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How, and why, does capitation affect General Dental Practitioners' behaviour? A rapid realist review

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Abstract: From a formal evaluation of a capitation-based NHS dental contract, as part of a National Institute of Health Research funded project (HS&DR 14/19/12), data collected from a series of qualitative interviews suggest that General Dental Practitioners (GDPs) may behave differently in ways that vary from the results of previous studies. Drawing on realist methodology, a rapid realist review (RRR) was conducted enabling us to develop a programme theory to explain the effect of a capitation pilot on NHS dentists working in primary care. In essence, our theory postulates that GDPs are affected by a number of competing interests and incentives and that this can influence their behaviour in a variety of ways. For example, a capitation based contract may result in some GDPs focusing more on prevention, as opposed to treatment, but for others it may not. It may, in practice, dis-incentivise some GDPs to perform certain treatments, whilst for other it may lead to them making no change to their clinical practice. Further research is required to fully understand the causal mechanisms associated with this divergent behaviour as well as the underlying contextual conditions through which these mechanisms are activated.

Background: The Department of Health, Social Services and Public Safety (DHSSPS) in Northern Ireland recently piloted a capitation based National Health Service (NHS) primary dental contract in 11 practices across the province. Its aim was to assess whether remuneration based on capitation, as opposed to the existing Fee-For-Service (FFS) contract, can control costs, promote prevention and improve the quality of care provided to patients. General Dental Practitioners (GDPs) can be acutely sensitive to incentives within dental contracts (Tickle et al, 2011; Brocklehurst et al, 2012; McDonald et al 2012). FFS, where the GDP submits a claim for every single item of completed treatment, has been shown to lead to over-treatment in order to maximize profit (Birch, 1988; Chalkley and Tiley, 2006; Tickle et al, 2011).

Per-capita remuneration systems can reduce the financial risk to the NHS, but this can be at the cost of patient-selection (skimping and dumping) as well as under-treatment (Ellis and McGuire, 1993; Gosden et al, 2000; Grytten, 2005).

Within a formal evaluation of the dental pilot, as part of a National Institute of Health Research funded project (HS&DR 14/19/12), one of the three work-streams involved conducting a series of qualitative face-to-face interviews with GPs and stakeholders from the DHSSPS and the Health and Social Care Board (HSCB) who have been involved in the pilot. Semi-structured interviews were conducted face-to-face with the 11 practice principals and via telephone with 8 associate dentists. Interviews were recorded and then transcribed verbatim. Thematic analysis of individual transcripts was undertaken by three researchers. Analysis involved coding transcripts using NVivo software and identifying themes. A constant comparative method was used to interpret the data. Key themes were identified using an open coding method.

The interviews revealed certain tensions and paradoxes which vary somewhat from the prevailing view in the literature identified above, as well as earlier studies conducted at times of contractual change in the delivery of primary dental care within the NHS (Lennon et al, 1990). Half of the GPs, for example, suggested that the pilot had enabled them to focus more on prevention as opposed to treatment, whereas the remainder stated that the pilot had not had this effect. Furthermore, one third of the GPs argued that the pilot had, in practice, dis-incentivised performing certain treatments, whilst the remainder said they had made no change to their clinical practice. With a view to explaining these different perspectives, a rapid realist review (RRR) of evidence was conducted to develop a theoretical account of how and why the capitation pilot has affected GPs' behaviour in different ways.

Methodology

The use of realist methodology is becoming increasingly popular in health services research (Rycroft-Malone et al 2012), as it recognises the need to show how and why interventions work, as opposed to merely evaluating whether they work or not. Realist reviews of evidence attempt to provide policy makers and practitioners with a theory (referred to by realists as a programme theory) to shed light on what it is about a particular intervention “that works, for whom and in what circumstances” (Pawson and Tilley, 1997). Programme theories are, in essence, causal explanations that are expressed, in realist methodology, as relationships between context, mechanisms, and outcomes (Pawson and Tilley, 1997; Pawson 2006). More specifically they seek to explain how variations in context may trigger causal mechanisms to generate particular outcomes. In comparison to a Cochrane-style systematic review (Brocklehurst et al, 2012), where the included studies are limited to those of an experimental or quasi-experimental design, realist methodology enables a broader range of approaches to be included - the intention being to disentangle the heterogeneity and complexity of an intervention. Rapid Realist Reviews (RRRs) have been developed to enable policy-makers to respond to time-sensitive and emerging issues, preserving the application of realist methods, albeit in a more condensed form (Saul et al, 2013; Tsang et al, 2016). Previous RRRs adhere to four broad overlapping classifications: guiding rules for policy making; knowledge quantification; understanding tensions/ paradoxes in the evidence base; and, reinforcing or refuting beliefs and decisions taken (Saul et al, 2013). We used RRR in this paper to understand the tensions and paradoxes that have emerged from our evaluation of the capitation pilot which conflict with the literature identified above. To the best of our knowledge, our review represents the first attempt to apply realist methods to evidence within dentistry.

Design: The design was focused on developing a theoretical explanation of why the capitation pilot had affected GPs' behaviour in different ways. Heterogeneous data, as well as opinion papers and reports, were included. Guidance towards relevant literature and 'sense checking' of the theories we developed was provided by a content expert group comprising senior members of the DHSSPS in Northern Ireland as well as senior academics in the field of health services research within dentistry. We conducted our RRR in accordance with the standards and guidelines emerging from the RAMESES project (Wong et al 2013), which has established quality and publication standards, as well as training materials for realist research.

We began the review by discussing the results from our qualitative interviews with our content expert group who suggested that we consult two specific sources of literature concerning how GPs have responded to previous changes in dental contracts (Tickle et al, 2011; Harris et al, 2015). Analysis of these sources identified a number of key insights that, we agreed, could be used to explain why the capitation contract piloted in HS&DR 14/19/12 may have caused GPs to behave differently. These insights are presented below in Table 1.

Table 1. Key insights into the effects of capitation on GPs' behaviour

From Rebecca Harris et al (2015)

"We found that dentists have several concerns which they have to bear in mind in their work: being responsible for keeping the practice going for the sake of staff and patients, providing high-quality care according to professional standards... and running their practice as a business in a profitable way" (p. xvii).

"Loopholes have been exposed where practitioners appear to exploit vagueness in the language of the contract to benefit their self-interest" (p.xvii).

"Social and professional networks in particular may be a powerful way in which opportunism is constrained, a mechanism which is currently relatively unexplored" (p.116).

From Tickle et al (2011):

“Economic theory suggests that the way people are paid influences their working patterns and there is a large body of evidence, particularly in the context of medicine, to support this theory. At the same time, it has been argued that professional codes and norms may dilute or eliminate the uptake of perverse financial incentives which encourage professionals to provide care that is sub-optimal” (p.465).

By combining these insights with our wider knowledge of dentistry, policy and health services research, we embarked on an iterative process of developing and adjusting our initial programme theory (IPT). The final version of this IPT was split into three different domains and is presented below in Table 2.

Table 2. Initial programme theory

- IPT 1. GDPs are affected by a number of competing interests: a responsibility to keep their practice going for the benefit of patients and staff; providing quality care; and running their business profitably.*
- IPT 2. Where loopholes, opportunities and perverse financial incentives exist, exploitation may occur in order to benefit GDPs' self-interests.*
- IPT 3. The existence of professional and social networks as well as professional codes and norms may constrain the impact of opportunism.*
-

Search: We then moved to refine our initial programme theory by searching for supporting evidence, or evidence which helped us to further modify our theory in light of further insights. Due to the rapid nature of this review, and the fact that we both time and resource limited, we restricted our search to two databases. Nevertheless, engagement with relevant stakeholders and use of the research-knowledge of the project group ensured that key theoretical contributions in the literature were identified and included. Knowledge and insight here was bolstered by the fact that a comprehensive systematic review of the literature had also been completed prior to the start of HS&DR 14/19/12 (Brocklehurst et al, 2012).

We searched MEDLINE and WEB OF SCIENCE. Citation searching and snowballing was also used. There were no geographic or date limitations but English language papers only were considered. Our searches focused on the dental literature, as well as the wider health care and public administration literature. The bibliographic searches were performed in February 2017. The search terms were derived from the 3 domains and from discussions within the project team (see Table 3). All study designs were included in order to perform an in-depth exploration of the factors which affect how GDPs behave when remunerated via a capitation contract. The results of the searches are summarised in Figure 1.

Table 3. Exclusion criteria and search terms

Exclusion criteria

Studies not written in English

Studies that include participants which are not human

Studies that did not inform the initial programme theory

Search terms used:

IPT 1

MEDLINE search:

1. (MH "Dentists") OR TI dentist* OR AB dentist*
2. (MH "Contracts") OR (MH "Practice Management, Dental") OR AB (contract* OR business OR practice) OR TI (contract* OR business OR practice)
3. (MH "Social Responsibility") OR (MH "Dentists/ST") OR (MH "Quality of Health Care/ST") OR (MH "Motivation") OR AB (profit* OR incentive* OR motivation* OR targets OR standards OR loyalty OR obligations OR "social responsibility*" OR "social contract") OR TI (profit* OR incentive* OR motivation* OR targets OR standards OR loyalty OR obligations OR "social responsibility*" OR "social contract")
4. 1 AND 2 AND 3 = 767 results in EBSCO Medline 15/02/17

IP 2

MEDLINE search:

1. (MH "Dentists") OR TI dentist* OR AB dentist*
2. AB (gaming OR self-interest OR "self interest" OR opportunism) OR TI (gaming OR self-interest OR "self interest" OR opportunism)
3. 1 AND 2 = 14 results
4. (MH "Capitation Fee") OR (MH "Fees and Charges") OR (MH "Reimbursement Mechanisms") OR TI (contract or capitation OR salary OR fee* OR reimbursement) OR AB (contract or capitation OR salary OR fee* OR reimbursement)

5. TI behavio#r OR AB behavio#r
6. 1 AND 4 AND 5 = 134 results
7. 3 or 6 = 146 results in EBSCO Medline 15/02/17

IPT 3

MEDLINE SEARCH 1

1. (MH "Dentists") OR TI dentist* OR AB dentist*
2. (MH "Social Support") OR TI ("social network*" OR "professional network*" OR "professional norms" OR team-working OR "team working" OR "local dental network*" OR "local professional network*") OR AB ("social network*" OR "professional network*" OR "professional norms" OR team-working OR "team working" OR "local dental network*" OR "local professional network*")
3. 1 AND 2 = 180 results in EBSCO Medline 15/02/17

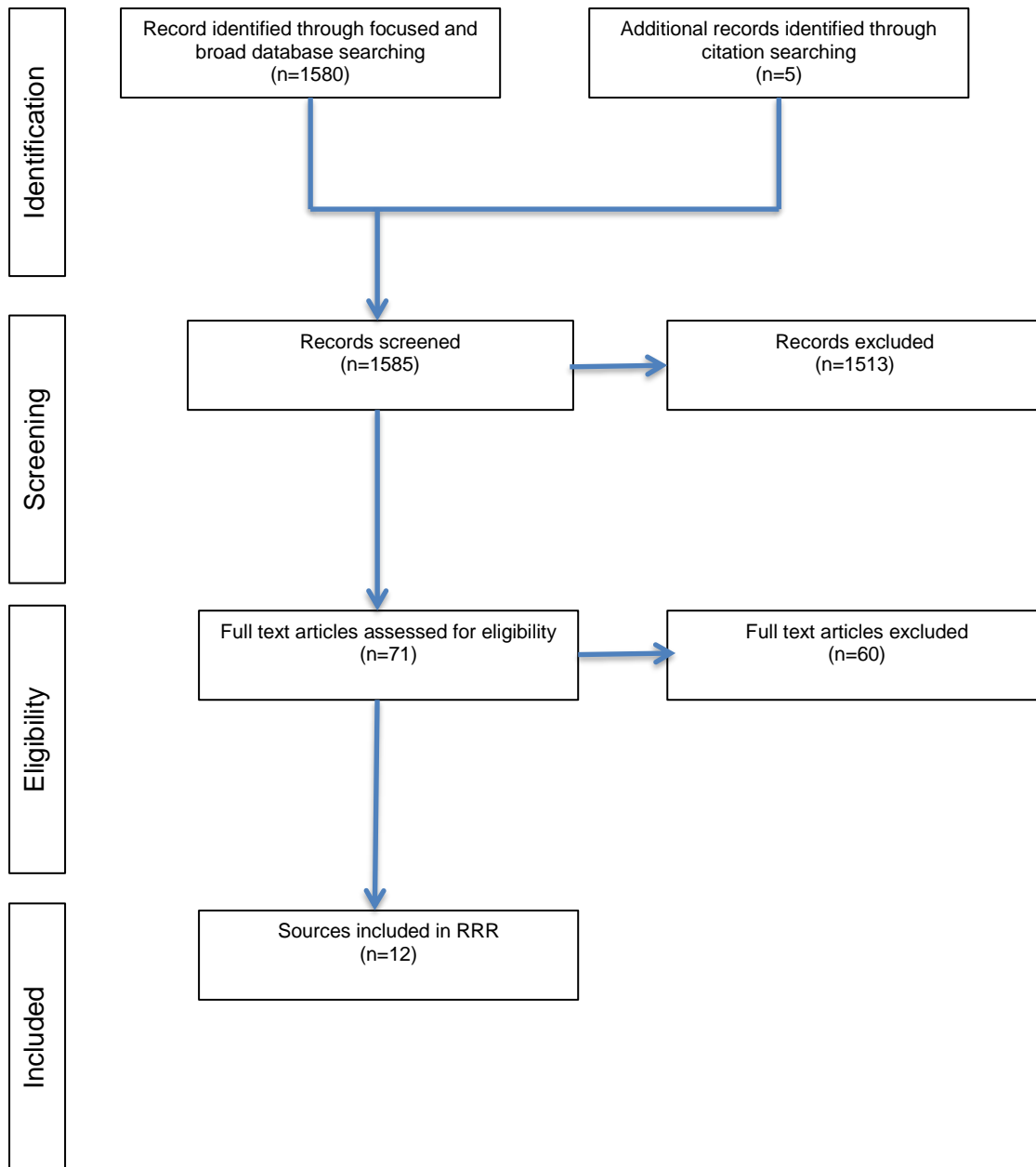
MEDLINE SEARCH 2

1. (MH "Health Personnel+") OR TI/AB (("health care" OR "healthcare" OR "health services") N2 staff) OR TI/AB ("health personnel" OR "health professional*" OR "medical staff" OR workforce OR "professional practice")
2. TI/AB ("social network*" OR "professional network*" OR "professional norms")
3. Ti/AB ("professional behaviour" OR "professional behavior" OR collegial* OR "public service motivation" OR "public service belief" OR professionalism OR collaboration OR cooperat* OR co-operat* OR community)
4. 1 AND 2 AND 3 = 290 results 06/04/17

WEB OF SCIENCE CORE COLLECTION SEARCH

1. TOPIC: ("health personnel" OR "health professional*" OR "medical staff")
 2. TOPIC: ("social network*" OR "professional network*" OR "professional norms")
 3. TOPIC: ("professional behaviour" OR "professional behavior" OR collegial* OR "public service motivation" OR "public service belief" OR professionalism OR collaboration OR cooperat* OR co-operat* OR community)
 4. 1 AND 2 AND 3 = 138 results 06/04/17
-

Fig 1. PRISMA flow diagram



Data Extraction: A data extraction tool was adapted and used to guide the capture of relevant data to inform programme theory development. Extracted data were discussed at regular meetings to articulate how the findings helped to support or modify the IPT.

Results: The review identified 12 full-text articles that were relevant to/and informed the IPT, a descriptive overview of which is presented in Appendix 1.

The sources identified helped to support and refine each domain in a number of ways enabling us to reformulate and modify the IPT to be more reflective of the evidence we collected through searching the wider literature. (See Table 4 below).

Table 4. Modified Programme Theory

Initial Programme Theory	Modified Programme Theory
<i>IPT 1. GDPs are affected by a number of competing interests: a responsibility to keep their practice going for the benefit of patients and staff; providing quality care; and running their business profitably.</i>	<i>MPT1. GDPs are affected by a number of competing interests, including: a responsibility to keep their practice going for the benefit of patients and staff; serving people and providing quality care; and running their business profitably. The balance between these interests may shift over time due to increased commercial necessity. Entrepreneurialism is not just connected to profit maximisation, but also to the need to maintain cash flow.</i>
<i>IPT 2. Where loopholes, opportunities and perverse financial incentives exist, exploitation may occur in order to benefit GDPs' self-interests</i>	<i>MP2. Where loopholes, opportunities and perverse financial incentives exist, exploitation may occur in order to prevent financial loss or to bring about financial gain. Whilst this exploitation could be linked to self-interest, it could also be driven by the desire to keep the practice going for the sake of patients and staff.</i>
<i>IPT 3. The existence of professional and social networks as well as professional codes and norms may constrain the impact of opportunism.</i>	<i>MPT3. The existence of professional and social networks, professional norms and the presence of a strong professional ethic may constrain the impact of opportunism.</i>

With respect to IPT 1, the notion that GDPs are affected by a number of competing concerns resonated with all of the identified sources (Baumrind, 2007; Öcek and Vatansever, 2014; Nash, 2015). An additional concern - "to serve people" - was also introduced, as was the idea that GDPs' priorities may shift over time towards commercialism (Öcek and Vatansever, 2014). In other words, whilst the primary motivation for becoming a GDP might be to serve patients, a more commercial

motivation may emerge once the pressures of trying to earn a living, or run a practice, start to be felt as a GDP. Furthermore, this pressure has arguably increased over the last 70 years as society has generally become more commercial (Baumrind, 2007; Nash, 2015). In relation to this, the wider evidence also suggests that “a sense of market” and an entrepreneurial spirit do not just feed into a desire to generate profit; they are also presented here as tools for helping to maintain cash-flow (Öcek and Vatansever, 2014).

IP2 posited the idea that GDPs’ exploitation of opportunities and loopholes was linked to self-interest. This is supported by the literature (McDonald et al, 2012; Hartshorne and Hasegawa 2003; House of Commons Health Select Committee 2008; Davies and Macfarlane 2006) - although it may be slightly more nuanced - the suggestion being that GDPs’ self-interest has at least two components in that the exploitation of opportunities or loopholes may be about the prevention of loss as well as financial gain, as suggested above. Consequently, GDPs “may seek alternatives such as over-servicing or unnecessary treatment to generate income and to improve their cash flow/and or profit” (Hartshorne and Hasegawa 2003). Furthermore, given the original insight from IPT1 - that GDPs care about keeping the practice going for the sake of their staff and patients (Harris et al 2015) - such exploitation might also be linked to this wider concern as opposed to mere self-interest.

The notion expressed in IP3, that the impact of opportunism is constrained by professional and social networks as well as professional codes and norms, is supported (Andersen 2009) and developed further by the evidence we found in the literature (Plant, 2003; Raynor, 2011). For example, because GDPs provide a public service, the assumption is “that there is a common good/purpose within the service/organisation to be pursued and that this will either constrain or displace sectional interest” (Plant 2003). Put differently, central to the delivery of public

services is “an allegiance of professionals to an ethos of public service” (Rayner et al 2011). This includes a commitment to certain values such as accountability, integrity, impartiality, and crucially, the adherence to the idea of a public interest distinct from private concerns (Rayner et al, 2011). In addition, and with respect to the notion that social networks may provide a mitigating factor against opportunism, we found evidence of one GDP reflecting on the fact that their particular practice is situated in a small community where they know their patients and “a percentage of them are friends” (Harris and Holt, 2013). Consequently, the depth of these particular community ties made them less likely to view their patients as a commodity that could be exploited for financial reasons.

Discussion: Employing the rapid realist review approach enabled us to develop a modified programme theory (MPT) about why changing something fundamental like the way in which GDPs are paid affects their behaviour differently. Typically, realist methodology would have us elaborate this programme theory in terms of the way in which different contexts and their associated causal mechanism lead to the kinds of divergent outcomes we have seen in our evaluation of a capitation-based NHS dental contract. This elaboration would then be subject to a further round of testing and refinement against the available literature. Whilst we do not have the space here to undertake this activity, there are a number of observations we can make about this next step relating to the notion of context, mechanism and divergent outcome patterns – in other words, why GDPs behave differently under a capitation based contract.

In short, our programme theory suggests that GDPs’ response to a change in the way they are paid varies for the kinds of reasons outlined above. What underpins this is a series of ideas about how individuals and the social structures in which they

operate are related and, in turn, the extent to which these relationships affects a person's actions (Bhaskar, 2013).

First, not all GDPs work within the same institutional structures. Since the establishment of the General Dental Service, GDPs have been independent contractors to the NHS, owning their premises, employing their own staff and paying their expenses from their income. NHS contractual terms permit practices to provide a mixture of NHS and private care. On average, GDPs spend 75% of their time providing services to the NHS (Harris and Holt, 2013). The majority of GDPs in the UK work in professional partnerships alongside other GDPs, although a third are single-handed practices where just one GDP owns the practice and provides all of the care (Kravitz and Treasure, 2008). In addition, as part of NHS changes made in 2006, the Government made it easier for practices to be owned by external commercial organisations. This has recently given rise to several large commercial chains which now provide dental care under a corporate model (Watson, 2016).

Hence, structural arrangements regarding the delivery of primary care dentistry in the UK are mixed. Crucially, these different structural arrangements give rise to different institutional logics, in other words “the predominating beliefs that create connections and a common purpose allowing those within a field a sense of grounding, orthodoxy and habituated normalcy” (Harris and Holt 2013). Dentistry appears to be governed by a range of at least three kinds of institutional logics: a professional clinical ethic; a business minded approach; and commercial opportunism, whereby care is commoditised (Harris et al, 2015). Whilst the dominance of one logic over another is likely to vary from practice to practice, we can imagine these logics mapping roughly onto the different kinds of institutional structures described above. As such, commercial opportunism may be more heavily associated with the large commercial chains and the attachment to a professional clinical ethic (as the operative decision-

making concern) may be more common in small practices, especially the single-handed variety. Although this contention constitutes something of a theoretical leap, it relates to the theory expressed above that a number of GDPs are driven initially by a desire to serve and help people and don't set out to be business owners (Öcek and Vatanserver, 2014). Given that priorities may shift over time due to the commercial realities of running a business, it is plausible to imagine that where the practice remains small, cash flow and financial management may be less of a concern therefore negating the need to take advantage of commercial opportunities.

Second, although institutional structures and their associated logics affect individual behaviour there is also the role of human agency to consider, in particular our purported ability to employ reflexive self-monitoring (Bhaskar, 2014) and choose a course of action from among various alternatives. In other words, we have the capacity to judge what we should do in a particular set of circumstances and then act upon such a judgement (Donagan, 1985), if we so wish. Consequently we are able to accept or reject the influence of a particular institutional logic and behave contrary to the prevailing wisdom. (Not all GDPs in a commercially minded practice will necessarily follow the dictates of commercialism all of the time, for example).

Moreover, the acceptance or rejection of a particular institutional logic might not be as deliberate as this. There are many things that we do as individuals - out of habit as opposed to a considered judgement. This may also affect the ability of a prevailing institutional logic to determine individuals' behaviour.

Finally, the relationships GDPs have with each other (both with their immediate colleagues and professional peers) means that there is always the potential for someone to govern and affect the actions of another (Taylor-Gooby et al, 2000). The preferences of a principal may influence an associate's clinical behaviour. But

equally, a principal's relationship with those around them may generate sense of responsibility for keeping a practice going, for the sake of the staff they employ, and influence their decision-making in certain situations. As we noted above in MPT 2, some GDPs may exploit loopholes in contracts for this very reason.

Furthermore, the relationship GDPs have with their patients also provides additional context here. Again, as noted above, with respect to MPT 3, GDPs operate under the influence of different social networks. And so, GDPs in an inner city practice with a high throughput of patients might have a very different relationship to those patients compared to a GDP operating in a rural setting, whose patients may even be their neighbours and friends (Harris and Holt 2013). As noted above, therefore, the depth of these particular community ties might make them more or less likely to view their patients as a commodity that could be exploited for financial reasons.

In summary then, the above discussion enables us to understand more about why capitation might affect different GDPs differently. Whilst GDPs can be acutely sensitive to incentives within dental contracts the subtle contextual variations and their associated causal mechanisms means that not all GDPs will necessarily behave in the same way when the terms of their remuneration are altered.

Conclusion: Our aim in this paper has been to explore how and why capitation affects GDPs' behaviour. By conducting our RRR, we have shed light on the apparent tensions and paradoxes raised in the introduction – namely that the results of the qualitative interviews conducted as part of HS&DR 14/19/12 vary from the results of previous studies. To this end, our findings suggest that the effects on GDPs' behaviour of changing the way in which they are paid is perhaps more complex and nuanced than previously realised. As such, this novel approach to the review of evidence has clearly been a helpful exercise. Nevertheless, despite this

strength, we acknowledge that the dental contract that was evaluated as part of HS&DR 14/19/12 was only piloted in 11 dental practices in Northern Ireland and hence the pool of data collection here is quite small. Moreover, a RRR is not as comprehensive as a full synthesis and we have only been able to focus here on theory development and modification. Although we have begun to illustrate how various social contexts underlie our programme theory, further research is now required to comprehensively test and refine the observations made above.

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Appendix 1. Data extraction

IPT 1. GDPs are affected by a number of competing interests: a responsibility to keep their practice going for the benefit of patients and staff; providing quality care; and running their business profitably.				
Name, date, country	Paper type	Study Design	Evidence	Relevance to theory
Ocek and Vatansever (2014), Turkey	Primary research	Qualitative: focus groups (n=4) and semi-structured interviews (n=31). To explore the perceptions of Turkish dentists in respect of their professional identity and of the effects of market orientation in dentistry	<p>“All participants who either chose dentistry as their secondary choice after medicine or as their first choice explained that their main motive in choosing their future profession was the desire to serve people. None of the participants emphasized becoming a businessperson as a motive... However, there were also participants who explained, by giving examples from their own lives, that the identity of dentists was inevitably affected by entrepreneurship” (p599).</p> <p>“The most important difficulty of entrepreneurship was defined as the effort shown to attain recompense for their labor and to protect the income- expense balance: <i>‘There are some expenses in the clinic. The dentist must somehow cover these. While I am face to face with the patient, I should think about how to get money from him or what to do to run my office. Inevitably, a sense of market is formed’</i>” (p601).</p>	<p>Suggests an additional interest – namely, that for some, the primary motivation for becoming a dentist is to ‘serve people’.</p> <p>Suggest that motivation may shift over time towards commercialism once the realities of running a practice start to be felt.</p> <p>Introduces the sense that entrepreneurship is required not just for the generation of profit, but also to help “run” a dental practice and protect the “income-expense” balance (cash flow).</p>
Baumrind (2006), USA	Opinion Piece	N/A	<p>“During the 60 years since the end of World War II, the practice of dentistry, like that of medicine, has been largely transformed from a “calling,” as Dr. Charles Bertalami, now Dean of the New York University College of Dentistry, described it several years ago, into a cog in the ever-expanding Healthcare Industry. We have become part of an Industry! And in the process, the distinction between professional ethics and the ethics of commerce has been attenuated and, to a large extent, lost. I argue that today’s dentist is faced more strongly than ever before with an inherent conflict between the classical pledge of the health profession to hold patients’ interests primary, and above all, to do no harm, on the one hand—and the necessary, personally self-protective commercial principle of caveat emptor.</p> <p>Among the forces driving deleterious changes to our profession, there has been a massive increase in pressures towards commercialism, especially from the federal</p>	<p>Suggests that the balance between competing interests has shifted since the 2nd world war towards commercialism and away from the prevalence of the professional ethic.</p> <p>Whilst the alleged pressure from the “federal government” and “insurance industry” are contextual factors that are specifically relevant to the USA, the claim that the balance has also been affected by “professional fees”, “cost[s] of production”, “[increased] overhead[s]”, and the repayment of “student loans”, would also seem to apply to dentistry in the UK.</p>

			<p>government and from the insurance industry.</p> <p>There have also been increasingly unfavorable changes in the ratio between professional fees and the cost of production. When I started in dentistry in 1950, I opened my office in Berkeley on \$1,500, and my over- head was 23%. As an older observer, I shudder to think how much it costs to open a dental office nowadays. Overhead has risen until it approximates 75% in some practices. To me, such a nut seems a strong impediment to altruistic thought. It's very hard to give away your services, especially when you are still paying off your student loans. I may seem to be laboring the obvious, but I think this needs to be said" (p.168)</p>	
Nash (2015), USA	Opinion Piece	N/A	<p>"In surveying the environment of dentistry today, it becomes obvious that, in contrast to the views of Adam Smith and other notable scholars previously identified, dentistry is existing in the marketplace of health care. For-profit corporations have become significantly involved in the delivery system; dentists understand themselves to be the proprietors of small businesses; students are graduating from dental schools with significant levels of debt, essentially coercing them to focus on making money—lots of money" (p.9).</p> <p>"Practice management courses encourage dentists to set daily revenue goals for their practices (p.10)."</p>	<p>Suggests that dentistry has become more commercially orientated with a focus on making money.</p> <p>There are several factors that explain this shift: the prevalence of "for-profit corporations" in the delivery of healthcare; dentists' perception of themselves as small businesses which is, in turn, influenced by things like their attendance on practice management courses; significant levels of student debt. All of these factors seem applicable to dentistry in the UK.</p>
Taylor-Gooby et al. (2000), United Kingdom	Primary research	<p>Mixed methods: Survey (n=2000). To provide information on the balance of NHS and private practice within the service.</p> <p>Semi structured interviews (n=56). To examine dentists' reasons for seeking – or not seeking – to alter the balance of private and NHS practice.</p>	<p>"Ideally you should be, as any other health care professional, totally committed to the patients' well-being. But your entrepreneur has got to make to business work – these two things are in conflict" (p.390).</p> <p>"There's always a trade-off between finance and health care" (p.390).</p>	<p>Supports the idea that dentists have competing concerns.</p>

IPT 2. Where loopholes, opportunities and perverse financial incentives exist, exploitation may occur in order to benefit GDPs' self-interests.

Name, date, country	Paper type	Study Design	Evidence	Relevance to theory
Davies and Macfarlane (2010), United Kingdom	Primary research	Qualitative: semi-structured interviews (n=12). To examine the influence of the post 2006 changes to dental contracts in England and its impact on dentist's clinical decision making	<p>"It was felt to be 'inevitable that the drive in the new contract is towards doing the least you can get away with in the category band.' One interviewee stated that while over-prescription represented a small minority of dentists working in the old system, 'perverse incentives in the new contract will encourage a far greater cohort to under-prescribe' as dentists sought to do the minimum amount that they could to cross a UDA treatment band threshold. Game-playing and interpreting rules literally was felt to be inevitable when dentists are running businesses and are going to see a substantial loss by providing some treatment over others" (p.2).</p> <p>"Dentists currently risk making substantial losses by providing one treatment option over another and so, consciously or subconsciously, may advocate for example, extracting a tooth that might otherwise be retained with a root canal filling and crown if the financial implication of doing so were not so damaging" (p 4).</p>	Supports the idea that some dentists will exploit opportunities for self-interest – particularly the prevention of financial loss.
Hartshorne & Hasegowa (2003), South Africa	Opinion piece	N/A	"Dentists may seek alternatives such as overservicing or unnecessary treatment to generate income and to improve their cash flow/and or profit. The main motives for overservicing are economic survival and financial gain" (p. 364)	Opportunism may be driven by either economic survival or financial gain.
Mcdonald et al. (2012), United Kingdom	Primary research	Qualitative: semi structured interviews (n=35) To explore the views of NHS dentists in England regarding reforms, which changed their incentive and payment structure.	<p>"Crown and bridgework all require expensive support from dental laboratory services. Dentists are paid a standard number of UDAs (12 UDAs for crowns, regardless of the number carried out), even though each procedure requires laboratory work that incurs costs for the dentist. This was also resulting in dentists making treatment decisions based on costs and income rather than on patient preferences or clinical factors.</p> <p>'I'm not likely to be offering a bridge, where I used to offer a bridge. Purely because it's costing me more in lab work and it's just the nature of the beast. Yes, we should do it, but human nature tells you why are we going to be spending a lot of money on lab work?'"</p>	Supports the idea that some dentists will exploit opportunities for financial gain

House of Commons Health Committee (2008), United Kingdom	Secondary analysis	Government report using descriptive statistics.	<p>In relation to the changes to the English dental contract in 2006, the report states:</p> <p>“The volume of more complex dental treatment administered by dentists within band three (requiring laboratory work such as crowns, bridges and dentures) has fallen sharply since 2006. According to the Dental Laboratories Association (DLA), there had been a significant fall in Band 3 treatments requiring laboratory work in England during the first year of the new contract. The organisation told us that since 2006 dental laboratories had experienced a decline of 57% in prescriptions for crowns and bridges and dentures, other than those replacing a single tooth” (p.32).</p>	Support the idea that some dentists will exploit opportunities.
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IPT 3. The existence of professional and social networks as well as professional codes and norms may constrain the impact of opportunism.

Name, date, country	Paper type	Study Design	Evidence	Relevance to theory
Anderson (2009), Denmark	Primary research/Secondary analysis	Qualitative: semi-structured interviews (n=24) plus secondary analysis from surveys and register data. To analyse the effects of public service motivation, professional norms and economic incentives on the behaviour and performance of health professionals.	<p>The author refers to the example of the use of fissure sealants for which “no professional norm among dentists regulated this preventive measure at the time of investigation” (p. 90).</p> <p>Public dentists – whose choice of treatment is entirely unrelated to their remuneration – “used fissure sealing systematically”.</p> <p>However, in the case of private dentists, whose choice of treatment is inherently linked to their remuneration, only one interviewee was found to use this treatment</p> <p>However, when for example it comes to instructing children how to brush their teeth there is an agreed norm here that such instruction ought to be given. As such, the author found that the “performance of public and private dentists is</p>	The existence of agreed norms may also act as a mitigating factor against opportunism.

			almost equal”.	
Raynor et al (2010), United Kingdom	Primary research	Questionnaires, distributed to: 1. 100 senior public servants and academics. 2. 300 public and private sector employees. 3. 14 colleges.	<p>“A critical factor in the delivery of public services has been an allegiance of professionals to an ethos of public service. Values intrinsic to that are said to include commitment, accountability, integrity, impartiality, organizational citizenship behavior, and some notion of the public interest, distinct from private interests” (p. 27).</p> <p>“Generally, our article supports the validity of the construct and shows that experts in the field believe that there is such a thing as public service ethos” (p.43).</p>	Given that NHS dentists provide a public service, the presence of a public service ethos may also mitigate against opportunism.
Plant (2003), United Kingdom	Normative analysis	N/A	<p>“Individuals do not enter the public service out of concern for self-interest or personal utility maximisation. They may derive satisfaction from what they are doing but that is to be seen in terms of service rather than utility maximisation. The assumption here is that there is a common good/purpose within the service/organisation to be pursued and that this will either constrain or displace sectional interest” (p. 562).</p>	Given that NHS dentists provide a public service, the presence of a public service ethos may also mitigate against opportunism.
Harris and Holt (2013), United Kingdom	Primary Research/Secondary analysis	Qualitative: semi-structured interviews (n=82) with a mixture of GPs, dental team members, patients and commissioners. Plus secondary analysis from archival documents	<p>“I think one thing here is we are a small community. You've got to remember that. That people we see in the waiting room – a percentage of them are friends. You see them in shops” (p.67).</p>	The fact that dentists are situated in a local community may act as a mitigating factor against opportunism.