Navigating the uncertainties of screening

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Biography:

Natalie Armstrong is Professor of Healthcare Improvement Research at the University of Leicester, where she currently holds a Health Foundation Improvement Science Fellowship. A medical sociologist by background, her work uses sociological theory and methods to understand health and illness and to tackle problems in the delivery of high-quality healthcare. Natalie has published widely in both social and health science, including editing (with Helen Eborall) a Sociology of Health and Illness special issue on the sociology of screening. Natalie is an associate editor for the journals BMJ Quality & Safety and Family Practice, and has served on numerous committees and management boards, including the Research Advisory Committee for the charity Wellbeing of Women and the East Midlands Regional Committee for the NIHR Research for Patient Benefit Programme. She is a member of the UK National Screening Committee's Adult Reference Group.

Navigating the uncertainties of screening: the contribution of social theory

Abstract

Screening programmes are social interventions as much as they are medical, and as such they benefit from scrutiny informed by social theory. Screening gives rise to a range of uncertainties and the debates and controversies that result are rarely confined to policy makers and health professionals. Contestations about the science underlying screening are common, and frequently enter the public sphere, engaging with wider societal themes and normative questions. The uncertainties of screening and the need to balance potential benefits against possible harms are often underestimated and underrepresented within these.

In this paper I consider the contribution of social theory to navigating the uncertainties of screening. In doing so, I focus in particular on two relatively recent developments. First, the marked shift, at least in policy terms, towards screening based on an individual's informed consent, having weighed up the possible harms and benefits. Second, the emerging focus on overdiagnosis and overtreatment. I highlight some important ways in which social theory can add value by helping us gain analytical purchase on these issues.

Keywords

Screening; uncertainty; sociology; theory; overdiagnosis

Introduction

The potential reach of medical screening is growing and developing; it is now possible to screen for an ever increasing range of conditions, using ever more advanced and sophisticated technologies and techniques. Screening is far from simply a medical matter though, rather it raises fundamental issues and dilemmas that are amenable to and indeed benefit from scrutiny informed by social theory. These issues are of interest to social scientists because screening gives rise to a range of uncertainties and the debates and controversies that result are rarely confined to policy makers and health professionals. Contestations about the science underlying screening are common, and frequently enter the public sphere, engaging with wider societal themes and normative questions. Different groups engage, prioritise, and mobilise different forms of knowledge and ways of knowing about screening.

It is important to be clear that my focus in this paper is on population based medical screening, by which I mean screening offered to all people within any particular identified target population, for example, based on age or sex. This is fundamentally different from both the traditional medical model of diagnosis following a patient's spontaneous presentation of symptoms, and opportunistic case finding in which a doctor tests for a condition during a consultation about another matter. It is also importantly different to predictive genetic testing in which individuals are referred for testing if there is a family history of a particular condition or disorder. This is not for a moment to suggest that sociological scrutiny of these activities is not valuable. The rich body of sociological work on predictive genetic testing, for example, has developed important insights into the social and cultural impact of providing people with information relating to the likelihood of their developing future disease (Cox and McKellin 1999, Davison, Macintyre et al. 1994); the experiences of genetic responsibility that testing and receiving the results may invoke (Hallowell 1999, Polzer, Mercer et al. 2002, Rowley 2007, Raspberry and Skinner 2011) and how such responsibility may be gendered (Steinberg 1996, Hallowell, Arden-Jones et al. 2006, Reed 2009). However, because genetic testing of

this type is not routinely offered at the population level, but rather referrals made on the basis of an individual's family history, the distinction between this and population based medical screening is an important one.

The population based medical screening of the kind I am concerned with in this paper involves the purposeful application of tests to an asymptomatic population in order to classify those being screened as either likely or unlikely to have or develop the disease. The UK National Screening Committee (UK National Screening Committee 2017a), which advises ministers and the health departments in the four UK countries about all aspects of population screening and supports implementation of screening programmes, defines screening as follows:

Screening is the process of identifying healthy people who may be at increased risk of disease or condition. The screening provider then offers information, further tests and treatment. This is to reduce associated risks or complications.

(UK National Screening Committee 2017b)

While there are of course differences in the screening programmes implemented in different countries, and recognising that a comprehensive overview of screening provision globally is beyond the scope of this paper, the screening arrangements in England provide a useful example. Here, the current screening programmes include those for: cervical cancer; breast cancer; bowel cancer; abdominal aortic aneurysm; diabetic retinopathy; and a range of fetal, maternal and child health screening tests (NHS Choices 2017).

In recent years the sociology of screening has demonstrated how scrutiny of such preventive interventions informed by social theory can be particularly valuable, both in informing policy and developing and implementing screening programmes (Armstrong and Eborall 2012a,b). Such value comes through, amongst other things, the insights generated about felt moral obligations to attend, participation as a response to a set of normative expectations rather than on the basis of informed consent, and exploration of the lived experience of screening which deepen our understanding of

the wider implications of being at risk. In this paper I present an overview of the wide ranging body of work informed by social theory that has sought to examine population based screening from a range of theoretical perspectives and using diverse methodological approaches. I do not claim to offer an exhaustive review but rather my intention is to highlight and explore some distinct themes within this work, particularly as they relate to my core concern of navigating uncertainties. My aim in this paper is to draw out multiple uncertainties, which are relevant at different levels and which pertain to different kinds of actors and forms of knowledge. First, I consider some of the uncertainties posed by screening and the issues these raise. Second, I synthesise relevant social science literature on screening and draw out the distinctive contributions of this body of work. Third, I turn to the increasing focus on issues of overdiagnosis and overtreatment in relation to screening and the potential contribution of social science theory to this area.

Screening and its uncertainties

Arguably one of the most important issues raised by population based screening of asymptomatic populations is the alteration in the usual relationship between patients and medicine that inevitably ensues. As Cochrane and Holland so clearly set out over forty years ago now, if a sick person experiences symptoms and chooses (and is able) to consult a doctor or other healthcare professional then that is one thing. However, if healthcare services start to invite people who are asymptomatic to be screened for something that they might, but probably do not, have then that is something quite different and starts to bring all sorts of other issues into play.

'Screening will inevitably turn some people who test 'positive' into patients – a transformation not to be undertaken lightly. If a patient asks a medical practitioner for help, the doctor does the best possible. The doctor is not responsible for defects in medical knowledge. If, however, the practitioner initiates screening procedures the doctor is in a very different situation. The doctor should, in our view, have conclusive evidence that screening can alter the

natural history of the disease in a significant proportion of those screened.'

(Cochrane and Holland 1971)

While misdiagnosis is of course possible, one of the important ways in which screening is different, and an important means through which uncertainty begins to creep in, is that all screening programmes involve an inescapable risk of false-positives and false-negatives, in which people are either incorrectly identified as at risk (and therefore subjected to unnecessary further investigation and possibly treatment) or are falsely reassured (and therefore not offered the further investigation and treatment they may require). Uncertainty therefore exists about whether people who screen positive really do have the condition and, vice versa, about whether those who screen negative definitely do not. These uncertainties are relevant not only to those individuals being screened but, particularly in the case of false positives, also to those healthcare professionals involved in providing further investigations.

Screening is not definitive, rather it is a preliminary 'sort' – the notion of a sieve is increasingly being used in this context as an explanatory metaphor – of those having been screened into two broad groups based on the probability of them having or developing the condition in question. This element of uncertainty is inescapable as screening is not definitive diagnosis – that comes later, at least for those who screen positive and who do really have the condition or its precursor (although see later in the paper for a discussion on the uncertainties posed by potential overdiagnosis). What this means is that a fine balance is needed between having the sieve catch too many people that do not have anything wrong with them (and are therefore false positives) and letting through too many people for whom further investigation is actually warranted (and are therefore false negatives). The distinction between screening and diagnosis is thus of great importance; both technically but also from a sociological perspective as the sociology of screening (Armstrong and Eborall 2012a,b) is related to but importantly distinct from the sociology of diagnosis (Jutel 2009, Jutel and Nettleton 2011).

A further source of uncertainty, and one which relates more to the level of epidemiological evidence, arises because it is in fact quite challenging to evaluate and assess screening's particular contribution to any observed reduction in mortality and morbidity - several sources of bias are often quoted here. One is length-time bias, which refers to the appearance that a person's life expectancy has been increased because the condition he or she has was detected through screening when in fact all that has lengthened is the period of time that they have been aware of the disease. A second is lead-time bias, in which the kinds of cases that are amenable to and identified through screening are arguably those that are by definition less aggressive or less likely to go on to be a problem for the patient. A third is selection bias, in which people who engage in screening programmes are at the same time precisely those also likely to be doing other things that are health promoting, such as not smoking, taking exercise, and eating well. These potential biases combine to mean that surfacing the particular contribution that screening is making in any particular case under consideration is not necessarily a straightforward thing to do.

These uncertainties of screening and the need to balance potential benefits against possible harms are often underestimated and underrepresented in policy and public discussions about screening. For example, despite evidence that prostate specific antigen (PSA) testing for prostate cancer does not reduce prostate cancer mortality and can instead cause harm from unnecessary treatment and anxiety, in the US a powerful pro-PSA lobby group contests this and encourages widespread screening. In the same vein, following the death from cervical cancer of the UK reality television star Jade Goody, repeated public calls for cervical cancer screening to start earlier were made despite a specially-commissioned review of the evidence supporting the decision not to screen until the age of 25 years (in England) in an effort to achieve an optimal balance between potential benefit and possible harm.

Insights informed by social theory

The 1990s saw a proliferation of sociological work that applied Foucault's ideas on governmentality to public health and health promotion, and argued that individuals were increasingly being constrained to think and act in particular ways in order to maximize their health and be regarded as responsible and moral citizens (Castel 1991, Burrows, Nettleton et al. 1995, Lupton 1995, Nettleton 1995, Nettleton and Bunton 1995, Petersen and Lupton 1996). Focusing broadly on how health status and the means for initially achieving and subsequently ensuring the maintenance of good health has become a predominant concern of modern life, of particular interest within what has been termed the 'New Public Health' (Green 2004) was a well-documented shift towards 'promoting' good health and encouraging populations to monitor their own health. Tolerating uncertainty about one's status as either healthy, ill, or 'at risk' in some way has arguably become increasingly undesirable.

At the same time, the influential work of David Armstrong (Armstrong 1983, 1993, 1995) to develop the concept of 'surveillance medicine' was influential in using social science theory to examine and problematise the increased observation and surveillance of the population in health terms. The premise of the surveillance medicine concept is that the model of medicine that emerged during the 20th century is concerned with the observation and monitoring of apparently healthy populations, and that asymptomatic individuals are increasingly expected to make their bodies available to health professionals for regular inspection in order to minimise uncertainty by prompt identification of asymptomatic abnormalities. Such observation and monitoring breaks down the traditional distinction between those that are healthy and those that are ill. Medicine is no longer concerned simply with the latter; instead, the whole population comes under surveillance and is potentially 'at risk' (Armstrong 1995).

A significant thread of sociological work on screening has drawn on and developed these ideas, often using cervical screening as case material – a particularly amenable example as it involves women

being invited at regular intervals through much of their adult life, therefore providing a large and easily accessible pool of potential research participants. An important contribution arising from the application of social science theory to what might look more like an issue only of interest to public health specialists is the way in which this enables us to conceptualise engagement with and attendance for screening as a response to normative expectations about what constitutes the most sensible and responsible course of action (McKie 1995, Howson 1998, 1999, Bush 2000). Alexandra Howson's work is notable here for the theoretically sophisticated way in which she problematises women's attendance for cervical cancer screening and links this to wider debates about the exercise of power within society (Howson 1998, 1999). In her work, Howson argues that attendance for screening can be highly problematic as through the application of social science theory it is possible to understand it not simply as a neutral outcome of public health activity but alternatively *"...as a response to a particular expression of power or set of normative expectations [...] a social practice, which is embedded within a moral framework of responsibility and obligation"* (Howson 1999:402). Attendance at screening may thus be understood as signifying responsible behaviour that demonstrates good citizenship by engaging in forms of health practices that seek to minimise uncertainty and risk – in Howson's terms, screening attendance becomes a form of 'moral obligation'. This is not to say that individuals are unable to think and behave in ways other than those suggested to them through such powerful discourse though (Armstrong 2005, 2007, Armstrong and Murphy 2012).

A second theme on which social scientific scrutiny has been of significant value, particularly given my concern in this paper with navigating screening's complex uncertainties, is whether and how truly 'informed consent' for screening can be achieved. The application of social theory has helped to unpick the complex interplay of factors which shape how people make decisions about whether to have screening, and indeed to question whether decisions are being made at all. There has been an increasing focus in recent years on screening based on informed consent rather than on an expectation or assumption of participation; from the invitee's perspective this has meant that the

information leaflets accompanying invitations to participate in screening have begun to include more about the possible harms as well as the potential benefits (Zapka, Geller et al. 2006, Gummersbach, Piccoliori et al. 2010, Gøtzsche and Jørgensen 2011). However, there are long recognised tensions between informed choice and ensuring optimal uptake of screening (Raffle 2001). The information provided may be influenced by a desire to present screening in particular ways, for example, Braun & Gavey (1999) argue that cervical cancer prevention policy in New Zealand largely suppressed sexual risk factor information as policy makers sought to avoid linking cervical cancer and screening to sexual promiscuity or adventurousness in order to avoid potential stigma and maintain attendance levels.

There are important questions about what constitutes both full and accessible information, and when such information may be available. Importantly, the extent to which ‘the facts’ can ever be fully known is questionable; sometimes the very act of screening itself changes what we know about a condition and how we think about it by creating uncertainties in epidemiological understandings. This may be the case because, prior to screening, knowledge about a condition is based almost solely on cases in which it has become symptomatic. A good example of this is work on medium chain acyl-CoA dehydrogenase deficiency (MCADD) in the context of expanded newborn screening in the US (Timmermans and Buchbinder 2012). Here, beginning to screen for a condition started to reveal new information that challenged how the condition was understood. From a singular disease it morphed into a condition with several variants, new kinds of patients with different risk factors were identified, the incidence appeared much higher than anticipated, and it seemed to affect a wider range of ethnic groups than had previously been thought. Presenting complex, technical information (which may be incomplete) in ways that are easily accessible necessarily involves selectivity and selection over what is included and how it is explained which may have implications for how those invited for screening come to understand what it is all about (Armstrong and Murphy 2008).

However, information leaflets are just one part of a bigger, complex picture of the influences on how screening is understood and the decision to participate or not in screening approached. Other pertinent issues include: the technologies or techniques used in screening and their acceptability, particularly when they transgress social taboos (Chapple, Ziebland et al. 2008, Armstrong, James et al. 2012); how individuals think about and understand their own risk of developing a particular condition (Pfeffer 2004, Armstrong 2005); the wider context in which screening is offered (Todorova, Baban et al. 2006, Pilnick 2008, Pilnick and Zayts 2012); and how those invited to participate in particularly sensitive or new types of screening can be understood as acting as 'moral pioneers' (Williams, Sandall et al. 2005, Markens, Browner et al. 2010).

Wider sociological concern with issues of risk and uncertainty has also proved to be fertile ground, and empirical work exploring the experiences and understandings of those for whom screening indicates there may be a problem is plentiful. As examples, Green et al. (2002) have explored the role that health technologies such as breast cancer screening may play in the 'management' of midlife women's bodies, and the way in which messages about these technologies and their potential are interpreted by women and Griffiths et al. (Griffiths et al. 2006) have used uncertainty as a way of thinking about the issues faced by professionals in balancing individual and population costs and benefits of screening for breast cancer. In the latter example, the focus is on how healthcare professionals understand, talk about and cope with the tension between the individual and distributive ethic of medicine within the breast screening context - a tension between focusing on what may be beneficial to any individual and attending to health issues for the population as a whole.

In cases where screening has highlighted that there may be a problem, the uncertainty experienced by individuals, and the ways in which they attempt to understand and cope with this, has been a particular area of focus; for example, in relation to cervical abnormalities (Kavanagh and Broom 1998, Forss, Tishelman et al. 2004, Blomberg, Forss et al. 2009), prenatal screening (Heyman, Hundt

et al. 2006, Lotto, Armstrong et al. 2016), and newborn screening (Grob 2008). Gillespie's work on risk experience nicely draws out the profound social effects, in addition to the physical and psychological, for those who are screened. By exploring the social implications of screening for those designated as being at risk of potential disease, Gillespie draws attention to the increased medical contact, restructuring of everyday routines, and altered social relationships (Gillespie 2015). Being 'at risk', Gillespie argues, symbolically alters health identities through the 'measured vulnerability' some forms of screening have the potential to invoke through their focus on quantification of risk factor (Gillespie 2012).

A valuable additional focus has been on the work healthcare professionals do in order to attempt to navigate the uncertainties of screening, both in terms of the screening act itself but also the possible follow-ons in terms of diagnosis and prognosis, and the making of decisions about possible interventions. Examination of the interactional work at the 'sharp end' of screening has offered important insights into the way in which this form of work gets done and is received (Pilnick 2008, Pilnick and Zayts 2012, Pilnick and Zayts 2014), including problematizing ideals of non-directive counselling on the part of healthcare professionals (Schwennesen and Koch 2012). As is increasingly being recognised, while there is a wealth of literature on patients' experiences of various forms of screening, research on the everyday work practices of the healthcare professionals working in these situations remains relatively small in comparison (Thomas 2014, Gale, Thomas et al. 2016).

Overdiagnosis and overtreatment – the potential contribution of social science theory

Overdiagnosis and overtreatment are increasingly being recognised as a significant problem in healthcare but are yet to receive any significant sociological attention, over and above that which is arguably transferable from the medicalisation literature (Conrad 1992, 2005, 2007). Overdiagnosis and overtreatment occur when a diagnosis is 'correct' according to current standards but the diagnosis or associated treatment has a low probability of benefitting the patient, and may instead be harmful (Moynihan, Doust et al. 2012). "Overdiagnosis of the well and undertreatment of the sick

are the conjoint twins of modern medicine”, writes Iona Heath, past president of the Royal College of General Practitioners (Heath 2014). While undertreatment of the sick has received significant and sustained attention across policy, practice and quality improvement arenas, overdiagnosis and overtreatment have so far received far less.

The relevance of this to population based medical screening is that there are increasingly questions about the clinical significance of at least some of the anomalies being identified and treated, in particular whether they would go on to become problematic in a person’s lifetime and therefore whether or not intervention to ‘treat’ them is warranted. In this way, uncertainties pertain to the body of epidemiological evidence as well as to how things will work out for any particular individual. A good fairly recent example of where these issues were played out is the NHS Breast Screening Programme. This programme was the subject of an independent review in 2011-12 following mounting criticisms of its effectiveness (Gøtzsche and Nielsen 2011), with the verdict being that screening does reduce breast cancer mortality but with the associated cost of overdiagnosis, meaning that some women will be diagnosed with anomalies that would never have troubled them in their lifetime (Marmot, Altman et al. 2012). The review placed the figure at about three over-diagnosed cases identified and treated for every one breast cancer death prevented. Echoing the increasing shift towards informed choice already highlighted, the review called for information about the possible costs and benefits of screening to be made clearer and more transparent to women when they were invited to attend for screening and when they were making decisions about treatment options.

Overdiagnosis and subsequent overtreatment are increasingly recognised as a problem. The potential consequences are significant, including: psychological and behavioural effects of disease labelling; physical harms and side effects of unnecessary tests or treatments; unnecessary treatment negatively affecting quality of life; increased financial costs to individuals; and wasted resources and opportunity costs to the health system (Moynihan, Doust et al. 2012, Heath 2014, Hicks 2015).

Overdiagnosis is driven by a range of factors including: increasingly sensitive tests that identify indolent, nonprogressive, or regressive abnormalities; expanded disease definitions and lowered thresholds; creation of pseudo diseases; public enthusiasm for screening or testing and the desire for reassurance (Chen, Eborall et al. 2014); clinicians' fear of missing a diagnosis or of litigation; and financial incentives (Moynihan, Henry et al. 2014).

On the face of it, overdiagnosis might be constructed as a problem best addressed by improving the patient-professional relationship. Strategies to mitigate overdiagnosis and overtreatment are now beginning to emerge and are often focused at the level of interventions to support individual patients and/or clinicians, such as the development of decision aids and other shared decision making tools (Hersch, Barratt et al. 2015), or higher-level activities such as the 'Too Much Medicine' (BMJ 2017) and 'Choosing Wisely' (Choosing Wisely UK 2017) campaigns seeking to raise awareness and champion the cause. Increasing awareness of the potential for overdiagnosis and overtreatment, and efforts to convey this to those invited to participate in screening, raises further uncertainties and means the decision about whether to attend for screening becomes one which involves balancing potential harms against possible benefits. The application of insights from social theory suggests that, notwithstanding the efforts of interventions of this type, it is questionable whether significant traction on overdiagnosis is possible through these means alone.

While shared decision making tools and awareness raising campaigns are likely to have some impact, they are unlikely to be the whole solution. Healthcare professionals can lack confidence and guidance on how to do shared decision making well; feel uncertain of the evidence about harms and benefits of screening; and, importantly, lack external triggers to prompt such activity (Thornton 2010, Godlee 2016, Jansen, Naganathan et al. 2016). It is perhaps not surprising that many proceed to more tests, diagnoses and treatments, many of which will be unnecessary and potentially harmful (Armstrong and Hilton 2014). The production and/or use of such shared decision making tools also tends to assume that there is a body of stable and agreed information to be included. The way we

communicate with people about screening is, at least in theory, changing (Hersch, Jansen et al. 2016) but informed choice must be based on adequate knowledge, which may or may not be present (Ward, Coffey et al. 2015). As Stephenson et al. (2017) have argued in the context of antenatal screening, *“distinguishing information from choice is underpinned by a questionable fact–value distinction”*. As discussed earlier, evaluating a screening programme’s effectiveness can be challenging, especially in the absence of high quality trial data. Perhaps the most high profile attempt to do this was the review of the NHS Breast Screening Programme outlined above (Marmot, Altman et al. 2012) - even following the publication of the review’s findings contestations around the newly produced evidence continued, with vocal criticisms of the methods used and the robustness of the conclusions drawn (Thornton 2012, Baum 2013). What is troubling is that many healthcare professionals do not themselves seem to understand these issues – a recent study in the US showed that clinicians mistakenly interpreted improved survival and increased detection through screening as evidence that screening saves lives (Wegwarth, Schwartz et al. 2012).

The way in which screening is implemented and operationalised in practice can be also be importantly influential on the extent to which meaningful informed choice can really be possible (Vassy, Rosman et al. 2014). Placing expectations on patients to ask questions of, and potentially challenge, healthcare professionals fails to take account of the long acknowledged asymmetries in power within clinical encounters (Pilnick and Dingwall 2011), and we may also question the appropriateness of trusting informed choice to resolve ethical problems and complex value judgments in this context (Johansson, Jørgensen et al. 2016).

Even when healthcare professionals and patients may wish to do less rather than more, e.g. not screen or not investigate and treat any anomalies identified, the system within which care is delivered and received can make this challenging to achieve. This is because overdiagnosis is further compounded by the way in which many attempts to improve care quality (e.g. diagnostic targets, disease registers, guidelines, audits) tend to encourage doing more rather than less. There is

concern, for example, that guidelines intended to reduce variation and improve care have instead encouraged the neglect of respect for patients' preferences (McCartney 2014). Financial incentive schemes such as the Quality and Outcomes Framework in English primary care also play their part. Mechanisms for 'opting out' are not simple as removing patients from pay-for-performance schemes is complex (Roland 2016) and how to account within audits for those declining tests or treatments (rather than not being offered them) is not clear. Overdiagnosis must thus be understood as a consequence of the organisational, financial and cultural attributes of the system, not just individual interactions. Social theory exploring accountability, governance and regulation (Power 1997, Hood 2011) can enhance our thinking about how features of the health system may make it challenging for clinicians and patients to behave in ways that might be considered 'deviant'.

While there is growing consensus that too much medicine is damaging (Moynihan 2011, Moynihan, Doust et al. 2012), significant uncertainties remain about where and how the lines between appropriate and inappropriate care should be drawn, and whether this is even possible. There is increasing recognition that people's decisions about whether or not to participate in screening are based on their values, preferences and reasoning, and that a focus on the clinical outcomes achieved is not enough (Carter 2017). Patients' preferences and priorities vary significantly and therefore the line may be drawn very differently between individual cases. It is not yet clear how to move beyond this to facilitate care which is sufficiently flexible and responsive to patients' preferences.

Conclusion

Population based screening is full of uncertainties and there is value in drawing on social theory to help navigate these; both the sociology of screening (Armstrong and Eborall 2012, Armstrong and Eborall 2012) and the sociology of diagnosis (Jutel 2009, Jutel and Nettleton 2011, Jutel 2015) are growing and developing areas. In the course of this paper I have highlighted some of the key ways in which social theory has the potential to add value by helping us gain analytical purchase on these issues through, amongst other things, analysis of medical organizations and institutions, the

production of medical knowledge, the actions and interactions of healthcare professionals with both their colleagues and patients, and the social and cultural effects of medical practice. As the potential harms of screening are becoming more recognised and the focus increasingly placed on those who participate doing so on the basis of informed consent, there is value to be gained through using social theory to deepen our understanding of how interventions such as decision aids and shared decision making operate within complex healthcare contexts with long recognised asymmetries of power and structural features that may encourage and normalise particular forms of behaviour. Also important are the ways in which social theory can challenge thinking about the production of knowledge about screening, the nature of that knowledge, whose knowledge prevails, and how it is communicated to those invited to participate.

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