

Towards sustainability of RBF in the health sector – learning from experience in high and middle income countries

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Abbreviations

AMI - acute myocardial infarction

ANAO - Australian National Audit Office

BMA – British Medical Association

CHC - Community Health Centres

CMS - Centers for Medicare and Medicaid services

DMP - Disease Management Programmes

DoHA - Australian Government Department of Health and Aging

EHIF - Estonia Health Insurance Fund

FM PBC - family medicine performance based contracting

GP - General Practitioner

HAS - National Authority for Health

HIC - high income country

HIRA - Health Insurance Review Agency

HQID - Health Quality Incentive Demonstration

IAC - Accreditation institution Brazil

IADB - Inter-American Development Bank

LMIC - low and middle income countries

MIC - middle income countries

MOF - Ministry of Finance

MOH - Ministry of Health

NHIC - National Health Insurance Cooperation

NHIF - National Health Insurance Fund

NHS - National Health Service

OSS - Sao Paulo private non-profit management

PCO - Primary Care Organisation

PHD - Provincial Health Directorates

PIP - Practice Incentives Programme

QBS - Quality Bonus System

QIDS - Quality Improvement Demonstration Study

QMAS - Quality Management Analysis System

QOF - Outcome Framework

RBF - Results based financing

RMHC - China Rural Mutual Healthcare

RPS - Red de Protección Social group

SES - State Secretariat for Health

SHI - Statutory Health Insurance

SHA - Strategic Health Authority

SUS - Unified Health System

VIP - Value Incentive Programme

Executive summary

Background

Results based financing (RBF) approaches have grown in number, geographical coverage and type over the past 15 years in low and middle income countries (LMICs). They remain however largely dependent on external support, financial and technical, and to a large extent operating as parallel programmes. The aim of this paper was to draw on experiences from possibly more developed RBF schemes in middle and high income countries (HICs) in order to provide guidance for the future in LMIC settings. RBF in this paper focussed on supply-side approaches, so excluding strategies such as conditional cash transfers. Sustainability was defined in relation to four main domains: de facto, financial, institutional and social/political/technical.

Methods

The paper was based on a literature review conducted over June-August 2015. Search terms included: 1) high or middle income countries AND 2) results based financing/performance based financing/pay for performance/performance based incentives AND 3) sustainability/mainstreaming. A variety of case studies were then chosen. All middle-income country case studies found were included. The other high-income countries were chosen to represent a mix globally. 41 experts were also contacted for their insights and further materials, given that written sources did not cover the questions of interest in depth. The main limitation was the non-comprehensive nature of the search, which also focussed in the first instance on English language texts.

For each chosen scheme information was extracted on the following: purpose, how long the scheme has been implemented, how they were funded, funding trajectory and scale of the programme, results of evaluations, information on political economy, whether the scheme was incorporated into mainstream systems or run as a stand-alone programme, and any lessons on why the scheme was sustained or not. Information on institutional arrangements was also extracted under five headings: 1) How have purchasing arrangements evolved? 2) How have funds been pooled or not to pay for the RBF scheme? 3) How have provider payments been adapted? 4) How were IT systems used, adapted, added to? What is the role of the Health Management Information Systems? 5) Who provided verification and other functions (including supervision)?

Findings

Seven HIC schemes were analysed (from Australia, France, the UK, South Korea, the US, Estonia and Germany) alongside five middle income country experiences (from Brazil, Turkey, the Philippines, Nicaragua and China). Some countries operate several types of RBF programmes.

The review highlights the diversity of rationales, contexts and approaches to RBF in high and middle income countries, which means we have to be cautious about drawing lessons for low income countries which are currently developing their own pilots and national schemes. Nevertheless, some observations can be drawn out which may be useful in considering the way forward and providing some tentative lessons in LMICs.

Lesson 1 – going national is itself linked to sustainability

From this small sample, it appears that most schemes which are launched nationally within high and middle income countries are sustained over the medium term. The schemes which were ended were mostly framed as pilots or research projects. Piloting is seen as good practice in LMICs, but national schemes in M/HICs rarely used pilots (Turkey being an exception). They more commonly launched at scale but were then adapted on a year-by-year basis. This may reflect political economy issues, such as avoiding interest group resistance but also the unacceptability of significant differences across areas in a mature health system. Path dependency is such that a national scheme may iterate but is unlikely to be rolled back, due to vested interests and the difficulty of removing additional payment mechanisms.

Lesson 2 – the importance of domestic financing

It will come as no surprise that domestic financing is linked to sustainability. Two of the four projects reviewed which had closed had been financed externally. All ongoing schemes are financed from domestic resources. Where they are part of a government political programme, as is commonly the case, sustainability is more likely as the political and institutional costs of withdrawal are higher.

Lesson 3 – integration enhances institutional sustainability

In most cases, the RBF scheme was developed within the context of existing purchasing and provision architecture and did not require new structures. It represented an adjustment to existing provider payment systems. Reporting, for example, was carried out through analysis of existing information systems, especially in high income countries and national schemes. The introduction of RBF schemes in most MHCs was done in an evolutionary, not revolutionary, way, working within existing institutional structures, which not only enhances the capacity to manage the scheme but also makes its longevity more assured.

Lesson 4 – managing the narrative of efficiency AND quality

Political, social and technical sustainability may be the key aspect to consider in investigating scheme sustainability. The political impetus behind schemes in high and middle-income settings has varied, but has often focussed on being seen to deliver quality care for patients within a restricted overall resource envelope. These twin, potentially conflicting, narratives have to be managed and experience changing fortunes. Most schemes have met with professional resistance at their start and while now embedded, still face concerns about interfering in the therapeutic relationship. The increase in administrative workload for medical practices is another source of tension in a number of countries. Collaboration with professional associations patiently over time is important to reduce opposition to new schemes.

Lesson 5 – introduce RBF in periods of growth

Although some schemes are cost-neutral or even cost-saving, the majority required additional resources which are easier to find in times of rising public health care expenditure (as in the UK in the late 1990s). Once introduced, this factor may become less significant if political and institutional interests still support the continuation of the RBF programme.

Lesson 6 – the need for continual iteration to adjust for performance and manage gaming

There appears to be no consensus on 'best practice' design of the incentive system. Some schemes provide positive incentives, others deductions for non-performance. Some pay per activity; some set

absolute targets; some set coverage targets; and others use relative rewards (relative to own baseline, relative to average performance and relative to one another). It is not evident from this rapid review which design works better or is more likely to be sustained. Design issues must relate to the objectives of the scheme and the starting point in terms of performance (how it varies across providers and why). Indicators which are too high or which have small variation in performance are clearly not likely to be effective. The main lesson then is the need for iteration to adjust for actual performance and manage provider gaming.

These iterations are not without cost, though – a sense of continual ratcheting of targets and changes to indicators and criteria creates resentment amongst providers, which can only be managed by an open dialogue with them about their context, constraints and realistic potential for improvement.

Lesson 7 – capacity matters, but structures can vary

RBF requires minimum capacity within the public sector for performance monitoring and verification, which needs to be built. However, while all systems have clearly defined purchasers, the structural set-up varies across mature systems. Some separate functions within an insurance-based system, while others are integrated, for example. These purchasers sometimes verify claims, though this role is sometimes given to a third party. Providers self-report data and reputational risk provides a control on mis-reporting. The existence of relatively high degree of pre-existing monitoring capacity and organisational controls enables RBF schemes to be added with limited added costs.

Lesson 8 – autonomy rules OK

In all of the schemes reviewed here, providers already had a large degree of autonomy over how to use resources and in this context, RBF did not change underlying rules about resource use. Where this is not the case, then RBF has to be accompanied by changes to allow local authorities and providers to manage resources effectively. In some cases, RBF covers core costs, while in the incentive schemes it is typically used for a mix of quality improvement and increased staff pay. The China examples reinforce the importance of providers being able to retain efficiency savings in order to make the shift to prospective payments successful. Clearly, trust is a key element here, which enables more autonomy to be permitted, which in turn permits higher performance. The prize for RBF programmes will be to enable health systems to climb this spiral; the risk is that in introducing additional resources and parallel controls they add to an apparatus of control and micro-management.

Lesson 9 – strong IT systems are the bedrock

The existence of relatively sophisticated IT systems for monitoring and claims management is important to operating and sustaining the schemes in any settings. However, no IT systems are perfect. The need for better outcome-oriented data has been noted, even in high-income settings.

Lesson 10 – embracing the shift from quantity to quality

The underlying rationale in MHIC schemes differs from that of LMICs at present. While the former tend to focus on quality improvement and cost containment, the latter tend to focus on increasing the volume of core services provided (with quality adjustments). This has potential implications for

sustainability: the mechanism of change in MHIC settings is to systematise certain changes in provider behaviour; in LMICs, in some cases at least, the mechanism of change includes making flexible resources available at provider level to enable core services to be delivered. The dependence on the additional resources may be greater in that context. As LMICs shift towards quality enhancement and providing incentives for efficiency within a wider reform of payment systems, financial dependence on RBF will reduce.

Although we focused on the sustainability of the RBF programme, arguably of more interest is the sustainability of its goals and effects. There is some evidence from the MHIC literature of benefits continuing after schemes have stopped, which supports the notion that RBF can be used to change habits, and does not necessarily require continued funding of specific targets. This is in the context of better basic funding and all other highlighted contextual and institutional differences, compared to LMICs.

A final note: it is interesting to see *what does not emerge as critical to sustainability* from the middle- and high-income examples. The engagement of the community, for example, is not prominent in MHIC countries, unlike LMICs, where community monitoring and engagement is often stressed as part of the reinforcement of the RBF approach. Similarly, most MHICs did not conduct robust scheme assessments. This reflects a context in which policy making can be more overtly driven by internal incentives and politics, without the need for external accountability. Paradoxically, it is likely that LMIC schemes are better documented. Whether that contributes to more effective continuous innovation will likely depend on country ownership in the process of monitoring and evaluation and the institutional capacity to react effectively to evidence.

Introduction

Results based financing (RBF) approaches have grown in number, geographical coverage and type over the past 15 years in low and middle income countries (LMICs). They remain however largely dependent on external support, financial and technical, and to a large extent operating as parallel programmes. The aim of this report was to draw on experiences from possibly more developed RBF schemes in middle and high income countries (HICs) in order to provide guidance for the future in LMIC settings. These will be communicated in a variety of formats aimed at health sector decision-makers and World Bank staff. This paper provides an initial assessment of the evidence and raises a series of questions for discussion.

RBF in this paper focussed on supply-side approaches, so excluding strategies such as conditional cash transfers.

The concept of sustainability has been variously defined and is often broken into different dimensions, such as technical, social, political, financial and managerial sustainability. At the heart of most definitions is the notion of a system which produces sufficient benefits to stakeholders to generate resources which allow it to continue over the long term (Olsen, 1998). How long the 'long term' is, is rarely specified. Moreover, sustainability is not a binary notion, but more of a sliding scale, with a number of dimensions. For the purposes of this paper, we consider that sustainability of a scheme is increased incrementally the more the following conditions are fulfilled:

- *De facto sustainability*: The scheme has continued to exist for a number of years – more than ten years, for example, is an indicator of likely sustainability
- *Financial sustainability*: The scheme is operating within funded limits (ideally from nationally generated resources; alternatively from external sources which have a long term commitment)
- *Institutional sustainability*: The scheme is integrated into national systems which have the capacity to manage it effectively
- *Political, social and technical sustainability*: Key stakeholders (political, social and technical) view the scheme as desirable, effective and worth maintaining

The first condition is self-evident and retrospective (has a scheme survived to date?), while the other three are more predictive and forward-looking (will it most likely continue to survive?).

Methods

The first stage was a rapid scoping review to establish what was available and what the gaps were. Search terms were:

- 1) high or middle income countries AND
- 2) results based financing/performance based financing/pay for performance/performance based incentives AND
- 3) sustainability/mainstreaming.

A WHO European Observatory on Health Systems and Policies book was identified as a key resource: *Paying for Performance in Health Care, Implications for health system performance and*

accountability. It was published in 2014 and was very thorough with a number of detailed case studies.

A variety of case studies were chosen. All middle-income country case studies were included as there was less on middle-income countries. The other high-income countries were chosen to represent a mix globally. New Zealand was excluded due to time constraints and the fact that Australia was already included from that region. These could be added if further examples are needed.

With the case studies chosen, the specific schemes were searched for to provide information from as many sources as possible. In many cases there were not many different sources to draw on. Some further references were identified from the WHO book for deeper information.

For each chosen scheme information was extracted on the following: purpose, how long the scheme has been implemented, how they were funded, funding trajectory and scale of the programme, results of evaluations, information on political economy, whether the scheme was incorporated into mainstream systems or run as a stand-alone programme, and any lessons on why the scheme was sustained or not. This information was compiled for the scoping document.

Based on the scoping document it was decided to proceed by looking further into the sources to extract information on institutional arrangements. Specifically information was extracted under five headings: 1) How have purchasing arrangements evolved? 2) How have funds been pooled or not to pay for the RBF scheme? 3) How have provider payments been adapted? 4) How were IT systems used, adapted, added to? What is the role of the Health Management Information Systems? 5) Who provided verification and other functions (including supervision)?

The paper is based on a literature review done over June-August 2015. The main limitation was the non-comprehensive nature of the search, which also focussed in the first instance on English language texts.

There was a sense that deeper information on institutional detail was not reported in the literature and documentation available through rapid searching. A methodology of contacting people in the field with experience to gain insight was explored. Experts were identified from key papers and by snow-balling. 41 experts were contacted. Six people responded with written comments, more replied with suggested papers and two were interviewed on the telephone. Their insights have been integrated into the review of the literature. The discussion and questions raised are based on the paper authors' interpretation of the evidence and what issues it raises for the context of LMICs.

Findings

Our findings summarise across the schemes which were analysed. Note that these were not comprehensive and that the depth of documentation of schemes varies. Further details by country example are given below and in Tables 1-4. Seven HIC schemes were analysed (from Australia, France, the UK, South Korea, the US, Estonia and Germany) alongside five middle income country experiences (from Brazil, Turkey, the Philippines, Nicaragua and China). Some countries operate several types of RBF programmes.

All of the HIC schemes functioned on a national scale. For the other countries, the schemes operate in selected cities or rural areas. The Philippines programme was specifically designed as a short-term research project. The RBF schemes analysed were focused on primary care. In the HICs, only two – from South Korea and the US – addressed secondary care challenges. For the middle income countries (MIC), only the Brazilian and Philippines schemes described here operated at hospital level.

This literature review highlights the diversity of rationales, contexts and approaches to RBF in high and middle income countries, which means we have to be cautious about drawing lessons for low income countries which are currently developing their own pilots and national schemes. Nevertheless, some observations can be drawn out which may be useful in considering the way forward and providing some questions and tentative lessons in LMICs. We examine first the different facets of sustainability, as defined in this paper, and its likely determinants, grouped into contextual, design and organisational factors.

De facto sustainability

The two longest-standing schemes were from Australia and Brazil, both functioning for 17 years. Of the 12 described, six have operated for ten or more years (Australia, the UK, Germany, Brazil, Turkey, Shanghai). The French, Estonian and Korean schemes have been operating for 6, 8 and 9 years respectively. Four were short term programmes of 4-6 years, which are now ended (US HQID, Philippines, Nicaragua, China Rural Mutual Healthcare (RMHC)). From this small sample, it appears that most schemes which are launched nationally within high and middle income countries are sustained over the medium term. The schemes which were ended were mostly framed as pilots or research projects.

Financial sustainability

Two of the four projects which had closed had been financed externally. All ongoing schemes are financed from domestic resources.

In most cases the RBF funding is additional to existing sources for the providers, but this is not always clear or specified in case studies. In Turkey, funding came out of existing budgets. In some cases, cost reductions have been documented as a result of the schemes, which fits with the overall focus of schemes in M/HICs, which is on quality improvement and (often) strengthening preventive care and chronic disease management.

The proportion of provider income which is derived from the RBF scheme is very varied, ranging from around 5% in some cases to 30% in others. In some cases, such as the UK Quality Outcomes Framework (QOF), the budget required was underestimated. However, budget overruns have steadily declined with better planning. As a proportion of spending, where this data is provided, expenditure on the schemes is relatively low (for example, 1% of the Estonia national health insurance budget for primary care, in one case, rising to an estimated 15% of primary care funding in the UK). There is no indication of financial pressures threatening sustainability.

Institutional sustainability

In most cases, the RBF scheme was developed within the context of existing purchasing and provision architecture and did not require new structures. It represented an adjustment to existing

provider payment systems. Reporting, for example, was carried out through analysis of existing information systems, especially in high income countries and national schemes. For schemes which were more small-scale, such as in Brazil, Nicaragua and the Philippines, additional systems were introduced for contract management, reporting and verification.

Political, social and technical sustainability

Political, social and technical sustainability may be the key aspect to consider in investigating scheme sustainability in M/HIC settings. The political impetus behind schemes has varied, but has often focussed on being seen to deliver quality care for patients within a restricted overall resource envelope. These twin, potentially conflicting, narratives have to be managed and experience changing fortunes. In the UK, for example, the drive to improve public sector efficiency, of which the QOF was one part, was later reviled as a part of a ‘target culture’ – distracting professionals from doing their tasks well in the pursuit of box-ticking.

Most schemes have met with professional resistance at their start and while now embedded, still face concerns about interfering in the therapeutic relationship. The increase in administrative workload for medical practices is another source of tension in a number of countries. The impact on provider satisfaction has not been measured in most cases.

Determinants of sustainability

Context

The context in which RBF schemes are introduced is not always clearly documented, but clearly plays an important role in not only launching but also sustaining them. Commonly the RBF schemes were part of a wider set of reforms to primary care, which had a wide range of objectives, including increasing productivity, redesigning services around patients, improving the skill mix in primary care, creating a culture and structure to improve quality, extending service range, improving recruitment, retention and morale, reducing disparities in access to primary care and reducing overload on secondary facilities. Where these are part of a government political programme, as is commonly the case, sustainability is more likely as the political and institutional costs of withdrawal are higher.

A more integrated health care system clearly enables taking programmes to scale – as evidenced by the many but more fragmented approaches in the US market-based system, compared to single national schemes in other HIC documented here. However, the relationship between market structure and sustainability is less clear.

Another contextual feature of importance is the trend in public health care financing. Although some schemes are cost-neutral or even cost-saving, the majority required additional resources which are easier to find in times of rising public health care expenditure (as in the UK in the late 1990s). Once introduced, this factor may become less significant if political and institutional interests still support the continuation of the RBF programme.

Given the importance of winning technical and social support, the nature of consultations with health professional bodies and the organisation and strength of those professional bodies will be important contextual factors in the establishment and continuation of the RBF programmes. Most countries conducted consultations with professional bodies, which is assumed to increase the acceptability of the eventual schemes. However, while some sources described the consultations in

the best-documented case study, the UK, as protracted, others described the same process as 'token' and 'top-down'.

It is also interesting how rarely national schemes were piloted. Piloting is seen as good practice in LMICs, but national schemes in M/HICs rarely used pilots (Turkey being an exception). They more commonly launched at scale but were then adapted on a year-by-year basis. This may reflect political economy issues, such as avoiding interest group resistance but also the unacceptability of significant differences across areas in a mature health system.

Design

The RBF programmes in MHICs have varying objectives and designs. Some are providing marginal incentives while others are changing core public provider payment systems (in the case of the two China examples, which focus on reducing perverse incentives from a system based on fee for service) or setting up public/private performance-based contracting (in the case of Brazil and Nicaragua). Although they share some features, it makes sense to consider these as separate models.

The complexity of targets varies according to the schemes, but as in many LMIC contexts, targets focus on a wide variety of types of indicators, ranging in number from 16 in France to 146 in the UK, including cost-reductions, efficiency, organisational aspects, volume of services and quality. The balance of incentives between these domains varies considerably by scheme. A recent WHO review concludes that incentives for organisational change were not typically efficient (or easy to measure).

There appears to be no consensus on 'best practice' design of the incentive system. Some schemes provide positive incentives, others deductions for non-performance. Some pay per activity; some set absolute targets; some set coverage targets; and others use relative rewards (relative to own baseline, relative to average performance and relative to one another). It is not evident from this rapid review which design works better or is more likely to be sustained. Design issues must relate to the objectives of the scheme and the starting point in terms of performance (how it varies across providers and why). Indicators which are too high or which have small variation in performance are clearly not likely to be effective. The main lesson then is the need for iteration to adjust for actual performance and manage provider gaming.

In common with RBF programmes in LMICs, recipients are most commonly institutions, not individuals (the Estonian, French and Turkish schemes being exceptions), but the funds are usually shared within institutions, as incentives have to reach front line providers in order to be effective. There are sometimes tensions between the autonomy of providers to distribute resources internally and perceptions of fairness – for example, in the UK, where the whole primary care team delivers results for the QOF, but the bulk of resources benefited GP partners (not other staff employed by them).

Institutions

As noted, the introduction of RBF schemes in most MHICs was done in an evolutionary, not revolutionary, way, working within existing institutional structures, which not only enhances the capacity to manage the scheme but also makes its longevity more assured. Changes to governance and accountability may have been important drivers of success in some contexts, however, for example in Brazil. Changes to human resource management, such as direct authority over staff,

participation in the recruitment process, transparent processes for assigning and transferring staff, competitive awarding of temporary contracts, and the ability to sanction and dismiss staff were identified as giving contracted hospitals an advantage over mainstream public ones. The state there has also shown a willingness to enforce contractual provisions by not increasing the budget of any hospital in deficit, withholding funds from faculties that fail to achieve performance targets or fulfil reporting requirements, and cancelling a contract for a persistent nonperformer.

RBF requires minimum capacity within the public sector for performance monitoring and verification, which is challenging in some settings. This was one of the features underlying the success of the Brazil public-private partnership, for example.

All have clearly defined purchasers, already existing within an insurance-based or integrated system. These purchasers sometimes verify claims, though this role is sometimes given to a third party. Providers self-report data and reputational risk provides a control on mis-reporting. The existence of relatively high degree of pre-existing monitoring capacity and organisational controls enables RBF schemes to be added with limited added costs.

In all of the schemes reviewed here, providers already had a large degree of autonomy over how to use resources and in this context, RBF did not change underlying rules about resource use. In some cases, RBF is covering core costs, while in the incentive schemes it is typically used for a mix of quality improvement and increased staff pay. The China examples reinforce the importance of providers being able to retain efficiency savings in order to make the shift to prospective payments successful.

There are no trials that have differentiated between the type of provider entity (individual physicians, small practices, large medical groups, individual hospitals, or combinations of these entities) in terms of their response to incentives. However, the response of any individual or organization will be influenced by the ease with which they can make improvements, and some differences in this domain can be expected by provider type. In particular, smaller groups tend to need more technical assistance, for example with the implementation of an electronic records system or learning how to measure performance and improve compared to their own prior performance, while larger groups may tend to value access to regional benchmarks and using consultants with clinical expertise to help them bring activities to scale.

The existence of relatively sophisticated IT systems for monitoring and claims management is important to operating and sustaining the schemes in any settings. The need for better outcome-oriented data has been noted, even in HIC settings.

Reflections for low and middle income countries

Context

Financial sustainability is clearly more of a challenge for LMICs than MHICs. In the MHICs, the scale of funding is very varied – ranging from 0% or negative in Turkey (where negative incentives are applied) to 4-7% of primary practice income in Estonia, Australia and France, and 20-30% in the UK. Most schemes are internally financed and not onerous. They provide signalling more than important

resources for providers. In the LMIC context, the affordability is likely to be more challenge, the external dependence greater and relative importance of the RBF funding more significant to providers.

Internal momentum (initiation, funding and provision) is likely to be a positive factor for sustainability – in cases like Nicaragua, external funding and in part provision may be linked to the failure to absorb and scale up the pilot. Where funding for health care is increasing, for example, as part of a commitment to move toward universal health coverage, that will be a supportive factor in sustaining RBF programmes.

The underlying rationale in MHIC schemes differs from that of LMICs. While the former tend to focus on quality improvement and cost containment, the latter tend to focus on increasing volume of core services provided (with quality adjustments)¹. This has potential implications for sustainability: the mechanism of change in MHIC settings is to systematise certain changes in provider behaviour; in LMICs, in some cases at least, the mechanism of change includes making flexible resources available at provider level to enable core services to be delivered. The dependence on the additional resources may be greater in that context.

There is always a potential tension between professionalism, patient-centred care and RBF, and **collaboration with professional associations patiently over time** is important to reduce opposition to new schemes. This element is arguably even more important in MHIC settings than in LMIC ones, where professional resistance may be less organised, though the capacity of service level providers for non-compliance may be higher. There is a perception of threat to the integrity of the doctor/patient relationship, as well as the increase in administrative workload in many MHIC schemes.

Design

Whether mandatory or not, most HIC schemes have high coverage because **the incentives to join the scheme are attractive to providers**. In addition to providing attractive incentives, the schemes should be made transparent and joining costs should be kept to minimum. This is especially important for smaller providers who may well serve more disadvantaged communities and may also struggle to offer the full range of incentivised care.

In setting incentives, **rewards should be appropriate to effort**, to avoid cherry picking of easier targets. Some countries (notably the UK) appear to have set targets which were too easy or were already being achieved, which clearly undermines cost-effectiveness.

From an **equity perspective**, it is important to design the schemes so that poorer areas are able to benefit equally or disproportionately, and also to monitor how different groups of staff are affected.

¹ See however <http://www.healthfinancingafrica.org/home/growing-pains-and-gains-reflections-on-the-current-state-of-play-and-future-agenda-for-performance-based-financing> for an indication of how this may be shifting in LMICs.

The **engagement of the community** is not prominent in MHIC countries, unlike LMICs, where community monitoring and engagement is often seen as part of the reinforcement of the RBF approach.

Institutions

The starting level of capacity within the system to operate RBF was in most cases much higher - RBF was not a gear-change in that sense, but an incremental change. This both increases institutional sustainability but also reduces the potential impact of the RBF programme.

Provider autonomy over resource use was also established prior to the RBF programme, comparing markedly to many LMIC settings. Clearly, **trust is a key element** here, which enables more autonomy to be permitted, which in turn permits higher performance. The prize for RBF programmes will be to enable health systems to climb this spiral; the risk is that in introducing additional resources and parallel controls they add to an apparatus of control and micro-management.

Eventually providers always game the system, and there is therefore **need to innovate continuously** and build feedback loops into policy and practice. Where the current system does not already do this function effectively, new institutions may provide an easier environment, though with risks of parallel systems. These iterations are not without cost, though – a sense of continual ratcheting of targets and changes to indicators and criteria create resentment amongst providers, which can only be managed by an open dialogue with them about their context, constraints and realistic potential for improvement.

Communication of schemes, while not raised as a challenge in MHICs, does remain a challenge in LMICs, where understanding of schemes by staff and managers is one of the barriers.

While it is taken as axiomatic that independent verification is needed to avoid misreporting in LMIC contexts, it is interesting to see that **verification is light touch** and part of routine systems in many of the larger MHIC schemes. Systems like the UK QOF rely on self-reporting to a large degree, with reputational damage the main implied sanction for fraud. This relates again to the virtuous circle unlocked by trust.

The evidence on monitoring and evaluating is mixed. **Most MHICs did not conduct robust pilots or scheme assessments** and this reflects a context in which policy making can be more overtly driven by internal incentives and politics, without the need for external accountability. Paradoxically, it is likely that LMIC schemes are better documented. Whether that contributes to more effective continuous innovation, as outlined above, will depend on the ownership in the process of monitoring and evaluation and the institutional capacity to react effectively to evidence.

Effects sustainability

Although we have been focusing on the sustainability of the RBF programme, arguably of more interest is the sustainability of its goals and effects. There is some evidence from the MHIC literature of benefits continuing after schemes have stopped, which supports the notion that **RBF can be used to change habits**, and does not necessarily require continued funding of specific targets. This is in the context of better basic funding and all other highlighted contextual and institutional differences, compared to LMICs.

Such robust evidence as exists suggests **variable cost-effectiveness** of RBF in H/MICs. Costs to funders, providers and users should be considered. Some schemes have been able to generate cost savings.

Overall, the health gains from RBF appear to have been modest, and mainly focused on management of chronic illness. **More important gains may have been in relation to consumer awareness of services and systems changes**, where these occurred.

Overview of schemes included

Purpose

Most HIC RBF schemes were introduced in the context of reforming primary care to improve its quality. In Australia, the Practice Incentives Programme (PIP) was part of a move towards a 'blended payment' model, providing a portion of funding to General Practitioner (GP) practices that was unrelated to the volume of fee-for-service payments. In the UK, although the underlying payment system was different (largely capitation based), the Quality and Outcome Framework (QOF) aimed to increase productivity, redesign services around patients, improve the skill mix in primary care, create culture and structure to improve quality, extend service range, and improve recruitment, retention and morale. The QOF was part of a comprehensive strategy to improve performance and quality, not implemented in isolation. Turkey's family medicine performance based contracting (FM PBC) scheme was similarly designed to reduce regional disparities in access to health services, and to address problems of staff absenteeism and poor quality primary care which were leading to overload in secondary and tertiary facilities. This was part of a shift towards family medicine, which included re-training general practitioners and providing an attractive financial package for family medicine practices (including capitation and base payments).

Most primary level schemes also put a strong emphasis on disease prevention and chronic disease management. This was the case for the Quality Bonus System (QBS) in Estonia, for example, as well as in the UK, France, and Germany, where the emphasis was very specifically on incentivising insurers to take on patients with chronic conditions. In the German scheme, sickness funds received incentive payments for establishing Disease Management Plans (DMPs), the aim being to improve quality and reduce hospitalisation. Chronic illnesses included in the programmes are diabetes, asthma, chronic obstructive pulmonary disease, coronary heart disease, and breast cancer.

The exceptions were South Korea and the US scheme described here, which focused on specific conditions at secondary level. The South Korean scheme aimed to improve care for acute myocardial infarction (AMI) and caesarean sections, targeted based on performance data for Korea being below that of other OECD countries. The Health Insurance Review Agency (HIRA) is planning to expand the VIP by including two additional clinical domains: acute stroke and use of prophylactic antibiotics for surgical care. The US Health Quality Incentive Demonstration (HQID) was triggered by a national report which made public widespread preventable errors in hospitals leading to high numbers of deaths. It measured the performance of five acute clinical conditions: AMI, coronary artery bypass graft, heart failure, pneumonia, and hip and knee replacement.

Although most schemes, in high and middle income countries, emphasized quality improvements, increased coverage with preventive health and management of chronic illness and improved equity across areas, the two schemes analysed from China were more specifically focused on reforming payment systems and their perverse effects – in particular, reducing reliance on prescription of antibiotics and vaccinations for income in the Shanghai area and on drug sales in general in the two rural provinces. They aimed to address the problem that health promotion and prevention result in low profits and are neglected.

Design

The primary care schemes either paid incentives for specified activities (such as setting up disease management plans for chronic illness in Germany) or paid for meeting specific targets. However, the structure of the performance arrangements varied across the schemes.

The UK QOF is probably the most complex in terms of number of targets: it includes 142 indicators in four domains. The four domains are clinical care, organisational, patient experience, and additional services, with 70% of points allocated for clinical care. Each indicator has a maximum point value. Achievement of points for many indicators is triggered at lower and upper thresholds of attainment (per cent of eligible patients reached). Practices are paid a flat rate for each point they achieve. The absence of a pilot meant that the scheme cost more than estimated as GPs achieved more than expected.

In France, four domains are rewarded based on 29 indicators in total, covering prevention, chronic disease management, cost-effective prescribing and the practice organisation. A baseline performance level is measured for each physician and two types of objectives are used to set payments: 1) an objective that corresponds to the average score of physicians for the specific indicator. A physician receives half the points for that indicator if they reach the average score. They are also rewarded for reaching objectives defined by laws and agreements. Most performance measures come from the 2004 Public Health Law. These are consistent with those in use by QOF and the US National Quality Forum.

In Australia, 13 incentives areas are organised into three main streams on quality, capacity, and rural support. Two incentive schemes were recently discontinued (the practice nurse and domestic violence incentive, and the after-hours incentive).

In Germany, the focus is more specific: sickness funds design their own DMPs but must include certain elements. Sickness funds receive a higher payment for patients enrolled in a DMP. Physicians receive financial incentives to encourage their participation in the form of additional payment for DMP-related services.

Prior to design of the family medicine model in Turkey and its contracting and performance payment mechanisms, international practices were examined and means to implement the model with country specific requirements were assessed. A proportion of the contracted general practitioner provider income is related to achieving targets. The contract may be cancelled if a threshold level is not reached. The salary deduction scheme covers eight indicators relating to immunisation, registering and visits for pregnant women, and follow-up visits for registered babies. The other part of the scheme requires certain standards are met for service delivery and standards for 35 indicators. Uniform absolute performance targets – rather than targets that are relative to baseline – reflect the Ministry of Health's policy objective of closing geographic gaps in performance. Practitioners also receive a lump sum payment to defray the costs of providing mobile services where required. Performance penalties are applied to the salaries of family physicians and to family health unit staff, including managers, based on their team's performance. Deductions are made from the total monthly base payment on a sliding scale e.g. 2 per cent deduction for 97-98 per cent coverage, 4 per cent reduction for 95-96 per cent coverage etc. For contract termination, staff are

evaluated against indicators and given warning points. A certain amount of points leads to contract termination.

In Nicaragua, the Red de Protección Social (RPS) scheme set a target for coverage of 98% of enrolled patients for the provision of preventive health care services (targets cover maternal and child, such as child growth and development monitoring, vaccinations, workshops for sanitation, breastfeeding etc.). Providers can also be paid for serving households that are not enrolled but there are no targets for this. They are paid each second or third month depending on the municipality.

In Shanghai, China, district health bureaus were given a yearly prospective budget, subject to assessment of the year-end performance. Targets for performances covered cost control, volume of services, delivery of preventive and primary care (e.g. immunisation rates, hypertension checks, diabetes checks, health records up to date, health education provision), and patient satisfaction. The district health bureau allocates funds to each community health centre on the basis of the population served by the centre, and its social insurance expenditures in the previous year. Most allocate at least half the funds to cost control, and share the rest equally between service volume and delivery of primary care or public health. The budget consists of a flat rate per person for a defined package of public health services and a payment from the Social Health Insurance bureau for provision of services for insured residents. The social insurance budget portion is based on the actual health expenditure for the insured population in the previous year with adjustments for inflation and increases in service volume. Every centre is given a share (50–70%) of its budget at the beginning of the year. Part or all of the withheld portion is disbursed on the basis of a year-end assessment by the district health bureau.

In the RMHC pilot in two Chinese provinces, targets were set for the proportion of patients treated as per protocol for 12 common health problems in rural areas—common cold, acute tracheitis, chronic tracheitis, diarrhoea, child dyspepsia, gastritis, peptic ulcer, vaginitis, urinary tract infection, diabetes mellitus, hypertension, psoriatic strain, and osteoarthritis.

The Korean and US schemes were unusual in operating a relative reward system, awarding a bonus to the top tier of performing hospitals and penalising the bottom tier. In Korea, the high-performing hospitals receive a payment of 2% of the payment by the National Health Insurance Cooperation (NHIC) for the disease area, the second highest performing receives 1%. Penalties are applied when hospitals fail to reach either of the two thresholds for the composite quality score. The US HQRID linked incentive payments to 34 nationally defined, standardised, risk-adjusted measures covering both processes of care to reflect compliance with clinical guidelines and patient outcomes. Hospitals in the two highest deciles of performance for a condition received a bonus, and those with poorest performance risking a penalty.

The Brazilian scheme in Sao Paulo is a performance-based contracting arrangement between the government health system and a private non-profit management group (OSS). Global budgets are attached to a management contract with predefined performance targets. OSS contracts specify volume targets by type of service (e.g., inpatient, outpatient, emergency, diagnostic, and surgical procedures). These service categories are further broken down by specialty, specific procedure, type of diagnostic test, and so on. The performance targets are classified in four domains: 1) quality of care, 2) patient satisfaction, 3) information quality, and 4) efficiency. 90 per cent is allocated monthly based on achievement of volume targets. This budget is fully disbursed for 85-100 per cent

of target, reduced by 10 per cent for 75-85 per cent target achievement, for less than 75 per cent volume target achievement budget may be reduced by 30 per cent. 10 per cent is held in a 'retention fund', and disbursed quarterly.

In the Philippines Quality Improvement Demonstration Study (QUIDS) programme, bonus payments were awarded to district hospital staff for meeting volume and quality standards. There were nine indicators over four domains (quality of care, patient satisfaction, information quality and efficiency). The quality domain was weighted more heavily (70%). Eligibility for bonuses was determined using a quality metric combining vignettes (knowledge and clinical reasoning) scores for randomly selected hospital physicians, facility case load, and average patient satisfaction. Bonuses were paid out quarterly. Payments were made to the Chief of Hospital, who in turn, distributed these payments to the hospital (medical and non-medical) staff.

How targets were set

Not all studies detail the process through which targets were set. However, in HICs where details are provided, the targets were typically elaborated in consultation with relevant professional bodies. In the UK, indicators were chosen after extensive negotiation with the British Medical Association which helped gain approval from GPs. The contract is renegotiated annually, and indicators and targets are updated as agreed between negotiating parties. More recently, the National Institute for Clinical Excellence (NICE) has responsibility for advising on indicators, though the decisions are still made between GPs and the government. This aimed to improve transparency and confidence. Initially targets were set too low and there was a delay in making changes. One of the reasons was the contractual negotiations between the Department of Health and the British Medical Association (BMA). The BMA tried to protect practice incomes. Similarly, in Australia, the targets were developed in consultation with the General Practice Financing Group, a negotiating body. In Germany, the Joint Federal Committee proposed the first four conditions for DMPs. The committee includes representatives from sickness funds, the Federal Association of SHI-Accredited Physicians, and the German Hospital Organisation. Disease specific committees are set up for each disease area composed of experts from universities and boards of medical associations. The committee drafts programme requirements based on evidence-based guidelines. In France, the initial definition of indicators was not consultative, but as the scheme evolved medical professions were included in their definition. In Korea, the Value Incentive Programme (VIP) was designed by the Health Insurance Review Agency. In the US HQID, quality measures were based on indicators widely accepted within existing voluntary reporting systems.

Negotiations are not detailed in the MIC case studies, except for Brazil, where, in 2006, the Ministry of Health launched a set of reforms, collectively known as the Health Covenants (*pactos pela saúde*). The *pactos* aim to give subnational entities the flexibility to design and organize their delivery systems to fit the local context. The *pactos* specify performance targets to be negotiated with each level of government and specified in intergovernmental management contracts (*termos de compromisso*). For each indicator, quarterly targets are negotiated between the private non-profit management group (OSS) and the state government. They are then assessed by an independent state evaluation commission.

Population covered

For the high-income countries, coverage extends to all of the population using the services (primary care or specified hospital services). In Germany, this was the population affected by chronic conditions and diseases (diabetes, asthma, chronic pulmonary disease, coronary heart disease and breast cancer). Some sickness funds offer patients incentives to enrol in Disease Management Programmes (DMPs). Some patients are enrolled in multiple DMPs. In the US, about 400,000 patients using the enrolled hospitals (mostly large urban hospitals) were covered annually during the running of the programme.

In Turkey, all of the population using family medicine units were covered, but for the other MICs, coverage was more specific. In Brazil, the OSSs are directed to provide care in low-income urban areas in São Paulo state. Through pro-poor targeting, most OSS-managed facilities were built in urban favelas (slums). According to the management contract, OSSs are not permitted to provide services to the privately insured or to charge fees, mainly because of the universal nature of the Unified Health System (SUS). Access is unrestricted, and the extent to which higher-income patients use these free facilities is unknown. Given their locations, however, it is unlikely that they are frequented by the well-off. In the Philippines, only patients using the chosen study hospitals were affected, while in Nicaragua, the Intervention targeted the poorest households. They received educational workshops and children's preventive healthcare appointments.

In Shanghai, all of the population covered for public health services were included, while the insured population (90%) were covered for other medical services.

In the China RMHC scheme, the village population attending contracted doctors for common ailments were addressed.

Provider participation

In most cases, participation in the scheme is universally available but voluntary (Australia, UK, Estonia, Germany), in others it is mandatory within relevant provider categories (Korea, Turkey, Shanghai), and in a third group, participation for providers is automatic but they can opt out (France). For some schemes, selective opting in through contracting or bidding is operated (US, Brazil, Nicaragua, China RMHC).

Although participation in the Australian PIP is voluntary, around two-thirds of practices participate. Providers decide which incentive areas in which to participate. In the UK, the QOF is a voluntary programme but nearly all practices participate (not least because the QOF makes up 20% of annual GP practice income). In France, private physicians are automatically enrolled on the programme but remain free to opt out. Less than 3% do not participate. The Estonian QBS is voluntary. In 2006, 50% participated. This increased steadily and included 90% in 2010. In Germany, there is limited information on coverage rates at national level, but some regional information is available (for example, in the North Rhine region, over 70% of ambulatory physicians participate in a DMP). Physicians are keen to participate so as not to lose out. It was felt that making quality improvements with transparent outcomes had failed in an obligatory system.

In Brazil, the scheme was put in place when new hospitals were established. OSS was created to operate in newly built hospitals. Since January 2011, all public hospitals have the opportunity to

switch to OSS management. Only a few have done this. Mainstreaming the hospital administration model would involve a complex process of converting all hospital employee contracts.

In Nicaragua, the Ministry of Finance (MOF), in coordination with the Ministry of Health (MOH), is responsible for the selection of health service providers through an international competitive bidding process. Private providers bid for the RBF contract.

In most schemes, providers have to opt in to the full range of incentives, but in some cases, particularly that of Australia, providers could select which domains to opt in to, which clearly gives them more options but also creates risks of cherry picking easier targets.

Purchasers

The most common purchaser is the national health insurance fund (in Australia, Germany, France, Estonia, Korea and the US). In Germany, insurers mostly contract directly with the regional Association of Statutory Health Insurance (SHI) Physicians and individual hospitals, which in turn enrol voluntary physicians in a network of supporting doctors for each disease area.

In Korea, the VIP programme was implemented within a broader reform effort, which started with the Reformed National Health Insurance Act of 2000. This law mandated integration of all different health insurance funds into a single payer system, the NHIC. The NHIC established a solid legal base for health purchasing, including quality assessment and monitoring of providers, and adjusting provider payment based on performance.

In integrated systems like the UK and Turkey, contracting is through delegated organisations. In the UK, GP practices are private entities contracted by Primary Care Organisations (PCOs) under the National Health Service (NHS). PCOs manage the contracts under the supervision of the Strategic Health Authority, the local representation of the NHS. In Turkey, the Ministry of Health delegates purchasing and contract management to Provincial Health Directorates (PHDs) in each province, making the extent of control more manageable. In Shanghai, the District Health Bureaus were the purchaser, while the fund office of RMHC was the sole purchaser in that scheme and competitively selected and contracted the best village doctors.

In the hospital programme in Brazil, the purchasers are not-for-profit organisations. The benefits of using delegated organisations here are: management autonomy, technological innovation, good management innovation and community credibility. The disadvantage has been some management problems, necessitating public intervention.

Provider autonomy

In all schemes, there are no restrictions on how RBF funds are used or necessity to report on this.

In Australia, while there are no restrictions, guidelines suggest purchase of new equipment, upgrade of facilities or increase in doctors' pay. The NHS does not provide any guidance on how bonus payments should be used or distributed. Some is being reinvested to improve patient care – for example, to hire more staff to focus on QOF targets e.g. nurses for chronic disease management. In Brazil, facility managers have flexibility in allocating and purchasing all inputs. Some use pooled procurement systems for greater efficiency. In Nicaragua, providers are private and have full autonomy. In this case the funds are for additional services not already provided in the public sector.

In Korea, anecdotal evidence suggests that resident doctors receive the extra payment. In Estonia, the bonus is paid to the family physician, who then decides whether and how the payment is shared among other staff. In France, the funds go to salaries.

In Turkey, it is a negative incentive programme so there are no extra funds to spend.

Funding sources and amounts

In Australia, the PIP is funded through the Australian Government Department of Health and Aging (DoHA). The cost of PIP is significant, nearly A\$300 million per year (US\$212 million²) in 2008-09. This amounts to A\$61,600 (\$US43,500) on average per practice, or A\$19,700 (\$US14,000) per full time equivalent GP. Most payments are made to practices but some of the quality incentives are paid directly to individual GPs. The average payment per practice in 2009/10 was A\$57,800 (\$US41,000), typically between 4 and 7 per cent of total practice income. It is not clear whether the funding was additional or from existing budgets. Plans for the future of funding the scheme are not identified.

The UK QOF cost £600 million (US\$926 million³) in the first year and £1 billion a year after that. There is no evidence of cost saving related to the framework. The average payment to a GP practice was £74,300 (US\$11,500) in 2004-05 (30% of average total earnings). (This equates to US\$82,916/practice/year for 2004/05 and US\$140,611/practice/year for 2005/06.) The performance bonuses currently account for about one-quarter of GP income and an estimated 15% of all expenditure on primary care. The proportion of income from these bonuses will fall when the new 2014–2015 contract is implemented, as the number of bonus-related services is reduced and funding rerouted into capitation.

In Estonia, the maximum payments for achieving disease prevention and chronic disease management targets was €3,068 (US\$3,460⁴) per year in 2011 (4.5% of the total annual income of a physician). There are also payments made for additional activities to a maximum of €767 (US\$865) per year. Per physician, this summed to US\$4,280/physician/year in 2011. The total cost in 2011 was €800,000 (US\$902,616):1% of the Estonia Health Insurance Fund's (EHIF's) total PHC budget.

In France, for GPs with more than 200 patients, yearly bonuses in 2013 amounted to €5,365 (US\$6,051), about 5-7% of their annual income. The National Health Insurance Fund (NHIF) spent approximately €250 million (US\$282 million) for the scheme in 2012 - approximately US\$24/capita/year (2012).

In Germany, a flat-rate administrative fee of €152 (US\$171) is paid to the sickness fund per patient, reduced yearly from €180 (US\$203) (in 2010). In 2012 the German SHI system spent a total of €920 million (US\$1,038) on all DMP programmes. 52% goes on fees for DMP related services, 26% for patient education, and 22% for administration and data management. The approximate cost per person was US\$170/capita/year in 2012. The additional costs came from the Health Fund which comprised of all contributions of statutory insurers (covering 89% of the population). However, the aim was to reduce costs by reducing unplanned hospitalisation and costs related to treatment and rehabilitation of complicated conditions.

² A\$1=US\$0.71

³ £1=US\$1.54

⁴ €1=US\$1.13

Physicians are incentivised to participate in DMPs. For example, in Rhineland and Hamburg regions they receive a lump-sum of €15 (US\$17) per quarter in addition to regular reimbursements. For referral of a patient to a diabetes specialist they receive €5.11 (US\$5.77) per case. Payments vary from region to region. As of 2012 there were seven million participants in DMPs with six million people covered (some individuals enrolled in multiple DMPs). More morbidity-related risk factors have been added to the system which has weakened the financial incentive for enrolling patients in DMPs.

In Korea, the scheme was funded through the Ministry of Health and Welfare. In 2008 incentives amounted to approximately US\$360,000 paid to 21 hospitals, increasing to US\$380,000 to 26 hospitals in 2009. Per participating hospital, this amounts to US\$8400/hospital/year (2009/10). It is not clear whether this was additional funding or not. For the US scheme, the Centers for Medicare and Medicaid services (CMS) awarded US\$48 million over 5 years.

In Brazil, OSS are contracted by the SES through a five-year renewable contract, depending on performance. The state has not increased the budget of any OSSs in deficit, and several OSSs have secured loans in the private sector to cover funding shortfalls. Variations in unit costs across hospitals generated heated discussions, as expensive faculties sought to justify their higher costs. In most cases, the state held firm, using average unit costs across all faculties to formulate their budgets. In one case study hospital, the scheme cost around US\$32/patient/year. Payments for production targets are made in 12 monthly instalments.

In Turkey, the FM PBC is funded through the Ministry of Health, using existing budgets, which are withheld if requirements not met.

In the Philippines, the QIDS was funded by the Philippines National Institutes for Health. Each quarter, the QIDS quality metric was computed for each hospital assigned to this intervention. Hospitals that qualify were given a bonus that was payable to the Chief of Hospital, who in turn, distributed these payments to the hospital (medical and non-medical) staff. For doctors, some 5% of income was provided through this scheme.

The Nicaragua RPS was externally financed by the Inter-American Development Bank (IADB). It costs US\$11 million in the first two years and US\$22 million for the remaining three years. US\$11 million represented approximately 0.2% of GDP, and 2% of government health spending. Health care providers were paid a per-household fee to carry out an initial analysis of the coverage of the preventive health care services (about US\$ 9.3 per household on average). The average yearly per household cost for services provided, across all municipalities, was US\$134 in 2005. Costs were higher in remote areas.

In Shanghai, the payment came from government and the Social Health Insurance Bureau. Sources suggest the funds came from existing budgets. Payments were made to each community health centre, but detailed cost information was not readily available. Preliminary results from the pilot suggest a reduction in per-visit outpatient expenditure. Similarly, in the RMHC pilot, household costs per visit to the village doctor in intervention sites dropped from 16 Renminbi (US\$2.51)⁵ at baseline to 10 Renminbi (US\$1.57) after the intervention. Cost per visit at control sites were 18 (US\$2.82) Renminbi.

⁵ 1 Renminbi=US\$0.16

How IT systems were used

Most HIC countries used existing information systems to monitor the RBF schemes, which were integrated into wider IT systems. This was particularly the case for insurance systems which already manage claims electronically. For MICs, dedicated information systems were often established to manage the schemes.

In Australia, information on the number of services delivered was collected through the Medicare claims system and routine reporting. Information on other incentive streams was submitted to the PIP database. A new online administrative system was introduced in May 2010 to allow practices to apply for new PIP initiatives and review payment levels. In Estonia, all necessary data to implement the scheme come from EHIF's routine claims data. A separate system has been set up to code provider activity in the EHIF routine data system for payments. In France, performance indicators are calculated using mainly insurance claims data. Claims are centralised in a data warehouse with the identification of all professionals and hospitals and details of all items of care for each individual patient. In the UK, data to calculate achievement scores are extracted from electronic medical records into the Quality Management Analysis System (QMAS). The system was developed specifically for supporting QOF. Organisational information must be submitted manually. In Turkey, the scheme used two systems: the Core Health Resource Management System (CRMS) and the Family Medicine Information System (FMIS), which tracks health-related indicators relevant to family medicine services and is a decision support system for providers. In Germany, the Federal Insurance Agency collects clinical and financial indicators of performance and sends it back to individual sickness funds.

In Korea, performance data for the programme comes from HIRA's highly integrated claims database. The integration of the numerous health insurance funds under a single-payer system has led to a more integrated health information system in which every patient is identified through different levels of care using a unique patient identifier. This identifier allows comprehensive data on patient health status and service use to be linked through reimbursement claims data. In Brazil, a standardised cost accounting and data collection system was set up. The contract mandates the establishment and functioning of medical record systems and facility-based commissions for reviewing mortality data, ethics issues, and infection control. It also specifies monthly and annual reporting requirements for activities, costs, payroll, spending, AIH (coding and billing), and patient surveys. In Nicaragua, an RPS information management system was designed and built. In the US scheme, Premier Inc. (joint designers of the programme) already had the largest clinical comparative database in the nation with the ability to track hospital performance in several clinical areas.

Verification functions

All longer term RBF schemes have arrangements for verification and accountability, sometimes by the purchaser and sometimes by a mandated third party.

In Australia, data are collected by Medicare Australia. The Continuous Data Quality Improvement Programme controls the quality of payments on a sampled basis, recording all sources. Medicare Australia conducts random and targeted audits to ensure that practices meet the eligibility requirements. The primary accountability mechanism for PIP is regular reviews by the Australian National Audit Office (ANAO). In the UK, the Strategic Health Authority (SHA) supervises PCOs. PCOs are required to carry out pre-payment verification checks on all practices and formally audit a 5%

sample of practices. With the scale in the UK and resources required it is the threat of verification that works rather than the verification itself. In France, the National Authority for Health (HAS) provides support and performs a mandatory evaluation of primary care physicians every five years. In Germany, the Federal Insurance Agency is mandated to validate all DMPs defined by sickness funds.

In Korea, every year a quality assessment report is prepared by HIRA, which reviews patient claims in a wide range of areas of care in addition to the VIP performance domains. Data are validated by direct inspection once a year to confirm the quality of claims data. In 2011, 97.4% of the data were found to be valid. In the US scheme, hospitals send data to Premier Inc. (a network of private non-profit hospitals who jointly designed the programme with CMS). Premier audits quality and identifies errors. They then send it back to the hospitals for correction. Premier then sends the data to CMS who run a validation process. They take a sample and request patient records for review.

In Turkey, the Provincial Health Directorate is responsible for data verification. Community Health Centres (CHC) provide logistical and technical assistance to family medicine units and supervise and monitor the FM PBC on behalf of the PHD. Every month 10% of family doctors are selected for data verification by the CHC. Also, each practice is visited once every six months. Sanctions can include warnings, salary deductions and ultimately withdrawal of contracts. Monitoring procedures were found to vary so the Ministry of Health introduced standardized monitoring forms and guidelines for use. CHCs are not a third party so there are potential conflicts of interest. There are also concerns that audits do not involve in-depth clinical reviews.

In Brazil, two monitoring systems were set up: a contract management unit within the State Secretariat for Health (SES) and the IAC (accreditation institution), which reviews the indicators and calculates the level of penalties. Additionally, a state audit agency is in charge of financial and technical audit of the OSS. The OSSs are subject to yearly audits by the state comptroller general and the state health council. In 2001 the state set up an assessment commission to review OSS compliance with performance indicators in the contracts. The state OSS law mandated the formation of governance boards in OSS-managed facilities (Law 846, Article 3). Consisting mainly of representatives of civil society, the boards are envisioned as the ultimate authority in the facility. In Nicaragua, every 6 months the RPS carried out random checks on a sample of providers, households and individual beneficiaries to verify information. Also a firm of independent external auditors performed random checks of the records. In the Philippines, data were verified by the research team. It was difficult, time-consuming and costly for one team to travel to the different parts of the Philippines, which presents a challenge to the sustainability of this model.

Political economy

Although we did not dig into political economy analysis of schemes, some observations arise from the reports reviewed about differential perceptions and perceived benefits of the schemes. It is to be noted that the schemes often faced opposition on their introduction, which could be addressed over time.

In Australia, the scheme was judged to have successfully reached remote areas. However, there was concern that it exacerbates inequity across urban practices and for small practices serving

disadvantaged populations. The accreditation process (required to join the scheme) can be a barrier for smaller practices.

In the UK, GPs are generally positive about the QOF system. There are problems, however, when patients' concerns do not relate to activities that are tied to the incentives. There are also concerns that GPs' pay has increased disproportionately compared to workload, which is sometimes passed on to nurses and other staff. GP partners benefited most from the new income, individual incomes rising by 58% in the first three years. Incomes of salaried GPs and nurses have not increased significantly.

In Estonia, the system is widely accepted by family physicians. However, only 35% consider the scheme to be motivating them. This may be due to the relatively low bonus payment. In France, the scheme was initially strongly opposed by physicians. There was concern that doctors working in poorer areas would be penalised. The pharmaceutical industry was also opposed. Doctors have since revised their position. In Germany, DMPs were also initially opposed by medical associations and physicians. Opposition was overcome over time and after some modifications to data requirements. There have been no obstacles in the running of the programme but provider satisfaction has not been studied. Research analysing horizontal inequality found the DMP enrolment to be fairly equitable across education levels but favouring women in less deprived areas relative to women in more deprived areas.

In Korea, the VIP was designed by the HIRA without involving other stakeholders. The Korean Medical Association and the Korean Hospital Association were opposed to any pay for performance programme. It was viewed as government interference or control over health care organisations and an infringement on autonomy. After initial resistance from the medical profession, support for the VIP has grown among hospitals.

In Nicaragua, the MOH were reluctant to contract out providers and had concerns about the programme. There was some improvement in attitude by the end of the programme, however, the model adopted by the RPS for preventive health care service delivery and payment has not yet gained sufficient political and institutional support with the Government of Nicaragua to be fully considered as part of a sector wide strategy to improve health outcomes.

In Brazil, the scheme is seen as providing high quality inpatient services in the most vulnerable communities. The problems in Brazil's hospital system were grounded in rigid politicised governance arrangements. The Brazilian public-private partnership model is seen by some authors to be successful as it addresses this problem.

Costs

Although most of these schemes are integrated, national and running smoothly, their sustainability is not assured, and requires a complex reflection on actual and perceived costs, savings, benefits, dis-benefits and affordability. We focus in this section on the evidence which is available on costs.

In Australia, the complexity of the system makes it costly to the practices, according to some studies. The cost of the programme has increased 25% over the six year period from 2003-09, although it has been a declining share of all government expenditure on primary care. The costs to GP practices of

participation, including accreditation and administrative burden, have not been quantified. Evidence that impacts justify costs is limited.

In the UK, there are concerns over the high cost of the programme and that the link to improved health outcomes is not adequately confirmed. THE NHS National Institute for Health and Clinical Excellence suggests that the price value of the QOF indicators do not reflect the health gains obtained. Average indicator payments ranged from £0.63 to £40.61 per patient, and the percentage of eligible patients treated ranged from 63% to 90%. The proportional changes required for QOF payments to be cost-effective varied widely between the indicators. Although most indicators required only a fraction of a 1% change to be cost-effective, for some indicators improvements in performance of around 20% were needed. A cost-effectiveness study of a QOF initiative in one region of the UK demonstrated that the incentive payments represented less than half of the £13m total programme costs. By generating approximately 5,200 quality-adjusted life years and £4.4m of savings in reduced length of stay, the programme was found to be a cost-effective use of resources in its first 18 months. A study which looked retrospectively at the impact of withdrawing performance indicators found performance levels in these areas remained stable. The authors suggest that health benefits from incentive schemes can potentially be increased by periodically replacing existing indicators with new indicators relating to alternative aspects of care.

In France, initially the NHIF intended to offset the costs of the programme with savings from replacing branded medicine with generic prescribing. It has been difficult to evaluate this part of the programme. One factor affecting future effectiveness and impact is the reliance on solo practices, constricting coordination of care. Another limiting factor is that outcome-oriented data required for more outcome-oriented indicators is not available in claims.

In Estonia, the cost is modest at only 1% of the annual primary care budget.

In Germany, some studies have shown lower costs for patients enrolled in DMPs. The largest insurer, AOK, reported savings of between 8-15% of total annual costs of care for enrollees with chronic conditions. However, another study reports higher costs for implementations of DMPs than in the control group. Type 2 diabetes DMP participants received more prescriptions, had more contacts with physicians, and submitted higher claims for health insurance benefits than the control group. The incidence of relative co-morbidities did not differ between the two groups.

In Turkey, as the FM PBC is a negative incentive programme there are no costs related to payment of incentives. Payments are withheld if standards are not met.

In Korea, there were no increases in cost for data collection as the HIRA routinely monitored providers before the VIP. The costs of bonus payments for C-section reductions may have been offset by cost reductions associated with increased vaginal deliveries.

In the US, the programme ended in 2008. It is believed to have been used as the blueprint for a large-scale CMS proposal for pay for performance under its 'value-based purchasing' initiative.

In Brazil, OSS hospitals receive on average 8% more revenues than directly administered hospitals but produce a higher volume of services. One estimate from 2007 found that OSS hospitals have 24% lower costs per bed than publicly managed hospitals. More recent data found the figure to be 9.8%, indicating that publicly managed hospitals have reduced the productivity gap. These data suggests a sustainable model, but recent evidence is lacking and associated administrative cost data are not available.

In Nicaragua, funding ended after the 5 years. The Philippines was also a short-term project. However, a follow up study showed that sustainable benefits were achieved even after the programme had ended.

In China, where cost-reduction was a main emphasis of the programmes, the recorded reduction in costs was encouraging.

Assessment of effectiveness

This report does not focus on assessing the effects of RBF schemes. However, an overview of some evaluation findings and factors underlying them is important to understand their sustainability. In most cases, comprehensive evaluations are lacking.

In Australia, no comprehensive evaluation has been conducted. Some evidence shows improved management of chronic diseases, positive effects on access in rural areas, and success in diversifying services. Barriers to achieving significant service and outcome improvements include:

- A complex and non-transparent programme structure
- Selective participation in lower effort incentive streams, i.e. a high uptake of incentives that are easy to achieve
- Inadequate use of performance data for improvement processes.

In the UK, since the QOF was introduced in 2004, achievement rates have improved from 91% to 94-97%. Evaluation suggests moderate improvement in outcomes. There is no comprehensive time-series or control group evaluation. Improvements are confounded by the overall increase in funding for primary care. Some improvements in processes and data availability and use have been found. The UK National Audit Office (2008) study found 'no progress' on productivity or redesigning services around patients. 'Some progress' was found in other areas including rewarding high quality care. Small beneficial equity effects were found.

In Estonia, studies suggest a positive impact on chronic disease management. The most important impact was raising awareness and understanding of the role of family physicians in providing the full scope of quality services. The most important factor in successful implementation has been the electronic billing data collection system which covers all family physicians in Estonia, though this is limited to process not outcome measures.

In France, the programme has made feedback information available to providers, facilitating an improvement process. The extent to which physicians use the information is unclear. One evaluation finds greater improvement in participants of the scheme but differences were modest. Another evaluation found improvements in all indicators in 2011 and 2012 compared to previous years.

In Germany, DMP results are analysed but there is no control group so it is difficult to attribute changes to the programme. Research studies point to positive results related to processes of care and patient satisfaction. Research also shows some modest improvement in health outcomes for DMP patients.

In Korea, a HIRA evaluation showed improvement in all process indicators associated with myocardial infarction. The performance gap between hospitals also narrowed. The impact on the C-section rate was found to be modest.

In the US HQID, quality scores increased in all five clinical areas and variations in hospital performance were reduced. However, there was a lack of formal monitoring and evidence was viewed as informal and was contested.

In Turkey, there have been significant improvements in key health outcomes since the programme was introduced. Infant mortality and maternal mortality fell. The number of primary care consultations increased. Patients are more satisfied with their care since the family medicine reforms. However, there were other reforms than just performance-based contracting that have contributed.

In Brazil, external reviews show OSS hospitals to be more efficient and more productive than counterparts. Greater autonomy is identified as a key to success. Managerial autonomy has been accompanied by greater accountability. Systematic measurement and monitoring is likely to have impacted on productivity, patient satisfaction and health outcomes. Implementing organizational reforms in public hospitals is a hugely complex task. Authors judge that the OSS experience in São Paulo was facilitated by the fact that the reform was introduced only in new facilities. Introducing alternative organizational arrangements in existing facilities is much more difficult. Finally, most OSS facility directors had been in the job since their facilities opened, whereas direct administration facilities suffer from high rotation of ranking managerial staff.

In the Philippines, the intervention hospitals were found to have quality improvements after three years. A study of long-term effects found that five years after the intervention stopped there were sustained long-term clinical performance effects.

In Nicaragua, the first phase evaluation after two years was positive and the project was extended for three years. The second phase evaluation also showed some positive results. It is difficult to distinguish however between the effects of demand- and supply-side incentives (transfers were also made to participants, conditional on making preventive healthcare visits and attendance at educational workshops).

In Shanghai, an evaluation of the pilot showed a reduction in per-visit outpatient expenditure. The performance in management of patients with chronic disease varied. Hospital case-based payment did not provide better incentives than the fee-for-service payment alone to improve efficiency or quality, since hospitals do not retain savings resulting from reductions in unnecessary tests, drugs, or procedures. Existing (although little) evidence indicates a moderate reduction in expenditure or no substantive effect.

The RMHC pilot was evaluated with a control and a before-and-after study design. Results from this experiment showed that the changes in payment incentives and organisation of service delivery provided measurable improvements in efficiency, quality, and access. Cost per visit to the village doctor in intervention sites dropped from 16 Renminbi at baseline to only about 10 Renminbi after the intervention, whereas cost per visit at the control site actually increased to about 18 Renminbi. This difference was largely due to reduced use of antibiotics. In Jining, prospective case-based payment was associated with a 33% reduction in expenditure for the 128 diseases included. A recent study found capitation and pay-for-performance led to a 15% reduction in antibiotic prescription and a small reduction in spending per visit in the predominantly rural Ningxia Province. Although the many provider payment experiments that are in progress in China are encouraging, definitive conclusions cannot be drawn about how well these experiments have improved the quality and

efficiency of health care because many are still in the early stages of implementation, and some were not designed to allow rigorous scientific assessment (Yip, 2010).

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Appendices

Appendix 1: Key information for high-income country case studies

Country and sources	Title and purpose	How long been implemented	Funding	Evaluations/effectiveness	Political economy	Mainstream or stand-alone	Sustainability
<p>Australia</p> <p>Sources: ANAO (2010) ANAO Audit Report Number 5, Practice Incentives Program. Commonwealth of Australia.</p> <p>Cashin C and Chi Y. (2014) Australia: Practice incentives programme. In: Cashin C, Chi Y, Smith PC, Borowitz M, Thomson S. (eds.) Paying for performance in health care. Implications for health system performance and accountability. WHO.</p> <p>Performance incentives for health in high-income countries key issues and lessons learned</p> <p>Elovainio, R. (2010) WHO background paper, 32.</p> <p>Scott I. A. (2007) Pay for performance in health care: strategic issues for Australian experiments. MJA. 187: 31–35</p> <p>Borowitz M, Chi Y, Bisiaux R, Cashin C, Scheffler R. (2011) Sustainability of Health Systems: Is pay for performance the answer, Review of OECD experience. OECD Better Policies for Better Lives Presentation</p> <p>http://siteresources.worldbank.org/INTRUSSIANFEDERATION/Resources/305499-1109933291285/767611-1303891645727/P4P_OECD_ENG.pdf</p>	<p>Practice Incentives Program. To improve integration, quality and comprehensiveness of GP care. Improve coverage in rural areas.</p>	17 years	<p>Funded through the Australian Government Department of Health and Aging (DoHA).</p> <p>Cost nearly A\$300 million per year in 2008-09. A\$61,600 on average per practice, or A\$19,700 per FTE GP. Most payments are made to practices but some of the quality incentives are paid directly to individual GPs.</p> <p>Average payment to practice in 09/10 was A\$57,800, typically between 4 and 7 per cent of total practice income.</p> <p>Not clear whether additional funding or existing budget.</p>	<p>No comprehensive evaluations. Some evidence shows improved management of chronic disease. Positive effect on access in rural areas. Successful in diversifying services.</p>	<p>Successfully reached remote areas. But concern that exacerbates inequity across urban practices serving disadvantaged populations.</p>	Mainstream.	<p>Complex and costly. Evidence that impacts justify costs is limited.</p>
UK	Quality and	11 years	The average	Evaluation suggests	GPs are	The QOF is a	There are

<p>Sources:</p> <p>Boeckxstaens, P., De Smedt, D., De Maeseneer, J., Annemans, L., & Willems, S. (2011). The equity dimension in evaluations of the quality and outcomes framework: A systematic review. <i>BMC health services research</i>, 11(1), 209. http://www.biomedcentral.com/1472-6963/11/209/</p> <p>Campbell, S., Reeves, D., Kontopantelis, E., Middleton, E., Sibbald, B., & Roland, M. (2007). Quality of primary care in England with the introduction of pay for performance. <i>New England Journal of Medicine</i>, 357(2), 181-190. http://www.nejm.org/doi/full/10.1056/NEJMSr065990</p> <p>Campbell S M, McDonald R, & Lester H. (2008). The experience of pay for performance in English family practice: a qualitative study. <i>The Annals of Family Medicine</i>, 6(3), 228-234. http://www.annfammed.org/content/6/3/228.short</p> <p>Cashin C. (2014) United Kingdom: Quality and outcomes framework. In: Cashin C, Chi Y, Smith PC, Borowitz M, Thomson S. (eds.) <i>Paying for performance in health care. Implications for health system performance and accountability</i>. WHO.</p> <p>Doran, T., Fullwood, C., Reeves, D., Gravelle, H., & Roland, M. (2008). Exclusion of patients from pay-for-performance targets by English physicians. <i>New England Journal of Medicine</i>, 359(3), 274-284. http://www.nejm.org/doi/full/10.1056/NEJMSa0800310</p> <p>Doran, T., Kontopantelis, E., Reeves, D., Sutton, M., & Ryan, A. M. (2014). Setting performance targets in pay for performance programmes: what can we learn from QOF?. <i>BMJ</i>, 348</p> <p>Kontopantelis, E., Reeves, D., Valderas, J. M., Campbell, S., & Doran, T. (2013). Recorded quality of primary care for patients with diabetes in England before and after the introduction of a financial incentive scheme: a longitudinal observational study. <i>BMJ quality & safety</i>, 22(1), 53-64. http://qualitysafety.bmj.com/content/22/1/53.short</p> <p>Kontopantelis, E., Springate, D., Reeves, D., Ashcroft, D. M., Valderas, J. M., & Doran, T. (2014). Withdrawing performance indicators: retrospective analysis of general practice performance under UK Quality and Outcomes Framework. <i>Bmj</i>, 348, g330.</p>	<p>Outcome Framework (QOF). Designed to reward GPs for more activity and better quality care.</p>		<p>payment to a GP practice was £74,300 in 2004-05 (30% of average total earnings). £126,000 in 2005-6. 2007 – QOF makes up on average 20 per cent of annual GP practice income.</p> <p>Difficult to identify per capita spending. Per practice= US\$82,916/practice/year (2004/05). US\$140,611/practice /year 05/06.</p> <p>The performance bonuses currently account for about one-quarter of GP income. The proportion of income from these bonuses will fall when the new 2014–2015 contract is implemented, as the number of bonus-related services is reduced and funding rerouted into capitation.</p> <p>Payment goes to the practice. GP partners benefit most from the new income with individual incomes rising by 58 per cent in the first three years. Incomes of salaried GPs and nurses have not</p>	<p>moderate improvement in outcomes. There is no comprehensive time-series or control group evaluation. Improvements are confounded by overall increase in funding for primary care. Some improvements in processes and data availability and use.</p>	<p>generally positive about the QOF system. There are problems however, when patients concerns do not relate to activities that are tied to the incentive There are also concerns that GPs pay has increased disproportionately compared to workload which is sometimes passed on to nurses and other staff.</p>	<p>voluntary programme but almost all GP practices participate.</p>	<p>concerns over the high cost of the programme and the link to improved health outcomes is not adequately confirmed.</p>
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<p>Meacock, R., Kristensen, S. R., & Sutton, M. (2014). The Cost-Effectiveness Of Using Financial Incentives To Improve Provider Quality: A Framework And Application. <i>Health economics</i>, 23(1), 1-13.</p> <p>Mossialos E, Wenzl M, Osborn R, Anderson C. (eds.) (2015) 2014 International Health Profiles of Health Care Systems. The Commonwealth Fund.</p> <p>Rawlins, M., & Moore, V. (2009). Helping to provide high quality care in primary care. <i>The Ulster medical journal</i>, 78(2), 82.</p> <p>UK National Audit Office (2008) NHS pay modernisation: new contracts for general practice services in England. London: The Comptroller and Auditor.</p> <p>Walker, S., Mason, A. R., Claxton, K., Cookson, R., Fenwick, E., Fleetcroft, R., & Sculpher, M. (2010). Value for money and the Quality and Outcomes Framework in primary care in the UK NHS. <i>British Journal of General Practice</i>, 60(574), e213-e220.</p> <p>Comments from Stephen Campbell, University of Manchester.</p> <p>Comments from Martin Roland, Cambridge Centre for Health Services Research.</p>			<p>increased significantly.</p>				
<p>Estonia</p> <p>Sources: Aaviksoo A. (2005) Performance payment for family physicians, <i>Health Policy Monitor</i>, 6.</p> <p>Habicht T. (2014) Estonia: Primary health care quality bonus system (QBS). In: Cashin C, Chi Y, Smith PC, Borowitz M, Thomson S. (eds.) <i>Paying for performance in health care. Implications for health system performance and accountability</i>. WHO.</p> <p>State Audit Office (2011) Family physicians web-based survey. Tallinn: State Audit Office.</p> <p>Västra K. (2010) Assessing the impact of implementing primary care quality bonus system on follow up of patients with hypertension and type 2 diabetes based on Estonian Health Insurance Fund claims registry data in 2005-2008. Unpublished Masters Thesis.</p>	<p>Primary health care quality bonus system (QBS). Launched to highlight the importance of family physicians in disease prevention and chronic disease management. Targets were set and physicians receive points for each target achieved.</p>	<p>9 years</p>	<p>Funded through the Estonia Health Insurance Fund (EHIF).</p> <p>The maximum payments for achieving disease prevention and chronic disease management targets was €3068 per year in 2011 (4.5% of the total annual income of a physician). There are also payments made for additional activities maximum €767 per year. 90% of</p>	<p>Studies suggest a positive impact on chronic disease management.</p> <p>The most important impact is raising awareness and understanding of the role of family physicians in providing the full scope of quality services.</p> <p>The most important factor in successful implementation has been the electronic billing data collection system which covers all family physicians in Estonia.</p>	<p>The system is widely accepted by family physicians.</p> <p>However, only 35% consider the scheme to be motivating them. This may be due to the relatively low bonus payment.</p>	<p>The QBS is voluntary. In 2006, 50% participated. This increased steadily and included 90% in 2010.</p>	<p>The cost is modest at only 1% of the annual PHC budget.</p>

			<p>physicians participated in 2010, covering 90 per cent of insured people in Estonia. The physician receives the payment and decides how it is shared among other staff. The total cost in 2011 was €800,000; 1% of the EHIF's total PHC budget.</p> <p>Difficult to assess per capita funding. Would need to identify how many insured people. Per physician= US\$4280/physician/year (2011)</p>				
<p>France</p> <p>Sources: Bousquet F, Bisiaux R, & Chi Y. (2014) France: Payment for public health objectives. In: Cashin C, Chi Y, Smith PC, Borowitz M, Thomson S. (eds.) Paying for performance in health care. Implications for health system performance and accountability. WHO.</p> <p>Caisse Nationale d'Assurance Maladie (2013) Rémunération des objectifs de sante publique: une mobilisation des médecins et de l'assurance maladie en faveur de la qualité des soins.</p>	<p>Payment for public health objectives. Designed to reduce fragmentation of care, improve quality and incentivise public health.</p> <p>Points are achieved which are used to calculate payment.</p>	6 years	<p>Use of Public Health Insurance Funds. For GPs with more than 200 patients, yearly bonuses in 2013 amounted to €5365, about 5-7% of their annual income. The National Health Insurance Fund (NHIF) spent approximately €250 million for the scheme in 2012.</p> <p>Approx. US\$24/capita/year (2012)</p> <p>It seems funds go to the doctors rather than the organisations but</p>	<p>The programme has made feedback information available to providers facilitating an improvement process. The extent to which physicians use the information is unclear.</p> <p>One evaluation finds greater improvement in participants of the scheme but differences were modest.</p> <p>Another evaluation found improvements in all indicators in 2011 and 2012 compared to previous years.</p>	<p>The scheme was initially strongly opposed by physicians. There was concern that doctors working in poorer areas would be penalised. The pharmaceutical industry were also opposed. Doctors have since revised their position.</p>	Incorporated into mainstream.	<p>Initially the NHIF intended to offset the costs of the programme with savings from replacing branded medicine with generic prescribing. It has been difficult to evaluate this part of the programme.</p> <p>One factor affecting future effectiveness and impact is the reliance on</p>

			not clear.				solo practice constricting coordination of care. Another limiting factor is that outcome oriented data required for more outcome oriented indicators is not available in claims.
<p>Germany</p> <p>Sources: Bozorgmehr, K., San Sebastian, M., Brenner, H., Razum, O., Maier, W., Saum, K. U., & J. (2015). Analysing horizontal equity in enrolment in Disease Management Programmes for coronary heart disease in Germany 2008-2010. International journal for equity in health, 14(1), 1-12.</p> <p>Chi Y (2014) Germany: Disease management programmes. In: Cashin C, Chi Y, Smith PC, Borowitz M, Thomson S. (eds.) Paying for performance in health care. Implications for health system performance and accountability. WHO.</p> <p>Drabik, A., Büscher, G., Sawicki, P. T., Thomas, K., Graf, C., Müller, D., & Stock, S. (2012). Life prolonging of disease management programs in patients with type 2 diabetes is cost-effective. Diabetes research and clinical practice, 95(2), 194-200.</p> <p>Linder, R., Ahrens, S., Köppel, D., Heilmann, T., & Verheyen, F. (2011). The benefit and efficiency of the disease management program for type 2 diabetes. Deutsches Ärzteblatt International, 108(10), 155.</p> <p>Stock S et al. (2011) Disease-management programs can improve quality of care for the chronically ill, even in a weak primary care system: a case study from Germany. The Commonwealth Fund, Issues in International Health Policy, November.</p> <p>Comments from Evert Jan van Lente, AOK-Bundesverband</p>	<p>Disease management programmes (DMPs).</p> <p>Devised to incentivise insurers (sickness funds) to take on patients with chronic conditions. Aim to improve quality of care and reduce hospitalisation.</p> <p>Sickness funds receive incentive payments for establishing a DMP. They design their own DMP.</p>	13 years	<p>Funded by the German Statutory Health Insurance System. Payment is made to the sickness fund which, in turn, makes incentive payments to doctors.</p> <p>A flat-rate administrative fee of €152 is paid to the sickness fund per patient, reduced yearly from €180 in 2010.</p> <p>Approx. US\$170/capita/year (2012)</p> <p>In 2012 the German SHI system spent a total of €920 million on all DMP programmes. 52% goes on fees for DMP related services, 26% for patient education,</p>	<p>DMP results are analysed but there is no control group so difficult to attribute changes to the programme. Research studies point to positive results related to process of care and patient satisfaction. Research also shows some modest improvement in health outcomes for DMP patients.</p>	<p>DMPs were initially opposed by medical associations and physicians. Opposition was overcome after a change in government and some modifications to data requirements. There have been no obstacles in the running of the programme but provider satisfaction has not been studied.</p> <p>Research analysing horizontal inequality found the</p>	<p>For chronic disease management only.</p> <p>A pilot was planned for different diseases in different states but was abandoned as it was known the time it takes and the endless discussions on the interpretation of evaluations. The government and parliament decided a structured approach with</p>	<p>Some studies have shown lower costs for patients enrolled in DMPs. The largest insurer, AOK, reported savings of between 8-15% of total annual costs of care for enrollees with chronic conditions (Stock et al, 2011). Drabik et al (2012) report even higher savings.</p> <p>Linder et al (2011) report higher costs for implementations of DMPs than in a control group. Type 2</p>

			<p>and 22% for administration and data management.</p> <p>Not clear if additional funding or existing budget. I assume additional funding. One aim was to reduce unplanned hospitalisation and costs related to treatment and rehabilitation of complicated conditions.</p> <p>Physicians are incentivised to participate in DMPs. For example (Rhineland and Hamburg regions) they receive a lump-sum of €15 per quarter in addition to regular reimbursements. For referral of a patient to a diabetes specialist they receive €5.11 per case. Payments vary from region to region.</p>		<p>DMP enrolment to be fairly equitable across education levels but favouring women in less deprived areas relative to women in more deprived areas. Women in socially deprived areas are more disadvantaged than male patients with the same need. The degree to which “potential access” to the DMP-CHD (guaranteed by the SHI system) is converted into “realised access” appears to be affected by regional deprivation</p>	<p>evidence based guidelines should be introduced, without piloting.</p>	<p>diabetes DMP participants received more prescriptions, had more contacts with physicians, and submitted higher claims for health insurance benefits than control group. Incidence of relative comorbidities did not differ between the two groups.</p>
<p>Republic of Korea</p> <p>Sources:</p> <p>Bisiaux C & Chi Y. (2014) Republic of Korea: Value incentive programme. In: Cashin C, Chi Y, Smith PC, Borowitz M, Thomson S. (eds.) Paying for performance in health care. Implications for</p>	<p>Value incentive programme (VIP). Aim to improve care for acute myocardial infarction (AMI) and Caesarean Sections.</p>	<p>8 years</p>	<p>Funded through the Ministry of Health and Welfare.</p> <p>Not clear whether additional funding or existing budget.</p> <p>In 2009 incentives</p>	<p>A Health Insurance Review Agency (HIRA) evaluation shows improvement in all process indicators associated with myocardial infarction. The performance gap between hospitals also narrowed. The impact on the C-section rate was found to</p>	<p>The VIP was designed by the HIRA without involving other stakeholders. The Korean Medical</p>	<p>Limited to a selection of teaching hospitals and then expanded to include hospitals that perform a</p>	<p>There were no increases in cost for data collection as HIRA routinely monitored providers before VIP. The costs of</p>

<p>health system performance and accountability. WHO.</p> <p>HIRA (2011) Report of pay for performance (P4P) demonstration project 2011.</p> <p>Kim, S. M., Jang, W. M., Ahn, H. A., Park, H. J., & Ahn, H. S. (2012). Korean National Health Insurance value incentive program: achievements and future directions. <i>Journal of Preventive Medicine and Public Health</i>, 45(3), 148.</p>	<p>Awards a bonus to top tier of performing hospitals and penalises the bottom tier.</p>		<p>amounted to approx., US\$360,000 paid to 21 hospitals. And US\$380,000 to 26 hospitals in 2010.</p> <p>Per capita info not available. Per participating hospital= US\$8400/hospital/year (2009/10)</p> <p>Bonuses are paid to the hospital. No info on use of money though anecdotal evidence suggests additional payments are redistributed to resident doctors.</p>	<p>be modest.</p>	<p>Association and the Korean Hospital Association were opposed to any P4P programme. It was viewed as government interference or control over health care organisations and an infringement on autonomy.</p> <p>After initial resistance from the medical profession support for the VIP has grown among hospitals.</p>	<p>certain level of the targeted services.</p>	<p>bonus payments for C-section reductions may have been offset by cost reductions associated with increased vaginal delivery.</p>
<p>United States, hospital quality incentive demonstration</p> <p>Source: Cashin C (2014) United States: Hospital quality incentive demonstration. In: Cashin C, Chi Y, Smith PC, Borowitz M, Thomson S. (eds.) <i>Paying for performance in health care. Implications for health system performance and accountability.</i> WHO.</p> <p>Kennedy S et al. (2008) <i>Evaluation of the Premier hospital quality incentive demonstration: impacts on quality, Medicare reimbursements, and Medicare lengths of stay.</i> Cambridge: Abt Associates.</p>	<p>A report in 1999 made public widespread preventable errors in hospitals leading to high numbers of deaths. Report recommended payment incentives to providers to support quality improvements.</p>	<p>6 years. 2002-8.</p>	<p>Centers for Medicare and Medicaid services (CMS) (National social insurance) budgeted US\$12 million per year. Overall awarded US\$48 million over 5 years (Kennedy et al, 2008).</p>	<p>Quality scores increased in all five clinical areas and variations in hospital performance was reduced. Evidence viewed as informal. Lack of formal monitoring.</p>	<p>Reports of success accepted by mainstream and professional healthcare media criticised by academics for being biased.</p>	<p>Standalone pilot.</p>	<p>The programme ended in 2008. Is believed to have been used as the blueprint for a large-scale CMS proposal for P4P under its 'value-based purchasing' initiative.</p>

Appendix 2: Institutional arrangements for high-income country case studies

	How have purchasing arrangements evolved?			How have funds been pooled or not to pay for the RBF scheme?		How have provider payments been adapted?			
Country	What kind of RBF approach was used?	How were targets set and revised?	Which body was purchasing services and how did this evolve with the scheme?	Who was covered and for what?	Rationale for what was covered.	How are providers incentivised and how did this evolve?	How much autonomy do providers have to use the RBF and other resources?	How were IT systems used, adapted, added to? What is the role of the HMIS?	Who provided verification and other functions (including supervision)?
Australia	<p>Incentives to general practices and GPs.</p> <p>Primary care.</p> <p>National scheme.</p>	<p>Developed in consultation with the General Practice Financing Group (GPFG), a negotiating body comprising the Royal Australian College of GPs, Australian Medical Association, Rural Doctors association of Australia, Australian Divisions of General Practice, and the Australian Government</p>	<p>Medicare Australia</p>	<p>All patients using GP practices. Patients in remote areas benefit particularly from increased coverage through the rural support aspect of the scheme</p>		<p>13 incentives areas are organised into three main streams: Quality, Capacity, and Rural support. Two incentive schemes were recently discontinued.</p> <p>The way payments are calculated and made is complex. The recipient, basis for payment amount, retrospective or prospective, and frequency vary across incentives. Most incentive payments are flat-rate rewards per Standardised Whole Patient Equivalent. Quality stream incentives give one-off payments to</p>	<p>Participation in PIP is voluntary, around two-thirds of practices participate. Providers decide which incentive areas to participate in.</p> <p>No restrictions on how practices allocate incentive payments. Guidelines suggest purchase of new equipment, upgrade of facilities or increase</p>	<p>Info on number of services delivered collected through Medicare claims system and routine reporting.</p> <p>Information on other incentive streams submitted to PIP database.</p> <p>A new online administrative system was introduced in May 2010 to allow practices to apply for new PIP initiatives and review</p>	<p>Data are collected by Medicare Australia. The Continuous Data Quality Improvement Programme controls the quality of payments on a sampled basis, recording all sources. Medicare Australia conducts random and targeted audits to ensure that practices meet the eligibility requirements.</p> <p>The primary accountability mechanism for PIP is regular reviews by the Australian National Audit</p>

						<p>practices that participate. Practices are then paid a per-patient bonus for coverage rates for priority services. Payments are made on a quarterly basis for diabetes, asthma, and cervical screening.</p> <p>The PIP began in response to recommendations made by the GP Strategy Review Group (DoHA officials and GPs).</p>	doctors pay.	payment levels	Office (ANAO).
UK	<p>Extra payments to GPs for improved services.</p> <p>Primary care. National.</p>	<p>Indicators were chosen after extensive negotiation with the British Medical Association which helped gain approval from GPs. The contract is renegotiated annually, and indicators and targets are updated as agreed between negotiating parties.</p> <p>Initially the framework was developed by the negotiating teams (BMA and government) with advice from a group of academic advisors. More recently NICE took over responsibility for advising on introducing / retiring indicators though the actual decisions are still part of the contracting process between GPs and the government.</p>	<p>GP practices are private entities contracted by Primary Care Organisations (PCOs) under the NHS. PCOs manage the contracts under the supervision of the Strategic Health Authority (SHA), the local representation of the NHS.</p>	<p>The population using GPs. Covered for clinical care, and additional services.</p>		<p>The QOF includes 142 indicators in four domains with targets that are uniform across GP practices. Some indicators score points which are used for reward. Other indicators are paid for once an action is confirmed.</p> <p>Payments made on an annual basis. Practices receive a flat rate for each point they achieve. Payments are adjusted for practice size and disease prevalence relative to national average.</p>	<p>It is a voluntary programme but nearly all practices participate. The QOF on average makes up 20% of annual GP practice income.</p> <p>The NHS does not provide any guidance on how bonus payments should be used or distributed. Some is being reinvested to improve</p>	<p>Data to calculate achievement scores are extracted from electronic medical records into the Quality Management Analysis System (QMAS). The system was developed specifically for supporting QOF. Organisational information must be submitted manually</p>	<p>The Strategic Health Authority (SHA) supervises PCOs. PCOs are required to carry out pre-payment verification checks on all practices and formally audit a 5% sample of practices.</p> <p>The threat of verification is the incentive rather than the verification itself given the scale and resources required.</p>

		<p>Thresholds were originally set too low and then arbitrarily raised to levels still deemed too low. There was a delay in improving the thresholds. One of the reasons was that changes needed to be agreed in contractual negotiations between the Department of Health and the British Medical Association (BMA). The BMA resisted threshold increases to protect practice incomes.</p>					patient care.		
Estonia	<p>Physicians receive bonuses for reaching certain targets.</p> <p>Primary care.</p> <p>National scheme.</p>	<p>How targets set not described.</p>	<p>Estonia Health Insurance Fund (EHIF).</p>	<p>People using family physicians for disease prevention and chronic disease management.</p>		<p>The bonus payment was introduced as a 'new service' in the government approved price-list.</p> <p>Payments are made annually. Physicians are eligible for different amounts depending on the per cent of possible points they could have achieved.</p>	<p>It is a voluntary system.</p> <p>Bonus paid to the family physician, who then decides whether and how the payment is shared among other staff.</p>	<p>All necessary data to implement the scheme come from EHIF's routine claims data. A separate system has been set up to code provider activity in the EHIF routine data system for payments.</p>	<p>Not stated.</p>
France	<p>Physicians receive payments for incentivised activities.</p> <p>Primary care.</p> <p>National scheme.</p>	<p>Physicians rewarded for above average indicator scores and for reaching objectives defined by laws and agreements. Most performance measures come from the 2004 Public Health Law. As the scheme evolved medical professions were included in the definition of quality indicators. These</p>	<p>National Health Insurance Fund (NHIF)</p>	<p>The population affected by the chosen indicators using physicians. Four domains are rewarded based on 29 indicators in total: prevention, chronic disease management, cost-effective</p>	<p>Most of the performance measures had been selected based on objectives and criteria defined by the 2004 Public Health Law as well as different HAS</p>	<p>Providers receive bonus payments for performing above average for specific indicators and meeting objectives defined by the Public Health Law, the National Health Authority guidelines, or international</p>	<p>Private physicians are automatically enrolled on the programme but remain free to opt out. Less than 3% do not participate.</p>	<p>Performance indicators are calculated using mainly insurance claims data. Claims are centralised in a data warehouse with the identification</p>	<p>The National Authority for Health (HAS) provide support. HAS perform a mandatory evaluation of primary care physicians every five years. Not clear on verification</p>

		are consistent with those in use by QOF and the US National Quality Forum.		prescribing and the practice organisation.	guidelines.	comparisons. Indicators are associated with a number of points. Baseline performance is measured and then payments made corresponding to average score of physicians for a specific indicator and target objectives defined by Law and guidelines. Frequency of payments not stated in source.	Payments made directly towards GP salary.	of all professionals and hospitals and details of all items of care for each individual patient.	specifically for the scheme.
Germany	Incentive payments for establishing disease management programmes (DMPs) for chronic illness. Primary care. National scheme.	The Joint Federal Committee proposed the first four conditions for DMPs. The committee includes representatives from sickness funds, the Federal Association of SHI-Accredited Physicians, and the German Hospital Organisation. Disease specific committees are set up for each disease area composed of experts from universities and boards of medical associations. The committee drafts programme requirements based on evidence-based guidelines.	Insurers mostly contract directly with the regional Association of SHI Physicians and individual hospitals, which in turn enrol voluntary physicians in a network of supporting doctors for each disease area.	The population affected by chronic conditions and diseases: diabetes, asthma, chronic pulmonary disease, coronary heart disease and breast cancer. Some sickness funds offer patients incentives to enrol in DMPs. Some patients are enrolled in multiple DMPs.	Chronic conditions were not adequately accounted for in payment mechanisms. Patients with these conditions were higher risk. Providing high quality care would be higher cost and insurers were disinclined to enrol them. The funding of the additional costs of the DMPs came	Payments go to organisation, physician, and patient level. Sickness funds design their own DMPs but must include certain elements. Sickness funds receive a higher payment for patients enrolled in a DMP. They receive a flat-rate administrative fee for each patient enrolled in a DMP. Physicians receive financial incentives to encourage their participation in the form of additional payment for DMP-	Physicians participate in DMPs on a voluntary basis. Physicians are keen to participate so as not to lose out. They wanted to have physicians, who positively decided to participate in a quality program, making outcomes transparent. So far such ambitions had failed in	Not described. Could assume individual sickness fund IT systems already in place were used and adapted?	The Ministry of Health serve as the basis of contracts between sickness funds (insurers) and providers. The Federal Insurance Agency is mandated to validate all DMPs defined by sickness funds. The flexibility in implementation of the DMPs is closely monitored by the Federal Insurance Agency who are mandated to validate DMPs.

					<p>from the “Health Fund” (respectively the former model): the fund comprising of all contributions of all statutory insurers (covering 89% of the population)</p>	<p>related services. They get a lump-sum for care of each patient with chronic illness and for referral to a specialist.</p> <p>Some sickness funds offer incentives to patients to enrol in a DMP by waiving practice fees or co-payments.</p>	<p>the obligatory system. Voluntary participation was seen as a crucial part of the process.</p> <p>Sickness funds are free to design their own DMPs but law states certain elements. Sickness funds individually define organisational arrangements and implementation.</p>		
Republic of Korea	<p>Awarding a bonus to the top tier of performing hospitals and penalises the bottom tier.</p> <p>Secondary care. Included all teaching hospitals nationally then extended to all hospitals treating AMI and C-sections.</p>	<p>The VIP was designed by the Health Insurance Review Agency (HIRA). The Health Insurance Review Agency (HIRA) decided to focus on acute myocardial infarction (AMI) and Caesarean-sections (C-section).</p>	<p>The National Health Insurance Cooperation.</p>	<p>Patients of teaching hospitals were covered through National Health Insurance for improved AMI and maternity services.</p>	<p>AMI and C-section rate were targeted based on performance data for Korea being below that of other OECD countries.</p>	<p>High-performing hospitals receive a payment of 2% of the payment by the NHIC for the disease area, the second highest performing receives 1%. Penalties are applied when hospitals fail to reach either of the two thresholds for the composite quality score.</p> <p>Payments made annually.</p>	<p>44 teaching hospitals were mandated to participate. In 2011, other hospitals which treat AMI and have at least 200 C-sections were also mandated to participate.</p> <p>No information on the use of bonuses in hospitals. Anecdotal</p>	<p>Performance data for the programme comes from HIRA’s highly integrated claims database</p>	<p>HIRA</p>

							reports suggested resident doctors receive the extra payment.		
United States, hospital quality incentive demonstration (HQID)	<p>Between 222 and 273 acute care hospitals across 38 states participated, covering about 400,000 patients annually. Mostly large urban hospitals.</p> <p>Secondary care.</p> <p>Incentive scheme was competitive.</p>	<p>HQID linked incentive payments to 34 nationally defined, standardised, risk-adjusted measures covering both processes of care to reflect compliance with clinical guidelines and patient outcomes. Performance measured for five acute clinical conditions: AMI, coronary artery bypass graft, heart failure, pneumonia, and hip and knee replacement. Quality measures were based on indicators widely accepted eg. indicators from the starter set of the National Voluntary Hospital Reporting Initiative, National NQF indicators, Joint Commission Core Measures indicators, indicators of the Agency for Healthcare Research and Quality</p>	Medicare	<p>Patients in participating hospitals covered for AMI, coronary artery bypass graft, heart failure, pneumonia, and hip and knee replacement.</p>	Not discussed.	<p>Hospitals in the two highest deciles of performance for a condition receiving a bonus, and those with poorest performance risking a penalty.</p>	<p>Not clear why which hospitals participated. Not discussed how extra payments were spent.</p>	<p>Premier Inc. (joint designers of the programme) already had the largest clinical comparative database in the nation with the ability to track hospital performance in several clinical areas.</p>	<p>Centers for Medicare and Medicaid services (CMS) calculated scores and ranked hospitals.</p>

Appendix 3: Key information for middle-income country case studies

Country and sources	Purpose	How long been implemented	Funding	Evaluations/ effectiveness	Political economy	Mainstream or stand-alone	Sustainability
<p>Turkey</p> <p>Sources: Menon R, Nguyen SN, Arur A, Yener AL & Postolovska I. (2014) Turkey: Family medicine performance based contracting scheme. In: Cashin C, Chi Y, Smith PC, Borowitz M, Thomson S. (eds.) Paying for performance in health care. Implications for health system performance and accountability. WHO.</p> <p>World Bank (2013) Turkey, Performance-Based Contracting Scheme in Family Medicine – Design and Achievement. IBRD. http://www.nice.org.uk/proxy/?sourceUrl=http%3A%2F%2Fwww.nice.org.uk%2Fmedia%2FEF8%2F37%2FFamilyMedicineReportTurkey.pdf</p> <p>Comments from Safir Sumer, Consultant.</p>	<p>The family medicine performance based contracting (FM PBC) scheme. Designed to reduce regional disparities in access to health services. Also problems of staff absenteeism. Poor quality primary care was leading to overload in secondary and tertiary facilities.</p> <p>Design: a portion of contracted provider income is related to achieving targets.</p>	13 years	<p>FM PBC is funded through the Ministry of Health.</p> <p>No extra funding required. Existing budget used and withheld if requirements not met.</p>	<p>There have been significant improvements in key health outcomes since the programme was introduced. Infant mortality and maternal mortality fell. The number of primary care consultations increased. Patients are more satisfied with their care since the family medicine reforms. However, there were other reforms other than performance based contracting that have contributed.</p>	<p>Little to note.</p>	<p>Mainstream.</p> <p>FM PBC model was piloted and rolled out in stages in Turkey. This necessitated a legislative background to be in place. <i>Family Medicine Pilot Implementation Law</i>⁶ of 2004 allowed first pilot implementation in Duzce, a province in the Northern Turkey, in 2005. Duzce pilot was used to assess the operational results, patient satisfaction and utilization of primary care services and the findings shaped subsequent stage of pilots. Countrywide rolling out of family medicine system in Turkey is as follows: 2005: 1 province, 2006: 6</p>	<p>As the FM PBC is a negative incentive programme there are no costs related to payment of incentives. Payments are withheld if standards aren't met. Associated administrative cost data not available.</p>

⁶ <http://www.sb.gov.tr/EN/belge/1-7284/5258-sayili-aile-hekimligi-pilot-uygulamasi-hakkinda-ka-.html>

						provinces, 2007: 7 provinces, 2008: 17 provinces in 2008,2009: 4 provinces and finally2010: 46 provinces.	
<p>Nicaragua</p> <p>Source: Regalía, F., & Castro, L. (2007). Performance-based incentives for health: demand-and supply-side incentives in the Nicaraguan Red de Protección Social. Center for Global Development Working Paper, (119).</p>	<p>Red de Protección Social (RPS). Designed so that services could expand in coverage and outreach services. Government contracted providers to be paid based on performance</p>	5 years (2000-2005)	<p>Financed by the IADB. US\$11 million in the first two years. US\$22 million for the remaining three years.</p> <p>US\$11 million represented approximately 0.2% of GDP, and 2% of government health spending.</p> <p>Health care providers are paid a per-household fee to carry out an initial analysis of the coverage of the preventive health care services (about US\$ 9.3 per household on average)</p> <p>The average yearly per household cost for services provided, across all municipalities, was US\$134 in 2005. Cost were higher in remote areas.</p>	<p>First phase evaluation after two years was positive and the project was extended for three years. The second phase evaluation also showed some positive results. It is difficult to distinguish between effects of demand- or supply-side incentives</p>	<p>The MOH were reluctant to contract out providers and had concerns about the programme . There was some improvement in attitude by the end of the programme</p>	<p>The model adopted by the RPS for preventive health care service delivery and payment has not yet gained sufficient political and institutional support with the Government of Nicaragua to be fully considered as part of a sector wide strategy to improve health outcomes.</p>	<p>Funding ended after the 5 years.</p>
<p>China, Shanghai</p> <p>Sources: Yip, W., Powell-Jackson, T., Chen, W., Hu,</p>	<p>Purpose: to reduce reliance on prescription of antibiotics and vaccinations for income. And to encourage prevention and care of chronic conditions.</p>	10 years	<p>Payment from government and the Social Health Insurance Bureau.</p>	<p>Evaluation of the Shanghai pilot showed a reduction in per-visit outpatient</p>	<p>Not identified.</p>	<p>Applied to all districts in Shanghai after pilot.</p>	<p>Reduction in cost per visit encouraging.</p>

<p>M., Fe, E., Hu, M., & Hsiao, W. C. (2014). Capitation combined with pay-for-performance improves antibiotic prescribing practices in rural China. <i>Health Affairs</i>, 33(3), 502-510.</p> <p>Yip, W. C. M., Hsiao, W., Meng, Q., Chen, W., & Sun, X. (2010). Realignment of incentives for health-care providers in China. <i>The Lancet</i>, 375(9720), 1120-1130.</p>	<p>Design: pay for performance for primary care facilities.</p>		<p>Source suggests funded from existing budget.</p> <p>Payments made to each community health centre.</p> <p>Cost information not readily available.</p> <p>Preliminary results from pilot suggest a reduction in per-visit outpatient expenditure.</p>	<p>expenditure (Yip, 2010). The performance in management of patients with chronic disease varies.</p>			
<p>China, rural experiment</p> <p>Sources: Yip, W., Powell-Jackson, T., Chen, W., Hu, M., Fe, E., Hu, M., & Hsiao, W. C. (2014). Capitation combined with pay-for-performance improves antibiotic prescribing practices in rural China. <i>Health Affairs</i>, 33(3), 502-510.</p> <p>Yip, W. C. M., Hsiao, W., Meng, Q., Chen, W., & Sun, X. (2010). Realignment of incentives for health-care providers in China. <i>The Lancet</i>, 375(9720), 1120-1130.</p>	<p>Village doctors have to generate most of their income from drug prescriptions and dispensing activities. So motivated to overprescribe antibiotics and intravenous injections. Health promotion and prevention result in low profits and are neglected.</p> <p>RMHC was a social experiment to find a model of rural health insurance to improve villagers' access, financial protection and improved health status. Doctor's salary separated from drug-dispensing and bonuses paid based on performance measures.</p>	<p>2002-2006 (4 years)</p>	<p>Not much information on funding in source.</p> <p>Cost per visit to the village doctor in intervention sites dropped from 16 Renminbi at baseline to 10 Renminbi after the intervention. Cost per visit at control sites were 18 Renminbi.</p>	<p>Cost per visit reduced. Not identified</p>	<p>Not identified</p>	<p>Case control experiment in three rural towns.</p>	<p>40% cost per visit associated with the intervention.</p>
<p>Brazil</p> <p>Sources: Barata, L. R. B., & Mendes, J. D. V. (2007). <i>Organizações Sociais de Saúde: a experiência exitosa de gestão pública de saúde do Estado de São Paulo</i>.</p> <p>Chi Y & Hewlett E (2014) <i>Brazil: Sao Paulo: Social Organizations in Health</i>. In: Cashin C, Chi Y, Smith PC, Borowitz M, Thomson S. (eds.) <i>Paying for performance in health</i></p>	<p>Designed to improve quality, and monitoring systems in secondary care in São Paulo. The government negotiates a performance contract with the Social Organisation in Health (OSS).</p>	<p>17 years</p>	<p>Case study: Pirajussara hospital in started OSS contract in 1999 and covered 500,000 patients mainly through outpatients' specialist visits. It has since grown to be one of the largest hospitals in the area providing a range of services in 46 specialties. The latest</p>	<p>External reviews show OSS hospitals to be more efficient and more productive than counterparts (La Forgia & Couttolenc, 2008; World Bank, 2006). Greater autonomy is identified as a key to success.</p>	<p>The initiative provides high quality inpatient services in the most vulnerable communities.</p> <p>The</p>	<p>OSS was created to operate in newly built hospitals. Since January 2011, all public hospitals have the opportunity to switch to OSS management. Only a few have done this.</p>	<p>OSS hospitals receive on average 8% more revenues than directly administered hospitals but produce a higher volume of services. One estimate finds OSS hospitals have 24% lower costs</p>

<p>care. Implications for health system performance and accountability. WHO.</p> <p>Ferreira, Walter Cintra, Jr. 2004. "Gerenciamento de Hospitais Estaduais Paulistas: Estudo comparativo entre a administração direta e as organizações sociais de saúde." Masters thesis, Fundação Getúlio Vargas, Escola de Administração de Empresas de São Paulo.</p> <p>La Forgia, G. M., & Couttolenc, B. (2008). Hospital performance in Brazil: the search for excellence. World Bank Publications.</p> <p>La Forgia GM and Harding A. (2009) Public-Private Partnerships And Public Hospital Performance In São Paulo, Brazil. Health Affairs, 28(4), 1114-1126.</p> <p>World Bank (2006) BRAZIL: Enhancing Performance in Brazil's Health Sector: Lessons from Innovations in the State of São Paulo and the City of Curitiba</p> <p>Comments from Olímpio Bittar, State Government of Sao Paulo.</p>			<p>contract, signed 2011, for payments made in 2012 stated a maximum of R\$92,700,000 composed of the production target payments and retention fund.</p> <p>Approx. max US\$32/patient/capita</p> <p>. Payments for production targets are made in 12 monthly instalments.</p> <p>Seems paid out of health hospital budget rather than additional funding. Though funding is additional in that they are new hospitals being funded.</p> <p>Other cost info not readily available.</p>	<p>Systematic measurement and monitoring is likely to have impacted productivity, patient satisfaction and health outcomes (Chi & Hewlett, 2014).</p> <p>La Forgia and Harding (2009) - the changes in human-resource practices and management are the most critical factor in improved performance.</p>	<p>problems in Brazil's hospital system were grounded in rigid politicised governance arrangements. The Brazilian PPP model is successful as it addresses this problem (La Forgia and Harding, 2009). The requirement of contract arrangements involving public officials for performance monitoring and verification may be challenging in low-income countries (ibid).</p>	<p>Mainstreaming the hospital administration model would involve a complex process of converting all hospital employee contracts.</p>	<p>per bed than publicly managed hospitals (Barata & Mendes, 2007). More recent data found the figure to be 9.8% indicating that publicly managed hospitals have reduced the productivity gap. These data suggest a sustainable model.</p> <p>La Forgia & Couttolenc (2008) note that the sustainability of the São Paulo OSS model could be enhanced through implementation of facility-based governance structures, as mandated in the state law.</p>
<p>Philippines</p> <p>Peabody JW, Shimkhada R, Quimbo S, Solon</p>	<p>The Quality Improvement Demonstration Study (QUIDS). A randomised policy experiment. A P4P bonus scheme to hospital staff for</p>	<p>5 years (2003-2008)</p>	<p>Funded by the Philippines National Institutes for Health.</p>	<p>Intervention hospitals were found to have quality</p>	<p>Not identified</p>	<p>Stand-alone</p>	<p>One reason the Philippines project was difficult to sustain was the</p>

<p>O, Javier X, & McCulloch C. (2014). The impact of performance incentives on child health outcomes: results from a cluster randomized controlled trial in the Philippines. <i>Health Policy and Planning, 29</i>(5), 615-621.</p> <p>Quimbo, S., Wagner, N., J., Solon, O., & Peabody, J. (2015). Do Health Reforms to Improve Quality Have Long-Term Effects? Results of a Follow-Up on a Randomized Policy Experiment in the Philippines. <i>Health economics</i>.</p> <p>More at http://www.qids.ph/</p> <p>Interview with Natascha Wagner, QIDS researcher.</p>	<p>improved quality of care.</p>		<p>Information on payment amounts not readily available.</p> <p>Each quarter, the QIDS quality metric is computed for each hospital assigned to this intervention. Hospitals that qualify are given a bonus that is payable to the Chief of Hospital, who in turn, distributes these payments to the hospital (medical and non-medical) staff. The bonus payment represented 5% of total physician salaries.</p>	<p>improvements after three years. A study of long-term effects finds that five years after the intervention stopped there were sustained long-term effects (Quimbo et al, 2015). Financial incentives compared with market incentives appear to produce larger and more lasting effects. Compared with other studies, the duration of the initial intervention lasting 3 years seems also critical to sustainability.</p>			<p>large number of stakeholders involved, which made it difficult to manage.</p> <p>The study showed that sustainable benefits were achieved even after the programme had ended.</p>
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Appendix 4: Institutional arrangements for middle-income country case studies

	How have purchasing arrangements evolved?			How have funds been pooled or not to pay for the RBF scheme?		How have provider payments been adapted?			
	What kind of RBF approach was used?	How were targets set and revised?	Which body was purchasing services and how did this evolve with the scheme?	Who was covered and for what?	How did this evolve?	How are providers incentivised and how did this evolve?	How much autonomy do providers have to use the RBF and other resources?	How were IT systems used, adapted, added to? What is the role of the HMIS?	Who provided verification and other functions (including supervision)?
Turkey	<p>A proportion of GP contracted provider income is related to achieving targets. The contract may be cancelled if a threshold level is not reached.</p> <p>Primary care. National scheme.</p> <p>Prior to design of the family medicine model and its contracting and performance payment mechanisms, international practices were examined and means to implement the model with country specific requirements were assessed. The preliminary design stage involved planning efforts where one key decision was to implement the model in stages.</p>	<p>Uniform absolute performance targets – rather than targets that are relative to baseline – reflect the Ministry of Health’s policy objective of closing geographic gaps in performance.</p> <p>Practitioners receive a lump sum payment to defray the costs of providing mobile services where required.</p> <p>8 indicators associated with immunisation rates of registered children, minimum number of antenatal care visits for registered pregnant women, and follow-up visits of registered babies and children to schedule.</p>	<p>Ministry of Health delegates purchasing and contract management to Provincial Health Directorates (PHDs) in each province.</p> <p>Delegating contract management and monitoring responsibilities to the provincial level created a more manageable span of control which allows PHDs to play a more active role in monitoring,</p>	<p>All population using family medicine units. The salary deduction scheme covers: immunisation, registering and visits for pregnant women, and follow-up visits for registered babies. The other part of the scheme requires certain standards are met for service delivery and standards for 35 indicators, failure to meet</p>	<p>Initially a pilot but now nationwide.</p>	<p>A portion of provider income is contingent on performance against a set of targets, and the threat of cancellation if a threshold of performance violation is reached.</p> <p>Performance penalties are applied to the salaries of family physicians and to family health unit staff, including managers, based on their team’s</p>	<p>The scheme covers all provider contracts.</p> <p>It is a negative incentive programme so there are no extra funds to spend.</p>	<p>The Core Health Resource Management System (CRMS), and 2) the Family Medicine Information System (FMIS), which tracks health-related indicators relevant to family medicine services and is a decision support system for providers.</p> <p>History and development</p>	<p>The Provincial Health Directorate PHD is responsible for data verification.</p> <p>Monitoring procedures were found to vary so the Ministry of Health introduced standardized monitoring forms and guidelines for use.</p> <p>Since verification is not done by a third party and does not involve people with an in-depth clinical background, there is potential conflict of interest</p>

			<p>supervising and managing providers and to respond quickly to any concerns. Furthermore, the purchaser-provider split also facilitates a more objective and independent assessment of providers' performance by the Provincial Health Directorate. This institutional arrangement has also liberated the Ministry of Health from the responsibility of day-to-day monitoring of providers or managing contracts and enables the Ministry to focus on overseeing the PBC scheme and the health sector as a whole.</p>	<p>this means the contract is terminated.</p>		<p>performance.</p> <p>Deductions are made from the total monthly base payment on a sliding scale eg. 2 per cent deduction for 97-98 per cent coverage, 4 per cent reduction for 95-96 per cent coverage etc.</p> <p>For contract termination staff are evaluated against indicators and given warning points. A certain amount of points leads to contract termination.</p>		<p>of these not stated.</p>	<p>as well as concerns over the real/clinical content of the audit.</p>
<p>Nicaragua</p>	<p>A pilot. Health service providers were paid based on performance. Primary care. Pilot in selected rural areas across Nicaragua.</p>	<p>Target set at coverage of 98% of enrolled patients with provision of preventive health care services (maternal and child, such as child growth and</p>	<p>The MOF, in coordination with the MOH, is responsible for the selection of health service providers</p>	<p>Intervention targeted poorest households. They received educational workshops and</p>		<p>Providers are paid for reaching coverage target. And for serving households outside of those</p>	<p>Private services bid for the contract which was based on RBF.</p>	<p>An RPS information management system was designed and built.</p>	<p>Every 6 months the RPS carries out random checks on a sample of providers, households and</p>

		development monitoring, vaccinations, workshops for sanitation, breastfeeding etc.). Why that percent was chosen is not explained. Providers can also be paid for serving households that are not enrolled but there are no targets for this.	through an international competitive bidding process.	children's preventive healthcare appointments. Not primary care – women's and children's preventive health services.		enrolled. They are paid each second or third month depending on municipality.	Providers are free to use the funds as they wish.		individual beneficiaries to verify information. Also a firm of independent external auditors perform random checks of the records.
China, Shanghai	Community and township health centres. District health bureaus given a yearly prospective budget, subject to assessment of the year-end performance. Primary care.	Targets for performances in cost control, volume of services, delivery of preventive and primary care, and patient satisfaction. District health bureaus set. Number of targets not specified. Target eg. Immunisation rates, hypertension checks, diabetes checks, health records up to date, health education provision, patient satisfaction surveys, control of expenditure per visit.	Districts health bureaus. Most allocate at least half the funds to cost control, and share the rest equally between service volume and delivery of primary care or public health.	All population covered for public health services. Insured population (90%) for other medical services. Scheme focus on chronic disease.		The district health bureau allocates funds to each community health centre on the basis of the population served by the centre, and its social insurance expenditures in the previous year. Every centre is given a share (50–70%) of its budget at the beginning of the year. Part or all of the withheld portion is disbursed on the basis of a year-end assessment by the district health bureau. The budget consists of a flat rate per person for a defined package of	Unknown	Unknown	Unknown

						public health services and a payment from the Social Health Insurance bureau for provision of services for insured residents. The social insurance budget portion is based on the actual health expenditure for the insured population in the previous year with adjustments for inflation and increases in service volume.			
China, rural experiment	<p>Bonus paid for meeting performance criteria.</p> <p>Primary care.</p> <p>Scale: experiment in three towns in the provinces of Guizhou and Shaanxi.</p>	<p>Not stated.</p> <p>Number of targets not stated. Examples include: Proportion of patients treated per protocol for 12 common health problems in rural areas—common cold, acute tracheitis, chronic tracheitis, diarrhoea, child dyspepsia, gastritis, peptic ulcer, vaginitis, urinary tract infection, diabetes mellitus, hypertension, psoriatic strain, and osteoarthritis. Maintaining medical records. Immunisation and vaccinations. Public</p>	<p>The fund office of RMHC was the sole purchaser and competitively selected and contracted the best village doctors.</p>	<p>Village population attending contracted doctors were covered for common health problems, and immunisations.</p>		<p>Bonus for performance incentives. Incentives listed in 'who was covered for what' section. Additional incentive for completion of standardised medical records.</p> <p>Frequency of payments not noted in source.</p>	<p>Doctors competed for selection for the pilot. Providers no longer received payments for prescribing antibiotics. Salary and bonuses were their sole income</p>	Unknown	Unknown

<p>Brazil</p>	<p>Performance-based contracting arrangement in São Paulo between the government health system and a private non-profit management group (OSS).</p> <p>Secondary level care.</p> <p>São Paulo only.</p>	<p>satisfaction.</p> <p>Quarterly targets are negotiated between the OSS and the state government. They are then assessed by an independent state evaluation commission.</p> <p>Volume targets eg. bed days, consultations, admissions, number of procedures.</p> <p>Performance targets, 4 domains: quality of care, patient satisfaction, information quality, efficiency – 9 indicators over the 4 domains. Quality domain weighted more heavily (70%),</p>	<p>The purchasers are not-for-profit organisations. The benefits of using delegated organisations here are: management autonomy, technological innovation, good management innovation and community credibility. The disadvantage has been some management problems, with public intervention needed.</p>	<p>OSSs are directed to provide care in low-income urban areas in São Paulo state</p>	<p>The scheme was put in place when new hospitals were established. From 1998 the number of general hospitals increased from 5 to 40 in 2015, with 7,400 beds.</p>	<p>Global budgets are attached to a management contract with predefined performance targets.</p> <p>90 per cent is allocated monthly based on achievement of volume targets. This budget is fully disbursed for 85-100 per cent of target, reduced by 10 per cent for 75-85 per cent target achievement, for less than 75 per cent volume target achievement budget may be reduced by 30 per cent.</p> <p>10 per cent is held in a 'retention fund', disbursed quarterly.</p>	<p>OSS was created to operate in newly built hospitals. Since January 2011, all public hospitals have the opportunity to switch to OSS management. Only a few have done this.</p> <p>Managers have flexibility in allocating and purchasing all inputs.</p>	<p>A standardised cost accounting and data collection system was set up.</p> <p>The contract mandates the establishment and functioning of medical record systems and facility-based commissions for reviewing mortality data, ethics issues, and infection control. It also specifies monthly and annual reporting requirements for activities, costs, payroll, spending, AIH (coding and billing), and patient surveys.</p>	<p>Two monitoring systems set up: a contract management unit within the State Secretariat for Health (SES). The IAC (accreditation institution), to review the indicators and calculate the level of penalties.</p>
<p>Philippines</p>	<p>Bonus payments awarded to district hospital staff for meeting quality standards.</p> <p>Secondary care.</p>	<p>Eligibility for bonuses is determined using a quality metric combining vignette (knowledge and clinical reasoning) scores for randomly selected hospital physicians, facility case load, and</p>	<p>The five-year project was funded by the U.S. National Institutes of Health. Specific purchasing</p>	<p>Patients using the chosen hospitals for the study.</p>		<p>Eligibility for bonuses is determined using a quality metric combining vignette (knowledge and</p>	<p>Hospitals were chosen for the experiment. Whether there were negotiations about consent is not clear.</p>	<p>Unknown.</p>	<p>The research team. It was difficult, time-consuming and costly for one team to travel to the different parts of the</p>

		average patient satisfaction. Bonuses paid every quarter.	arrangements are not explained in the study.			clinical reasoning) scores for randomly selected hospital physicians, facility case load, and average patient satisfaction. Bonuses were paid out quarterly.	Payments made to Chief of Hospital, who in turn, distributes these payments to the hospital (medical and non-medical) staff.		Philippines.
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