this position, however there were factors that weakened this argument. The commitment to individual patients and maintaining patient relationships was important. Further there was uncertainty as to the extent of how the local population would be impacted and the responsibility for these impacts was unclear. The extent that individual decisions made by GPs in Wiltshire would have any impact on sustainability issues was doubted by some participants.

The data therefore indicated that the broad case could seem remote or not relevant to the day to day concerns and actions of the sample of GPs.

Hard to see the benefit on day-to-day basis; one project at a time. It's rather boring.

Long timescale for outcomes to be measurable.
(Survey responses to item 22)

Survey data indicated high levels of support for commissioning more sustainable models of care and lowering overall levels of activity, but more mixed support for taking environmental impact into account in individual decisions, being monitored and

assessed on environmental impact and leading contentious decisions. Broad support for a more sustainable NHS did not translate into support for every proposition put forward in the literature.

6.9.12 Beliefs and understandings related to sustainability

Data indicated that working towards a more sustainable NHS was understood to be challenging. Data indicated that disinvestment to fund other services was difficult, with an emotional attachment to buildings and services in the wider community. Putting new services in place first was seen as a way to address this. Support for some sustainability activities was demonstrated by the data. The majority of survey participants thought that GPs should choose more sustainable ways of working and commission more sustainable models of care, as well as taking steps to support the resilience of their local communities. However this support existed alongside the presence of significant barriers.

The barriers to change suggested in the literature review were present in much of the data. Perceptions of low levels of leadership, organisational engagement with sustainability, no incentives, competing priorities and insufficient resources to engage with sustainability indicated significant barriers. Participants mentioned financial disincentives and lack of interest from colleagues as barriers to making their practices more sustainable. Data suggested that the case for sustainability had not been communicated to many participants. The data indicated a perception that the wider context was not supportive of some aspects of a more sustainable NHS, noting the emotional attachment of the public to buildings, high patient expectations and the prospect of media and political criticism. The rational, long term case for a more sustainable NHS described above was open to criticism on emotive grounds or where individual decisions were disapproved of regardless of the broader justification.

Concerns about the future viability of the NHS were acknowledged as a facilitator of engagement with sustainability. The expectation of long term austerity and GP responsibility for commissioning were also noted as providing an additional driver to move care outside of expensive hospital settings. Potential facilitators included establishing new services before disinvestment in other services, however financial austerity made that challenging. These potential facilitators, however, would require addressing the barriers of a lack of leadership, clear communication and provision of resources.

6.10 Conclusions

The extent that the research questions were addressed by the research project and a series of practical and organisational recommendations follow in the conclusions chapter.

7 Conclusions

The thesis began with the assertion that the NHS was not sustainable, in terms of its environmental impact or in terms of continuing to provide comprehensive care given increases in demand. Working towards a more sustainable NHS was described as a way to address these challenges by transforming how care is delivered. The challenge of transitioning to a more sustainable NHS was characterised as a wicked problem, which needed to be explored and understood so that action towards a more sustainable NHS could be identified and implementation facilitated.

7.1 Research questions and objectives

This research was designed to address the question:

How do GPs make sense of the problem of working towards a more sustainable NHS and what does this mean for the transition to a more sustainable NHS?

The findings indicated that GPs in Wiltshire had a broad understanding of the importance of working towards a more sustainable NHS, that sustainability and health were connected and that working towards a more sustainable NHS was complementary to their concerns about the long term viability of the NHS and its capacity to cope with growing demands for the services it provides. However, views about sustainability were complex and nuanced. Beliefs about the importance of sustainability sat alongside a view of sustainability as a remote problem; as something to which their contribution could only be limited. Thinking about sustainability required a focus on benefits that would be felt in the long term and accrued across the population, whereas it was important to focus on individual patients and ensuring that their needs were met. These complex beliefs were explored in the discussion chapter.

The research identified barriers and facilitators to working towards a more sustainable NHS perceived by GPs. Survey responses and interview data suggested that although sustainability objectives were supported there were a host of barriers to actually engaging with sustainability. This included financial disincentives, a perceived lack of leadership and no time or resources to give to sustainability.

The following research sub-questions were addressed:

- A. What is the relationship between sustainable development and health?

The literature review covered the relationship between sustainable development and health and highlighted the relevance of sustainability to human security as well as the

potential to address sustainability and health challenges through healthy and sustainable settings.

- B. How does the developing literature make the case for, and propose working towards, a more sustainable NHS?
- C. How can the developing literature on sustainable development be better understood in regard to the wider literature on sustainability and the NHS in organisations, debates in healthcare and organisational change?

Review of the literature making the case for a more sustainable NHS and proposals on how it might operate showed that working towards a more sustainable NHS was discussed in terms of the links between health and sustainable development, responsibility, consistency with healthcare values and improvement in the delivery of care. These proposals were consistent with developing a more productive health service appropriate to the health needs of the population, however the complexity and challenge of transitioning to a more sustainable NHS was not fully addressed.

- D. What are the attitudes of GPs in Wiltshire towards sustainability in the health service, and their role in working towards sustainability, particularly in relation to the developing literature and barriers and facilitators to their engagement?

Survey responses indicated broad support for a more sustainable NHS, however support for individual sustainability activities could be more mixed, with the sample divided over individual proposals such as GPs considering the environmental impacts of their clinical decisions. Survey data also reflected the presence of significant barriers to engagement with sustainability, based on those identified in the literature review. Although there was broad approval for a more sustainable NHS, survey responses indicated a very challenging environment for this transition.

- E. How do GPs understand working towards a more sustainable health service, their contribution and the potential challenges and opportunities that this presents?

Interview data indicated that GPs held a variety of views towards sustainability, appreciating the important connection between sustainability and health, while also understanding sustainability to be remote to everyday concerns. The connection of sustainability to the viability of the NHS and investment in primary care provided an account of sustainability that went beyond those in the literature. In common with the survey data, interviews indicated financial, time and resource barriers to taking part in sustainability activities. Interview data also suggested that delivering better quality and

more sustainable care would be facilitated by more time in primary care to build relationships with patients and better meet their health needs.

The research objectives set out in the introduction were met. The connections between sustainable development and health were examined, in terms of the conceptual link between meeting human needs and health and the links and interactions between human activity and the wider environment. The literature on working towards a more sustainable NHS was reviewed along with the implications for the NHS, while survey and interviews provided an account of the complex attitudes towards sustainability, health and the role of the NHS held by the sample of GPs. Data further indicated broad levels of support for some sustainability activities, for example, building the resilience of individuals and local communities, alongside reservations about activities such as taking environmental impact into account when making clinical decisions. The discussion indicated where attitudes diverged from the developing literature, particularly in regard to the understanding of sustainability as both important and the “embryonic” understanding of sustainability among GPs that limited its impact on day to day actions. These reflections expanded on the literature, while recommendations in the previous chapter informed policy and practice regarding facilitating engagement with sustainability and addressing barriers.

7.2 Contributions

The literature review offered an outline of the importance of sustainability to health and made a compelling case to work towards a more sustainable NHS. The connections between health and sustainability and the opportunities to improve health and the delivery of healthcare while addressing sustainability concerns provide a broad direction for a more sustainable NHS. Similarly proposals on how a more sustainable NHS might operate illustrate the potential to improve health and ensure healthcare matches health needs. However, the transition to a more sustainable NHS is far from assured and this research expands and contributes to that literature by identifying barriers to change and presenting new knowledge in terms of how GPs in Wiltshire make sense of sustainability and their role.

7.2.1 Wicked problem

Confirming the complexity and challenge of working towards a more sustainable NHS and the need to invest time, resources and leadership expands on the case presented for a more sustainable NHS in the literature review. Identifying barriers to change, the need to address these barriers and making the case for solutions is essential for progress towards a more sustainable NHS.

7.2.2 Understanding of sustainability

Prior to this work there was no account of how a broad section of health professionals understood the meaning of working towards a more sustainable NHS. The findings presented here suggest broad support for sustainability, but also provide a potential explanation of why this broad support may not motivate change. Interview and survey data that suggested that sustainability was remote or an afterthought provide an indication of the leadership, resources and guidance necessary to change practices.

Findings also indicate areas of support for a more sustainable NHS. The close association of sustainability with the future viability of the NHS and the need to provide primary care services that meet the needs of patients using low tech, human centred care suggested a positive and compelling account of healthcare for patients and professionals.

7.3 Recommendations

The research project findings suggest a number of practice recommendations to facilitate working towards a more sustainable NHS. The findings and reflection on the research process lead to recommendations for how future research should be conducted and opportunities to expand knowledge.

7.3.1 Practice recommendations

7.3.1.1 General Practitioner level

7.3.1.1.1 GPs should continue to develop opportunities to improve practices and provide visible examples of sustainability leadership to peers and patients.

The study identified support for working towards a more sustainable NHS from many GP participants; however there were barriers to immediate transformational change in the delivery of healthcare. Even so there are significant opportunities for sufficiently motivated GPs to undertake sustainability activities, on their own and with colleagues.

Opportunities include:-

- Energy efficiency measures at practices, sustainable use of resources, recycling and other sustainability improvements
- Encouraging sustainable transport among staff and patients, for example provision of bike racks
- Provision of information and support for patients and staff to live healthy and sustainable lifestyles
 - o For example healthy food, green transport, information on local green spaces and other appropriate local information

7.3.1.1.2 GPs should link improvement and sustainability

The study identified understanding of and support for action that would both contribute to a more sustainable NHS and improve the delivery of service among participants.

Opportunities include:-

- Where possible reduce lower value interventions, such as antibiotic prescriptions that may be unwarranted or over investigation
- Support patients to improve their health, practice self-care and address wellbeing issues

7.3.1.1.3 GPs should address barriers to engagement with sustainability

Significant barriers to GP engagement with sustainability were described during the study. Where these barriers can be addressed at GP level steps should be taken to address them.

Opportunities include:-

- Seeking out reliable and credible information, such as from the SDU or organisations such as the Centre for Sustainable Healthcare
- Identifying peers with sustainability interests to facilitate peer learning and working in partnership to overcome barriers or raising awareness. Organisations such as the Centre for Sustainable Healthcare could facilitate this, as well as existing professionals networks.

7.3.1.2 Clinical Commissioning Group level

The CCG is well placed to take a long term view on sustainability and link environmental sustainability to service sustainability.

7.3.1.2.1 Wiltshire CCG should work towards integrating sustainability into the CCG strategic plan

Much of the strategic plan is already compatible with a more sustainable NHS, however this could be made much clearer.

Opportunities include:-

- Link environmental and social sustainability to financial sustainability
- Consider environmental and social trends alongside demographic and financial trends to strengthen the case for transformational change
- Ensure that recommended system changes such as expanding primary care and community services or tackling the wider determinants of health are

identified as more sustainable and opportunities to link this to the wider sustainability agenda are taken

7.3.1.2.2 Wiltshire CCG should address the barriers to engagement identified in the research findings and provide leadership and clear signals on sustainability, organisational incentives, straightforward guidance on sustainability and resources to facilitate action.

The CCG is well placed to address barriers to engagement faced by GPs, by sending clear signals on sustainability; providing support and aligning organisational incentives with sustainability.

Opportunities include:-

- Establish delivering sustainable services as a key priority for Wiltshire CCG, alongside other key priorities of personal responsibility equitable access to care and care in the most appropriate setting
- Provide organisational incentives for engagement with sustainability, such as including sustainability in performance reviews and revenue sharing for sustainability initiatives that save money
- Work with the SDU and other organisations to provide clear, actionable, guidance on sustainable services
- Provide resources for healthcare professionals to engage with sustainability, such as funds for sustainability projects

7.3.1.3 NHS

7.3.1.3.1 The SDU should communicate sustainability in terms of viability in order to help persuade health professionals of its relevance to their current and future practice.

The study indicated that GP participants were supportive of delivering sustainable services where this was supportive of health and improving services. Interview participants also connected environmental sustainability with the long term sustainability of the NHS.

Opportunities include:-

- Material and campaigns connecting sustainability to the long term sustainability of the NHS and improvement of services
- Provide materials and guidance that makes it as easy as possible to claim continuing professional development points

7.3.1.3.2 The SDU should develop appropriate guidance about environmental impacts of care pathways to assist GPs and CCGs in making evidence based decisions.

The study suggested that research participants felt little guidance and evidence was available to enable GPs to make more sustainable decisions with patients

Opportunities include:-

- This guidance should be simple and relevant to GPs in their day to day practice
- Ensuring that guidance is available at the appropriate time, for instance on screen when GPs are selecting and printing a prescription
- Provide materials and guidance that makes it as easy as possible to claim continuing professional development points

7.3.1.3.3 High level support for sustainability to send clear signals about the long term, more sustainable, future of the NHS

High level support for sustainability could drive sustainability as an agenda and ensure that GPs sympathetic to a more sustainable NHS, but not passionate and proactive, would engage with the agenda.

Opportunities include

- Clear leadership on sustainability, from secretary of state of level, NHS leadership, professional organisations and peers
- Deployment of resources to enable more GPs to engage with sustainability and address scepticism over the agenda
- Education, training and assessment processes to integrate sustainability

7.3.2 **Research recommendations**

- Projects recruiting GPs should take into account the recruitment challenge, and ensure that are able to contact the GPs directly and that they are able to present the research in a way that is compelling to potential participants.
- Follow up research could utilise and develop further the survey instrument produced for this study, offering opportunities to learn more about the reliability and validity of the instrument.
- This set of findings provided a perspective on a more sustainable health system from the perspective of primary care. Future research into the views of stakeholders, such as other secondary health professionals, management, service users and the wider public, is essential to facilitate wide spread

engagement with sustainability.

- A more sustainable primary care system, providing a more human centred approach, managing complex conditions and building empowering relationships with patients, was suggested by some participants during the interview. Further research on how this might operate and what working towards this would entail could provide valuable information on more sustainable primary care.
- The research project attempted to better understand the problem of working towards a more sustainable NHS from the point of view of GPs in Wiltshire.
 - o Similar survey and interview work with GPs in other areas could examine the extent that understandings of sustainability and perception of barriers are influenced by local context or if there are shared understandings of sustainability among GPs.
 - o A transformative action research project conducted with GPs in Wiltshire could build on the findings and above recommendations to facilitate GPs taking sustainability actions and addressing barriers.

The literature review and findings suggested that a more sustainable NHS will depend on moving to a model of care that enables and empowers individuals and communities to meet their own health needs as much possible. Active partnership between health professionals, patients and public will be required to achieve this. Research into the views of all stakeholders and their support of this radical transition is required to achieve a more sustainable NHS.

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9 Appendix A – Survey materials

Participant information sheet	(4 pages)
Survey instrument	(20 pages)
UWE ethics approval	(2 pages)
NHS research governance letter	(1 page)

9.1 Participant information sheet



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Version 1.4 Date 23/04/2013

Online survey of Wiltshire GP attitudes towards sustainability

Invitation

In the coming years environmental and social sustainability will set the agenda and drive transformative change throughout the health service. This is particularly relevant for GPs whose treatment, referral and commissioning decisions account for the majority of the health services environmental impacts. Significant change in how GPs work will be necessary to create a resilient and sustainable health service that is adapted to a low impact, resource constrained world with an aging and growing population. The challenge is considerable. An 80% cut in greenhouse emissions by 2050 is required to comply with the 2008 Climate Change act legislation.

Research is needed to support this agenda. This email is an invitation to take part in a 20 minute survey, administered by the University of the West of England and co-funded by NHS Wiltshire and Great Western Research. No prior knowledge is needed to take part in the survey and the survey can be accessed from the link included in the invitation email.

Why is this study important? What's the background that means that we need to do this research?

The sustainable development agenda directly impacts Wiltshire GPs and their clinical, prescribing, referral, practice management and commissioning decisions. Necessary changes range from energy efficiency and waste management measures to radical and transformative long term change in how healthcare is delivered and the role of health professionals. A growing literature, contributed to by the Department of Health, the NHS Sustainable Development Unit, professional organisations like the RCGP and the Faculty of Public Health, academics and enthusiast health professionals, proposes ways in which health professionals can change their practice. This survey draws upon your experience and knowledge of your practice, your local area and the needs of your patients to add to the existing literature. Your contribution is essential to improve policy and ensure that sustainability measures have wide support, are relevant to your needs, are deliverable and are a positive contribution to how health care is delivered in Wiltshire.

Survey objectives:

- To explore the extent to which the beliefs around health and sustainable development prevalent in the literature are supported by GPs in Wiltshire.
- To determine which sustainable development activities are supported by GPs in Wiltshire, using specific and relevant examples from the literature
- To establish the perceived barriers and facilitators to sustainability activities

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Version 1.4 Date 23/04/2013

Defining sustainable development

Sustainable development is described by the NHS Sustainable Development Unit as the 'the balance required between financial, social and environmental factors in order that future generations do not suffer because of the way we live today' (NHS SDU, 2011. Route Map for Sustainable Health p3). This means the NHS must take into account the environmental and social impacts of its decisions. Environmental trends such as a harsher and warmer climate, resource pressures (including energy, raw materials and water) and loss of biodiversity and essential ecosystems services interact with population growth and unsustainable production and consumption to impact human health and wellbeing.

Health and wellbeing impacts in Wiltshire will include **direct impacts** from environmental change, such as increases in extreme weather events (heatwaves, flooding etc). **Indirect impacts** on security and wellbeing will arise from **direct impacts** experienced elsewhere. This could include food insecurity as a result of decreased agricultural productivity or unpredictable patterns of migration. **Mitigation activities** to reduce environmental impact (for example reducing greenhouse gas emissions) and **adaptation activities** to increase resilience (such as retrofitting buildings for increased energy and water efficiency) may increase health and wellbeing or, if poorly planned and implemented, reduce it. **Widening health inequalities** may be experienced as vulnerable groups will have fewer resources to adapt; for example low income individuals will be most affected by food price fluctuations.

Sustainability and health are closely linked, both materially impacted by issues such as energy security, diet, housing, transport and town planning. In many cases more sustainable options, such as increased walking and cycling or diets low in animal products have health benefits while high impact behaviours such as overreliance on cars and diets high in animal products can negatively impact health.

NHS and Sustainable Development

The NHS has a carbon footprint equivalent to a country the size of Portugal and is committed to demanding carbon footprint reductions of 10% by 2015, 34% by 2020 and 80% by 2050. The NHS is well placed to encourage health and sustainability more widely with staff, patients, local community and partner organisations. Immediate action is required on sustainability. Much of today's NHS estate will still be operational in 2050 while the elderly population of 2050 is currently in its thirties and developing the habits that will contribute to future wellness. A sustainable health service requires transformational change in what the health service does, how healthcare is delivered and where healthcare is delivered. Overall reductions in activity and real estate are required along with a prioritising of upstream preventative care and high value activities. GPs will make sustainability central to their commissioning, referral and treatment decisions.

Why have I been sent this survey?

All general practitioners in Wiltshire have been invited to take part in this research. We hope that as many GPs as possible take part and that a wide spectrum of views, supportive and critical, on sustainability in the NHS can be heard. This will widen the debate on sustainability in the NHS beyond a narrow spectrum of enthusiasts and to a broad range of individuals. Taking part in this survey is a matter of choice and you are free to not take part or stop the survey at any time. After completing the survey you will be able to withdraw your data from the study by contacting the principal researcher.

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Version 1.4 Date 23/04/2013

Benefits/disadvantages

Potential benefits from taking part include:-

- 1. Have your views heard on sustainability in the health service**
 - The outcome of this research project will include recommendations on the role of sustainable development in Wiltshire and an identification of barriers and facilitators to sustainability activities
 - Results from the survey will be fed back to NHS Wiltshire, CCGs, the NHS SDU and through academic journals
- 2. To benefit your own understanding and using the survey as an opportunity to gain CPD points**
 - Reviewing the supplied information and taking part is an opportunity to consider the impact of sustainability on your practice and could be claimed as knowledge acquisition for CPD points
- 3. Additional materials to support CPD** will be available following the survey end date.
 - A certificate of completion will be made available to all GPs who request one
 - A summary of survey findings will be made available after the survey has been analysed
 - The resources and references used to build the survey will be sent to any GP that requests them following the survey end date

Although kept to a minimum there are a few potential disadvantages to taking part in the survey. It is unlikely, but possible, that some participants will find considering the impacts of sustainability issues on health and wellbeing and the health service disconcerting. The survey includes some open text sections where you are free to express any opinions. All data is anonymous and cannot be linked to an individual, however if a participant were to disclose something that indicated involvement in illegal or harmful activities this data would be relayed to NHS Wiltshire.

Data information / confidentiality

All data collected during the survey will be confidential and no personally identifiable information will be collected during the main survey. At the end of the survey communication preferences and a contact email address will be collected. These details will be collected separately and not linked to the information collected for the main survey. Collected data will be stored securely and only accessed by the principal researcher and shared with the supervision team. The information collected in the survey will be used in the current research project 'A sustainable NHS?' being undertaken by the principal researcher. The findings of this research will be disseminated in reports, academic articles, presentations and a PhD thesis. The data may be reused in follow up projects that further explore sustainable development in the NHS.

Taking part in the survey

The survey is completed online. You can access the survey from any web enabled device, such as PC, mac or a smartphone. To take part in the survey please follow the link included in the invitation email. If clicking the link does not work please copy and paste the web address into your internet browser. If you are unable to access the survey please contact the survey organisers.

Contact details

If you have any questions or would like more information about the study please contact the principal researcher, Adam Noonan, at Adam.Noonan@uwe.ac.uk or the PhD project supervisor Dr Paul Pilkington at Paul.Pilkington@uwe.ac.uk.

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9.2 Survey instrument

Version 2.6 Date: 03/12/2012

Sustainability Survey 2.6_final version for R&D

A Sustainable NHS? Survey of GPs within Wiltshire

***1. Thank you for taking part in this survey. This survey will help us understand the attitudes of GPs towards sustainability in the NHS and find out the extent to which current policy on sustainability reflects these attitudes. This is an independent research project, run by the University of the West of England and funded by Great Western Research & NHS Wiltshire. The survey consists of 29 questions and will take around 20 minutes to complete. You require no previous knowledge to take the survey and it consists mostly of statements that you are invited to agree or disagree with.**

Before the survey begins we need to confirm that you have read the participant information sheet that was included in the email you were sent and consent to taking part in the survey. This is important as the information sheet indicates why the survey is taking place and how your data will be used.

Contact information

This research is being conducted by Adam Noonan, of the University of the West of England, supervised by Dr Paul Pilkington. If you have any questions about the survey, the research project or if you would like to withdraw from the survey please contact Adam.Noonan@uwe.ac.uk or Paul.Pilkington@uwe.ac.uk

Please indicate if you would like to take part in the survey.

- I have read and understood the information presented here and in the participant information sheet. I consent to participating in the study.
- I do not consent to taking part in the study.

Page 1

Sustainability Survey 2.6_final version for R&D

Individual Factors

This section focuses on the attitudes and opinions of GPs towards sustainability and the NHS.

2. To what extent do you agree with the following statement?

I am well informed about sustainability issues such as climate change.

- Strongly disagree Disagree Neither agree nor disagree Agree Strongly agree

3. Please indicate which of the following statements best describes your current lifestyle.

- I don't really do anything that is environmentally-friendly
 I do one or two things that are environmentally-friendly
 I do quite a few things that are environmentally-friendly
 I'm environmentally-friendly in most things I do
 I'm environmentally-friendly in everything I do
 Don't know

4. GPs have an increasing role in commissioning services for their local population.

Different GPs will have different levels of involvement in the commissioning process.

Please indicate which of the following statements best describes your level of involvement in commissioning.

- I am proactively involved in GP commissioning and seek out opportunities to take the initiative in GP commissioning
 I am engaged in GP commissioning and am involved whenever I have the opportunity
 I am engaged in GP commissioning when I need to be, but do not seek out opportunities to be involved
 I am not really engaged in GP commissioning and only take part if it is necessary
 Don't know

Sustainability Survey 2.6_final version for R&D

Health and Sustainability

For these questions we'd like you to think about interactions between sustainability and the health and wellbeing of your local population.

5. To what extent do you agree with this statement?

Climate change is a major threat to public health.

Strongly disagree Disagree Neither agree nor disagree Agree Strongly agree

6. We would like to understand more about your attitudes towards sustainability and how sustainability issues could influence the health of the community served by your practice. Please indicate the extent to which you agree with the following statements.

	Agreement with statement
Increases in major long-term conditions such as asthma, obesity, diabetes and high blood pressure are, in part, caused by environmental factors such as poor air quality, a lack of healthy food choices, a badly designed environment and inadequate facilities for safe walking and cycling.	<input type="text"/>
In the area served by my practice efforts to improve sustainability, for example better infrastructure to support increased active travel (walking and cycling), would not have health and wellbeing benefits for the local population.	<input type="text"/>
If my local community were more sustainable, demand for the local health service would be reduced.	<input type="text"/>

Health and Well-being Impacts

A number of global factors connected to environmental sustainability have the potential to influence health and wellbeing within Wiltshire.

These include:

- A harsher and warmer climate
- Pressure on resources such as energy, water and raw materials
- Threats to biodiversity and ecosystem services
- Growing worldwide levels of production and consumption increasing pressure on the environment
- Population growth

These could impact health and wellbeing in complex ways that are hard to predict. We would like to find out the extent to which GPs in Wiltshire believe that these trends have a negative impact on the health and wellbeing of their local practice population.

Sustainability Survey 2.6_final version for R&D

7. This question is intended to determine the extent to which GPs in Wiltshire believe that environmental sustainability trends have negatively impacted the health and wellbeing of the population served by their practice in the past 5 years.

Please read the following statements and indicate what you perceive the negative impact to be on a scale of 1-5.

1= You believe there has been no negative impact on health and wellbeing in the past 5 years

5= You believe there has been a significant negative impact on health and wellbeing in the past 5 years

	1	2	3	4	5	Don't know
Direct impacts from sustainability trends. These are experienced directly by your local population. Examples include extreme weather events (heatwaves, flooding etc), change in disease vectors as the climate changes and reduced air quality.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Indirect impacts from sustainability. These are experienced by your local population as a result of direct impacts experienced elsewhere. Examples include food insecurity from decreased agricultural productivity, economic and political turbulence, resource shortages and unpredictable patterns of migration	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Sustainability Survey 2.6_final version for R&D

8. This question is intended to determine the extent to which GPs in Wiltshire believe that environmental sustainability trends will negatively impact the health and wellbeing of the population served by their practice in the next 20 years.

Please read the following statements and indicate what you perceive the negative impact to be on a scale of 1-5.

1= You believe there will be no negative impact on health and wellbeing in the next 20 years

5= You believe there will be a significant negative impact on health and wellbeing in the next 20 years

	1	2	3	4	5	Don't know
Direct impacts from sustainability trends. These are experienced directly by your local population. Examples include extreme weather events (heatwaves, flooding etc), change in disease vectors as the climate changes and reduced air quality.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Indirect impacts from sustainability. These are experienced by your local population as a result of direct impacts experienced elsewhere. Examples include food insecurity from decreased agricultural productivity, economic and political turbulence, resource shortages and unpredictable patterns of migration	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Sustainability Survey 2.6_final version for R&D

The NHS and Sustainability

This section focuses on attitudes towards sustainability in the NHS. We would like to explore the extent to which the attitudes of GPs in Wiltshire reflect the points made in the literature and where they diverge from the literature.

9. To what extent are you aware of:

	I have never heard of it	I have heard of it but do not know much about it	I know a fair amount about it	I know a lot about it
The NHS Carbon Reduction strategy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The NHS SDU's 'Route Map to Sustainable Health'?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The NHS Wiltshire Sustainable Development Management Plan	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

10. The NHS has many competing priorities. We would like to know what priority you think the NHS should give to environmental sustainability. Please indicate which answer is closest to your opinion.

	the lowest priority	a low priority	a medium priority	a high priority	the highest priority	Don't know
For the NHS, sustainability should be...	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

11. GPs, as a diverse group, will have very different levels of personal commitment to work towards sustainability in the NHS.

Please indicate which of the following statements best describes your level of commitment to sustainability in the NHS.

- I am highly committed to working towards sustainability in the NHS. I would create new sustainability initiatives and work to move the sustainability agenda forward.
- I am committed to sustainability in the NHS. I would proactively support sustainability initiatives that are taking place.
- I am supportive of sustainability in the NHS. I would take part in sustainability initiatives and work for their success.
- I am neutral in my support of sustainability initiatives. I would take part in sustainability initiatives that directly affect me, but only do what is asked.
- I do not really support sustainability initiatives. I would take part in sustainability initiatives, but do the minimum that was required.
- I do not support sustainability initiatives taking place in the NHS. I would oppose taking part in them.
- I am not really interested in sustainability in the NHS.
- Don't know.

Sustainability Survey 2.6_final version for R&D

12. This section focuses on your attitudes towards sustainability in the health service. Please indicate the extent to which you agree or disagree with the following statements.

	Agreement with statement
The NHS should lead the public sector as a sustainable and low carbon organisation.	<input type="text"/>
I am uncertain how sustainability in the NHS will influence my role as a GP.	<input type="text"/>
Working towards sustainability in the health service will involve compromises in the health care services delivered to individual patients served by your practice.	<input type="text"/>
The working practices of a GP like me will change very significantly as a result of sustainability in the NHS.	<input type="text"/>
It is not essential that the NHS reduce greenhouse gas emissions by 80% by 2050.	<input type="text"/>
The NHS has less of a responsibility than other sectors of the economy to lower its environmental impact and contribute to sustainability in the UK.	<input type="text"/>
The high environmental impact of the NHS is inconsistent with the values of the health profession to protect and promote health.	<input type="text"/>
There is clear leadership taking sustainability forward in the NHS.	<input type="text"/>
Among my peers there are no examples of individuals taking the sustainability agenda forward.	<input type="text"/>
Working towards sustainability in the health service will lead to improvements in the health and wellbeing of the population served by your practice	<input type="text"/>
GPs do not have a greater responsibility than individuals of other professions to contribute to sustainability.	<input type="text"/>
Working towards sustainability in the health service will require significant additional work from GPs.	<input type="text"/>
The NHS must significantly reduce its current level of environmental impact.	<input type="text"/>
The case for sustainability in the NHS has been communicated to me.	<input type="text"/>

Sustainability Survey 2.6_final version for R&D

Sustainability Activities

A sustainable health service is one where sustainability is central to how health care services are delivered. This means transformative change in what health care services are delivered, how they are delivered and the where they are delivered. Sustainability will be a core responsibility of GPs in Wiltshire and require them to consider the environmental impacts of decisions in their day to day clinical activities, management and commissioning decisions.

There is a growing literature on sustainability in the NHS and the transformative change to the health service and the role of GPs and their practice. The following survey items include a number of statements, derived from this literature, on potential sustainability activities. Please consider these statements and the extent to which you agree with them using your knowledge of the area served by your local practice and experience working as a GP.

Sustainability Survey 2.6_final version for R&D

Leadership and advocacy

GPs and their practices have the potential to lead sustainability in the NHS and in the local area served by their practice. Health professionals are well placed to connect the sustainability and health agendas in their local communities.

13. Please consider the following statements, derived from the literature on sustainability in the NHS, and their potential impacts on you, your practice, the local community and your patients.

Please indicate the extent to which you agree or disagree with the statements.

	Agreement with statement
GPs and their practices, in their day to day activities, should provide highly visible examples of sustainable behaviour to their local communities, such as using active travel when visiting patients in the community.	<input type="text"/>
GPs, as private citizens, should not be expected to provide a clear example of sustainable and healthy choices, for example in their personal travel and transport choices.	<input type="text"/>
In routine interactions with patients GPs should not be expected to promote healthy and sustainable behaviours, for example discussing active travel with patients.	<input type="text"/>
GPs should be advocates in their local community for measures which support sustainability and health, for example infrastructure to promote active travel.	<input type="text"/>
GPs should not be expected to influence provider organisations to adopt sustainable practices through the inclusion of sustainability criteria in contracts.	<input type="text"/>
GPs should commonly encourage the uptake of sustainable practices within all parts of the NHS, for example measures to decrease impacts from staff commuting.	<input type="text"/>
GPs should not be expected to be knowledgeable on the links between sustainability and health and to communicate this whenever possible and appropriate.	<input type="text"/>
GPs should actively engage with stakeholders, such as patients, local communities and NHS staff, about what a sustainable NHS will mean for them and the changes that will take place	<input type="text"/>
Please let us know why you support, or do not support, GPs in Wiltshire undertaking the above mentioned activities.	
<input type="text"/>	

Sustainability Survey 2.6_final version for R&D

Health improvement

A key focus of the literature on sustainability in the NHS is the need to improve and maintain the health and wellbeing of the population served by your practice. It is hoped that focusing on preventative care and early intervention will reduce the demand for curative medical care. This would benefit patients and reduce the environmental impacts of the health service.

14. Please consider the following statements, derived from the literature on sustainability in the NHS, and their potential impacts on you, your practice, the local community and your patients.

Please indicate the extent to which you agree or disagree with the statements.

	Agreement with statement
GPs should not move resources to prioritise services that reduce demand for services in the long term.	<input type="text"/>
GPs and their practices should not routinely use NHS resources to identify and promote actions that have joint health and sustainability benefits for their practice population. An example would be using NHS resources to improve housing to be warm and energy efficient.	<input type="text"/>
GPs and their primary care teams should principally focus on maintaining the health and wellbeing of their practice population.	<input type="text"/>
GPs should not be expected to routinely work with other professionals in social care and other public services to improve health in the area served by their practice.	<input type="text"/>
In their commissioning role GPs should shift NHS resources to commission services that address the 'systemic causes of ill health' in their local population, for example supporting more active travel among the most vulnerable.	<input type="text"/>

Please let us know why you support, or do not support, GPs in Wiltshire undertaking the above mentioned activities.

Sustainability Survey 2.6_final version for R&D

Clinical practice

Incorporating sustainability into the GP role will include changes to clinical practice to reduce environmental impact.

15. Please consider the following statements, derived from the literature on sustainability in the NHS, and their potential impacts on you, your practice, the local community and your patients.

Please indicate the extent to which you agree or disagree with the statements.

	Agreement with statement
GPs should customarily consider the environmental impacts of the clinical decisions they make with patients and prefer options that have lower environmental impact.	<input type="text"/>
GPs should reduce 'low value' activities. For example reducing diagnostic tests or prescriptions that are likely to offer little benefit to patients.	<input type="text"/>
GPs should increasingly support patients to manage conditions through sustainable and healthy behaviour change. For example increased physical activity and reduction in the use of pharmaceuticals.	<input type="text"/>
GPs should not be expected to choose ways of working that reduce environmental impact, for example reducing travel by consulting with patients over telephone.	<input type="text"/>

Please let us know why you support, or do not support, GPs in Wiltshire undertaking the above mentioned activities.

Sustainability Survey 2.6_final version for R&D

Management and commissioning role

GPs manage the patient journey through the healthcare system and the resources used through their clinical, referral and commissioning decisions. In the short term GPs are responsible for their individual patient journeys and are charged with developing the long term solutions to current health challenges. Embedding sustainability in the NHS requires that GPs incorporate sustainability into all activities.

16. Please consider the following statements, derived from the literature on sustainability in the NHS, and their potential impacts on you, your practice, the local community and your patients.

Please indicate the extent to which you agree or disagree with the statements.

	Agreement with statement
When developing and commissioning services GPs should favour models of care that have a lower environmental impact.	<input type="text"/>
GPs should be responsible for and evaluated on the environmental impacts of their clinical, referral, commissioning and management decisions.	<input type="text"/>
GPs should not be expected to lead contentious decisions that are necessary to reduce environmental impact. For example decisions about the availability of services and how they are delivered.	<input type="text"/>
GPs, working with their clinical commissioning group, should take steps to understand how the health of the population served by their practice will be influenced by sustainability trends, such as increases in extreme weather events or reduced energy and food security.	<input type="text"/>
GPs, working with their clinical commissioning group, do not have a responsibility to take action to increase the resilience of the population served by their practice to sustainability trends that could influence their health, such as increases in extreme weather events or reduced energy and food security.	<input type="text"/>
GPs should work towards lowering overall levels of activity in the health service. This may include actions such as reducing the healthcare real estate and the number of healthcare interventions.	<input type="text"/>

Please let us know why you support, or do not support, GPs in Wiltshire undertaking the above mentioned activities.

Sustainability Survey 2.6_final version for R&D

Current and past sustainability activities

The definition of 'sustainability activities' is wide and includes any activities that are intended to reduce the environmental impact of your practice, reduce the overall environmental impact of the health care sector or influence staff, patients, partners and others to behave more sustainably.

Many different activities are taking place, and this survey is an opportunity for us to learn more about the initiatives that are taking place in Wiltshire. Examples of sustainability activities that you may have taken part in include:

- Formal training
- Personal learning
- A meeting that you have attended
- An action that you have taken yourselves or with colleagues
- A discussion that you have had with patients

It is equally valuable to learn if you have taken part in few or no sustainability activities. Sustainability in the NHS is in its early stages and it is expected that many busy health professionals will not have taken part in sustainability activities.

17. Please indicate if you have taken part in any sustainability activities in the past 2 years.

- I have taken part in many sustainability activities in the past two years
- I have taken part in some sustainability activities in the past two years
- I have taken part in few sustainability activities in the past two years
- I have taken part in no sustainability activities in the past two years

Please let us know what these sustainability activities were and what your role was. Any further comments on these activities is welcomed.



Sustainability Survey 2.6_final version for R&D

Advantages and disadvantages of working towards sustainability in the NHS

A more sustainable NHS will require changes in the delivery of healthcare services. Some possible changes have been discussed in the previous sections on sustainability activities. Changes always have advantages and disadvantages. These may be experienced as benefits and opportunities by some groups or disadvantages or risks by others.

For example a change in how a health condition is managed may offer benefits for patients, but have the disadvantage to health professionals of requiring more time and resources.

We would like to know, in your opinion, what the 3 main advantages and disadvantages of sustainability in the health service are.

When thinking about this question consider how sustainability will influence:

- GPs and other health professionals
- Individual patients
- The local community and patient population
- The ability of the NHS to achieve its operational and strategic goals

18. Please fill in the box with up to 3 of what you consider to be the main advantages of sustainability in the health service.

19. Please fill in the box with up to 3 of what you consider to be the main disadvantages of sustainability in the health service.

20. When you consider the advantages and disadvantages of sustainability in the NHS, do you believe it will have an overall positive impact or an overall negative impact?

Significant negative impact	Some negative impact	Neutral	Some positive impact	Significant positive impact	Don't know
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Sustainability Survey 2.6_final version for R&D

Barriers and facilitators to sustainability activities in the NHS

A sustainable NHS will require transformative change in how health care services are delivered.

This requires that GPs engage fully with sustainability agenda. This includes embedding sustainability in your clinical and commissioning activities, advocating for the uptake of sustainable and healthy behaviours in your local community and planning a resilient future health system with a dramatically lower environmental footprint.

We would like to learn

- What things would enable GPs like you engage with and carry out the sustainability agenda
- What things prevent GPs like you engaging with the sustainability agenda

Please answer the following questions using your personal knowledge and experience. You may wish to consider the following areas:-

- The context in which you work – rules, regulations and available resources
- The social context – your colleagues and the organisational culture
- Patients and the local community
- Your own motivation, level of knowledge and skills

21. Please consider the things that would enable you to engage with the sustainability agenda and fill in the text box with up to 3 of the main things that would most enable you.

22. Please consider the barriers that would prevent you from engaging with the sustainability agenda and fill in the text box with up to 3 of the main barriers you would face.

Sustainability Survey 2.6_final version for R&D

23. This section focuses on factors that may enable or constrain GPs to work to incorporate sustainability into their day to day activities. Please indicate the extent to which you agree or disagree with the following statements.

	Agreement with statement
Sustainability in the NHS should be mostly the concern of 'enthusiast' GPs, not every GP.	<input type="text"/>
Sustainability in the NHS is very relevant to my day to day activities.	<input type="text"/>
I believe patient expectations of NHS services will be a considerable barrier to carrying out changes to NHS services that lower the environmental impact of the NHS.	<input type="text"/>
At present, I am able to begin incorporating sustainability into my day to day activities.	<input type="text"/>
It is unlikely that the target of an 80% reduction in NHS greenhouse gas emissions by 2050 will be met.	<input type="text"/>
At present there are no organisational incentives to incorporate sustainability into my activities.	<input type="text"/>
I believe that my patients and local community will be very supportive of the aspiration for a 'low impact, sustainable health service'.	<input type="text"/>
In my practice there are not enough resources available to concentrate on sustainability.	<input type="text"/>
I can easily access support to enable me to become more sustainable in my work and practice.	<input type="text"/>
Working towards a sustainable health service will require challenging decisions to be made about current health service activities.	<input type="text"/>

Demographic information

Learning a bit more about you will help us understand how representative this survey is of GPs in Wiltshire.

24. What is your sex?

- Male
- Female

25. What is your age group?

- | | | |
|-----------------------------|-----------------------------|-----------------------------------|
| <input type="radio"/> 20-24 | <input type="radio"/> 40-44 | <input type="radio"/> 60-64 |
| <input type="radio"/> 25-29 | <input type="radio"/> 45-49 | <input type="radio"/> 65-69 |
| <input type="radio"/> 30-34 | <input type="radio"/> 50-54 | <input type="radio"/> 70 and over |
| <input type="radio"/> 35-39 | <input type="radio"/> 55-59 | |

26. How many years have you worked as a GP?

- | | | |
|-----------------------------|-----------------------------|-------------------------------------|
| <input type="radio"/> 0-4 | <input type="radio"/> 15-19 | <input type="radio"/> 30-34 |
| <input type="radio"/> 5-9 | <input type="radio"/> 20-24 | <input type="radio"/> Over 35 years |
| <input type="radio"/> 10-14 | <input type="radio"/> 25-29 | |

Sustainability Survey 2.6_final version for R&D

Thank you!

27. Thank you for filling in the survey. Your contribution is much appreciated.

If you have any further thoughts about sustainability in the NHS and how it might influence your role, would like to add to or qualify any answers that you have given or have any other comments about issues raised in the survey please include them here.

28. Please tag your survey response with a unique word or phrase and then make a note of this tag. A tag could be 'apple21' or 'yellowbook'

If you wish to withdraw from the study you will need to send this tag to the principal investigator.

Including two words, numbers or symbols will decrease the likelihood of participants choosing the same tag.

You do not need to include a tag, but we will be unable withdraw your responses from the study if you do not.

- On completion you will be redirected to an online form where you will be able to give your contact details in order to:-
- Receive a completion certificate and set of sustainability references
 - Register to receive a summary of survey results when the survey has been analysed
 - Indicate if you would like to hear about the follow up research that will be taking place

Sustainability Survey - Contact preferences

Communication preferences and contact details

Please indicate your communication preferences and provide an email address at which you can be contacted.

This online form is separate to the anonymous survey you have just completed. Your contact details will be entirely separate to your survey answers.

1. Please let us know your communication preferences and if you would like to be contacted about future research

- I would like to receive a survey completion certificate and a set of sustainability references
- I would like to receive a summary of results after the survey has been analysed
- I would like to be contacted about follow up research on sustainability in the health service

email address

9.3 UWE ethics approval



Faculty of Health & Life
Sciences
Glenside Campus
Blackberry Hill
Stapleton
Bristol BS16 1DD
Tel: 0117 328 1170

Our ref: JW/lt

25th March 2013

Adam Noonan
43 Chalks Road
St George
Bristol
BS5 9EP

Dear Adam

Application number: HLS/13/03/58

Application title: Great Western Research & NHS Wiltshire

Your ethics application was considered by the Faculty Research Ethics Committee and based on the information provided was given ethical approval to proceed.

You must notify the Faculty Research Ethics Committee in advance if you wish to make any significant amendments to the original application.

If you have to terminate your research before completion, please inform the Faculty Research Ethics Committee within 14 days, indicating the reasons.

Please notify the Faculty Research Ethics Committee if there are any serious events or developments in the research that have an ethical dimension.

Any changes to the study protocol, which have an ethical dimension, will need to be approved by the Faculty Research Ethics Committee. You should send details of any such amendments to the committee with an explanation of the reason for the proposed changes. Any changes approved by an external research ethics committee must also be communicated to the relevant UWE committee.

Please note that all information sheets and consent forms should be on UWE headed paper.

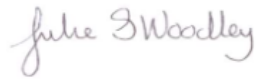
S:\RBI\Research Admin\HLS-FBL\Ethics\HLS Ethics\Forms and letters\Decision letters

Please be advised that as principal investigator you are responsible for the secure storage and destruction of data at the end of the specified period.

Please note: The University Research Ethics Committee (UREC) is required to monitor and audit the ethical conduct of research involving human participants, data and tissue conducted by academic staff, students and researchers. Your project may be selected for audit from the research projects submitted to and approved by the UREC and its committees.

We wish you well with your research.

Yours sincerely

A handwritten signature in blue ink that reads "Julie Woodley". The signature is written in a cursive, flowing style.

Dr Julie Woodley
Chair
Faculty Research Ethics Committee

c.c. Paul Pilkington

9.4 NHS Research governance letter



Room 3.22, 1 West
University of Bath
Claverton Down
BATH
BA2 7AY
Telephone: 01225 384197
E-mail: brd@bath.ac.uk

Adam Noonan
43 Chalks Road
St George
Bristol
BS5 9EP

22 January 2013

Dear Adam,

Re: 2013/003 An online survey of the attitudes and opinions of GPs in Wiltshire towards sustainability, health and wellbeing, and a more sustainable health service.

I am pleased to inform you that governance checks have been completed for the above project and on behalf of NHS Wiltshire, I can confirm that NHS permission is granted, with effect from the date of this letter, to conduct the research on the basis described in the application form, protocol and supporting documentation subject to the following conditions.

1. The research should be conducted in accordance with the Research Governance Framework for Health and Social Care and, if applicable, with ICH GCP.
2. Amendments should be submitted in accordance with IRAS guidance.
3. The R&D office should be notified of any urgent safety measures taken.
4. Project monitoring and outcome information should be provided at least annually and the office should also be notified of the study completion. Please note that a random audit of this research may be conducted.

If you need any further support or information, please do not hesitate to contact me at the above address, quoting our reference number.

Yours sincerely,

A handwritten signature in black ink, appearing to read 'Irene Blair'.

Irene Blair
Research Governance Facilitator
Bath Research & Development
(NHS Wiltshire is a member of the Bath Research & Development consortium.)

cc: Anne Rutland, NHS Wiltshire



Bath and North East Somerset Primary Care Trust - Swindon Primary Care Trust
Wiltshire Primary Care Trust - Kennet and North Wiltshire and West Wiltshire localities



10 Appendix B – Interview materials

Participant information sheet	(4 pages)
Interview topic guide	(5 pages)
Participant consent form	(1 page)
UWE ethics approval	(2 pages)
NHS research governance letter	(1 page)
NHS letter of access for research	(2 pages)

10.1 Participant information sheet



University of the
West of England

Glenside Campus
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Bristol BS16 1DD
Telephone +44 (0)117 32 88534
www.uwe.ac.uk

Version 0.4 Date 23/09/2013

A Sustainable NHS? Understanding the engagement of GPs with sustainable development in the NHS.

Invitation to participate in the research

Thank you for reading this invitation to participate in a face to face interview looking at the engagement of GPs in Wiltshire with sustainability. We hope that GPs with a range of views on sustainability in the NHS take part in the interviews so that the research reflects the diversity of opinion among Wiltshire GPs. This document explains the purpose of the research and what taking part in the research would involve for you. Once you have read the document the researcher will be happy to discuss any questions that you have about the research and your involvement in it.

In the coming years environmental and social sustainability will set the agenda and drive transformative change throughout the health service. This is particularly relevant for GPs whose treatment, referral and commissioning decisions account for the majority of the health services environmental impacts. Significant change in how GPs work will be necessary to create a resilient and sustainable health service that is adapted to a low impact, resource constrained world with an aging and growing population. The challenge is considerable. An 80% cut in greenhouse emissions by 2050 is required to comply with the 2008 Climate Change act legislation. Necessary changes range from energy efficiency and waste management measures to radical and transformative long term change in how healthcare is delivered and the role of health professionals.

Additional information on sustainable development and the NHS is included at the end of the information sheet.

Why is this study important?

Research is needed to understand how GPs engage with sustainability, to develop ways to facilitate this engagement and remove any barriers that exist. This is why NHS Wiltshire and Great Western Research are co-funding this research project, conducted by the University of the West of England. The interviews discussed in this information sheet contribute to a mixed methods research project, for which an online survey of GPs in Wiltshire has already taken place, conducted as part of a PhD project.

Participating in an interview does not require any specific knowledge of sustainability issues, but will ask you draw upon your experience and knowledge of your practice, your day to day activities, the community served by your practice and the needs of your patients. Your views and experiences will contribute to the growing literature on sustainability, health and healthcare. Current contributors to this literature include the Department of Health, the NHS Sustainable Development Unit, professional organisations like the RCGP and the Faculty of Public Health,

1

bettertogether

University of the West of England, Bristol
Vice-Chancellor Professor Steven West

Version 0.4 Date 23/09/2013

academics and enthusiast health professionals. We think it is important that the views of a wide range of GPs, who are expected to work towards the sustainability agenda, are included in this literature. Your contribution is essential to improve policy and ensure that sustainability measures have wide support, are relevant to your needs, are deliverable and are a positive contribution to how health care is delivered in Wiltshire.

Interview topics will include:

- Sustainability and its impact on health, the delivery of healthcare and the day to day activities of GPs
- How GPs engage with sustainability and the barriers and facilitators to this engagement

Why have I been invited to take part in these interviews?

You have been invited to take part in this project as we are interested in exploring the engagement with sustainability of GPs in Wiltshire. Interviewing a variety of GPs will enable us to understand engagement with sustainability from a variety of perspectives. This invitation may have been sent because you indicated in the online survey that you wish to be contacted about further research or your contact details may have been received from another source who indicated that you may be interested.

Interview procedures

Interviews will take around an hour and be scheduled and located to your convenience, for example in your practice over a lunch hour. No prior knowledge relating to sustainability in the NHS is needed to take part in the interviews. The interviews will be conducted informally in a conversational style guided by a general topic outline. The focus will be on attitudes towards sustainability, health and the healthcare system. Towards the end of the interview a number of scenarios illustrating possible applications of sustainability in the health service will be put forward for discussion. You are free to discuss topics in any way you wish and can choose to move on the discussion if you prefer to not to address a particular issue. Interview participation is entirely voluntary and you may withdraw your participation at any time before or during the interview. After the interview takes place you may withdraw your participation and have the interview data removed from the study for four weeks. After this time the data will have been analysed and incorporated into the survey and complete removal may not be possible, however this will be accommodated if possible. Deciding not to participate or withdrawing from the study will have no negative impacts.

After the interview you may be contacted by the researcher to further discuss your interview, for example to clarify data collected during the interview. Again you are free to decide if you wish to discuss your interview further or if you prefer not to. Interview participants, if they wish, will receive copies of the research outputs.

How will data collected during the interviews be stored and used?

Interview data is confidential, will be stored securely and only accessed by the principal researcher and supervision team. Interview recordings will be transcribed and analysed by the researcher. Transcribed data will be anonymised, with identifying information replaced with identifier codes. An additional document, password protected in digital form and stored separately in physical form, will be required to link transcripts to the identities of participants. In accordance with UWE regulations data will be stored for 6 years after PhD completion then destroyed.

Finding from this research will be disseminated in reports, academic articles, presentations and a PhD thesis. The findings will refer to, paraphrase and directly quote from interviews. Care will be taken when reporting data to

Version 0.4 Date 23/09/2013

ensure that participants can not be identified. Interview participants will not be identified by name and descriptions of participants will include only general details, from which participants will not be identifiable.

Benefits/disadvantages

Potential benefits from taking part include:-

1. Have your views heard on sustainability in the health service

- The outcome of this research project will include recommendations on the role of sustainable development in Wiltshire and an identification of barriers and facilitators to sustainability activities
- Results from the survey will be fed back to NHS Wiltshire, Wiltshire CCG, the NHS SDU and through academic journals

2. Gaining a greater understanding of the impacts of sustainability on health and the healthcare system

- Taking part in the interviews is an opportunity to reflect and consider how sustainability issues could impact the health of your local community, the local health service and the day to day role of GPs

3. An opportunity to work towards CPD points

- Participating in the interview is an opportunity to consider the impact of sustainability on your practice and could be claimed as knowledge acquisition for CPD points
- A completion certificate will be made available to interview participants to demonstrate their participation.

Although kept to a minimum there are a few potential disadvantages to taking part in the survey. It is unlikely, but possible, that some participants could find considering the impacts of sustainability issues on health and wellbeing and the health service disconcerting. Within interviews sustainability issues will be presented in a balanced way, interviews will be sensitive to the needs of participants and interviewees free to address topics or move on as they see fit.

Interview topics are focused on sustainability in the health service, however you are free to express any opinions that you like, which could include views that you would not wish to be widely known. Confidentiality and data management procedures will ensure that opinions presented during interviews are not disclosed and protect participants from harm. In the extremely unlikely event that you were to choose to disclose something that indicated involvement in illegal or harmful activities confidentiality procedures could be disregarded and these activities reported.

Contact details

If you have any questions or would like more information about the study please contact the principal researcher, Adam Noonan, at Adam.Noonan@uwe.ac.uk or the PhD project supervisor Dr Paul Pilkington at Paul.Pilkington@uwe.ac.uk.

Version 0.4 Date 23/09/2013

Additional information – Sustainable development and its impact on health and the NHS

Sustainable development is described by the NHS Sustainable Development Unit as the ‘the balance required between financial, social and environmental factors in order that future generations do not suffer because of the way we live today’ (NHS SDU, 2011. Route Map for Sustainable Health p3). This means the NHS must take into account the environmental and social impacts of its decisions. Environmental trends such as a harsher and warmer climate, resource pressures (including energy, raw materials and water) and loss of biodiversity and essential ecosystems services interact with population growth and unsustainable production and consumption to impact human health and wellbeing.

Health and wellbeing impacts in Wiltshire will include **direct impacts** from environmental change, such as increases in extreme weather events (heatwaves, flooding etc). **Indirect impacts** on security and wellbeing will arise from **direct impacts** experienced elsewhere. This could include food insecurity as a result of decreased agricultural productivity or unpredictable patterns of migration. **Mitigation activities** to reduce environmental impact (for example reducing greenhouse gas emissions) and **adaptation activities** to increase resilience (such as retrofitting buildings for increased energy and water efficiency) may increase health and wellbeing or, if poorly planned and implemented, reduce it. **Widening health inequalities** may be experienced as vulnerable groups will have fewer resources to adapt; for example low income individuals will be most affected by food price fluctuations.

Sustainability and health are closely linked, both materially impacted by issues such as energy security, diet, housing, transport and town planning. In many cases more sustainable options, such as increased walking and cycling or diets low in animal products have health benefits while high impact behaviours such as overreliance on cars and diets high in animal products can negatively impact health.

NHS and Sustainable Development

The NHS has a carbon footprint equivalent to a country the size of Portugal and is committed to demanding carbon footprint reductions of 10% by 2015, 34% by 2020 and 80% by 2050. The NHS is well placed to encourage health and sustainability more widely with staff, patients, local community and partner organisations. Immediate action is required on sustainability. Much of today’s NHS estate will still be operational in 2050 while the elderly population of 2050 is currently in its thirties and developing the habits that will contribute to future wellness. A sustainable health service requires transformational change in what the health service does, how healthcare is delivered and where healthcare is delivered. Overall reductions in activity and real estate are required along with a prioritising of upstream preventative care and high value activities. GPs will make sustainability central to their commissioning, referral and treatment decisions.

10.2 Interview topic guide

Version 0.8 Date 23/09/2013

Semi-Structured Interview Topic Guide

A Sustainable NHS? Understanding the engagement of GPs with sustainable development in the NHS.

This preliminary interview topic guide is representative of the final topic guide that will be used in the research interviews. This final topic guide will develop further alongside the interviews to reflect what is learnt during these interviews and to address theory as it emerges from early analysis.

Pre-interview introduction/discussion

Pre- interview steps will include:-

- Personal introduction
- Discussion of the participant information form
- Introduction to the topic and purpose of the research
 - o Discussion of key terms used in the interview
 - o Discussion of interview process
 - Relaxed/conversational style
 - Achieving rich description and in depth exploration of issues may involve detailed questioning, or questions that may not seem relevant at times
- Opportunity for participants to ask questions and put forward any concerns
- Discussion and signing of consent form
- Set up of recording equipment

1. Introduction to the topic and background

Topic introduction:-

First I'd like to find out a little about you and your practice, in your own words.

Notes – May need to discuss with participants why biographical questions are being asked – Aim is to understand GPs in their own words/provide context for the interview

Professional life

- How long have you worked as a GP?

Probes - How long at this particular practice?; Other jobs?; Specialities/interests

- Can you tell me about your role as a GP?

Probes – Describe a day / week; Aspects of the role - important/enjoyable/key

Overall description of GP role (example – farmer ploughs fields/feeds animals – but overall produces food for people to eat – what do you do?)

- Can you tell me about the community that your practice services?

Probes – Size; Local area; Health and wellbeing challenges/opportunities

Sustainability

- Can you tell me what you think about sustainability?

- When I say 'sustainability', what do you think of? What does it mean to you?

Probes – Attitudes towards sustainability (positive/negative)

Personal sustainability behaviours – past/current/future

Work based sustainability behaviours – past/current/future

Biographical information

- Primarily established through observation/follow up questions rather than specific questions which may be intrusive
- Interview will respond to what interview participants bring up throughout the interview and probe these topics
- For example an interview participant may relate their discussion of environmental issues to their family (children/grandchildren) or personal beliefs/attitudes (religious belief/scientific interests/hobbies).

Probes – How does that link to sustainability? Why do you think you feel that? Is that an important factor for you?

2. Sustainability and health

Topic introduction:-

There are a range of views on the connections between sustainability, health and wellbeing. This part of an interview is an opportunity to discuss these links, in general and in how they apply to the local community served by your practice.

Sustainability introduction:-

- Reference will be made to the participant information sheet and discussion of sustainability in section 1 of the interview. Participants will be reminded that their views on sustainability may differ from those set out in the participant information sheet, and this is a valid point for discussion.

Sustainability/health connections in the local community

- Can you tell me how you think the local community, served by your practice, will be impacted by sustainability issues?

Probes 1–Key sustainability/health issues; Impacts already/currently felt; Likely future impacts; Direct impacts (examples); Indirect impacts (examples); Behavioural changes (examples); Resilience; Impact of different sections of the local community/ health inequalities

Probes 2 – Negative impacts; Positive impacts; Opportunities

- Can you tell me how significant connections between sustainability and health are in your local community?
- What are the opportunities to address health and sustainability in your local community?

Probes – Health and sustainability – where issues are not connected

- How does sustainability relate to the health challenges of your local community?
- Considering the ways that you feel health in your local area may be impacted, what do you think the role for a GP like you is?

Notes – This question is intended to link sections 2 and 3

3. Sustainability and the delivery of healthcare

Topic introduction:-

Delivering health care sustainably requires that health care be delivered within environmental limits. One of these limits is the carbon foot print of the NHS, which is required to shrink by 80%, on 1990 levels, by 2050. Delivering health care with a much lower impact will require that services are delivered very differently.

Sustainability and the NHS

- What kind of role do you think the NHS should have in addressing sustainability issues?
Probes – Leadership role; Greater/lesser responsibility than other sectors; Limited role reducing impact vs. transformative role leading behaviour change; Particular activities that the NHS should focus on
- Is sustainability something that healthcare professionals have a particular responsibility for?
Probes – Do no harm; Health/wellbeing impacts; Connected agenda; Spiritual offsetting/ less responsibility (already working in a pro social field)

- What kind of things should the NHS do in order to become more sustainable?
Probes – Biggest opportunities; Things that should not be done; How resources should be used

Notes – Specific opportunities could include:- Prevention – public health role – integration with other social services – stopping doing things that are not 'effective' – increasing self care

- What kind of impacts do you think that a more sustainable approach to healthcare could have on different groups?

Probes – Patients (different groups of patients); Local community (different groups within local communities); NHS workers; You

- How do you perceive the impact of sustainability on the delivery of healthcare?
Probes – Is sustainability a cost or solution?; Compromises in healthcare delivery; Additional work; Challenges/negative impacts that may arise; Opportunities/positive impacts; Double agent Relationships-Individual patients; Local communities; Healthcare providers

4. Engagement with sustainability

Topic introduction:-

Earlier we discussed links between sustainability, health and healthcare. Now I'd like to talk about how GPs like you might engage with sustainability and make sustainability part of what you do.

Notes – Referring back to section 1, 2 and 3 will be useful here - How can sustainability (as discussed) be part of a GPs day to day activities (as discussed in section 1)

Current/past sustainability activities

- In your role as a GP are you now, or have you been involved in, any sustainability activities?
Probes – Define sustainability activities (reduction in environmental impact, behaviour change); Formal activities; Informal activities; Preparation (meetings, training, discussions); Changes to your practice; Behaviour change; Awareness of sustainability initiatives; Awareness of other sustainability activities;
- Why did you take part in those activities?
Probes - Facilitators; Barriers

Context to engagement with sustainability activities

- Do you think you are able to work towards sustainability at the moment?

Probes –

Overall context – Priority of sustainability

Work context – Available resources; Regulations; Freedom to act

Social context – Organisational culture; Colleagues

Patients and the local community – Support for sustainability

Do different sustainability activities have different challenges?

- Can you tell me some of the barriers that you face to engaging with sustainability?

Probes –Current barriers; Potential future barriers

- Can you tell me what might facilitate engagement with sustainability?

Probes – Current facilitators; Potential future facilitators

Potential/future sustainability activities

- Can you tell me where you see opportunities to engage with sustainability?

Probes – Day to day activities; Commissioning; Advocacy; Behaviour change; Partnership working

5. Vignettes – engagement with sustainability

Depending on the interview situation participants may be presented with a short vignette depicting a situation that a GP may take part in as part of a sustainability activity. It is important that participants understand the vignettes as relevant, plausible and realistic. Vignettes will develop and change over time, incorporating the feedback and findings from previous interviews.

Vignette introduction:-

We've discussed sustainability and its impacts in general, but I would like to discuss some hypothetical situations and for you to discuss these situations in relation to your experience and knowledge. These short 'vignettes' describe actions that different healthcare professionals might take as they engage with sustainability.

Participants will be told that vignettes are derived from the literature on sustainability in the health service

Notes:-

- Vignettes will be given to participants in the form of short pre-prepared cards that participants will be able to read in their own time
- Vignettes should be short, easy to read and describe a plausible and relatable scenario.
- Vignettes will develop over time. The following examples indicate the form that vignettes will take.
- Vignettes will be of scenarios that correspond to different levels of engagement with sustainability, with low engagement requiring minimal changes to practice, while high engagement requires more involvement from GPs.

Vignette questions

After presenting a vignette the following areas will be discussed:-

- Do you think the situation described here is believable?

Probes – Plausible aspects – implausible aspects – alterations to the vignette to make it something that is more plausible

Notes – It is important that participants respond to the vignette as a plausible situation, that they may choose to engage with. If a vignette is not plausible to a participant they will be given the opportunity to say why it is not plausible and alter the vignette to be more plausible

- How applicable is this to your local situation?

Probes – Could this take place here?; Would this be a positive thing to happen here?; Is this relevant to past activities that you have take part in?

Different perspectives – Their own; The practice; Local community; Patients

- What should be done here? What could be done here?

Probes – Opportunity to discuss should/would – ideal scenario vs. real world scenario

- What would provide a barrier to doing this? What actions would facilitate this?

Probes – Refer to previously discussed barriers and facilitators

Vignette examples

Low engagement

A parent, who you know through previous consultations, visits you with their 4 year old child to discuss a minor health problem. You are able to address the parent's concerns in a straightforward way. You decide to take this opportunity to raise the health and wellbeing benefits that the family could gain from sustainable behaviours, choosing to discuss physical activity and travel. You take a few minutes to have a conversation with the parent about the health benefits of active travel. You discuss some of the ways in which walking and cycling could be incorporated

into the family's activities. You give the parent some references that they can choose to follow up on local walking and cycling facilities.

Medium engagement

You and a patient are discussing the best way to manage a health problem they have. There are a number of options that you could take, which include diagnostic tests and prescription drugs that you believe will offer little benefit to the patient and have a high environmental impact. You consider these environmental impacts and when you discuss options with the patient you prefer the options that have lower impacts.

High engagement

You have the opportunity to contribute to and influence the commissioning decisions of your CCG. In your contribution you put forward that commissioning decisions should prioritise sustainability by balancing the long term needs of the population against the short term needs. Resources should be used to prioritise activities that reduce demand for services in the long term by improving the health of the local population. Commissioning decisions should consider meeting environmental objectives by stopping activities that have little benefit and reducing the health care real estate.

6. Closing interview

- Interviews are scheduled, so both participant and researcher will be aware of the need to end the interview
- 5-10 minutes before the scheduled end of the interview the researcher will indicate to the participant that the interview is scheduled to end. Participants will be able to extend the interview if they wish to cover a topic in more detail if this is practical.
- Key points raised during the interview may be summarised by the researcher, with opportunities for further discussion
- Participants will be asked if there are any areas of discussion that they would like to clarify or go over
- Participants will be asked if they are aware of any colleagues who may wish to take part in interviews
- Participants will be reminded of the end of interview procedures, which will include
 - o Participants will be provided with a transcript of the interview for their review, although it is up to them if they wish to take the time to review the transcript in full
 - o Participants may be contacted to discuss some of their responses, but they are free to discuss these responses or not
 - o Participants will be asked if they wish to have a copy of the research outputs
 - o Participants will be reminded that they may ask for their data to be withdrawn from the study
 - o The participant will be encouraged to contact the researcher, using the contact details available on the participant information sheet, if they have any questions
-

10.3 Participant consent form



University of the
West of England

Adam Noonan, Doctoral Student
Faculty of Health and Life Sciences
University of the West of England
Blue Lodge, Glenside Campus
Blackberry Hill
Bristol BS16 1DD
Adam.Noonan@uwe.ac.uk

A Sustainable NHS? Understanding the engagement of GPs with sustainable development in the NHS.

CONSENT FORM

Title of Project: A Sustainable NHS?

Name of Researcher: Adam Noonan

Please initial all boxes

1. I confirm that I have read and understand the information sheet dated 23/09/2013 (version 0.4) for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily.

2. I understand that my participation is voluntary and that I am free to withdraw at any time without giving any reason and without any negative repercussions.

3. I agree for the interview to be recorded and transcribed.

4. I understand that data collected during the interview will be utilised in the 'A sustainable NHS?' research and publications and presentations derived from this project in the ways described in the participant information sheet.

5. I agree to take part in the above study.

Name of Participant

Date

Signature

Name of Person
taking consent.

Date

Signature

Consent form date of issue: **23/09/2013**
Consent form version number: **0.3**

Page 1 of 1

10.4 UWE ethics approval



Faculty of Health & Life
Sciences
Glenside Campus
Blackberry Hill
Stapleton
Bristol BS16 1DD
Tel: 0117 328 1170

Our ref: JK/lt

06 May 2013

Adam Noonan
43 Chalks Road
St George
Bristol
BS5 9EP

Dear Adam

Application number: HLS/12/05/61
Application title: A Sustainable NHS?

Your ethics application was considered by the Faculty Research Ethics Committee and based on the information provided was given ethical approval to proceed.

You must notify the Faculty Research Ethics Committee in advance if you wish to make any significant amendments to the original application.

If you have to terminate your research before completion, please inform the Faculty Research Ethics Committee within 14 days, indicating the reasons.

Please notify the Faculty Research Ethics Committee if there are any serious events or developments in the research that have an ethical dimension.

Any changes to the study protocol, which have an ethical dimension, will need to be approved by the Faculty Research Ethics Committee. You should send details of any such amendments to the committee with an explanation of the reason for the proposed changes. Any changes approved by an external research ethics committee must also be communicated to the relevant UWE committee.

Please note that all information sheets and consent forms should be on UWE headed paper.

S:\HLS\Admin\Research\HLS Research\Admin Staff\Leigh\Ethics – April 2012

-2-

Please be advised that as principal investigator you are responsible for the secure storage and destruction of data at the end of the specified period. A copy of the 'Guidance on Managing Research Records' is enclosed for your information.

Please note: The University Research Ethics Committee (UREC) is required to monitor and audit the ethical conduct of research involving human participants, data and tissue conducted by academic staff, students and researchers. Your project may be selected for audit from the research projects submitted to and approved by the UREC and its committees.

We wish you well with your research.

Yours sincerely

A handwritten signature in blue ink, appearing to read 'Julie Kent', with a long horizontal flourish extending to the right.

Prof Julie Kent
Chair
Faculty Research Ethics Committee

c.c. Paul Pilkington
David Evans

10.5 NHS research governance letter



Room 3.22, 1 West
University of Bath
Claverton Down
BATH
BA2 7AY
Telephone: 01225 384197
E-mail: brd@bath.ac.uk

Adam Noonan
43 Chalks Road
St George
Bristol
BS5 9EP

14 October 2013

Dear Adam,

Re: 2013/051 Qualitative interviews addressing the attitudes and opinions of GPs in Wiltshire towards sustainability, health and wellbeing, and a more sustainable health service as part of a mixed methods study.

On behalf of NHS Wilts CCG we are pleased to inform you that the R&D governance review has been successfully completed by Bath R&D for the above project. Please accept this letter as assurance to GP practices within the CCG that the project meets nationally agreed research governance criteria.

1. The research should be conducted in accordance with the Research Governance Framework for Health and Social Care and, if applicable, with ICH GCP.
2. Amendments should be submitted in accordance with IRAS guidance.
3. The R&D office should be notified of any urgent safety measures taken.
4. Project monitoring and outcome information should be provided at least annually and the office should also be notified of the study completion. Please note that a random audit of this research may be conducted.

If you need any further support or information, please do not hesitate to contact me at the above address, quoting our reference number.

Yours sincerely,

A handwritten signature in black ink, appearing to read 'Irene Blair'.

Irene Blair
Research Governance Facilitator
Bath Research & Development
(NHS Wiltshire is a member of the Bath Research & Development consortium.)

cc: Anne Rutland, NHS Wiltshire



Bath and North East Somerset Primary Care Trust - Swindon Primary Care Trust
Wiltshire Primary Care Trust - Kennet and North Wiltshire and West Wiltshire localities



10.6 NHS letter of access for research



Rm 3.22, 1 West
University of Bath
Department for Health
Claverton Down
Bath
BA2 7AY

Telephone: 01225 386575
Email: brd@bath.ac.uk

Adam Noonan
43 Chalks Road
St George
Bristol
BS5 9EP

14/10/2013

Dear Mr Noonan

Letter of access for research:

2013/051: Qualitative interviews addressing the attitudes and opinions of GPs in Wiltshire towards sustainability, health and wellbeing, and more sustainable health service as part of a mixed methods study

This letter confirms your right of access to conduct research through NHS Wiltshire CCG for the purpose and on the terms and conditions set out below. This right of access commences on 14/10/2013 and ends 01/03/2014 unless terminated earlier in accordance with the clauses below.

You have a right of access to conduct such research as confirmed in writing in the letter of permission for research from this NHS organisation. Please note that you cannot start the research until the Principal Investigator for the research project has received a letter from us giving permission to conduct the project.

The information supplied about your role in research at NHS Wiltshire CCG has been reviewed and you do not require an honorary research contract with this NHS organisation. We are satisfied that such pre-engagement checks as we consider necessary have been carried out.

You are considered to be a legal visitor to NHS Wiltshire CCG premises. You are not entitled to any form of payment or access to other benefits provided by this NHS organisation to employees and this letter does not give rise to any other relationship between you and this NHS organisation, in particular that of an employee.

While undertaking research through NHS Wiltshire CCG, you will remain accountable to your employer, but you are required to follow the reasonable instructions of the relevant department heads in this NHS organisation or those given on her/his behalf in relation to the terms of this right of access.

Where any third party claim is made, whether or not legal proceedings are issued, arising out of or in connection with your right of access, you are required to co-operate fully with any investigation by this NHS organisation in connection with any such claim and to give all such assistance as may reasonably be required regarding the conduct of any legal proceedings.

You must act in accordance with NHS Wiltshire CCG policies and procedures, which are available to you upon request, and the Research Governance Framework.



Bath and North East Somerset Primary Care Trust - Swindon Primary Care Trust
Wiltshire Primary Care Trust - Kennet and North Wiltshire and West Wiltshire localities



You are required to co-operate with NHS Wiltshire CCG in discharging its duties under the Health and Safety at Work etc Act 1974 and other health and safety legislation and to take reasonable care for the health and safety of yourself and others while on NHS Wiltshire CCG premises. You must observe the same standards of care and propriety in dealing with patients, staff, visitors, equipment and premises as is expected of any other contract holder and you must act appropriately, responsibly and professionally at all times.

You are required to ensure that all information regarding patients or staff remains secure and *strictly confidential* at all times. You must ensure that you understand and comply with the requirements of the NHS Confidentiality Code of Practice (<http://www.dh.gov.uk/assetRoot/04/06/92/54/04069254.pdf>) and the Data Protection Act 1998. Furthermore you should be aware that under the Act, unauthorised disclosure of information is an offence and such disclosures may lead to prosecution.

You should ensure that, where you are issued with an identity or security card, a bleep number, email or library account, keys or protective clothing, these are returned upon termination of this arrangement. Please also ensure that while on the premises you wear your ID badge at all times, or are able to prove your identity if challenged. Please note that this NHS organisation accepts no responsibility for damage to or loss of personal property.

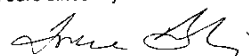
We may terminate your right to attend at any time either by giving seven days' written notice to you or immediately without any notice if you are in breach of any of the terms or conditions described in this letter or if you commit any act that we reasonably consider to amount to serious misconduct or to be disruptive and/or prejudicial to the interests and/or business of this NHS organisation or if you are convicted of any criminal offence.

Your substantive employer is responsible for your conduct during this research project and may in the circumstances described above instigate disciplinary action against you.

NHS Wiltshire CCG will not indemnify you against any liability incurred as a result of any breach of confidentiality or breach of the Data Protection Act 1998. Any breach of the Data Protection Act 1998 may result in legal action against you and/or your substantive employer.

If your current role or involvement in research changes, or any of the information provided in your Research Passport changes, you must inform your employer through their normal procedures. You must also inform your nominated manager in this NHS organisation.

Yours sincerely



Irene Blair
Research Governance Facilitator, BRD
on behalf of NHS Wiltshire CCG