“More than my job is worth” – Defensive medicine and the marketisation of healthcare

Chapter · January 2018

DOI: 10.4324/9781315186351

2 authors:

Anant Jani
University of Oxford
61 PUBLICATIONS **638** CITATIONS
SEE PROFILE

Andrew Papanikitas
University of Oxford
87 PUBLICATIONS **178** CITATIONS
SEE PROFILE

“More than my job is worth” - Defensive Medicine and the Marketization of Healthcare (In PRESS)

Anant Jani, Honorary Research Fellow
Nuffield Department of Primary Care Health Sciences
University of Oxford
Radcliffe Observatory Quarter, Woodstock Road, Oxford. OX2 6GG

Email anant.jani@phc.ox.ac.uk
Webpage: https://www.phc.ox.ac.uk/team/anant-jani

Andrew Papanikitas, NIHR Academic Clinical Lecturer in general practice
Nuffield Department of Primary Care Health Sciences
University of Oxford
Radcliffe Observatory Quarter, Woodstock Road, Oxford. OX2 6GG

ORCID ID orcid.org/0000-0002-4163-4873
Twitter @gentlemedic

Email: andrew.papanikitas@phc.ox.ac.uk
Webpage: https://www.phc.ox.ac.uk/team/andrew-papanikitas

Abstract

Anant Jani and Andrew Papanikitas examine defensive medicine as a markets-related phenomenon that has increasing prevalence across healthcare systems globally. They divide defensive medicine into two broad categories: Positive defensive medicine, or assurance behaviour, occurs when unnecessary services are provided to patients to reduce the chance of patients taking legal action against a physician. Negative defensive medicine, or avoidance behaviour, occurs when physicians refuse to provide risky procedures and/or provide care to high risk patients. The identify ways in which defensive medicine harms both justice in healthcare delivery and healthcare markets themselves. They note that the factors that could quality, safety and value in healthcare are the same factors that drive defensive medicine. Healthcare markets, they suggest, need to account for irrational self-interest both on the part of the healthcare user and the healthcare professional. These key understandings of the situation have important implications for healthcare system improvement.

Please cite is used as: Jani and Papanikitas (2018), "More than my job is worth": defensive medicine and the marketization of healthcare . In Feiler, T, Hordern, J,

Papanikitas A (eds) Marketisation, Ethics and Healthcare: Policy, Practice and Moral Formation. Abingdon: Routledge, Pages tbc

An introduction to Defensive Medicine

Defensive medicine refers to medical care performed primarily to reduce the risk of litigation. (Bishop and Pesko 2015)

In British slang, a 'jobsworth' is a term of abuse levelled at someone who refuses to help you because it will jeopardise his or her employment in some way. 'Jobsworth' is an abbreviation of, "It's more than my job is worth…" Often it is applied to those who will not exceed their remit, even to a small degree, in providing assistance or who slavishly follow protocol when it is clearly inappropriate. Healthcare professionals are not immune to 'jobsworth' behaviour. Defensive medicine arguably represents a kind of 'jobsworth' behavior, dependent on a notion of protecting the livelihood, reputation or even the perceived conscience of a healthcare professional in preference to attending to the needs of any particular patient.

Defensive medicine is a phenomenon that has increasing prevalence across healthcare systems globally and can generally be divided into two categories:
Positive defensive medicine, or assurance behavior, occurs when unnecessary services (i.e. diagnostic tests, procedures, referrals) are provided to patients to reduce the chance of patients taking legal action against a physician.
Negative defensive medicine, or avoidance behavior, occurs when physicians refuse to provide high risk procedures and/or provide care to high risk patients (Bishop and Pesko 2015, Studdert et al 2005, Antoci et al 2016).

Defensive medicine presents a clear and present danger to good healthcare and as such ought to be resisted. It is unquestionably a fact of current medical life. Several studies have pointed to the increased role defensive medicine is playing in how physicians and surgeons deliver care:

- A study of 800 doctors in Pennsylvania highlighted that 92% were ordering diagnostics procedures for assurance and 42% avoided high risk patients and/or procedures (Rothberg et al, 2014)
- Between 2001 and 2005, 50% of A&E doctors in California acknowledged that their practice was influenced by concerns about malpractice lawsuits (Sekhar and Vyas 2013)
- A study of over 100 gastroenterologists in Japan identified concerns about lawsuits as a driver for decisions they made about care (Sekhar and Vyas 2013)
- A 2014 study revealed that 28% of over 4000 test procedures were at least partially defensive in nature (Rothberg et al, 2014)

- 2,000 U.S. orthopaedic surgeons were surveyed and 96% agreed they practiced defensive medicine; furthermore, the study also highlighted that 24% of tests were ordered for defensive reasons (Sethi MK et al 2012).

While it is difficult to definitively measure whether any particular test or procedure, or lack thereof, was done for defensive reasons, it cannot be denied that the practice of defensive medicine has had a significant and adverse impact on global healthcare systems. Defensive medicine increases the financial costs of healthcare delivery, decreases the quality and safety of healthcare and reduces access to healthcare. This is because unnecessary tests and interventions increase costs in and of themselves, and false positive results may stimulate further anxiety and further tests. Many tests are also invasive in nature and complications as a result of unnecessary tests compound the problem with costs incurred not only in treating those complications but, paradoxically any litigation resulting from the defensive behaviour. Defensive medicine also reduces access to healthcare if waiting lists increase because of the larger number of tests and procedures being done. Access is reduced if physicians practice avoidance behaviour because the sickest and most difficult to treat patients are likely to have the worst outcomes (Rothberg et al, 2014, Hermer and Brody 2010).

In this chapter we will consider how defensive medicine both influences and is influenced by a healthcare market. We will do this by considering why defensive medicine is bad for healthcare. We will consider the influence of marketization on defensive medicine and of defensive medicine on markets. Finally we consider some of the proposed solutions. In this chapter we talk of physicians and doctors interchangeably, largely referring to all medically qualified clinicians but noting that the papers we cite use the term to mean medically qualified hospital doctors rather than surgeons or general/family practitioners. Of course defensive medicine need not be a purely medical phenomenon, and we invite the reader to consider how other clinicians, managers, administrators and lawyers employed by healthcare institutions might engage with it.

The role of stakeholders and the effect of the market on defensive medicine

For us, the deeper issue is [that] modern medicine has become driven a lot by technology, a lot by money—and we need to free decisions to be driven by patients' needs. – Vikas Saini (Packer-Tursman J 2015)

When considering the evolution and spread of defensive medicine it would be easiest to place the blame directly on doctors trying to avoid risk and/or opportunistic lawyers, but this would be a gross oversimplification. The key stakeholders in the healthcare system (patients, physicians, payers, and other private sector stakeholders such as the medical technology sector and the legal

profession) have had, and continue to have, an important role in the propagation of defensive medicine. Below we highlight some of the factors that have played a role in these different stakeholders supporting the evolution and spread of defensive medicine. Reviewing these factors, the reader will notice that they originate in mechanisms designed to make medicine safer, higher quality and more efficient.

Patients

We firstly consider patients as end-users of healthcare. Whilst even those who do not pay directly may feel that they pay through taxation or insurance, we find it helpful to distinguish entitlement to healthcare from direct purchase of it. Moreover healthcare has perennially claimed to be an ethical activity aimed at patient benefit, even altruism (Glannon and Ross 2002).

The ostensible shift away from paternalistic medicine has meant a greater drive towards transparency of clinical decision-making and attention to patient education. While this has obvious benefits it has also had the unintended consequence that patients, sometimes only partially instead of fully-informed, make demands, sometimes unrealistic, of their clinicians about treatments and interventions. Indeed, a study in 2005 highlighted that pacifying demanding patients was a key reason for medical specialists to go through the process of ordering costly tests and interventions.

People come in wanting antibiotics, wanting studies, wanting to see the specialists…
- Kisha Davis, medical director of Casey Health Institute (Antoci et al 2016)

Further to this, patients are able to to communicate more freely with each other via online fora and social media which makes it easier to compare relative care delivery. While this is definitely an important development, it has also contributed to patients making comparisons with each other of the care they are receiving which has raised patient expectations and has also decreased patient tolerance for errors – both of which drive patients to more readily sue doctors if they feel they did not receive the standard of care they were expecting (Adwok and Kearns 2013).

Doctors

There are several ways in which physicians and surgeons have directly contributed to the rise of defensive medicine.

The most well-recognized and documented mechanism that has driven physicians to contribute to the propagation of defensive medicine is their fear of lawsuits from patients and their relatives. A 2013 study demonstrated that physicians who had the greatest concern about malpractice lawsuits were much more likely to engage in defensive medicine practices (Carrier ER et al 2013). This concern is, unfortunately, also validated by data. A study published in the British Medical Journal in 2015

showed that for physicians across six separate specialties, higher spending on tests and procedures was associated with reduced malpractice claims (Jena AB et al 2015).

A very important contributor to the persistence of defensive medicine is the presence of perverse financial incentives, particularly in fee for service systems, for physicians to order more tests and/or interventions because it leads them to earn more money (Hermer and Brody 2010, Lefton R 2008). Further pressure for physicians comes from patients who demand tests and interventions, which may not be clinically indicated. If physicians do not meet their patients' expectations for standards of care, there is a risk that their reputation will suffer (Antoci et al 2016). Reputation loss may also mean that patients who can seek healthcare elsewhere will do so and relationships with other payers may also be adversely affected – in effect reputational loss may mean loss of 'business'.

Physicians working within defined clinical pathways or standards of care established within their institution, usually established with the intention of standardizing care and/or reducing the risk of malpractice, will often not have the ability to make judgements on a case by case basis about tests and/or interventions for individual patients. This may lead to patients getting tests and interventions they do not actually need (Hermer and Brody 2010). Doctors and other clinicians may be reluctant to deviate from clinical guidelines, even where clinical acumen suggests that these are inappropriate, because clinical guidelines approximate a responsible body of medical opinion, or in other words standard practice. The 'responsible body of medical opinion' is a legal standard by which a doctor may be judged in a court of law – and deviation from such orthodoxy needs to be justified – something which doctors, especially those in training or unfamiliar with a test or treatment, may lack the confidence to do.

Payers

Two key contributions payers have made in the propagation of defensive medicine is the use of fee-for-service payment mechanisms and, for insurance-based payers, having widely inclusive insurance policies. Both of these mechanisms give physicians a perverse financial incentive to over-test and over-treat their patients. (Sekhar and Vyas 2013) As Roland has outlined, however, any payment structure can offer perverse financial incentives (Roland 2012). There perhaps ought to be a broad similarity between how patients are treated in an insurance-based healthcare system and a state provided one – in both cases there are finite resources and inappropriate tests and treatments ought to be discouraged. Even here there is a dilemma for individual clinicians who need to strike a balance between the harms of routine testing and the harm of missing a diagnosis, such as cancer, where early diagnosis might make a difference to patients.

The medical technology sector

Technological advances in medicine have driven huge improvements in the delivery of safer and higher quality care in the 20th and 21st centuries. Rapid improvements in technology have also helped to reduce the per-test and per-intervention costs in many cases. Both of these sets of factors have also made it easier for clinicians to order tests and interventions for patients, which has been a great contributor to defensive medicine (Adwok and Kearns 2013). Whilst individual tests are cheaper and more accessible, their aggregate consumption has the potential to be a greater expense. Above we have mentioned as well that tests are not harm free – a key harm being the possibility of a false positive result, or a failure of the test to reassure (McCartney 2017).

Lawyers

The group that is singled out as the biggest contributor to the rise of defensive medicine is lawyers. Amongst lawyers as a group, those who are blamed are the lawyers that act on behalf of patients in suing healthcare providers. In thinking about the role of the legal system in medicine we cannot downplay the important role it has played in making medicine safer by holding medical professionals accountable for avoidable medical errors and reckless behavior. Like the other factors highlighted in this section, however, the checks and balances provided by the legal system to ensure safer care have mutated into a system which often has opportunism at its core leading to unnecessary lawsuits and unregulated damage awards, which has had the effect of making doctors practice medicine in a more defensive way to protect themselves (Studdert et al 2005). These behaviours are not unjustified – for example, most US surgeons face malpractice claims in their career and there is a 70% chance they will need to make an indemnity payment (Antoci et al 2016).

In this section we attempted to highlight how the evolution and spread of defensive medicine is much more complicated than a phenomenon driven by the behavior of risk-averse doctors and/or opportunistic lawyers. All of the key stakeholders in the healthcare system have had an important role to play in the establishment of defensive medicine, often times through factors that were also essential in making medicine safer, higher quality and more efficient.

The effect of Defensive Medicine on the Healthcare Market

Some aspects of defensive medicine may not be driven by purely economic considerations – notable examples of concepts that drive defensive medicice being reputation and accountability. However, any system of exchange of goods for services is arguably a form of market, and in the following section we note the irony that a type of dysfunctional behaviour that is enhanced by market systems has a deleterious effect on those very same systems.

The most basic definition of marketization in healthcare is the exposure of healthcare to market forces, which are the forces affecting the availability, demand and price of healthcare. From this definition it is clear that defensive medicine has had a profound effect on the availability, demand and cost of healthcare.

One of the clearest means by which defensive medicine affects demand is through a greater use of tests and interventions linked with assurance behaviour. Depending on the test or intervention in question, the increase in demand can sometimes lead to innovations that will lead to improved safety, quality and efficiency of the test or intervention. Often times, however, the increased demand will further affect the availability and price of healthcare. If the increase in demand due to assurance behaviour is not met with a corresponding increase in supply, a natural consequence will be decreased availability of healthcare services, which often manifests itself as delays to care and longer waiting lists. This phenomenon of decreased availability is particularly true for tests and interventions that need specialist input.

With respect to avoidance behaviour, the links between defensive medicine and availability are fairly clear – physicians refuse to deliver care to patients they deem too risky. This has a number of ramifications. As we mentioned above it is often the sickest and neediest patients who are also the riskiest and availability of care to those people may suffer. In the 1960s Tudor-Hart famously articulated the inverse care law (Tudor-Hart 1971)- that those most in need of healthcare may be the least likely to receive it. Defensive medicine could well be one of those factors that deter clinicians from addressing the needs of the poor and disenfranchised. Not only may their health be poorer at the outset but social barriers may interfere with effective following of medical advice and consequently outcomes may be poorer. Moreover, doctors' decisions may be consciously affected by such reflections (Bernheim et al 2008). Conversely, maintaining a clientele that is healthy, perhaps by playing upon their anxieties or offering the latest 'fountain of youth' has the potential to cause harm through the offer of unnecessary intervention. Selecting the easiest cases erroneously inflates a reputation for success, and may even obscure the fact that a clinician is not as excellent as they claim to be. A frequent accusation levelled at the for-profit healthcare sector in the UK is that it 'cherry picks' the most straightforward cases (Allen and Jones, 2011). This potentially has an effect on current and future care: It unjustly increases the burden of harder cases on those who conscientiously see all comers. Moreover, those cases that would be deemed straightforward enough to be seen by clinicians in training instead form the basis of a predictable workload aimed at generating a financial profit in the short term. Avoidance behaviour therefore is a potent potential source of injustice, but also has the potential to distort markets in healthcare. This last point is because risky and therefore unpopular work becomes ever more expensive, or its availability dwindles.

A barrier to defensive medicine is provided by the so called 'medical defence organisations' in the UK and medical malpractice insurers elsewhere. Clinicians pay a membership fee or premium so that these organisations will pay the legal costs of defending their reputations or compensate patients for harms resulting from negligent practice (where possible). Whilst there are differences between indemnity

and insurance from the purchaser's perspective, all doctors in the UK at least are required to have either one or the other as a condition of employment. As aspects of practice become more litigious and are deemed riskier, the cost of medical defence increases. This cost is not always borne by institutions and another worrying trend on the availability/supply side is the trend of physicians taking early retirement or stopping practices because of unaffordable defence organisation fees or malpractice insurance (Adwok and Kearns 2013. This has recently been seen in out-of-hours general practice care in the UK. Rising costs of indemnity and insurance have made out-of-hours work economically unsustainable for GPs (NHS England 2016).

Defensive medicine's impact on both the demand on, and consequent availability of, healthcare has an obvious impact on cost. For tests that do not require specialist input, increased demand has led to a decrease in the cost per test which can be acknowledged as a positive effect on the overall cost of healthcare. However, the increase in the actual number of tests done for any given patient have, on the whole, increased the cost of healthcare. For tests and interventions that require specialist input, the increases in cost have been quite stark particularly because there has not been an increase in the supply to meet the increased demand. Layered on top of both of these factors, the increase in malpractice insurance premiums for physicians has meant that the cost of physician input has also increased. The overall effect has been that the cost of healthcare has dramatically increased because of defensive medicine practices (Anderson RE 1999).

Health care is not and cannot function as a rational market. Much of the time, people just cannot purchase health care in the coolly deliberative, rational way they shop for a house or a car. When someone's doctor tells her that the lump she felt is malignant, she cannot defer treatment the way she might postpone buying a new spring wardrobe or a trip to the islands (Hoffman DR 2015).

It is important to note that the marketization of healthcare does not necessarily mean that it would drive healthcare towards operating as a true and rational market. For healthcare to function as a true and rational market would require that patients first had full knowledge 'symmetry', i.e. a thorough understanding of the technical nuances of the healthcare options available to them; and second they would need a wide variety of options to choose from (Antoci et al 2016). Healthcare systems across the world are trying to move in this direction but no system is there yet and debate still rages as to whether this is a good direction in the first instance. For example, influential ethical models of the consultation advocate symmetry of purpose rather than full knowledge symmetry (Emmanuel and Emmanuel 1992). Cursory attempts at the knowledge symmetry (where information is made available without meaningful support to interpret it) are viewed as forms of abandonment of care or abdication of responsibility (Heath, 2003).

Paradoxically, many of the factors that could drive healthcare towards operating as a true market are the same factors, highlighted above, that are contributing to the spread of defensive medicine and a corresponding marketization of healthcare.

- Well-informed patients are a key factor in ensuring healthcare operates as a true market but, as previously highlighted, when patients are only partially informed, they make demands on their physicians about tests and interventions which may be unnecessary.
- Physicians work within prescribed guidelines, protocols and pathways with the intention of standardising care and reducing variation. However, this sometimes has the unintended effect of patients getting unnecessary tests and interventions because the physician feels that he/she lacks the autonomy to make a case-by-case decision about their patients
- The evolution of medical technology has helped medicine make huge strides in improving diagnostic accuracy as well as safety, quality and efficiency. Yet, at the same time, the wide availability of a variety of medical technologies has made it easier for physicians to order these procedures, and it has also raised expectation on the part of patients to have access to these tests and interventions.
- The presence of the legal system and the recourse patients have to the legal system in case of medical error is an essential check to hold physicians accountable for avoidable medical error and negligent behaviour, with the ultimate hope that this would contribute to better standards of care. However, the use and abuse of the legal system with respect to healthcare has contributed greatly to healthcare moving further away from functioning as a true and rational market. Furthermore, there is no evidence that fear of lawsuits has actually reduced the rate of medical error (Antoci et al 2016, Packer-Tursman J 2015) and it may actually lead to harm because it prevents stakeholders from having an open dialogue about errors and learning from their mistakes (Studdert DM et all 2006).

The factors that could lead healthcare to operate as a true and rational market (and as a result to increase its quality, safety and value) are the same factors that are driving defensive medicine. This key understanding of the situation has important implications for how the healthcare community might work together to utilize these factors to facilitate, rather than hinder, healthcare system improvement.

Conclusion: Is Defensive Medicine Unavoidable?

Defensive medicine has evolved and been propagated by factors that are dependent on the evolution of the rest of the healthcare system. As highlighted above, several factors that are essential for the improvement of healthcare systems constitute a double-edged sword that has also contributed to the evolution and spread of defensive medicine. The future of defensive medicine will depend on how these factors are used by different stakeholders in the system. If we hope to control the spread of defensive medicine, stakeholders will need to work together to ensure that these factors are used to contribute to healthcare system improvement rather than the spread of defensive medicine.

Many initiatives are under way to stem the spread of defensive medicine and below we highlight five general mechanisms healthcare systems are using to improve healthcare and reduce the impact of defensive medicine. These approaches appear simple, but sadly they are not – and we highlight some difficulties with them. We nonetheless suggest they merit investigation.

1. *Reducing the stigma around medical errors:* Fostering mechanisms that reduces the stigma and disincentives around reporting errors would help doctors shift away from assurance and avoidance behaviour in their practice. It could help to create a culture where open communication about errors could be used to help physicians improve their practice and improve the safety of healthcare delivery. A critical component of this would be to include patients in the conversations about errors (Adwok and Kearns 2013).
2. *Re-establishing trust between the doctor and patient: "*If you want to fix defensive medicine, develop trusted therapeutic relationships using effective communication skills and be available to patients, period" (Packer-Tursman J 2015). Fear of lawsuits dramatically hinders open discussion between physicians and patients, and this has the effect of eroding trust. Open discussion between doctors and patients about errors will help to re-establish trust and decrease the tendency for patients to sue when medical errors do occur (Adwok and Kearns 2013, Sirovich et al 2011). The drive to create more open discussion between physicians and patients is the basis for the Choosing Wisely campaign in the USA (ABIM Foundation 2017) and the RCGP Standing Group on Over-diagnosis in the UK which highlight tests and interventions that provide little value to patients so that patients and physicians can together make rational and effective care choices and move away from defensive medicine.
3. *Modifying financial incentives and payment models:* It is important to remember that assurance behaviour is not driven solely by fear of lawsuits (Sethi MK et al 2012, Hermer and Brody 2010); in fee-for-service models physicians also have a perverse incentive to do more tests and interventions even if their patients do not need them. It is well recognized that tort reform will need to occur alongside modifications to financial incentive structures and one means of doing this may be to shift away from fee-for-service models to capitated and patient/population-outcomes based models (Adwok and Kearns 2013, Sirovich et al 2011). Having said this, we are aware that any way of paying for services can be subject to gaming without appropriate regulation and ethical behaviour on the part of the service provider.
4. *Tort reform*: There is evidence that malpractice liability reforms are able to reduce pressures on physicians to use assurance and avoidance behaviour (Kessler and Maclellan 1996). Furthermore, reducing stigma around medical errors and fostering more open discussion with patients could allow more disputes to be resolved through mediation and arbitration rather than through litigation (Adwok and Kearns 2013).
5. *Modifying liability:* Modifications to medical liability have also been shown to reduce defensive medicine practices. For example, shifting liability from

individual physicians to the healthcare institution in which he/she works and/or limiting the non-economic damages that can be awarded to patients can help to limit assurance and avoidance behaviour on the part of the physician (Antoci et al 2016, Adwok and Kearns 2013). In the UK, NHS work carried out in NHS hospitals is indemnified by the State. Nonetheless, hospital doctors are obliged to make their own medico-legal indemnity arrangements. This is because institutions are considered to be more attractive targets for lawsuits on account of having more resources with which to settle claims. Institutions also have an interest in maintaining their resources and reputation, and this may create incentives to place blame back on clinicians. Worse still, defensive medicine may be adopted in institutional policy as well individual practice.

Through this analysis we have seen that defensive medicine contributes to marketization and marketization contributes to defensive medicine. However, defensive medicine actually prevents healthcare from functioning as a true and rational market. Paradoxically, we see that the factors that contribute to defensive medicine are also essential for the improvement of healthcare systems and are also important in helping healthcare to function as a true and rational market. It may be that for a market in healthcare to work, better understanding is needed of the economic irrationality alluded to in the quotation from Hoffman above (Hoffman DR 2015). If the defensive medicine phenomenon teaches us anything it is that there is a parallel irrationality on the part of the healthcare provider! It may be that defensive medicine and its marketization effects represent a transition state that is unavoidable and necessary for healthcare to evolve into a rational market; the full conversion may only occur when the factors spreading defensive medicine are used to improve healthcare systems. One may also conclude however that it is too simple to lay both the blame and the solution with society's tools for safe and high-quality healthcare. Any tool requires responsible and adept use. As we have suggested above, the solutions may not always be simple – potentially involving both change to regulation and education, with a robust approach to both science and values. It is clear that defensive medicine is a present and clear danger to healthcare quality and patient safety, and as such must be addressed. An understanding of healthcare and of markets is of clear relevance to this task. The practice of good, safe and effective medicine should be instrinsic to healthcare and all of its stakeholders and, we suggest, not 'more than anyone's job is worth'.

References

ABIM Foundation, http://www.choosingwisely.org/; accessed on March 13, 2017.

Adwok J, Kearns EH (2013) Defensive medicine: Effect on costs, quality and access to healthcare. Journal of Biology, Agriculture and Healthcare 3: 29-35.

Allen and Jones, (2011)Diversity of Healthcare Providers, Chapter 2, p.1-29 in Understanding New Labour's market reforms of the English NHS, The King's Fund, London https://www.kingsfund.org.uk/sites/files/kf/chapter-2-diversity-health-care-providers-new-labours-market-reforms-sept11.pdf (accessed 01/08/2017)

Anderson RE (1999) Billions for defense: the pervasive nature of defensive medicine. Archives of Internal Medicine 159: 2399–2402.

Antoci A, Fiori Maccioni A, Russu P (2016) The Ecology of Defensive Medicine and Malpractice Litigation. PLoS ONE 11: e0150523.

Bernheim SM, Ross JS, Krumholz HM and Bradley EH (2008), Influence of Patients' Socioeconomic Status on Clinical Management Decisions: A Qualitative Study, Annals of Family Medicine, 6: 53-59

Bishop TF, Pesko M (2015) Does defensive medicine protect doctors against malpractice claims? BMJ 351:h5786.

Carrier ER, Reschovsky JD, Katz DA, Mello MM (2013) High physician concern about malpractice risk predicts more aggressive diagnostic testing in office-based practice. Health Affairs 32: 1383-1391.

Emmanuel E and Emmanuel L, four models of the physician-patient relationship, Journal of the American Medical Association 1992; 267:2221-6

Heath I (2003) A wolf in sheep's clothing: a critical look at the ethics of drug taking British Medical Journal 327:856

Hermer LD, Brody H (2010) Defensive medicine, cost containment, and reform. J Gen Intern Med 25: 470-473.

Hoffman DR. "The effect of patient demands and defensive medicine on health care costs." Philly.com, 26 February 2015. Web.

Jena AB, Schoemaker L, Bhattacharya J, Seabury SA (2015) Physician spending and subsequent risk of malpractice claims: observational study. BMJ 351: h5516.

Kessler D, McClellan M (1996) Do doctors practice defensive medicine. Q J Econ 111: 353-390.

Lefton R (2008) Addressing roadblocks to hospital-physician alignment. Healthc Financ Manage 62: 30-31.

McCartney M (2017), Benefits, harms and evidence: reflections from UK healthcare, Chapter 2, p 11-16, Handbook of Primary care Ethics, Eds. Papanikitas A and Spicer J, CRC Press, London

NHS England (2016), GP Indemnity Review, https://www.england.nhs.uk/wp-content/uploads/2016/07/gp-indemnity-rev-summary.pdf (accessed 01/08/2017)

Packer-Tursman J. “The defensive medicine balancing act”. Web blog post. *MedicalEconomics.* Modern Medicine, 09 January 2015. Web.

RCGP Standing Group on Overdiagnosis (2016), Report to RCGP Council, http://www.rcgp.org.uk/policy/rcgp-policy-areas/overdiagnosis.aspx (accessed 01/08/2017)

Roland M (2012). Incentives must be closely aligned to professional values. *British medical journal*; 345: e5982

Rothberg MB, Class J, Bishop TF, Friderici J, Kleppel R, Lindenauer PK (2014) The cost of defensive medicine on three hospital medicine services. JAMA Intern Med 174: 1867-1868.

Sekhar MS, Vyas N (2013) Defensive medicine: A bane to healthcare. Ann Med Health Sci Res 3: 296-296.

Sethi MK, Obremskey WT, Vatividad H, Mir HR, Jahangir AA (2012) Incidence and costs of defensive medicine among orthopedic surgeons in the United States: a national survey study. Am J Orthop 41:69-73.

Sirovich BE, Woloshin S, Schwartz LM (2011) Too little? Too much? Primary care physicians’ views on US health care. Arch Intern Med 171: 1582-1585.

Studdert DM, Mello MM, Sage WM, DesRoches CM, Peugh J, Zapert K, and Brennan TA (2005) Defensive medicine among high-risk specialist physicians in a volatile malpractice environment. JAMA 293: 2609–2617.

Studdert DM, Mello MM, Gawande AA, Gandhi TK, Kachalia A, Yoon C, Puopolo AL, Brennan TA (2006) Claims, errors, and compensation payments in medical malpractice litigation. New England Journal of Medicine 354: 2024–2033.

Tudor Hart J (1971). The Inverse Care Law. The Lancet. **297**: 405–412

Glannon W, Ross LF (2002), Are doctors altruistic? Journal of medical ethics, 28: 68-69