

**THE COMMONWEALTH FUND
20XX–20XX HARKNESS FELLOWSHIPS IN HEALTH CARE POLICY AND PRACTICE
APPLICATION FORM**

PRELIMINARY RESEARCH PROPOSAL

“The Impact of Pay-for-Performance on Health Care Inequalities”

A. Purpose and Context

The health care problem

The drive to improve the quality and efficiency of health care has lead policy makers and health care funders worldwide to experiment with financial incentives for providers [1-7], despite a relative lack of evidence on the long-term effects [8, 9]. Incentives are incorporated into pay-for-performance programs, which reward healthcare providers for achieving specified performance targets relating to the quality of delivered care. While evidence is now emerging that carefully constructed pay-for-performance programs can lead to improvements in quality of care for incentivized activities [10-13], concerns remain about the potential unintended consequences [14]. In particular, financial incentives could lead to unincentivized aspects of patient care being neglected and could increase existing health inequalities. The purpose of my proposed research is to investigate the extent of these unintended consequences in U.K. and U.S. pay-for-performance programs in order to inform the design and development of future schemes.

Evidence on neglect of unincentivized activities

Whereas some commentators consider neglect of non-incentivized activities to be an inevitable consequence of financial incentive programs [15], others predict that specific incentives will lead to overall improvements in quality of care by focusing attention on quality improvement [16]. There is evidence supporting both views. Studies of U.K. and U.S. programs have found that while quality of care for incentivized conditions improved in response to financial incentives, quality of care for conditions without an incentive remained relatively unchanged [17, 18]. However, where a condition had one or more financial incentives, performance across a range of activities appeared to improve, including activities that were not specifically incentivized [17, 19, 20]. The evidence in this area is limited, however, and further research is necessary. Without understanding the effect of pay-for-performance programs on all aspects of care, both incentivized and unincentivized, it is impossible to determine their net effect on health care and health care inequalities.

Evidence on health care inequalities

It is a common feature of health policy interventions that health inequalities initially increase following their introduction, even if they reduce over the longer term [21]. Pay-for-performance programs are particularly susceptible to this effect: there may be poorer outcomes and lower rates of engagement in certain population groups, and the reality or expectation of this may lead providers to avoid patients from such groups. As a result, communities with the greatest need – which often have the poorest health services – could become further disadvantaged [22]. Under the U.K.’s pay-for-performance program for primary care, the Quality and Outcomes Framework (QOF), providers serving deprived populations initially achieved lower levels of performance on the quality indicators [23, 24] and as a result received less generous financial rewards [25]. However, by the third year of the scheme inequalities in quality of health care between affluent and deprived areas had narrowed substantially [23]. The effect of pay-for-performance programs on health inequalities is therefore not straightforward, and is likely to change over time.

The importance of payment structures and context

The effect of a pay-for-performance program on unincentivized activities and health care inequalities will depend to a great extent on its design and the context in which it operates. For example, the rapid reduction in health care inequalities under the U.K. QOF is likely to have been influenced by two important characteristics of the scheme that mitigate against widening inequalities. First, payments are

non-competitive and incremental, so that every additional patient for whom a target is achieved brings a financial reward. Second, physicians can exclude ('exception report') patients from the payment calculations for a range of reasons, including extreme frailty and informed dissent. This provision was intended to avoid inappropriate treatment of patients, but also serves to ameliorate perverse incentives to refuse care to 'difficult' or 'unprofitable' patients [26]. These two mechanisms appear to have successfully incentivized practices with all levels of baseline achievement and serving all population groups. Context is also important: health care in the U.S. is not universal and provision is more fragmented than in the U.K. [27]. The dangers of 'cherry-picking' of patients by providers are therefore greater [22], and pay-for-performance programs may present more of a risk to equity of health care in the U.S.

Relevance of the issue in the United States

Pay-for-performance programs have spread rapidly across the U.S. in the past decade. The majority of private sector health maintenance organizations now operate financial incentive programs [28]; incentive payments have been introduced into Medicare services under the Physician Quality Reporting Initiative [29]; and several states are looking to incorporate incentive payments into their Medicaid programs. Given that health inequalities are currently increasing in the U.S., with patients on lower incomes and from ethnic minorities less likely to have access to high quality care [30], this makes the potential effect of pay-for-performance programs on health care inequalities a critical issue.

Relevance of the issue in the United Kingdom

The Quality and Outcomes Framework represents the most radical attempt to influence clinical practice and to improve quality of care ever attempted in the U.K. The scheme currently costs the National Health Service over £1 billion each year, and is a key part of the U.K. government's strategy to improve quality of care. The U.K. government is also committed to reducing health inequalities, and has made health inequalities a health service priority for 2008–09, with primary care services intended to have a central role [31]. Given that over 60% of the gap in life expectancy between the government's Spearhead areas – those with the greatest material deprivation and poorest health – and the rest of the country is attributable to diseases targeted in the QOF, the success of the government's efforts to reduce health inequalities will be profoundly affected by the impact of the QOF on health care inequalities.

The research questions to be explored

The aim of my proposal is to build on existing research evidence to gain a deeper understanding of the effect of pay-for-performance programs on health care inequalities in England and the United States. For England, analyses will focus on the Quality and Outcomes Framework, which covers over 99% of family practices. For the U.S., Medicaid pay-for-performance schemes operating in Minnesota and Pennsylvania will be examined. The specific research objectives are to determine:

1. The effect of pay-for-performance on both overall quality and variation in quality of care for:
 - a) incentivized activities and conditions; b) non-incentivized activities and conditions.
2. Variation in quality of care by age, sex, socio-economic status, ethnicity and geographical location of patients.
3. The extent to which patients are excluded or denied care by providers participating in pay-for-performance programs.

The research findings will be related to the specific characteristics of the pay-for-performance programs under investigation, including: the specific performance targets; levels of reward; payment/reward thresholds; mechanisms for risk adjustment; public reporting of outcomes and target populations.

B. Research Design

Research methods

The study will use quantitative methods to examine variation in intended and unintended outcomes of the analyzed pay-for-performance programs for different population groups. Structured interviews

will also be conducted with key people involved in the design and implementation of the pay-for-performance programs and a small sample of physicians subject to the incentives.

B1. Quantitative methods

Data collection

Different approaches to the research objectives are required for the different pay-for-performance schemes. Whereas England has a single, uniform pay-for-performance program with a standard data set collated in a central database, the U.S. has a wide range of programs in different settings, managed by different private and public organizations, collecting different sets of data.

English pay-for-performance scheme and data sources

For the English arm of the study the national primary care pay-for-performance scheme, the Quality and Outcomes Framework (QOF), will be examined. The QOF was introduced in 2004 and links large financial incentives to family practice performance on 135 quality indicators relating to quality of care for a range of chronic conditions, including diabetes, coronary heart disease and asthma (**table 1**).

U.S. pay-for-performance schemes and data sources

The U.S. arm of the study will utilize data derived from pay-for-performance schemes operating within Medicaid programs in Minnesota and Pennsylvania (**table 1**). Available data includes Medicaid enrollment data (age, gender, category of eligibility, dates of eligibility, race/ethnicity, and geographic location), claims and disease management data (date of service, place of service, provider information, procedures, and diagnoses), and encounter data (for Minnesota). Additional data on performance will be available for the period of the intervention in each setting, i.e. physician-reported and chart abstracted diabetes quality measures (Minnesota) and participation in disease management and patient-reported measures of treatment (Pennsylvania). These data will be used to construct quality indicator numerators (N_i) and denominators (D_i) for incentivized activities and, where available, non-incentivized activities for the years immediately preceding and following the introduction of the incentive schemes.

Table 1: Pay-for-performance schemes included in the study

	United Kingdom	United States	
	England	Minnesota	Pennsylvania
Setting	National Health Service (General Practices)	MinnesotaCare, Medical Assistance, General Assistance Medical Care, Alternative Care Grants Program	Medicaid, Access Plus (PCCMP [†])
Covered population	49,000,000	650,000 (325,000 HMO [‡] , 325,000 FFS [§])	1,800,000 (280,000 in Access Plus)
Scheme	Quality and Outcomes Framework. 135 quality targets for 17 chronic conditions: asthma, cancer, CHD, CKD, COPD, dementia, depression, diabetes, epilepsy, hypertension, hypothyroidism, learning difficulties, obesity, psychosis, sexual health and stroke.	Bridges to Excellence incentive program for providing ‘optimum’ diabetes care: HbA1C \leq 7.0%, BP \leq 130/80 mmHg, LDL cholesterol \leq 100 mg/dl, daily aspirin, and non-smoker.	Disease management programs for providing recommended care for: coronary artery disease (aspirin, statins), congestive heart failure (beta blockers), asthma (controller medication), COPD, diabetes (aspirin, LDL cholesterol screening).
Annual	Up to £125,000	HMO: \$100 per patient for	\$17 per patient.

incentive	(\$180,000) per practice, adjusted for list size and condition prevalence.	medical groups providing optimal care for 20% of patients. FFS: Up to \$250 for each patient receiving optimal care.	
Year implemented	2004	2007	2006

† Primary care case management program

‡ Health maintenance organization

§ Fee-for-service

Data analysis

Reported achievement for quality indicators will be calculated as N_i/D_i . Rates of exclusion (for the Quality and Outcomes Framework) will be calculated as $E_i/(D_i + E_i)$. The distributions of outcome scores are likely to be highly skewed, but the sample sizes may justify the use of parametric methods for inferential testing. This will be confirmed by means of bootstrapping.

For research objective 1, indicators will be categorized as in **table 2**. The analysis will be based on reported achievement, i.e. the percentage of patients for whom the indicator was met. These scores are subject to floor and ceiling effects, hence changes are not equivalent across the scale. To reduce this effect, the logit transformation will be applied to the rates, P : $\text{Logit}(P) = \ln(P/(1-P))$. Where a rate is equal to 0 or 100, the empirical logit will be computed: $\text{Logit}(P) = \ln((P+0.5/n)/(1-P+0.5/n))$, where n is the number of observations.

Table 2: Categories of indicators

	Incentivized patient group	Non-incentivized patient group
Incentivized process	Cell A	Cell B
Non-incentivized process	Cell C	Cell D

The data structure can be viewed in the form of indicators nested within cells. The aim of the analysis will be to determine whether, overall, there exists any difference between the indicators in the four cells (A, B, C, D) with regard to the extent of change from pre- to post- incentive, beginning with an overall test of the hypothesis: change in A = change in B = change in C = change in D. Change may be delayed, so the comparison will be repeated for the second and subsequent years of each scheme.

For research objectives 2 and 3, associations of patient- and practice-level characteristics with rates of achievement, exclusion of patients (where available), and changes in these outcomes will be assessed with multiple linear regressions. These analyses will be controlled for missing indicators, heterogeneity of variance, and clustering of practices, with checks on the robustness of the results to model specifications. For objective 3 in the U.S., changes in the patient composition of participating practices will be assessed pre- and post- incentive.

B2. Interviews

Interviews will be conducted with key people involved in the creation and administration of the incentive schemes. In the U.S. interviews will be conducted with key people involved in the design of the incentive schemes and administration of Medicaid programs in the respective states. Interviews will cover the following themes:

1. The context at the time of the introduction of the scheme, in terms of health inequalities, quality of care and initiatives and incentives intended to address these.

2. The objectives of the incentive scheme.
3. The key players.
4. The design and development of the scheme.
5. The effect of the scheme on quality and equity of services.
6. The effect on practices' internal relations and relations to the wider health economy.
7. Lessons for the future in terms of, for example, designing a system to generate greater equity.

C. Expected Contributions of the Proposed Research

Pay-for-performance is the most radical policy intervention in the field of health care of the last decade. It is being rapidly adopted in health care systems throughout the world, with the U.S. and the U.K. in the vanguard. To date pay-for-performance has been implemented in the absence of evidence for the long-term effects of financial incentives. While evidence is now accumulating on the intended effects of pay-for-performance programs, the evidence for the unintended effects remains weak. Without an appreciation of the overall impact of such programs on quality and equity of health care, policy makers can not make informed decisions about the utility and future development of such interventions. My proposed research will begin to address this gap in the evidence.

D. Dissemination Strategy

The findings from the study will be disseminated through i) direct contact with other researchers and policy makers; ii) online publication; iii) through conventional academic channels:

- i) Findings will be discussed with existing academic partners and policy contacts in the U.K. (e.g. the Department of Health, the Kings Fund, the British Medical Association, the National Institute for Health and Clinical Excellence) and the United States (e.g. RAND). As a seconded member of the Harvard School of Public Health I will participate in regular regional and national meetings with relevant research, clinical and policy audiences in the U.S.
- ii) Results of the work will be carried on the NPCRDC website and in its literature.
- iii) Emerging findings will be submitting as abstracts to relevant conferences and academic meetings, including the Academy Health Annual Research Meeting, the International Society for Quality in Health Care Quality Exchange Meeting and the Society for Academic Primary Care Annual Scientific Meeting. Results from the study will be submitted for publication to international health policy journals.

E. Workplan

Work in the U.K. will begin in May with the literature review, collation of the U.K. data, preliminary analyses and U.K.-based interviews. The Fellowship proper will begin in August 2009, with the following year based in the U.S.

Project timetable

Project task	Year/Month																	
	2009									2010								
	5 [†]	6 [†]	7 [†]	8	9	10	11	12	1	2	3	4	5	6	7	8 [‡]	9 [‡]	
Months in U.S.				X	X	X	X	X	X	X	X	X	X	X	X			
Months in U.K.	X	X	X													X	X	
Literature review	X	X	X	X	X	X												
Identifying data sources in the U.S.	X	X	X	X														
Data gathering in the U.S.				X	X	X	X	X	X	X	X							
Data analysis for U.S. data									X	X	X	X	X	X				
Data gathering in the U.K.	X	X	X	X														
Data analysis for U.K. data			X	X	X	X												
Writing up, reporting													X	X	X	X		
Dissemination															X	X	X	

[†] Preparatory phase

[‡] Post-Fellowship phase

F. Placement in the United States:**G. Home Country Mentor:****H. Research References/Footnotes:**

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