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Incentives to follow Best Practice in Health Care

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1. Introduction

There has been long-standing interest in the use of incentives to encourage delivery of high-quality health care services at the lowest feasible cost. Although it is clear that health care professionals have intrinsic incentives to deliver high-quality care to patients, there are significant variations in quality standards, indicating that a desire to see patients thrive is on its own insufficient to ensure uniformly high standards of care. It is important that the health system provides incentives to add to intrinsic motivation. The objective of this briefing is to summarise concisely the evidence on incentives that encourage providers of health care to follow guidance on best practice, particularly where that guidance requires the use of specific medicines or other health technologies.

We define incentives broadly, to include both monetary and non-monetary rewards to adhere to best practice. We do not attempt to define "best practice" precisely but use a working definition that it

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is health care practice as recommended in written guidance propagated by the National Institute for Health and Care Excellence (NICE), the Scottish Medicines Consortium (SMC), the All Wales Medicines Strategy Group (AWMSG), NHS England or other NHS-recognised organisations such as medical Royal Colleges, for use in the UK National Health Service (NHS). Our study does not focus on the generation or dissemination of such guidance or on the evidence that underlies it. Rather, our focus is on adherence to guidance once it is available to health care professionals.[1]

The briefing draws on economic literature but has been written for all readers interested in policy and practice to improve adherence to guidance aimed at improving patient care. The primary focus is the use of such incentives in the NHS in England, but as we summarise the findings of the relevant international literature we hope the briefing will be of interest in many other health care systems as well.

The responsiveness (or lack of it) of health care providers to guidance on best practice is most visible when that guidance changes in some respect. Such change may be due to the emergence of new evidence or the advent of new medicines or other health technologies. In the NHS, uptake of medicines, particularly newer medicines, even when recommended by national Health Technology Appraisal (HTA) bodies as cost-effective, is more often than not lower than in other high-income countries' health care systems (O'Neill and Sussex, 2014; Richards, 2010). At the same time, use of medicines varies substantially from location to location within the UK (Health and Social Care Information Centre, 2014). Closer adherence to guidance implies less variable uptake of cost-effective technologies.

The aims of this briefing are threefold: (1) to review the evidence on the effectiveness of incentives to follow guidance on best practice health care in the UK and elsewhere; (2) to describe the incentives that are currently operating in the NHS in the UK in primary and secondary care; and (3) to determine whether additional or modified incentives might be capable of stimulating better adherence to best practice regarding use of medicines and other health technologies. The incentives programmes we examine may operate only in primary care, only in secondary care or in both sectors, and the type of incentive may be either financial or non-financial. In the literature, the distinction is often made between incentives for structure for process or for outcomes. A "process incentive" might directly stimulate use of a health technology as part of best practice. An "outcomes incentive" could indirectly stimulate greater compliance with best practice, and corresponding medicine use, as a means to achieve better outcomes for patients. We exclude incentives for structure as these are less relevant to adopting best-practice use of individual health technologies with patients.

Incentives might be targeted on processes or outcomes in the clinical domain or they may be concerned with patients' experience of the process of care – how long they have to wait, how often they have to visit health care facilities, etc. In principle there is a third domain: "safety", such as avoidance of so-called "never events", such as giving the incorrect dose of a medicine, but we exclude this from the framework (except insofar as it is reflected in clinical outcomes) as it does not concern incentives to use new treatments.

[1] There is a distinct and growing literature on "medicines optimisation", which focuses on enabling patients to get the most benefit, and least risk, from the medicines they are prescribed. But that is not the subject here: our focus is on incentivising the providers of health care, not the recipients of it.

We have excluded from consideration general policies intended to encourage quality competition/ choice in general. Although these policies are important in supporting an environment where quality of care is promoted (OHE, 2012), in the NHS their impact on use of best practice will be mediated through the type of incentive arrangements we discuss in this briefing.

2. Review of Empirical Evidence about the Impact of Incentives

2.1. Method

In this section, we summarise the evidence on the impact of incentives for best practice that have been in operation in health services in the UK and other high-income economies internationally. The literature review is not specific to the uptake of new medicines as it is likely that the types of incentive used to encourage quality in other aspects of health care would also be effective for this purpose.

The initial search of the literature was performed using PubMed at the end of January 2014 using the following search terms:

[("healthcare" ∪ "health care" ∪ "primary care" ∪ "secondary care" ∪ "doctor") ∩ ("incentiv*" ∪ "target*" ∪ "penalt*" ∪ "fee*" ∪ "reimburs*") ∩ ("quality" ∪ "performance" ∪ "best practice" ∪ "compliance" ∪ "adherence") ∩ ("evidence" ∪ "impact" ∪ "effect")] ∪ ["pay for performance" ∪ "quality and outcomes framework"]

This yielded a total of 3,239 papers, to which we applied the following exclusion criteria. A study was removed from the list if it was:

- not relevant from the title
- concerned solely with the health care system of a low- or middle-income country
- listed with no abstract/authors available
- published before 2004 (giving a 10-year window of publication)
- not written in English
- a purely qualitative, as opposed to quantitative, analysis of the evidence.

This process left 148 papers, including 22 reviews of the evidence. Given their comprehensive nature, we focus on the evidence presented in these reviews. Two of the included reviews were in fact reviews of reviews (Eijkenaar et al., 2013; Flodgren et al., 2011). Where these included an article that met the inclusion criteria for this briefing but that article was not detected in our own search, we added it to the list of papers we included. This resulted in a total of 27 reviews for analysis, which are summarised in Table 1.

Table 1. Included reviews from literature search (by year and author)

Review	Incentive type	Setting	Country
Hatah et al., 2014	Fee-for-service	Pharmacy	Various
Brocklehurst et al., 2013	Various financial	Dentist	UK
Eijkenaar et al., 2013	P4P	Various	Various
Huang et al., 2013	P4P in diabetes care	Various	Various
Langdown and Peckham, 2013	QOF	GP	UK
Gillam, Siriwardena and Steel, 2012	QOF	GP	UK
Houle et al. (2012)	P4P	Various	Various
De Bruin, Baan and Struijs, 2011	P4P in disease management	Various	Various
Flodgren et al., 2011	Various financial	Various	Various
Scott et al., 2011	Various financial	Primary care	Germany, US
Alshamsan et al., 2010	P4P in diabetes care	GP	UK
Van Herck et al., 2010	P4P	Various	Various
Briesacher et al., 2009	P4P	Nursing homes	US
Khanduja, Scales and Adhikari, 2009	P4P	Various	UK, US
Mehrotra et al., 2009	P4P	Hospital	US
Scott, 2009	Various non-financial	Various	Various
Christianson, Leatherman and Sutherland, 2008	P4P	Various	Australia, Spain, UK, US
Sabatino et al., 2008	Various financial and non-financial for screening	Various	US
Schatz, 2008	P4P	Various	UK, US
Doran and Fullwood, 2007	P4P in hypertension care	Various	UK, US
Petersen et al., 2006	P4P	Various	US
Pink et al., 2006	P4P in publicly financed health care	Various	Australia, UK, US
Rosenthal and Frank, 2006	P4P	Various	US
Sorbero et al., 2006	P4P for physicians	Various	US
Town et al., 2005	P4P in preventive care	Various	US
Dudley et al., 2004	Various financial and non-financial	Various	US

2.2. Overview

The large majority of reviews concern the use of financial incentives – many are overviews of the use of pay-for-performance (P4P) in several areas of health care. Only three papers discuss non-financial incentives (Dudley et al., 2004; Sabatino et al., 2008; and Scott, 2009).

Studies included in the reviews are most commonly set in the US and the UK. Many of the earlier studies are US-based, before attention turned to the UK around 2004 after the implementation of the Quality and Outcomes Framework (QOF, discussed below). In the US, health care provider facilities are owned and operated predominately by private businesses that receive income from insurance companies. In the UK, the Government is the main payer and thus provider of financial incentives. We assume that the impacts of incentives for health care professionals and the organisations that employ them will be broadly similar whoever pays for the incentives. Hence evidence from the US on this subject is of interest in the UK despite the differences between the two nations' health care systems.

In some cases, it was possible to extract from these papers evidence on the effectiveness of a specific incentive scheme or specific type of incentive scheme operating in the health service. However, due to the nature of reviews, a number of the selected papers discussed incentives or groups of incentives at a high level.

In order to address this issue, the analysis was divided into two sections. The first involved studying the 27 included reviews and picking out evidence on specific incentives. There was a large degree of "nesting" within the reviews – many included the same papers. By creating a table of the reviews and the papers they included, we ensured that nesting did not lead to the overrepresentation of any one piece of evidence. During this process, it became apparent that the papers included in Van Herck et al. (2010) encompassed the majority of the papers included in other studies. We have therefore given particular attention to the findings of this review in section 2.3.

Where it was feasible to pick out evidence on particular incentive schemes from the literature, these are summarised in Table 2. Here, the incentives are grouped by broad care setting (primary or secondary care), type of incentive (financial or non-financial), type of target (process or outcome) and domain (clinical or experience). The evidence is presented by direction and quality, and the number of studies addressing the incentive is also shown.

An upward arrow indicates evidence of a positive effect; a downward arrow indicates a negative effect. A horizontal line means either that the evidence suggests the incentive has no effect or that the results are mixed.

Judgements relating to the quality of the evidence are based on our interpretation of the comments of the review authors relating to the studies contained within those reviews. For example, the quality of evidence was judged to be "good" if the studies included in the reviews were considered to be of good quality by the authors of those reviews. Thus, if a horizontal line is associated with "good" evidence, this indicates that the incentive was found to have no effect; if a horizontal line is associated with "poor" evidence, this indicates that the effect is unclear (rather than that there was clearly no effect).

Table 2. Incentive schemes evaluated in the literature

	Setting		Type of incentive		Type of Target		Domain		Evidence		
Programme	**Primary**	**Secondary**	**Financial**	**Non-financial**	**Process**	**Outcome**	**Clinical**	**Experience**	**Number of studies**	**Direction of effect**	**Quality of evidence**
Quality and Outcomes Framework	✓		✓		✓	✓	✓	✓	11	▲	Good
Western New York Physician Incentive Program	✓		✓		✓	✓	✓		1	▲	Moderate
Integrated Healthcare Association Pay-for-Performance Program	✓	✓	✓		✓	✓	✓		1	▲	Moderate
Fee-for-service for dentists	✓		✓		✓	✓	✓		2	▲	Poor
Fee-for-service medication review by pharmacists	✓		✓		✓	✓	✓		21	—	Good
Bonuses for performance in nursing homes	✓		✓			✓	✓		4	—	Poor
CMS-Premier Hospital Quality Incentive Demonstration		✓	✓		✓	✓	✓		3	▲	Good
Directing patients to high-quality hospitals		✓	✓		✓	✓	✓	✓	3	▲	Moderate
Audit and feedback	✓	✓		✓	✓		✓		118	▲	Good
Peer-comparison feedback interventions		✓		✓		✓	✓	✓	12	▲	Good
Public scorecards and performance reports		✓		✓	✓	✓	✓	✓	8	—	Poor
Formal review of performance by external accreditation agencies		✓		✓	✓	✓	✓	✓	4	—	Poor

2.3. Financial incentives for quality

The Quality and Outcomes Framework (QOF) is a system of financial incentives which rewards UK general practitioners (GPs) for delivering high-quality care, as indicated by achievement of a range of mainly process measures. It is to date the most extensively scrutinised incentive programme found in the literature: 10 of the 27 chosen reviews included studies that evaluated its effectiveness. The details of the QOF are discussed further in Section 3.1.

Langdown and Peckham (2013) is the most recently published systematic review of the effectiveness of the QOF. In this study, 10 of the 11 papers identified by the authors assessed the impact of the QOF on the health outcomes targeted by the financial incentives. Of these, seven papers focused on specific conditions and all reported statistically significant improvements in intermediate health-target outcomes (blood pressure and cholesterol). In a different systematic review of the evidence, Gillam, Siriwardena and Steel (2012) concluded that the QOF improved the processes of care as well as intermediate outcomes but that these improvements decreased after the first year of operation of the scheme. They report an increase in prescription rates in associated drug categories as well as modest population mortality reductions.

However, the evidence from both reviews suggests that many of the papers reporting positive effects for the QOF do not adequately account for pre-existing trends in targeted outcomes. In the studies that employ more rigorous scientific designs, the magnitudes of the reported improvements are much smaller or they are not statistically significant. In addition, there is little evidence of significant improvements to the quality of care reported by patients, as captured by measures such as "overall satisfaction" and "quality of communication". A third issue is that both reviews report modest evidence that the quality of care for non-incentivised activities fell to below that predicted by pre-QOF trends. In other words, the outcomes for non-incentivised activities improved at a slower rate after the introduction of QOF.

The QOF is a pay-for-performance (P4P) programme in primary care in the UK. P4P programmes make payments to providers partly dependent on (auditable) activities linked to best, or at least good, health care practice. De Bruin, Baan and Struijs (2011) discuss specific P4P programmes in primary care in the US, including the Western New York Physician Incentive Program (WNY-P4P). This was implemented by a managed care organisation in upstate New York, where individual primary-care physicians were financially rewarded if their patients met targets in areas of patient satisfaction, access and preventive health care.

P4P has also been implemented and evaluated in other areas of primary care. Brocklehurst et al. (2013) examined the effect of the introduction of two fee-for-service remuneration programmes for dentists practising in Scotland. The authors reviewed two cluster-RCTs (randomised controlled trials) that looked at the impact of fee-for-service, compared to capitation payments, on the level of clinical activity of dentists (each cluster-RCT addressed one specific incentive scheme). One of the studies reviewed also examined the effect on utilisation (mean number of visits), patient outcomes and costs. The authors report that fee-for-service was associated with a statistically significant increase in the clinical activity of dentists – for example, the number of applications of fissure sealants for

molars. There was also evidence that incentivised dentists saw their patients more frequently and carried out more fillings and extractions, but tended to give less preventive advice to patients. However, Brocklehurst et al. judged both papers to be of low quality, meaning that one should be cautious in the interpretation of these results.

A meta-analysis of 21 studies by Hatah et al. (2014) examines the effect of fee-for-service, pharmacy-led, medication reviews on patient outcomes, where the majority of included studies evaluated programmes set in the US (8), the UK (4) and Canada (3). Most interventions were conducted in community pharmacies, though some were set in GP surgeries, community health centres or patients' homes. The authors concluded that pharmacist intervention improved patient outcome targets such as blood pressure and low-density lipoprotein levels but that there was no significant effect on hospitalisation or mortality rates.

Briesacher et al. (2009) provide a review of the effectiveness of P4P in the context of US nursing homes. They found one RCT that demonstrated that P4P improved access and outcome quality, and three observational studies that found only modest or no impact.

Moving to secondary care, Mehrotra et al. (2009) evaluated P4P programmes directed at US hospitals, including the Hawaii Medical Service Association Hospital Quality Service and Recognition P4P Program, the Blue Cross Blue Shield of Michigan Participating Hospital Agreement Incentive Program and the CMS-Premier Hospital Quality Incentive Demonstration (PHQID). These three programmes provide financial incentives to improve process-of-care measures as well as patient outcomes. The evaluations of the PHQID were the only ones to include use of a control group to improve the validity of the results. Based on these papers, Mehrotra et al. report a two- to four-percentage-point improvement in outcomes over control hospitals. The positively affected variables included process-of-care measures for acute myocardial infarction (AMI), coronary artery bypass graft (CABG) surgery, and hip and knee replacements, and outcome measures such as mortality rates, readmission rates and complication rates.

As explained above, Van Herck et al. (2010) is a systematic review of the effects, design choices and contexts of P4P in primary-care and acute hospital-care medicine. The 128 papers included in this review encompass the large majority of those covered by the reviews published previously. Therefore, it serves as a useful summary of the evidence surrounding the effectiveness of P4P programmes in general and the features that contribute to their success or failure.

The review by Van Herck and colleagues includes 39 papers assessing the effect of P4P on clinical effectiveness across 55 different targets, split by type of care and patient group. In terms of study design, roughly half (51%) used a concurrent–historic comparison without randomisation, around a third (34%) used a historical comparison and the remainder (15%) used randomisation.

The key messages from the review are summarised in the following bullet points:

- Of the 55 targets, P4P was found to have:
  - a significant positive effect in 20 cases
  - a significant negative effect in one case
  - conflicting, and hence unclear, results in 21 cases
  - insignificant results in 13 cases.
- The average improvement in measures of clinical effectiveness was 5%.
- P4P was generally more effective for chronic care than acute care.
- The most positive quality improvement results were for diabetes, followed by smoking cessation and asthma.
- Within preventive care, results were more conflicting for screening targets than for immunisation targets.
- The effect of P4P on non-incentivised measures was unclear.
- In general, P4P programmes have not had negative effects on access to, or equity of access to, care in terms of patient characteristics such as age, ethnicity, socio-economic status or the presence of comorbid conditions.
- Of the three included studies that addressed the effectiveness of P4P on patient experience, none found a significant effect.

Van Herck et al.'s discussion of the features of P4P programmes that are associated with positive results may be summarised under the following subheadings:

Targets

- Process indicators generally yield higher improvement rates than outcome measures and intermediate outcome measures.[2]
- P4P programmes can yield positive results whether they are focussed on rectifying *underuse* of health care (associated with capitation payment of providers, where they have the incentive to avoid costly payments) or *overuse* of health care (associated with fee-for-service).
- Lower baseline levels of quality are associated with greater improvements. This is known as a ceiling effect, which is often observed for voluntary P4P programmes where the providers that choose to opt into the programmes are those that are already high-performing and thus have less room for improvement.
- Studies reporting the involvement of stakeholders in target selection appear to find P4P to be more effective.

Incentive design

- There is little evidence that "gaming" – for example, over-classification of patients – takes place.
- Positive financial incentives that are available to all who meet a certain requirement appear to

[2] Outcome measures are defined as those that the incentive is designed to achieve ultimately (e.g. reduced rate of heart disease); intermediate outcome measures are critical outcomes that occur in order to reach the higher-level outcome (e.g. reduced cholesterol levels).

yield more positive effects than those that create "winners" and "losers".

- Positive effects of P4P programmes are greater for initially low performers than for initially high performers.
- There is no clear relationship between incentive size and reported effectiveness of P4P.
- Incentives targeted at the individual or team level generally achieve positive results; those aimed at hospital level are likely to have smaller effects.

Implementation

- There are stronger effects for P4P programmes where new funds are made available, compared with those where existing funds are reallocated.
- The evidence on whether schemes should be voluntary or mandatory is mixed.
- Sufficient awareness of the existence and of elements of programmes is important in ensuring positive results.

Context

- National-level P4P programmes (such as the QOF) tend to be more effective than more fragmented programmes.
- There is conflicting evidence on the relationship between the size of the incentivised organisation (in terms of staff or patients) and the effectiveness of P4P.
- There is a lack of evidence on how patient characteristics affect the success of P4P programmes.

The authors note that although most studies controlled for potential confounders, selection bias cannot be ruled out in the studies that do not use a randomisation design. However, they report that restricting the analysis to randomised controlled trials did not change the main findings of the review.

Finally, an alternative approach to financially incentivising quality of care in hospitals, distinct from P4P, is the "centre-of-excellence" method, as discussed in Khanduja, Scales and Adhikari (2009). In this approach, payers direct patients with certain conditions or requiring specific treatments to the hospitals with the best results and offer lower payments to the remaining hospitals. Therefore, high-quality hospitals or specialists are selectively remunerated. Khanduja, Scales and Adhikari (2009) review three studies from the US, of which two demonstrate correlations between high-volume centres/specialists and improved patient outcomes.

In summary, evidence on the effectiveness of financial incentives for following best practice in health care is that they sometimes but not always have a significant but not large positive effect on processes adopted and/or outcomes in the incentivised area (see Table 2 above). This conclusion is consistent with the recently expressed view of Cashin et al. (2014), who find that P4P in general "fails to show any 'breakthrough' quality improvements". However, having reviewed 12 case studies programmes in various OECD countries, they argue that P4P does nevertheless appears to be "creating heightened awareness of the strategic purchasing function and its proper alignment with health system objectives" (Cashin et al., 2014, p. 16).

2.4. Non-financial incentives for quality

The literature on the effectiveness of non-financial incentives for best practice is smaller than the body of evidence that addresses financial incentives. This is most likely explained by the fact that financial incentives are simply a more commonly used tool in health care. Nevertheless, Scott (2009) presents a review of strategies for improving quality and safety of health care that includes a number of non-financial incentives. The focus of these incentives tends to relate to the reputation of health care staff.

For example, the author discusses a Cochrane review of 118 RCTs designed to measure the effectiveness of "audit and feedback" on both process-of-care measures and clinical outcomes. Audit and feedback, defined as any summary of clinical performance over a specified period of time and referring specifically to clinician-driven schemes, was found to increase compliance with evidence-based recommendations by a median of 5% for dichotomous measures of quality and 16% for continuous measures.[3]

Similarly, Scott (2009) discusses a meta-analysis of 12 RCTs that aimed to measure the effect of peer comparison feedback interventions in which health care specialists (individuals or groups) are "profiled" by their peers both within and across provider organisations. The profiling, which is not necessarily associated with evidence-based recommendations, is based on relative utilisation of tests, treatments or procedures. Relevant outcomes include the number of prescriptions for target drugs, number of laboratory tests, number of cancer-screening tests and number of appointments kept. Of the 12 RCTs, 10 studies showed significant changes in practice as a result of peer comparison. Meta-analysis showed a mean change of around nine percent towards stated utilisation targets for care processes.

Scott (2009) also reviews the evidence on manager- and policy-maker-driven quality-improvement strategies. One such strategy is the use of published scorecards and performance reports, which have been used in Australia, Canada, the UK and the US, amongst other countries. In some cases, these have been used to rank hospitals according to performance. However, the evidence surrounding this type of incentive is lacking. Scott states that "public reports do not, in general, exert any direct effects on individual clinician performance or on patient outcomes, have low predictive value for 'outlier' institutions, are not readily accessed, interpreted or trusted by consumers and may have unintended, perverse consequences" (Scott, 2009, p. 395).

Finally, Scott discusses the role of "external accreditation" agencies, specifically formal reviews of institutional performance by agencies such as the US Joint Commission on Accreditation of Healthcare Organisations (JCAHO). Miller et al. (2005), a study described in Scott (2009), found no correlation between the JCAHO's accreditation of hospitals and clinical quality/safety indicators across 24 US states. An Australian systematic review of health-sector accreditation (Greenfield and Braithwaite, 2008) found weakly positive effects on aspects of organisation but

[3] An example of a dichotomous outcome is whether a patient receives an immunisation or not; an example of a continuous outcome is blood pressure level.

there was no clear evidence supporting its effectiveness in improving quality. Similarly, a review by Snyder and Anderson (2005) of the US literature found no association between external quality-improvement organisations and quality outcomes.

3. Current Incentives for Best Practice in the NHS

The preceding section of this briefing discusses evidence on the effectiveness of various types of incentive in a number of international settings. In the following section, we describe incentives for best practice that are currently in place in the NHS, particularly in England, in primary and secondary care respectively. For two of the secondary-care incentives (CQUIN and Advancing Quality), we examine some of the evidence surrounding their success, as there has been a significant level of evaluation since their inception and they are not covered by the papers reviewed in section 2 above.

3.1. Incentives to follow best practice in NHS primary care

3.1.1. QOF payments

The General Medical Services (GMS) contract is the contract between general practices and the NHS in all countries of the UK for delivering primary-care services. The "new" GMS contract that came into force in April 2004 stipulates that each GP practice is given a share of the total budget allocated towards primary care, determined by the size of the practice, patient demographics and other features of the local area, and by its achievement of numerous targets as specified in the QOF.

The QOF is a key feature of the GMS contract. Participating GP practices have a proportion of their income linked to their performance, measured using "QOF points", depending on the level of achievement across a number of indicators. Participation in the QOF is voluntary but close to universal. Achievement of QOF standards was initially linked to up to 20% of GP practices' income in its first year of introduction in 2004–2005, but this has been scaled down to around 15% for 2014–2015. In 2014–2015, a maximum score of 559 QOF points was possible, and each point awarded has a monetary value (which varies between the four countries of the UK). Each GP practice's achievement is measured across QOF indicators in the clinical domain and the public-health domain, as listed in Table 3 (NHS Employers, General Practitioners Committee and NHS England, 2014).

Table 3. QOF clinical and public health domains 2014–2015

Clinical domain	Public-health domain
Atrial fibrillation	Cardiovascular disease – primary prevention
Secondary prevention of coronary heart disease	Blood pressure
Heart failure	Obesity
Hypertension	Smoking
Peripheral arterial disease	Cervical screening
Stroke and transient ischaemic attack	Contraception
Diabetes mellitus	
Asthma	
Chronic obstructive pulmonary disease	
Dementia	
Depression	
Mental health	
Cancer	
Chronic kidney disease	
Epilepsy	
Learning disabilities	
Osteoporosis: secondary prevention of fragility fracture	
Rheumatoid arthritis	
Palliative care	

Source: NHS Employers, General Practitioners Committee and NHS England, 2014

There is a group of QOF indicators, the majority of them in the clinical domain, that directly relate to medicines expenditure by driving up the prescribing rates of some medicines. These are mostly focussed on long-term conditions. For example, the coronary heart disease area indicator, CHD006, measures GP practices' performance in terms of the percentage of their patients with a history of myocardial infarction currently treated with an ACE inhibitor (or with an angiotensin receptor blocker, ARB, if ACE intolerant), aspirin or an alternative anti-platelet therapy, beta-blocker and statin. A GP practice does not receive a payment for this indicator unless 60% of their eligible patients received treatment that met the standard defined by indicator CHD006 in financial year 2014–2015. The practice earns progressively more points and hence money as the percentage of eligible patients treated approaches 100%.

Before 2013–2014, there were also a small number of medical management indicators in the QOF that related directly to prescribing. These were in the "organisational domain", which no longer exists (NHS Employers, General Practitioners Committee and NHS Commissioning Board, 2013). For example, to achieve the QOF reward for one such indicator, the GP practice was required to meet the prescribing adviser of the Primary Care Organisation (PCO) at least annually and to agree up to three actions related to prescribing. The three actions could vary from one GP practice to another. An example of an action could have been a self-audit of how the practice is implementing guidance from NICE.

3.1.2. Prescribing incentive schemes

Prescribing incentive schemes in England are designed to save the NHS money by allowing clinical commissioning groups (CCGs), who purchase health care services for their local populations, to stimulate GPs to prescribe more cost-effectively. For example, a CCG might agree with its GP practices at the beginning of the financial year to set up targets for GPs to write more of their prescriptions generically. In order to qualify for the potential incentive scheme payment, e.g. a few pounds per registered patient, GP practices must hit those agreed targets. All payments under such prescribing incentive schemes should go into practice funds and not to the remuneration of individual GPs (Department of Health, 2010a).

3.1.3. Incentives for dispensing doctors

As well as providing essential GMS services, some GP practices - usually in rural areas - provide dispensing services to patients who find it more difficult to access a pharmacy. The Health and Social Care Information Centre's "UK GP Earnings and Expenses" report for 2011–2012 (published in September 2013) states that there are around 5,000 dispensing GPs in the UK. Dispensing doctors receive a fee for each item that they dispense. Since 2006, dispensing practices in England and Wales have an additional incentive scheme, the Dispensary Services Quality Scheme, which rewards dispensing GPs for providing high-quality services to their dispensing patients. Participating practices that achieve all the quality requirements receive £2.58 for each dispensing patient (NHS Employers and General Practitioners Committee, 2006).

The main quality indicators are:

- Dispensing staff must be appropriately trained and undertake continued training with annual appraisals.
- Dispensers who work unsupervised must have at least 1,000 dispensing hours' work experience over the previous five years in a GP dispensary or community pharmacy and must be trained to Pharmacy Services S/NVQ level 2.
- Minimum levels of staff hours dedicated to dispensary services must be established.
- Staff with a limited dispensing role must be given relevant training and competency assessment.
- Standard operating procedures (SOPs) that reflect good professional practice must be established. SOPs must be reviewed and updated at least once every 12 months and whenever dispensing procedures are amended.
- A significant-event monitoring procedure must be in place.
- An annual review must take place of the medicines use for the dispensing list.

3.1.4. Medicine use reviews

In 2005, the NHS in England and Wales introduced medicine use reviews (MURs) as part of the Community Pharmacy Contractual Framework. MURs are structured reviews undertaken by pharmacists to help patients manage their medications more effectively. The pharmacy receives

a payment for each completed MUR. In September 2013, the payment was £28. Pharmacists are required to keep a record of data about the MUR, which is sent to NHS England (evidence on the effect of reviews of this type in the UK and elsewhere is discussed in section 2.3 above).

According to Direction 4(2) of the Pharmaceutical Services (Advanced and Enhanced Services) (England) Directions for 2013, the purpose of the MUR service is to improve patient knowledge of, adherence to and use of medicines by:

- establishing the patient's actual use, understanding and experience of taking their medicines
- identifying, discussing and resolving poor or ineffective use of their medicines
- identifying side effects and drug interactions that may affect adherence
- improving the clinical and cost-effectiveness of prescribed medicines and reducing medicine wastage (Department of Health, 2013).

3.1.5. CCG Quality Premium

Although the focus of this briefing is on incentives for health care providers, the CCG Quality Premium, an incentive for purchasers introduced by NHS England, is an important part of the context. For many incentives used in the NHS providers receive funds from the commissioners for delivering high-quality care. The Quality Premium is used to compensate commissioners for the extra resources they require to reward providers for delivering high-quality services: it incentivises CCGs to incentivise providers. The maximum quality premium payment for a CCG is around £5 per head of local population (NHS England, 2014), which implies around £1.25 million per year for an average-sized CCG serving a population of 250,000.

- The size of the premium that the CCG receives is determined by how far it achieves CCG-specific targets agreed with NHS England in each of the following six areas (NHS England, 2014):
- reducing potential years of lives lost through causes considered amenable to health care and addressing locally agreed priorities for reducing premature mortality (15% of the quality premium)
- improving access to psychological therapies (15%)
- reducing avoidable emergency admissions (25%)
- addressing issues identified in the 2013–2014 Friends and Family Test (FFT), supporting roll-out of FFT in 2014–2015 and showing improvement in a locally selected patient experience indicator (15%)
- improving the reporting of medication-related safety incidents based on a locally selected measure (15%)
- a further local measure that should be based on local priorities such as those identified in joint health and well-being strategies (15%).

3.2. Incentives to follow best practice in NHS secondary care

3.2.1. Standard contracts

A purchaser/provider split exists in the NHS in England but not in the rest of the UK, where commissioning and provision of health care are the responsibility of unified health boards. This affects the institutional arrangements by which expected standards of health care are enshrined, though not the principle. Similarly, institutional arrangements for monitoring and regulating the quality of health care vary between the countries of the UK. England has the Care Quality Commission, Monitor and NHS England, all with roles in regulating quality of care. Different arrangements address the same ends in Northern Ireland, Scotland and Wales.

Within those standard-setting and regulatory arrangements, the NHS Standard Contract in England (first introduced in 2007 and modified since) specifies some dimensions of the standards of care that all providers of care to NHS patients are supposed to meet (NHS England, 2013). The local CCGs sign contracts with health care providers and are supposed to ensure compliance with the contracts. CCGs are answerable to NHS England for the quality of care received by their local populations. Schedule 4 of the 2014–2015 contract template states quality requirements in terms of:

- "operational standards" – to do with maximum waits etc., but none concerns use of medicines or other specific health technologies
- "national quality requirements" – but again none concerns use of specific health technologies/ medicines
- "local quality requirements" – for CCGs to agree with their providers
- "never events" – such as wrong-site surgery
- "Commissioning for Quality and Innovation (CQUIN)" – which we discuss separately below
- "local incentive schemes" – left blank for CCGs to negotiate, if they wish, with their providers (NHS England, 2013).

3.2.2. CQUIN

The Commissioning for Quality and Innovation (CQUIN) payment framework makes a small percentage of the total value of a secondary-care provider's NHS income in a year dependent on achieving agreed quality improvements. It applies only in England, where it was introduced in April 2009. In 2009–2010, 0.5% of total income was linked to CQUIN requirements. This percentage has since been increased, first to 1.5% of total NHS income and then to 2.5% from 2012–2013 onwards. At least 0.5% must be linked to achievement of four nationally set quality goals: applying the Friends and Family Test,[4] and in the areas of safety, dementia and venous thromboembolism. The remaining up to 2% is linked to goals agreed locally between CCGs and provider organisations. If providers do not meet a CQUIN target, their income is reduced (Department of Health, 2010b).

The specific locally agreed behaviours incentivised by CQUIN vary from place to place, but examples include the following (which are among a large number listed by Allen, Petsoulas and Ritchie, 2012):

- Falls: patients assessed within six hours of admission to hospital to identify those at high risk of falling. Penalty applied on a quarterly basis to the Trust: £2,000 if fewer than 98% but more than 95% assessed; £4,000 if fewer than 95% but more than 90%; £6,000 if fewer than 90%.
- Proportion of high-risk transient ischaemic attack (TIA) cases investigated and treated within 24 hours: £50,000 penalty for each quarter where a specified proportion was not achieved.
- Discharge letter to be received by patient's GP within two days of discharge from hospital: £50 for each late letter up to a cap of £100,000 per quarter.
- Risk assessment by the provider organisation of the compliance with NICE quality standards, NICE guidance and technology appraisals within three months of publication: £2,000 for each month that breached.

For their evaluation of CQUIN for the Department of Health, McDonald and colleagues compiled a national data set from 337 providers of NHS health care in 2010–2011, which together contained 5,001 different indicators (McDonald et al. 2013). They found:

> Observational and interview data suggest that CQUIN has made some impact on clinical practice and service delivery. However, reservations were expressed by some respondents about the extent to which CQUIN was improving the quality of patient care. In some cases, maintaining changes in practice was reported as difficult, with constant efforts being required to ensure that clinicians did not revert to pre-CQUIN behaviours and practices. (McDonald et al. 2013, p. 18)

The transience of the impact results from the practice within CQUIN of frequent introduction of new indicators and dropping of existing ones. Data collection requirements were sometimes onerous, leading to abandonment of some indicators and the money being paid regardless of performance. Another failing identified in the evaluation was that more involvement of frontline clinicians was needed sometimes to ensure that clear and meaningful goals were incentivised (McDonald et al., 2013).

A 2012 survey of NHS staff in Primary Care Trusts (PCTs, the local NHS purchaser organisations that preceded CCGs) found, "There seems to be a general enthusiasm among commissioners to use financial penalties, but, in practice, some do not find it possible to withhold money from providers, as this is likely to exacerbate the performance problems. Others do not think it was constructive to impose financial penalties" (Allen, Petsoulas and Ritchie, 2012, p. 17). An earlier study reported that "purchasers generally set CQUIN targets at achievable levels, and these were little different from past quality targets. Almost all available CQUIN monies were paid to providers, and several respondents suggested that expectations were relatively undemanding" (Hughes et al., 2011, p. 333).

Thus, although CQUIN offers a clear mechanism for financially incentivising provider organisations in England, it seems that those incentives may often not be used actively to drive improved quality.

[4] NHS England's website provides the following description: "The Friends and Family Test (FFT) is an important feedback tool that supports the fundamental principle that people who use NHS services should have the opportunity to provide feedback on their experience. It asks people if they would recommend the services they have used and offers a range of responses. When combined with supplementary follow-up questions, the FFT provides a mechanism to highlight both good and poor patient experience … Launched in April 2013, the FFT question has been asked in all NHS inpatient and A&E departments across England and, since October 2013, all providers of NHS funded maternity services … The FFT is now being rolled out to additional areas of NHS care making the opportunity to leave feedback possible in almost all NHS services." See http://www.england.nhs.uk/ourwork/pe/fft

3.2.3. Advancing Quality

"Advancing Quality" (AQ) was a pay-for-performance scheme that operated across the 24 NHS acute hospital trusts in the North West region of the NHS in England for 18 months from October 2008 until March 2010, after which it was absorbed into CQUIN. AQ was modelled on the US-based PHQID, and covered hospital services for AMI, heart failure, CABG, pneumonia, and hip and knee replacement. Across these treatment areas, performance was measured against 28 process indicators, including timely administration of appropriate medicines. At the end of the first year, in each of these areas, the hospital trusts (i.e. the provider organisations that may include more than one hospital site) that recorded quality scores in the top quartile in the region received a bonus payment of 4% on top of the standard tariff. Hospital trusts in the second quartile received a 2% bonus. Other hospital trusts received only the standard tariff.

For the next six months, the incentives were revised so that in each treatment area any or all of three different bonuses could be earned: an "attainment" bonus if the trust's achievement in the second period exceeded the median across the 24 hospitals in the first year, an "achievement" bonus if they were in the top or second quartiles in the second period, and an "improvement" bonus if their increase in achievement since the first year was in the top quartile of such increases. The "achievement" and "improvement" bonuses could only be earned by those trusts that qualified for the "attainment" bonus.

Sutton et al. (2012) report that bonuses totalled £3.2 million in the first year and £1.6 million in the next six months. Importantly, the chief executives of the 24 trusts collectively agreed at the outset that bonuses would be distributed within their hospitals to the clinical teams whose performance had earned the bonuses, for investment by those teams in improving clinical care (they could not take any of the bonuses as personal income). The financial incentives were reinforced by support to all 24 trusts from the regional health authority (a tier of NHS organisation subsequently abolished in a later NHS reorganisation) to ensure standardisation of data collection and regular feedback of performance data, and results were published on a dedicated website (Sutton et al., 2012).

Sutton et al. (2012) found that AQ, in combination with public reporting of providers' achievement of the targeted indicators, was associated with a clinically significant reduction in 30-day in-hospital mortality during the first 18 months. This effect appears to have been driven by reductions in mortality for pneumonia patients, as there was no statistically significant effect for AMI or heart failure patients (they did not analyse for CABG and hip and knee replacement as mortality is very low in those treatment areas). Meacock, Kristensen and Sutton (2014) report that the size of these benefits made AQ incentives cost-effective when assessed against the conventional NHS cost-effectiveness threshold of £20,000 to £30,000 per quality-adjusted life year (QALY) gained.

In a second follow-up study, the authors extended their analysis to consider the longer-term effects of the policy over an additional 24 months. They found that by the end of the 42-month follow-up period, the fall in mortality was no longer significant, and concluded that "short-term improvements in mortality in the northwest region as compared with the rest of England were not maintained" (Kristensen et al., 2014, p. 544).

3.2.4. Best Practice Tariffs

In England a national "payment-by-results" (PbR) tariff sets nationally fixed prices per unit of activity funded by the NHS (inpatient spell, day case, outpatient attendance, A&E attendance) for around 60% of hospital activity, both elective and emergency (Monitor and NHS England, 2013). Prices vary according to the treatment, which for inpatients and day cases are grouped into over 1,200 healthcare resource groups. In the rest of the UK, hospitals are paid mainly under "sophisticated block contracts" which do not automatically vary the amount paid to hospitals as their activity levels change.

Most of the tariff prices are set to reflect approximately the average unit costs of that activity across the NHS in England. For a relatively small group of hospital activities, however, "best-practice tariffs" (BPT) have been set at levels intended to encourage adherence to guidance (McDonald et al., 2012). BPT prices might be higher or lower than national average costs. Four BPT prices were created in 2010–2011 and the number has gradually been increased since to 18 in 2014–2015. Two of the 18 BPTs for 2014–2015 specify higher prices when best practice is applied and offer different prices according to which treatment pathway is followed. Those pathways differ with respect to use of medicines:

- Acute stroke care – the BPT is made up of three different conditional payments, one of which is that, having been assessed for thrombolysis, the patient receives alteplase if clinically indicated (in line with NICE guidance).
- Early inflammatory arthritis (EIA) – three separate BPTs are applicable: one where the diagnosis is that the patient does not after all have EIA, and the other two where treatment with disease-modifying anti-rheumatic drugs (DMARDs) is initiated within six weeks of referral. (The purpose of prompt initiation of DMARD treatment is in part to reduce the need for subsequent biologic medicines.)

An evaluation for the Department of Health of the impact of the four BPT prices that were effective in 2010–2011 (McDonald et al., 2012) found that:

- Two (hip fracture and day-case cholecystectomy) had the intended impact of increasing use of best practice.
- The stroke/alteplase BPT did not appear to impact on quality and outcome indicators (they did not measure its impact on use of alteplase).

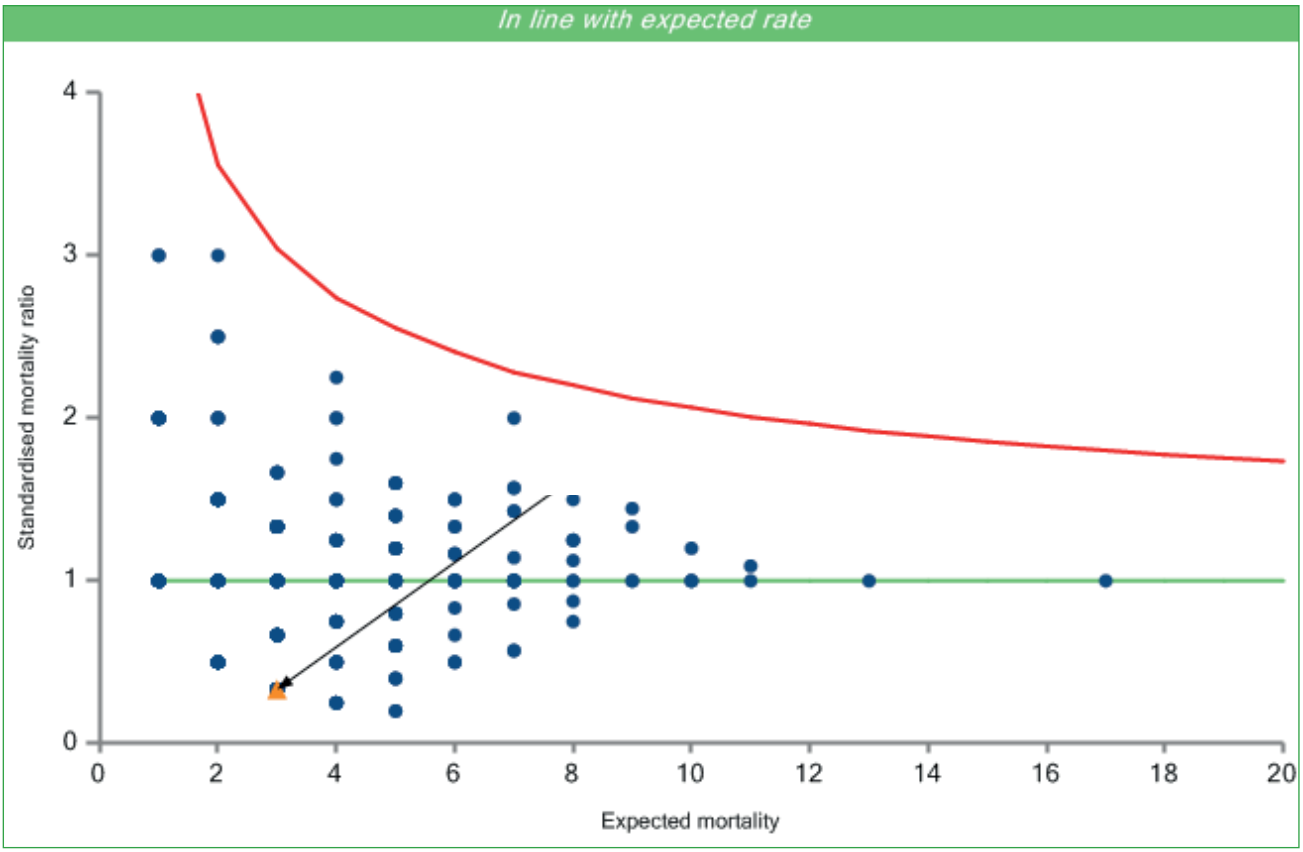
They did not analyse the impact of the BPT for the streamlined care pathway for cataracts due to low reported use of that tariff (which is interesting, given the supposed national use of all PbR tariff prices). Another important finding was that data collection costs were a barrier to uptake of one of the cataract BPTs, i.e. the extra income from demonstrating use of best practice was not worth the extra trouble to the provider of doing it and proving it. More generally, "an increased burden in relation to data collection was reported in all sites" (McDonald et al., 2012, p. 15).

3.2.5. Publication of consultant performance data

Since June 2013, surgeons operating on NHS patients in England have had their standardised mortality rates, complication rates and other quality indicators published on the NHS Choices website (http://www.nhs.uk/Service-Search/performance/Consultants). This enables anyone to see how the mortality rate of any NHS surgeon compares with other NHS surgeons and with the national average mortality rate for a particular type of surgery adjusted for numbers and mix of patients treated, and identifies any surgeons with outlying performance, i.e. exceptionally high rates of mortality or complications.

Figure 1 shows an example taken from the National Joint Registry of how such data can be presented, in this case for the mortality performance of a particular orthopaedic surgeon doing hip replacements (the first on the list, alphabetically). In this graph, the individual surgeon is highlighted as an orange triangle. The vertical axis measures the standardised mortality ratio. Progression along the horizontal axis indicates that the surgeon has operated on increasingly risky patients, such as older patients, which results in a higher mortality rate. The green line shows the average expected mortality rate, accounting for case mix. The red line is the 99.8% confidence limit line, above which surgeons would have a higher-than-expected mortality rate. The data suggest that the 90-day mortality rate following hip surgery for this surgeon is in line with the expected rate, based on the characteristics of the patients on which the surgeon has operated.

Figure 1. Example of surgical mortality rate data available – 90-day mortality rate following hip replacement surgery



Source: http://www.njrsurgeonhospitalprofile.org.uk, accessed 4 December 2014. The name of the surgeon highlighted in this screenshot has been removed.

This kind of information is currently presented for most types of surgery and covers almost all surgeons currently working in the NHS in England – the names of the small number of surgeons who have not consented to have their mortality rates published (21 when the website was accessed on 23 January 2014) are also listed on the website. It is intended that publication of this information will act as a stimulus to surgeons to improve their performance in the light of what their peers are achieving, which is also visible to the public.

3.2.6. Better Care Fund

In the 2013 Spending Review, the Government allocated £3.8 billion to the "Better Care Fund" with the aim of improving integration between health and social care in England through pooled budgets between NHS CCGs and the non-NHS local authorities responsible for publicly funded social care (Local Government Association and NHS England, 2013). This money will be accessible to both local authorities and CCGs from 2015–2016 and £1 billion of it will be linked to achievement across a number of performance metrics. £500 million of this sum will be released in April 2015, of which half will be dependent on achievement of four national conditions:

- protection for adult social care services
- providing seven-day services to support patients being discharged and prevent unnecessary admissions at weekends
- agreement on the consequential impact of changes in the acute sector
- ensuring that where funding is used for integrated packages of care there will be an accountable lead professional.

The achievement of these conditions by local health/social care partnerships will be assessed using the following performance measures:

- admissions to residential and care homes
- effectiveness of re-ablement
- delayed transfers of care
- avoidable emergency admissions
- patient/service-user experience.

The other half of the pay-for-performance element of the fund available from April 2015 will relate to performance against two other national conditions – delayed transfers of care out of hospital and into social care, and avoidable emergency admissions – and another indicator, determined locally. The remaining £500 million will be released in October 2015 and will relate to further progress against the national and locally determined metrics.

4. Discussion and conclusions

In section 2 above we reviewed the literature surrounding the effectiveness of incentives for best practice in health care and in section 3 we described the incentives that are currently operating, or have recently operated, in the UK. The purpose of section 4 is to use the information presented in the previous sections to consider the extent to which health care in the UK can be improved by using additional or modified incentives to encourage providers to follow best-practice guidance.

From the review of the literature, P4P programmes appear, more often than not, to have had a beneficial effect in both primary and secondary care. In particular, we found evidence that the following features of P4P programmes are associated with positive results:

- the use of P4P in chronic care, as opposed to acute care
- the use of P4P in the areas of diabetes, smoking cessation and asthma, specifically
- programmes with clinical outcomes, rather than outcomes relating to patient experience
- the use of process indicators, as opposed to outcome measures
- lower baseline levels of quality
- the use of positive incentives for all participants, rather than schemes that create "winners" and "losers"
- the use of incentives for individual providers and teams (rather than for whole hospitals)
- new funds being made available for the programme, rather than merely a redistribution of existing funds.

In primary care, the QOF is the most widely evaluated incentive scheme in the literature to date. As discussed in section 2.3 above, the majority of evidence suggests that the QOF is associated with both improved quality of care (i.e. improved processes) and improved patient outcomes. However, some studies do not adequately control for underlying trends and further research is required to determine more precisely the effects of the QOF on quality of care. Despite this issue, there is evidence that the QOF is associated with improvements in intermediate patient outcomes such as blood pressure and cholesterol levels, and that this is accompanied by increased prescription rates in corresponding categories of medicine.

The evidence from the impact of the QOF suggests that financial rewards to GPs who demonstrate adherence to NICE, or other formally recognised guidance on the use of medicines, could have a beneficial effect. Such an incentive programme would target mostly chronic conditions (for which the majority of GP prescriptions are written), would be assessed using process indicators and clinical outcomes, and would be directed at individual physicians. Similarly, the Services Quality Scheme – in which dispensing GPs are rewarded for providing high-quality services – could be adapted to encourage best practice in the use of specific health technologies, including medicines.

At the medicines dispensing level, there is scope for the use of the infrastructure created by medicine use reviews to encourage best practice. As described in section 3.1 above, when pharmacists conduct

MURs, they are required to send a record of the data to NHS England. This process of data collection could be exploited to identify occasions where medicines are not being used effectively or cost-effectively, and could perhaps be linked to prescribing incentives for GPs. The evidence discussed in section 2.3 suggests that these types of intervention can be effective in improving some patient health outcomes.

Moving to secondary care, there is good evidence about the use of P4P to encourage improved quality of health care. It is possible that the locally agreed incentives in the CQUIN programme could specify compliance with best practice. One of the examples of locally agreed behaviours noted by Allen, Petsoulas and Ritchie (2012) is the use of a £2,000 per month fine if the provider organisation does not carry out a risk assessment of compliance with NICE quality standards, NICE guidance and NICE technology appraisals within three months of publication. There is potential for the inclusion of incentives for adherence to best-practice guidance as part of these risk assessment activities. It should be noted that owing to their local nature and the large number of CCGs and providers involved (hundreds), it is not possible to know from published literature whether CQUINs are already being used for that purpose anywhere.

The absence of a purchaser/provider split in the NHS in the rest of the UK removes the channel that CQUIN incentives operate through in England. There can, in principle, be explicit, published undertakings by the provider arms of health boards, such as the ”long-term agreements” used in the NHS in Wales, and they could be adapted to contain CQUIN-like incentive clauses. Enforcement of such agreements would have to be by national or regional NHS bodies with a duty to regulate or performance-manage the local health boards. But experience suggests that this would not happen in practice: local NHS health boards in Wales have, according to Hughes et al. (2013), been discouraged by the national Department of Health and Social Services from using contractual penalties with provider arms for fear that that would lead to adversarial relationships and consequent problems: “All the LHBs [Local Health Boards] interviewed had discontinued use of penalty clauses” (Hughes et al., 2013, p. 6).

In addition to P4P programmes and CQUIN payments with existing providers, there is scope in principle to link providers’ winning of contracts with CCGs at the outset to auditable adherence by the providers to best practice, including appropriate use of medicines and other specific health technologies. NHS standard contracts include a number of clauses that could be vehicles for propagating best practice in key areas of health care: operational standards, national quality requirements, local quality requirements, and local incentive schemes. CCGs lack the resources to monitor achievement of large numbers of quality standards in numerous providers. Collecting accurate and detailed data imposes costs on the provider, which the purchaser (CCG) ultimately has to pay for. Consequently, successful use of standard contracts to incentivise best practice looks feasible only on a highly selective basis. Furthermore, where providers are under little competitive pressure from actual or potential rivals, CCGs may have little leverage to make such clauses meaningful, other than public shaminwg of providers. Purchasers and providers within the NHS often remain mutually dependent, which limits the extent to which contract conditions may be enforced (Hughes et al., 2011; Petsoulas et al., 2011). Where there is no purchaser/provider separation and hence no competition between providers, it is likely to be even harder to make such incentive clauses enforceable.

As described in section 3.2 above, best-practice tariffs were introduced in the NHS in England in 2010–2011 as part of the activity-based hospital funding system and are set at levels intended to reflect the costs of delivering high-quality and cost-effective care. Given the evidence that BPTs can be effective in stimulating use of best practice (for example in the areas of hip fracture and day-case cholecystectomy), they could be extended to cover additional treatment pathways. McDonald et al. (2012) suggest that the main criteria for selecting future BPTs should be to pick areas that:

- are shown to have variance in performance across England
- are high-volume in terms of patient numbers
- have existing data collection systems in place or which build on existing systems
- have existing quality initiatives taking place
- have clear evidence-based standards associated with them (e.g. supported by NICE or Royal College guidance).

Finally, there is good evidence surrounding the use of audit and feedback provided to clinicians, and the use of a system to "profile" health care specialists and direct patients to them. These non-financial incentives could be used more extensively in the NHS and could be aimed specifically at encouraging best practice in the use of medicines. In addition, the NHS could investigate the collection and publication of physicians' outcomes data in the same way that surgeons' mortality rates and complication rates are now being collected and published, which would create a non-financial, reputational incentive to comply with best medical practice.

In conclusion, there appears to be scope for the introduction of additional policies and the modification of current incentives to reduce variation in, and improve average levels of, adherence to best-practice guidance, including where that specifies use of particular medicines and other health technologies.

However, although we find that incentives can be effective in improving the quality of health care, it should be emphasised that the evidence is far from conclusive. The magnitude of a particular incentive depends on the context within which it is set, and may be modest.

Future incentives schemes should ideally be implemented with adequate resources for monitoring and evaluation of their impact, including their effect on any non-incentivised elements of health care. Evaluations should take a long-term perspective and use meaningful "control" groups.

Overall there is a case for greater use of incentives to follow best practice in health care in the NHS in England, and doubtless elsewhere too, and for the impacts of those incentives to be evaluated.

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