Evidence Review

Results-Based Financing of Maternal and Newborn Health Care in Low- and Lower-Middle-Income Countries

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Its elaboration was the first step in the development of an Evidence Brief on Results-Based Financing of Maternal and Newborn Health Care. As a second step, its findings were peer reviewed by an independent expert group. On the basis and as a result of the discussions that step one and two elicited, a shorter Evidence Brief was formulated in close cooperation with the sector project PROFILE.

All three papers, i.e. this Evidence Review, the Peer Review and the resulting Evidence Brief, as well as the presentations held at the seminar, can be accessed and commented upon at the following website: http://www.german-practice-collection.org/de/veranstaltungen/expert-forum-results-based-financing-eschborn

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Content

Abbreviations

ANC	Antenatal Care
BMZ	Bundesministerium für wirtschaftliche Zusammenarbeit und Entwicklung (German Federal Ministry for Economic Cooperation and Development)
CBHI	Community-Based Health Insurance
CCT	Conditional Cash Transfer
DSF	Demand-side Financing
FBO	Faith Based Organisation
FP	Family Planning
GDC	German Development Cooperation
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
HC	Health Centre
HEF	Health Equity Fund
HI	Health Insurance
HMIS	health management and information
HRITF	Health Results Innovation Trust Fund
KfW	Kreditanstalt für Wiederaufbau (German Development Bank)
LAC	Latin America and Caribbean
LLAPM	Long Acting and Permanent Methods
LLMICs	Low- and lower-middle income countries
M&E	Monitoring and Evaluation
MDG	Millennium Development Goals
MNCH	Maternal, Neonatal and Child Health
MNH	Maternal and Neonatal Health
MNM	Maternal and Neonatal Mortality
MOH	Ministry of Health
MOU	Memorandum of Understanding
MSI	Marie Stopes International
NGO	Non-Governmental Organization
OBA	Output-based Approach
OOP	Out of Pocket expenditure
P4P	Pay-for-Performance
PBC	Performance-based Contracting
PBF	Performance-based Financing
PMTCT	Prevention of Mother-to-Child Transmission
PPP	Public Private Partnerships
PS	Private Sector
PwC	Pricewaterhouse Coopers
QA	Quality Assurance
RBB	Results-Based Budgeting
RBF	Results-Based Financing
RTI	Reproductive Tract Infections
SF	Social Franchise
SFO	Social Franchise Organization
SHI	Social Health Insurance
SMH	Safe Motherhood
SRH	Sexual and Reproductive Health
STIs	Sexually Transmitted Infections
VMA	Voucher Management Agency

Executive summary

Background

Improving maternal, neonatal and child health are two of the most critical Millennium Development Goals (MDGs). Despite substantial progress towards MDG 4 and to a lesser extent MDG 5, the rates of decline in maternal, neonatal and child mortality remain insufficient to achieve these goals by 2015. This situation not only is intolerable from a global and national justice perspective, but it also indicates major shortcomings in the delivery of basic services to some of the most vulnerable groups.

During the last decade much effort at national and global level has been invested in searching for innovative strategies to enhance the performance of health systems. Strategies relying on so-called high-powered incentives are one of them. It consists of linking payment of health facilities (or any other co-producer of good health) to their achievements. This new strategy is tantamount to a significant step away from the standard traditional approach which assumed that (1) health program and health facility managers are benevolent and spontaneously providing the highest effort for the benefits of their fellow citizens, and that (2) household members are always taking the right decisions for their good health (or the one of their dependents). As we shall see throughout this review, it is also about paying particular attention to the many barriers related to access to health care.

The umbrella term coined by the World Bank to refer to these new strategies is 'Results-Based Financing' (RBF), defined as *"a cash payment or non-monetary transfer made to a national or sub-national government, manager, provider, payer or consumer of health services after predefined results have been attained and verified"*.[1] RBF includes a wide range of approaches, including performance-based contracting (PBC), performance-based financing (PBF), results-based budgeting (RBB), vouchers, health equity funds, and conditional cash transfers. They vary according to, among other things, the objectives, the targeted behaviours (or indicators), the entity receiving the reward and the type and magnitude of the financial reward. But they all share a common trait: payment, in some form, for results as opposed to exclusively financing the inputs (e.g. providing drugs, paying salaries). Output-based approach and pay-for-performance are often used interchangeably with RBF and PBF.

For development cooperation agencies, RBF is tantamount to a paradigm shift. Indeed, they have to move from a cooperation model relying on provision of resources (including technical assistance) according to a co-owned planning of activities to a model of 'purchasing' outcomes or, more often, outputs (or some of their attributes) with as a corollary, less control on the production processes, but more focus on the outputs. Furthermore, part of the risk is transferred to the service providers who see themselves incentivised to take steps to increase outputs and interact with potential consumers. This can lead to an important reduction of access barriers, and hence, increased outputs. The shift towards purchasing outputs questions practices and instruments. Obviously, no one can contest the objective to increase benefits for the vulnerable population. But one can have doubts on the effectiveness of these various RBF approaches, their efficiency or be concerned by some of their side-effects.

Process, objectives and readership of the evidence review

This Evidence Review was commissioned by the German Federal Ministry for Economic Cooperation and Development (BMZ) through the *Deutsche Gesellschaft für Internationale Zusammenarbeit* (GIZ) in cooperation with KfW. It was elaborated as a first step in the development of an Evidence Brief on Results-Based Financing of Maternal and Newborn Health Care in low and lower-middle income countries (LLMICs). The authors were requested to focus on applications of RBF to **maternal and neonatal health care** and on the effects of the reviewed schemes on the performance of **health care providers**.

[1] http://www.rbfhealth.org/rbfhealth/system/files/Musgrove_2011.pdf

As a second step, this Evidence Review was peer-reviewed by a group of independent experts whose comments are available in a separate paper[2]. On the basis of the Evidence Review and its Peer Review, a shorter Evidence Brief was formulated[3]. All three papers were written for an **operational** readership: experts working for development cooperation agencies, their national partners and all other actors contemplating starting RBF operations in a LLMIC. It is hoped that this review will help them: (1) to decide whether to start an RBF scheme or not, and (2) to better identify which RBF scheme (or combination of RBF schemes) better matches the specific conditions of their setting once they decided to start it.

Methods of the evidence review

In order to reach this double purpose, the document builds on two types of knowledge: the one available in the literature and the one hold by the authors of the review. An extensive review of the literature on RBF was implemented. The review was not as rigorous as, for instance, a Cochrane review, but that precisely allowed considering a greater number of papers, including 70 individual papers on a specific RBF experience and 14 reviews done by other researchers. In case of a scientifically more rigorous review, many of these papers would have been excluded. Instead, each of the 70 papers was scored regarding the rigorousness of the evaluation technique used, and this was then taken into account in the final analysis. Most studies on RBF, especially on vouchers, had already undergone such scoring in rigorous reviews. These scores were also used in this evidence review. The methodology ensured that the actual state of the evidence on RBF is well reflected. In addition, RBF related knowledge and operational experience in LLMICs of the authors and a few other experts were tapped into interpreting the findings from the literature review and making recommendations.

Results

The main findings of this review are the following.

1. The review found that the evidence base of RBF is not yet stabilised and is still growing[4].
2. This is particularly the case for PBF – which is very new – but also for PBC and RBB. There is more evidence on vouchers – an older strategy, although the scope of evidence is limited to some dimensions (especially effectiveness) and does not include many others, e.g. cost-effectiveness. In a nutshell: many unknowns remain and this state will persist for a while.
3. Maternal and neonatal health (MNH) services have been a major area of application of the RBF logic, possibly the main one. The output-based payment logic has been applied to family planning, prevention and management of sexually transmitted infections, antenatal care package, skilled normal delivery, referral of complicated delivery, neonatal and postnatal care, and child care.
4. There have been RBF experiences applied to MNH in Africa, Asia and Latin America and Caribbean, both in LLMICs. There is evidence showing that RBF can be applied in very different settings, including post-conflict situations.
5. External players have had a leading role in the initiation of RBF in many cases, but this is not an absolute rule. There is growing ownership at country level. A few countries have integrated RBF as a full component of their national health policy funded by the national budget.
6. RBF schemes can and do address different access barriers to health care services – there is high creativity in this respect. RBF implementers adapt the strategy to the local bottlenecks and priorities and this might well be the major reason why RBF is considered to have great potential.

[2] Peer Review: Results-Based Financing of Maternal and Newborn Health Care in Low and Lower Middle Income Countries
[3] Evidence Brief: Does Results-Based Financing Improve Maternal and Newborn Health?
[4] The same result was found in a recent evaluation (June 2012) of the Health Results Innovation Trust Fund (HRITF): "Nonetheless the evidence base for RBF remains narrow and there is still a huge potential and opportunity for the programme supported by the HRITF to draw and learn key lessons by just using the information that is being already generated by the pilots at country level and soon to be generated by impact evaluations supported by the Fund".

7. As for the impact of RBF schemes on MNH, there is an emerging body of evidence showing that RBF can improve relevant parameters related to MNH services. Impact on utilisation of the incentivised services has been the most investigated issue and findings are rather supportive, even if the evidence is rarely of a randomised controlled trial standard. The fact that RBF increases the amount of services utilised by the target population (or coverage rates) is true for specific priority groups (with vouchers) and also for large populations (with PBC and possibly with PBF). This result is consistent with the expectations related to the output-based payment formula.
8. There is also some evidence suggesting that RBF can lead to improvement in quality of services, specifically for PBF and vouchers. There is good evidence for vouchers and emerging evidence for PBC that these approaches can impact on equity in health care utilisation. Again, PBF is very new, and to document impact on equity more time is needed.
9. The review confirms that some important dimensions are under-documented. This is particularly the case for efficiency (cost-effectiveness) of RBF compared to the status quo or other health financing approaches (which raises some methodological challenges for provider-payment mechanisms), and obviously, for other dimensions that are even more complex to document such as the long-term effect of RBF on providers' behaviours and expectations, including the much commented but never demonstrated risk of crowding out intrinsic motivation.
10. There is no substantial evidence, but mainly hypotheses, on the negative and unintended side-effects of RBF. Few studies specifically investigated these effects. While more RBF schemes are being implemented, research will be needed to disentangle the positive and negative effects in order to analyse the overall impact on the health system. Other dimensions, such as sustainability are neither well documented. Most RBF schemes have just been recently initiated and it is far too early to do a realistic assessment.
11. Another area still insufficiently studied is the effect of a combination of two or more RBF approaches. For example a nationally implemented PBF which increases the quality combined with vouchers to reach the most underserved populations. Unfortunately none of the more rigorous papers investigated the concurrent impact of two or more RBF approaches, with the exception of RBF approaches such as vouchers and RBB combined with a conditional cash transfer.
12. The review provides some interesting insights in terms of choice between RBF schemes. While RBF can be considered as an option in very different settings, one can also observe some patterns of 'specialisation'. PBC has mainly been adopted in post-conflict setting or fragile states. Vouchers and RBB allow accelerating progress for specific groups which lag behind for the utilisation of some high impact services. PBF is adopted as a more universal/systematic approach, often as a step towards a broader health system reform.

Limits

The general assessment is that this review reaches the same limits encountered by other previous reviews (see section 4.1). These include the diversity of contexts, the great variety in terms of scheme designs, the fact that good implementation is a key determinant of success of such schemes, the difficulty to apply rigorous impact evaluation designs on complex interventions, the difficulty for the evaluators to capture the many possible spill-over effects, etc. RBF schemes are about revising institutional arrangements – assessing a specific RBF scheme without a good understanding of the whole nexus of institutions and how it shapes the incentive structure is truncated science.

In fact, one can wonder whether so-called RBF 'rigorous evidence' is the most important source of knowledge for those willing to start RBF interventions. For instance, the designer of an RBF scheme does not need peer-reviewed research to pay attention to the risk of gaming or of collusion between agencies verifying the outputs and providers. There is also a whole body of literature not identified as 'RBF', but very relevant anyway. For instance, one knows well from the theoretical and empirical literature on fees-for-service that if this payment rule is applied to activities prescribed by providers and for which

appropriateness is difficult to verify ex post, over-prescription can occur. A general recommendation is that each RBF intervention is specific and will have to be designed with a strong combination of among other things: contextual, public health, health system and economics insights. Expertise will be key to this.

Recommendations

The relevance of the review for governments of LLMICs and their partners is as follows:

RBF or not?

1. The general direction of the available evidence found in this study is favourable to cautious application of RBF approaches to MNH.
2. There is increasing evidence for government of LLMICs and their partners to consider RBF schemes as one option to improve health care services. However, RBF should be part of a package of reform or an overall strategy in the health sector of the partner country.
3. There are probably good alternatives to RBF, one way to enrich the debate on 'RBF or not' will be to document these alternative approaches along the same standards than those adopted for RBF (e.g. impact evaluation).

Which RBF scheme?

1. The current evidence does not allow establishing strong criteria for opting for a specific RBF strategy versus another. In fact, to a fair extent, part of the evidence is transversal – it confirms that output-based payment may work under certain circumstances. Beyond this rather obvious lesson effectiveness of the scheme will largely depend on the quality of the design and of the implementation.
2. As for the future, there is one type of evidence which will be crucial for ranking RBF approaches against each other and the current status quo, or against other interventions such as cost-effectiveness analysis. However, this type of research is currently not well articulated and it will take quite some more time to obtain sufficient information.
3. The main criteria for choosing among the RBF approaches (or for choosing the right mix) should be therefore the specific conditions and challenges prevailing in the country of intervention. A good strategy is to clearly identify the priority needs, the objectives to achieve and to tailor the RBF approach accordingly.
4. Yet, with the current knowledge, there is no country which agreed first on a clear and comprehensive RBF strategy and then developed a mix of RBF schemes. The process is rather incremental: the country tests first a specific approach, realises the power of output-based payment and then progressively enriches its policy by scaling the pilot and eventually bringing in other RBF schemes to address even more bottlenecks. From such a process perspective, any pilot experience can be helpful for the country.
5. As a rule of thumb, in countries where the public health system needs to be strengthened, PBF is an interesting option. In settings where the state is weak and health problems are huge and pressing, PBC can be considered, maybe mainly as a temporary strategy. RBB can be used to accelerate the production and utilisation of a well-defined priority service currently under-consumed by large proportions of the population. Vouchers look particularly relevant for helping vulnerable groups to catch up for some priority services or to bring in the private sector in areas where public service provision is weak. Where private (profit and/or non-profit) providers are dominant, vouchers and PBC can be considered. One can obviously consider a combination of strategies if necessary (even if sequencing them is probably required).

6. Most RBF approaches, with the exception of RBB, can also be used during health reforms, when the system is transiting from pure public input based system to a more dynamic system in which the split between purchaser and provider, inclusion of private sector, stronger regulation, and accountability towards the population become important elements.

RBF applied to MNH only or to broader health problems?

1. MNH is a global priority and it is fortunate that RBF seems to be applicable to it. In some situations, the right choice will be to focus the RBF intervention on MNH indeed. This is for instance the case if some specific groups are lagging behind in terms of utilisation of some basic services. Vouchers will then be an interesting option. In case larger parts of the population are lagging behind, RBB can be considered, eventually combined with vouchers for the most vulnerable groups.
2. But in many low-income countries, the needs are much broader. The recommendation then is to avoid a program skewed on a few MNH problems only. PBF has demonstrated its capacity to accommodate a large list of health activities. Covering more than a sub-group of health problems may prevent risks of 'verticalisation' and help to consolidate the whole health system.
3. In general, it has to be taken into account that RBF approaches may also be valuable to their spill-over and systemic effects. Ancillary benefits such as transferring cash resources to frontline actors, familiarising the Ministry of Health with strategic purchasing, increasing competition and engaging with the private sector are also valuable for the health system of many countries. However, these effects need to be carefully monitored as spill-over effects may also be negative.

How can development cooperation contribute?

1. For a growing number of observers, the responsibility of development cooperation agencies at country level is, on the one hand, to pilot innovations in terms of strategies, and on the other hand, to consolidate a broad commitment, including the government and its budgetary means, for better outcomes for vulnerable populations. The first objective is about taking risks, trying out new approaches and evaluating them. The second one is about introducing a culture of performance, accountability, good governance and harmonisation.
2. Where development cooperation is supporting/contributing to the implementation of an RBF approach, the following steps should be taken into consideration: (i) investigate contextual factors such as socio-economic situation, political system, type of health system, strategic documents on health financing, barriers to health care, etc.; (ii) for choosing an RBF approach (or the mix of it), one can best start from the context using the data collected, including the local burden of diseases and the main bottlenecks at the level of the health system; (iii) it is relevant to acknowledge from the very beginning potential spill-over effects and alignment with other goals; (iv) as for the design and the implementation emerging good practices can be very helpful; and (v) in order to build local ownership, set up comprehensive monitoring and evaluation, and disseminate the lessons learned, there should be enough resources.
3. Starting an RBF intervention means a permanent concern to look for coordination with the national authorities, but also with other donors. Development agencies should not see RBF as a project, but as a process of change. There is demand by many local actors for greater accountability at country level. This review shows for instance that governments themselves have initiated RBF approaches specifically RBBs, but also PBC and vouchers and that most PBF and several voucher schemes have been scaled up by national governments, even with their own public budgets. Development cooperation agencies can accompany the movement.
4. In terms of generating new knowledge, development cooperation agencies can contribute in many ways. More evidence on the effectiveness and efficiency of RBF schemes in the area of MNH is necessary. However, a holistic approach to the possible effects of RBF on health systems and even

societies is needed. One priority would certainly be to explore how RBF can consolidate the objective of **universal health coverage** at country level.

1. Introduction

Improving maternal, neonatal and child health are two of the most critical Millennium Development Goals (MDGs). Despite substantial progress towards MDGs 4 and to a less extent 5, the rates of decline in maternal, neonatal and child mortality remain insufficient to achieve these goals by 2015. This situation not only is intolerable from a global and national justice perspective, but also indicates major shortcomings in the delivery of basic services to some of the most vulnerable groups.

In order to provide program managers of the German Development Cooperation (GDC) and their partners with the best available evidence necessary for relevant decisions with regard to the selection and implementation of interventions in partner countries, the GIZ sector project "Programme to Foster Innovation, Learning and Evidence in HIV and Health Programmes of German development cooperation" (PROFILE) decided to develop an Evidence Brief on Results-Based Financing (RBF) on Maternal and Newborn Health (MNH) Care in Low- and Lower-Middle-Income Countries (LLMICs). As a first step it commissioned the authors of this paper to conduct a comprehensive review of the available evidence. As a second step, PROFILE requested a group of independent experts to peer review this Evidence Review, and their comments are available in a separate paper.[5] On the basis of both, Evidence Review and its Peer Review, a shorter Evidence Brief was then formulated.[6]

The present Evidence Review includes six core sections, which are structured as follows. After the introduction, there will be a description of the background of results-based financing, key facts on maternal and neonatal health care and potential roles of results-based financing in improving maternal and neonatal health. Then the methodology used for searching, selecting and reviewing relevant documents and papers is described. This is followed by the key findings from the review. Finally, the findings are shortly discussed, followed by conclusions and recommendations to facilitate policy makers to make decisions on choosing the type of RBF most appropriate to address particular MNH care problems in a given context.

[5] Peer Review: Results-Based Financing of Maternal and Newborn Health Care in Low and Lower Middle Income Countries
[6] Evidence Brief: Does Results-Based Financing Improve Maternal and Newborn Health?

2. Background

In this background section, the terminology and common types of various RBF approaches are introduced; how incentives shape behaviours is described (i.e. the theory underlying RBF); and how RBF can lead to better service provision. Then the problems observed in MNH care are described and how RBF can assist in solving some of these problems.

2.1 What is results-based financing?

During the last decade much effort has been invested in searching for alternative approaches to financing the delivery of health services in LLMICs. Several factors have contributed to the emergence of this agenda. Current health service provision does not meet public expectations, huge gaps remain and often the poor do not receive the most basic health services. Among the community of development cooperation actors, there is frustration with the lack of results achieved by more traditional approaches (i.e. line-item budget and provision of supplies, equipment etc.) [1]. Many governments are also aware of the low performance of their administrations and service providers and are ready to test new approaches. There is a widespread quest for greater accountability to the population [2].

One of the options is linking payments (or more broadly: transferring property rights on any valuable resource) to results. The umbrella term coined by the World Bank to refer to these new approaches is "results-based financing".[7] **Results-Based Financing (RBF)** for health has been defined as *"a cash payment or non-monetary transfer made to a national or sub-national government, manager, provider, payer or consumer of health services after predefined results have been attained and verified"* [3]. Results can be an output, outcome or impact – intended or unintended, negative and/or positive – of a development intervention.[8] Output-Based Approach (OBA) is often used synonymously with RBF[9]. To prevent confusion, this paper will use the term RBF.

It is important to note that whereas 'linking payment to results' may mean a radical paradigm shift in terms of development cooperation contracts, way to finance public health facilities or how to engage with beneficiaries, in terms of incentives it sets to the provider, it is very close to the standard market contract: a unit price against an agreed product or service. Trying to find the best way to remunerate health care providers is also a rather old quest for health economists (see literature on provider payment mechanisms).

As a matter of fact, incentives – understood as any human-made gains in terms of wellbeing which one can appropriate by adopting certain behaviour – are all around us and shape our daily life. RBF programs can be seen as a conscious and (hopefully) well-thought effort to shape incentive structures to motivate producers of health to deliver their specific contribution. 'Producers of health' include health facilities, vertical programs, individual health care providers, but also the individual person himself, his household or his community. The exact contribution by each co-producer will depend on the health problem and the specific situation of the individual. Unsurprisingly, the RBF logic is today tested on the different components of the health co-production chain.

In fact, RBF includes a wide range of approaches. They vary according to the objectives (from narrow targets to broad transformation of the health system), the expected results, the indicators, the entity receiving the reward, type and magnitude of the reward, proportion of financing which is paid for results compared to rest of funding, and ancillary components associated with RBF, including increased availability

[7] There has been much debate about the definitions of this and other terms such as Output-Based Aid (OBA) and Pay-for-Performance (P4P), neatly summarized by Philip Musgrove at the World Bank

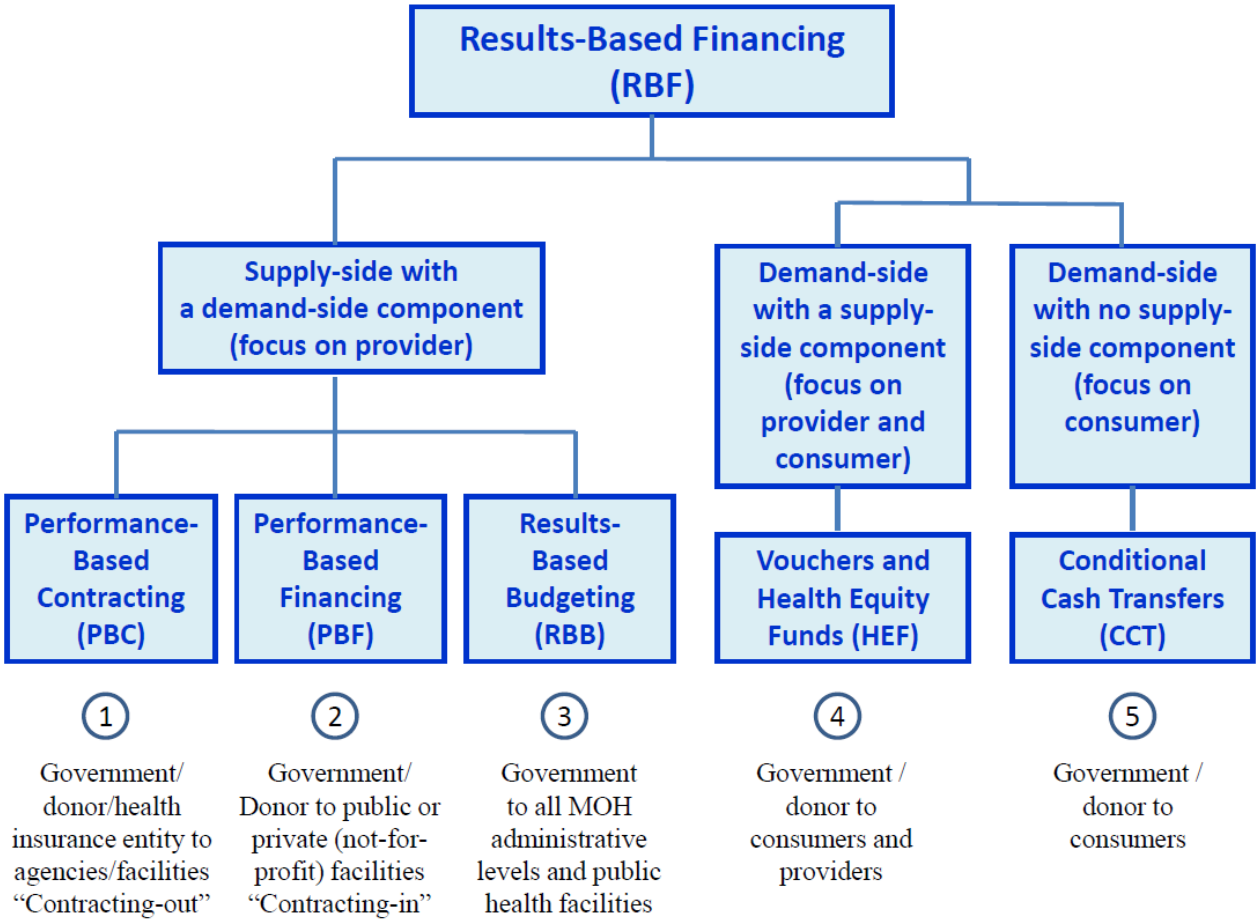
[8] OECD/DAC Glossary of Key Terms in Evaluation and Results-Based Management.

[9] According to Musgrove OBA is one form of RBF and refers to "a results-based mechanism that is used to deliver basic infrastructure and social services to the poor"… "One distinguishing feature is that payment provides a subsidy to cover the difference between the full cost of providing a service and the price that poor users can afford, so it is explicitly based on an estimate of ability or willingness to pay." [3] However, the term is also being used for example for a KfW funded voucher scheme in Kenya, perhaps because in this particular scheme, beneficiaries pay a small amount to acquire the voucher (Reference: GIZ on behalf of BMZ, Vouchers: making motherhood safer for Kenya's poorest women. A publication in the German Health Practice Collection, March 2012, Bonn and Eschborn, Germany). In most voucher programmes vouchers are distributed for free.

of resources, supplies, technical support or training [4]. All of RBF approaches pay in some form for results as opposed to exclusively financing the inputs. Some of them do fully replace the input-based financing (or create a reward for a behaviour which was not compensated previously), but most of the approaches are limited to payment of a reward based on results and co-exist with input-based financing of the services provided.

The richness of approaches developed over the last decade is a challenge for anyone willing to draw lessons and maybe take inspiration from them. Many experiences are still in their first phase of development and knowledge is far from being stabilised. There is also some confusion in the terminology and classification. In order to clarify the scope of this review, (which focuses on RBF and provider performance), it is helpful to classify the incentive schemes into some categories. A standard categorisation is to distinguish RBF schemes that tend to revise incentives on the supply side (*supply-side RBF*) from those modifying the incentive structure primarily on the household side, (*demand-side RBF)*, although in practice the boundary between both categories is not a clear cut, depending on the extent to which the 'purchasing power' is given to providers or consumers. Figure 1 provides a typology of the chief supply-side and demand-side approaches in RBF.

Figure 1: Typology of chief supply and demand-side approaches in results-based financing



Source: adapted from Naimoli (2010) [5].

In a **supply-side RBF** incentives are paid to the provider based on a (set) of performance target(s) or indicator(s), which are mostly linked to the number of beneficiaries or consumers, e.g. the number of consumers using the service. Hence, all supply-side RBF schemes also have a demand-side component, and somehow adhere to the principle "the money follows the client".

The key defining feature of a **demand-side RBF** is the direct link between the payment of incentives and the intended beneficiary as well as the desired result. However, many demand-side RBF schemes also have a supply-side component. Two basic forms of demand-side RBF are proposed. One form in which the 'purchasing power' is first given to the consumer, and then to the provider attending that particular consumer: "the money follows the client". This form has a strong supply-side component and the behaviour of both provider and consumer is influenced by the incentive. Another form of demand-side RBF consists of giving the incentive to the consumer after he or she has achieved the expected result, such as giving birth in a health facility: "the money is given to the client" (results can be an output, outcome or impact, in this case the result is at the outcome level: "skilled birth attendance"). This form of RBF has in principle little or no effect on the behaviour of the service providers, although in some programs the money received by the consumer is used to partly remunerate the provider.

In summary, there are three basic models of RBF: (1) supply-side RBF with a demand-side component; (2) demand-side RBF with a supply-side component; and (3) demand-side RBF with no supply-side component. It may well be that in the search for alternative health financing approaches other models are currently under development or will be developed in the near future. In fact, the division in three models is artificial, as there are programs which are reported as demand-side RBF while in practice they function as a supply-side RBF and vice versa. Furthermore, there are programs which use some combination of these three models. Within the three basic models, there are various common types or forms which have been developed over the last decade and are described in the literature.

1) **Performance-Based Contracting (PBC)** is a form of supply-side RBF where a financing agency (government, insurance entity or development partner), also known as a "purchaser", contracts with a non-state provider (e.g. an NGO or private sector firm), also known as a "contractor", to provide a set of services, in a specified location (often in poor areas where publicly provided services are irregular or unavailable) with defined objectives and a set of measurable performance targets or indicators over a defined period. Depending on measured performance against the agreed targets or indicators, the contractor receives rewards (such as performance bonuses, public recognition) or is imposed with sanctions (such as termination of the contract or public criticism). The contractor may further subcontract with individual health providers or health facilities and pay them based on their performance [6].

   PBC is also called 'contracting out' because the contractor is different from the contracting entity or purchaser. However, this paper will only include PBC and not contracting out where payment is based on pure costs and/or the number of services provided (e.g. contracting cleaning services in a hospital).

2) **Performance-Based Financing (PBF)** is also a form of supply-side RBF. The focus of PBF is not so much on the contract, but on the fact that one introduces a new provider payment mechanism. In this evidence review, the term PBF is used for any mechanism by which health providers are (at least partially) funded on the basis on their performance, measured (at least in some extent) against a set of predefined outputs or health outcomes. PBF is somehow contrasted with traditional input-based financing (commonly known as line-item approach), which includes salary and medical supplies [7]. PBF is interchangeably used with pay-for-performance (P4P), performance-based incentives, and sometimes also PBC.

   There exists also a more specific definition of PBF, which refers to the model currently under rapid expansion in sub-Saharan Africa. Noteworthy, PBF is a 'contracting in' approach, because the performance contract is between the Ministry of Health (MOH) and the public health facilities. Often, the contract is also made with private not-for-profit facilities or even for-profit facilities. In this case, the difference with PBC might become small or disappear completely, and it thus becomes a PBF-PBC mixed scheme (e.g. a PBF scheme being implemented with public providers adds faith-based organisation providers which are already receiving MOH grants for the coverage of particular populations).

There are also examples of semi-statal insurance agencies contracting with public and private providers which may want to add performance targets or indicators. One could say that this becomes a PBF if the contract is only with public providers or facilities. If the private providers are also included, it then becomes a PBF-PBC mix.

3) **Results Based Budgeting (RBB)** is a supply-side RBF form through which the government links its budget funds to desired outputs, rather than just financing inputs. On the basis of achieving pre-agreed performance targets, portion of budgets or performance bonuses are transferred from national to sub-national government administrative units (provincial or district health offices) and/or their managers, which often have performance agreements with their respective individual health providers or facilities. Central, provincial and/or district level managers have an incentive to support the achievement of results by the health facilities and to organize their planning, budgeting, supervision and monitoring systems accordingly [5,8]. RBB is also sometimes called results-based management; output-based or performance-based budgeting; or intra-governmental transfers. RBB is named 'results-based aid' or 'performance-based funding' in case the funding is not government budget, but contributions of donors such as in the case of GAVI and the Global Fund to Fight AIDS, Tuberculosis and Malaria [4,9].

4) **Vouchers for health** are a demand-side RBF with a supply-side component through which public subsidies (from government or donor agencies) are used to stimulate demand for priority health goods or services by under-served population groups. Subsidies go directly to the consumer in the form of a voucher – a certificate or other token (e.g. a coupon) – that the consumer redeems when demanding the goods/services from a preselected provider, which can be public or private. Depending on the level of the subsidy associated with the voucher, health goods or services may be provided free of charge or at a reduced price. Vouchers are usually competitive with multiple providers; however, they can also be non-competitive [10]. Vouchers are particularly relevant when one wants to restrict the health conditions covered by the entitlement to a specific category of needs (e.g. safe motherhood) and target these services to particular needy populations.

5) **Health Equity Fund (HEF)** is another demand-side RBF with a supply-side component which is specifically designed to remove financial barriers for the poor to access public health services and prevent poor households from financial hardship or catastrophic health expenditures. Although HEF tends to focus on conditions likely to entail catastrophic costs, the entitlement to HEF assistance is broadened to cover all services available in some facilities. The management of each HEF scheme is entrusted to a third party, usually a national NGO. HEF beneficiaries are identified according to eligibility criteria, either at the community before accessing health services (pre-identification) or at the health facilities through interviews (post-identification), or a combination of the two. At the health facilities, the eligible poor patients receive full or partial support from the HEF for the cost of user fees (mainly hospital user fees), plus transport costs and other related costs during hospitalization. The participating health facilities are reimbursed monthly by the HEF for user fees based on the number of poor patients using the services and a predefined fee schedule [11,12].

6) **Conditional Cash Transfer (CCT)** is a pure demand-side RBF form with no supply-side component. In a CCT scheme, cash payments are made to eligible persons or households (often the poor) conditional on measureable behaviour – a health-related behaviour in the case of health CCT, which mostly refers to the utilisation of a service which was insufficiently consumed by a particular population, such as an institutional delivery or vaccinations in LLMICs, but can also be to an outcome (e.g. no sexual transmitted infection) [13-15].

Table 1 presents the chief supply-side and demand-side RBF approaches as already shown in figure 1 with some more details related to incentives for providers and consumers. The column "provider" describes very shortly how the incentives for the provider are determined, whereas the column "consumer" reflects the extent to which the RBF approach influences or can influence consumer behaviour.

Provider behaviour: expected performance (mostly defined by quantity and/or quality of services) is determined by the contract (PBC); the focus can also be on the definition of performance targets measured through quantity and/or quality indicators (PBF/RBB); payment can furthermore be defined by the quantity of services produced (HEF/vouchers) or used (CCT).

Four levels of RBF influence on consumer behaviour are proposed, defined by:

- X: consumer behaviour is only indirectly influenced because quality of services improve; health facilities take pro-active actions to attract users; and through worth-of-mouth communication other potential consumers are informed;
- XX: consumer behaviour is directly influenced because the approach gives purchasing power to the consumer; informs about benefits; and payment is directly linked number of services consumed;
- XXX: behaviour is directly influenced because the approach gives purchasing power to the consumer; distributes a token of payment (voucher); informs about benefits; and payment is directly linked to utilisation of the voucher, and hence number of services consumed;
- XXXX: consumer is paid for using the services.

Table 1: Incentives and chief supply-side and demand-side results-based financing approaches

RBF	Approaches	Incentives	
		Provider	**Consumer**
Supply-side, with a demand-side component	Performance-Based Contracting (PBC)	Contract defines expected performance (in quantity/or quality) as well as level of payment, plus rewards or sanctions	X
	Performance-Based Financing (PBF)	Level of payment is based on achieving performance targets, often quantity and quality indicators	X
	Results-Based Budgeting (RBB)	All administrative levels have an incentive: bonus or larger budget on the basis of pre-agreed performance targets	X
Demand-side with a supply-side component	Health Equity Fund (HEF)	Incentives are equal to the fee paid for each eligible patient treated. Since short pilot with quality indicators	XX
	Vouchers	Incentives are equal to the fee paid for each voucher. Quality indicators used for selection; quality assurance	XXX
Demand-side	Conditional Cash Transfers (CCT)	Provider does not receive incentives, but there is provider selection which can include quality indicators	XXXX

In most PBF schemes quantitative *and* qualitative indicators play a key role, whereas in PBC, RBB, HEF and vouchers, emphasis is on the number of services provided – the more services the higher the payment. However, in PBC as well as in vouchers, contracts stipulate quality criteria against which the services should be provided. In case these are not fulfilled sanctions can be taken and contracts terminated. This works slightly different in PBF where a score is usually assigned to the quality of the services provided which then, together with the quantitative indicators, is used to determine the level of the incentives. HEF payments are based on quantitative indicators (i.e. number of patients and type of service). Recently a pilot started which also uses qualitative indicators.

As indicated above, **the distinction between the various RBF approaches is rather artificial.** There are hybrid schemes, whereby vouchers are combined with a CCT, e.g. the Ministry of Health (MOH) safe motherhood voucher program in Bangladesh [16]. Furthermore, the payment system of this voucher scheme is much alike that of a PBF program as it does not pay for the full costs of the services but rather provides incentives which co-exist with input-based financing. There are also voucher systems which can be described as a hybrid voucher-insurance scheme, such as the KfW funded voucher program for safe motherhood in Tanzania [16]. RBB can be combined with a CCT (e.g. the safe motherhood program in Nepal) [17]. Furthermore, a continuum exists in type and relevance of indicators: schemes where the quantity and quality of the services play an equal role; schemes where the quantity is much more

important than quality or vice versa; and schemes where nor the quality nor the quantity plays a role and where only the client receives a payment or a benefit, such as CCTs. Obviously, creativity of RBF designers challenges typologies.

2.2 How incentives shape behaviours: the theory underlying RBF

An incentive for someone is any human-made gains (financial or non-financial) which he can appropriate from others by adopting a particular course of action. Incentives are *extrinsic* sources of motivation: the individual performs the action not because it has value per se, but because it is the mean to obtain valued resources [18]. The midwife performs the delivery at the health centre (instead of attending it in her private practice), because the resources (financial, reputational, protection against complaints…) she will get from this strategy are superior to the one she would obtain through her private practice. There are also *intrinsic* sources of motivation. They may be related to personal and professional values and self-esteem, altruistic considerations, but also personal enjoyment from doing the action itself. The midwife performs the delivery at the health centre, because she believes it is the best option for the health of the mother and the baby, or because she likes to work as a team member.

As incentives have an influence on individuals' behaviour, they are major instruments in our daily life: we use them to direct behaviours of our employees, suppliers… but also our partners and kids. Over the last decades, economists have increasingly become aware that incentives should be in fact at the centre of their research. They have developed so-called *principal-agent models*, carried out empirical studies, and more recently have undertaken studies in 'laboratories' to identify possible differences between how they model rationality of human beings and how the latter actually take decisions.

It is today well-known that the exact nature of the *asymmetry of information* between the *agent* (the contracted health facility) and his *principal* (the contracting agency) will have a lot of influence on the outcome of the transaction. This asymmetry of information can have different causes (the agent is based in another location, has more expertise than the principal), it can also vary across the tasks assigned to the agent: it is easy to check a posteriori whether a woman delivered a baby, it is more difficult to know whether the delivery was done along the state of the art; e.g. it can be costly for the principal to appreciate to which extent the agent has fully performed.

Proposing an RBF approach for a specific Maternal, Neonatal and Child Health (MNCH) problem is tantamount to believing that the RBF arrangement is superior to the prevailing institutional configuration and any other possible remuneration contracts. First, 'superiority' has to be understood here as more efficient than any other option to achieve the goals which are valued by the principal(s). This obviously requires first to take into account all the resources required to enforce the contract, including the inescapable costs of administration and verification of services provided. Second, and more fundamentally, it requires the principal(s) to agree on the valuable goals. This highlights the need for a bilateral development cooperation agency tempted by RBF to clarify first (jointly with its partner country) which goals it pursues with its health intervention: to serve a specific vulnerable population, to consolidate the health system, to get political visibility, etc. RBF can probably contribute to achieving several relevant goals at the same time, but an RBF scheme with a too narrow focus can also undermine some other important goals, as the agent may be tempted to neglect dimensions not valued by the RBF scheme.

This tension is probably **one of the most challenging for any RBF scheme**. Indeed, as one will see in the following sections of this paper, gathering information on the different effects of a RBF scheme is difficult and costly. Some positive, but also possibly negative effects of the scheme can involuntarily be overlooked in the process.

2.3 How RBF aims to improve the provision of services

RBF can be seen as a strategy (1) whose focus is on motivating health actors to adopt some specific health-producing behaviour; and (2) with a particular stress on financial rewards as a source of motivation.

However, one should neither underestimate that under some specific schemes, health care providers intrinsically value the greater autonomy they are granted on how to deliver these behaviours.

Most RBF schemes aim to increase coverage of and access to the services provided by health facilities, to improve service quality and reduce costs. However, the success of the RBF scheme will hinge on how good the program is able to produce these expected results. Whereas an important RBF goal is to change the behaviour of health providers, many programs will also pay attention to constraints which are not within the power of the health facilities, but can affect the expected results, e.g. by making certain input investments which require coordination at a higher level and/or are costly, e.g. training, major equipment, and infrastructure. In some RBF programs, this type of investments is done by the health facilities themselves; it is the case if financial rewards paid are large enough to build for example a maternity ward or surgical theatre. Several RBF approaches, in particular PBF, also try to address long-term political and economic constraints through a substantial revision of institutional arrangements.

Resources collected from a RBF scheme by the performing provider may have different usages. In the daily practice of most RBFs part of the incentives is used for supplemental financing of inputs, such as extra staff, medicines, supplies and equipment to enhance service delivery capacity and improve quality. A virtuous circle effect can develop whereby financial rewards are used to address relevant bottlenecks and to improve the services further in order to attain better results and therefore generate even more income. RBF income is for example used by the health facility to:

- Attract qualified staff in remote areas (e.g. midwives)
- Motivate management and staff to organise outreach
- Motivate management and staff to be open 24/7 (during night/weekend)
- Motivate management and staff to be creative and use resources in a more efficient way
- Motivate management and staff to pay attention to technical quality
- Motivate management and staff to be user-friendly, e.g. increase perceived quality (welcoming, ensuring supplies are available)
- Motivate management and staff to ensure availability of medicines, equipment, etc.
- Motivate management to increase service delivery capacity, for example more beds, increase staff capable of providing a certain service package[10]
- Motivate community workers to improve provision of information to clients, etc.

The success of RBF obviously depends on how accurate the results are measured and verified. Monitoring of RBF schemes provides an opportunity to move away from the micromanagement of monitoring the inputs to a greater emphasis on monitoring the quality and quantity of the services provided. Monitoring is ideally accompanied by feedback to the recipients of rewards, who then can use this additional information to further improve the results, be it to improve the quality and/or the quantity of the services.[11]

RBF advocates have argued that the ancillary components of an RBF scheme, such as improved management to obtain the results, improved information, more money to address shortcomings in inputs, and more committed staff can also consolidate the agenda for more autonomy at the health facility level, a great good which can again lead to further improvements [7]. Who knows better the health needs of a population than those working with them on a daily basis?

[10] This can even include for example catholic facilities, liaising with temporary staff to provide Family Planning.

[11] In the case of CCTs which reward clients, monitoring of results can also lead to further improvement of the scheme. For example in programs where women receive a reward when they give birth in a facility, regular monitoring will immediately make visible when few mothers are coming in, forcing program managers to investigate and address the problem.

In RBF, expected results or objectives and rewards are embodied in contracts between one or more principals who provide the rewards and one or more agents who contract to deliver the specified results – outputs and/or outcomes [3]. These contracts bring what is perceived as a healthy split between purchaser and supplier, as a necessary step to make the traditional health systems in LLMICs responsive 'again' and interested in producing results.

2.4 Risks and perverse effects of RBF

However, schemes and rewards which are not well balanced can also work to the detriment of the quantity and particularly the quality of the services. Theoretical economics help to map the main issues.

A first issue is related to the fact that most agents are in what economists call a *multi-tasking* situation [19], i.e. a situation where they have to perform different tasks which may compete for their scarce resources (especially time of the performer).[12] Such situations prevail at the organisational level of the provider – the health centre has to provide curative services, child immunisation, and antenatal care – but also at individual level – the nurse has to fill in the register, take the temperature and other vital signs, be kind with the patient. The challenge for the principal is to design and enforce a contract such that the agent delivers the full set of tasks with the right 'dose' of each task. The obvious risk with a scheme linking payment to the implementation of only a part of the tasks (e.g. those which one principal judges priority, or those easy to verify) is the neglect of the non-remunerated tasks, especially if they are costly for the agent to produce.

It is easy to imagine situations where a RBF scheme fails at this level: a RBF scheme focusing on short-term objectives may lead to overlooking long-term goals; a scheme limited to MNCH services may incentivize the health centre to neglect male adult patients with a chronic disease; a RBF scheme focusing on quantity indicators may lead the staff to overlook quality of services; a scheme paying a constant amount per patient may lead to 'cream-skimming', e.g. the provider focuses on easy-to-reach and easy-to-treat patients.

A second issue is related to the fact that some goods or services are co-produced as *team work*, [20] with the characteristic that it is impossible or very costly for the principal to identify the actual contribution of each individual team member. Performance-based payment in PBF schemes requires the possibility to define performance and attribute it to an agent to reward.

A third issue is related to the extent to which the agents accept to bear the *risk* related to variations in their performance. The latter – measured in terms of units of outputs for instance – is indeed not completely under their control. Other things being equal, individuals will prefer a fixed salary instead of a remuneration which varies according to their performance [21].

A last issue is related to the management of information between the principal and his agent. Because of the asymmetry of information, the principal may miss some important issues (e.g. actually, the agent is not capable to deliver the contracted service) or the agent may opportunistically decide not to disclose some information going against its interest. This informational problem is true with any contract, but the risk is even stronger if the agent is remunerated per output and if the principal relies on his reporting for the payment. The non-disclosure of information can be related to the technical capacity of the agent; to the actual need of the patient (e.g. the agent prescribes unnecessary drugs); to the actual characteristics of the provided service (e.g. the agent *games* the system, by over-classifying an activity to obtain a higher payment); or the very reality of the service (fraud with ghost patients). These informational risks will require the principal to commit substantial resources to verify these different aspects, which can substantially increase transaction costs. Furthermore some strategies to verify the performance by the agent are also susceptible to fraud (e.g. collusion between providers and voucher bearers or voucher

[12] The competition is not systematic: performing task A can reduce the cost to produce task B. For instance, a midwife who exerts efforts for quality antenatal consultation will have less effort to do to attract women to deliver in her health center.

distributors; bribery and kickbacks to verification agencies or voucher management agencies). If these problems are too big, the output-based payment approach will be inefficient and must be discarded.

Advocates of RBF do not deny the challenges (see for instance, table 4) [22]. Many schemes have design features or enforcement processes to mitigate the related problems (e.g. the concern to propose different payment formula for the health facility and the individuals; efforts in monitoring quality of the services; involvement of independent grassroots organisations to verify the reported activities). A general recommendation to avoid mistakes is to have a holistic view on the institutional arrangements shaping the incentive structure, both for the facility and the individuals [23]. RBF should be embedded in a general reflection on provider payment mechanisms, governance and human resource management, taking into account constraints even at peripheral level (e.g. equity across providers and eventually across users may require remunerating a same service at different prices).

2.5 Maternal and neonatal health care

Improving maternal, neonatal and child health are two of the most critical Millennium Development Goals (MDGs 4 and 5). Despite substantial progress towards MDGs 4 and 5, the rates of decline in maternal, neonatal and child mortality remain insufficient to achieve these goals by 2015 [24,25].

Maternal and neonatal mortality (MNM) is unacceptable high with huge poor-rich inequalities. Worldwide, about 6,000 women die each week or 287,000 women each year from pregnancy- or childbirth-related complications [26]. More than 3 million babies die in the first 28 days of life, accounting for 40% of under-five mortality. About 99% of the maternal and neonatal deaths arise in LLMICs, mainly in Sub-Saharan Africa and South Asia, and most of these deaths could have been prevented.

The majority of maternal deaths occur during or immediately after child birth. The common medical causes of maternal deaths include bleeding, high blood pressure, prolonged and obstructed labour, infections, and unsafe abortions [27]. The main causes of neonatal deaths are preterm birth, severe infections and asphyxia. AIDS and malaria are also among the leading causes of maternal and neonatal deaths in countries where these diseases are prevalent such as in Sub-Saharan Africa. Maternal complications during labour carry a high risk of neonatal death [28].

Evidence-based cost-effective interventions for improving maternal and neonatal health and survival are well-known nowadays. The major ones include family planning and safe abortion, appropriate antenatal care, skilled birth attendance, postnatal care for mother and newborn [29-33]. These interventions are often closely related and should be provided in integration across a continuum of care approach – throughout the lifecycle (adolescence, pregnancy, childbirth and postnatal period) and between places of care-giving (community, first level care or outreach, and referral level care) [34,35]. Annex 1 summarizes essential interventions for improving maternal and neonatal health and survival recommended by the Partnership for Maternal, Neonatal and Child Health [30]. However, coverage of cost-effective maternal and neonatal health (MNH) care services in LLMICs remains poor due to insufficient supply and inadequate demand for these services, especially among the poorest groups. Major challenges in scaling up these services are lack of financial and human resources, poor health system infrastructure, absence of reliable data, and limited political commitment [36,37].

Table 2 presents the numerous supply- and demand-side barriers which prevent people from accessing needed health services [38,39], especially maternal health services [40-43], leading to the 3 delays: i) deciding to seek care, ii) reaching the health facility and iii) receiving care at the facility. In resource-poor settings, essential maternal and neonatal health services are often unavailable or of low quality, for restricted time periods only, or at inconvenient locations. This is because of poor infrastructure, lack of funding, limited numbers and low motivation of health personnel, and lack of equipment and medical supplies. Demand barriers include lack of knowledge on safe motherhood and on availability and adequacy of maternal and neonatal health services; and inappropriate socio-cultural norms and beliefs towards pregnancy and delivery-related practices. In addition, direct and indirect payments to seek and receive

needed health care – including user fees, transportation cost, expenses for food and lodging, and informal payments – can constitute a major access barrier for poor women.

Table 2: Supply- and demand-side barriers to access by dimension

Supply-side	Demand-side
Availability/geographical accessibility	
• Service location • Unqualified health workers, staff absenteeism, opening hours • Waiting time • Motivation of staff • Restrictions for staff to perform tasks for which they have been trained (but not permitted to do) • Equipment, drugs and other consumables • Non-integration of health services • Lack of opportunity (exclusion from services) • Late or no referral	• Distance, indirect costs to household (transport) • Means of transport available • Means of communication available • Information on health care services/providers • Education • Awareness of services, demand for services
Affordability	
• Costs and prices of services, including informal payments • Private-public dual practices	• Household resources and willingness to pay • Opportunity costs • Cash flow within society
Acceptability	
• Complexity of billing system and inability for patients to know prices beforehand • Staff interpersonal skills, including trust	• Households' expectations • Low self-esteem and little assertiveness • Community and cultural preferences • Stigma • Lack of health awareness

Source: Adapted from Jacobs et al. (2012) [38].

2.6 Role of RBF in improving maternal and neonatal health

RBF, whose fundamental is to try to re-align incentives with public health goals, can be applied to various health problems. Many actors believe that it has a role to play to boost provision and uptake of maternal and neonatal health services. As evidenced in chapter 4, quite a large number of LLMICs are currently implementing or piloting RBF schemes that address Maternal and Neonatal Health (MNH) components, including Sexual Transmitted Infections (STIs) and Family Planning (FP). In fact, most RBF schemes developed up to now have been applied with the aim of increasing the supply of quality MNH care, promote best practices, and increase demand for these services by addressing both supply-side and demand-side barriers.

Payments can be directed to the various actors at the supply side: individual health care providers, health facilities, or even programs improving performance; as well as to those health managers at district, provincial and national level who are responsible for the health facilities or programs participating in the RBF scheme.

Supply-side RBFs are relevant when most constraints limiting coverage and use of quality MNH services are at the supply-side and not at the demand-side. A PBF scheme for example can increase motivation of individual providers as well as of health facility managers to take appropriate actions which impact on the overall organisation of the services.

The RBF programs transferring resources to users can address some of the demand-side barriers. For example, a CCT can provide a reward to beneficiaries who have undertaken health-related actions such as antenatal consultations. The incentives are mostly financial rewards or sometimes given in kind and as such

motivate women to use the service, but they also provide some form of information on the relevance of the MNH service, and indicate the consumer where the service best can be obtained.

In the case of voucher programs the incentives are given to the consumer in the form of a voucher which the beneficiary can use to obtain free health services at a provider of her or his choice. The voucher stimulates the use of the health service (e.g. delivery in a health facility) because it provides information about the service, its relevance for the person's health, and where it can be obtained; it acts as a type of personal invitation; and it may even empower the consumer to use the services. Furthermore, many voucher programs pay transport costs and sometimes other costs such as for food [16].

While covering a wide spectrum of health needs, HEF address also some major demand-side barriers by paying for transport, providing information about the availability of the services and assisting the poor in overcoming problems related to low self-esteem and little assertiveness (HEF staff monitors the health care provided on a daily basis). Also payment of funeral costs reduces the barrier of accessing hospital care because of potential costs of a person dying in a hospital, which is considered a financial risk and as such constitutes a barrier.

Health facilities in voucher and HEF scheme often use the extra income to improve the quality of the services in order to attract more clients. Thus, even with no competition, providers will still organise their services so as to convince potential clients of the benefits of using the services – this could be called competition *for* the market (as opposed to within the market). This type of competition is important because it can assist in overcoming important supply-side barriers.

Supply-side RBF can also reduce demand-side barriers through the organisation of community-based provision of information by health staff or outreach workers. Especially when incentives are also linked to quantity indicators, they can motivate health staff to contact potential consumers and search for ways to overcome demand-side barriers and make the facility more attractive. For example in Rwanda, some health centres under PBF give a 'welcome pack' (soap, cloth for the baby) to women who give birth in their facility (in fact some form of CCT). Also in Rwanda and Burundi health facilities subcontracted traditional birth attendants (TBAs) to bring pregnant women into care for safe motherhood services, and shared the PBF incentives with them.

By reducing supply- and demand-side barriers RBF can bring underserved populations into care (e.g. pregnant women) and accelerate the use of priority services among the population (e.g. family planning services).

2.7 Role of RBF beyond maternal and neonatal health

There is a growing recognition that RBF can be more than a health financing strategy; it can also have systemic effects on the health system. This mere possibility can be seen as an opportunity – such as an entry point to reform the health sector or even the public sector [7] or a risk – e.g. putting the country on a path that it will not be able to sustain in the future.

From a theoretical perspective, RBF can be seen as a substantial revision of the incentives driving behaviours in the health sector. Achieving such a revision requires to reform institutional arrangements (contracts, internal regulation…) shaping the health sector.

RBF can also provide an opportunity to include non-state providers in the provision of care, such as NGO clinics, faith-based organisation clinics and private-for-profit clinics. This is especially relevant when there are gaps in the public provision of critical health services, and/or in areas where no or little public facilities exist, such as informal settlements or remote rural areas.

3. Methods

The main objective of this review paper is to compile and synthesise evidence on RBF of MNH care in LLMICs. As for readership, it primarily aims at program managers and partners considering adopting RBF as a strategy. This operational objective influenced the approach to review the literature. The review considered review papers (in which multiple studies were reviewed and study results synthesized) as well as individual papers (both peer-reviewed papers and grey literature such as evaluation reports) on RBF programs that focus on providers or have a strong supply-side component and are related to MNH care. A number of inclusion and exclusion criteria were developed:

- Relevant supply-side RBF approaches were included, such as PBF, PBC and RBB. For PBC, programs were included in which a third party is contracted to manage a health (sub) district, and excluded contracting out of services to independent service providers (NGOs/local clinics providing service to poor target groups) unless part or total payment was linked to some measures of performance, i.e. changing patterns of performance as opposed to payment based on pure costs or number of services provided. PBC where a third party is contracted just to perform a specific service within a health facility (e.g. cleaning services or x number of sterilisations or cataract surgery) was excluded as well;
- Among schemes with a demand-side RBF approach and with a strong effect on the supply-side, only schemes predominantly applied to improve the provision of MNH care were included (vouchers). Broader demand-side approaches such as HEF and Community-Based Health Insurance (CBHI) were excluded. Nevertheless, we have included an annex on HEF as the approach increasingly used in combination with vouchers. Also we included a review paper on HEF in the section where we summarised the results of the review papers.
- CCTs were excluded because this type of demand-side RBF scheme provides no incentives to the provider. For the same reason, vouchers for insecticide-treated nets to prevent malaria and transport vouchers to facilitate pregnant women to reach the facility were not included. Projects providing beneficiaries with quasi-insurance coverage, for example, those that involve per capita transfers (capitations) from donors or central governments to an implementer, and where there is no direct link with performance, are also excluded.

The review process included the following steps: identification of the research questions and development of two templates for the review. **Template 1** to be filled with details of each relevant RBF program plus results of each of the studies deemed sufficient rigorous to produce good evidence (see Appendix 1). **Template 2** to be filled with the results of papers reviewing one or more RBF approaches (see Annex 2).

An extensive review of all literature related to RBF was implemented. The review was not as rigorous as, for instance a scientific review implemented by the Cochrane Collaboration, which uses stringent inclusion criteria and therefore often results in a limited number of studies meeting these criteria. However, the review used some of the techniques of a systematic review such as pre-defined evaluation criteria, evaluation of studies` methodological quality etc., but less rigorous and this precisely allowed to consider a greater number of papers, including 70 individual papers on a specific RBF experience and 14 reviews done by other researchers.

In case of a scientifically more rigorous review many papers would have been excluded. Instead, each of the 70 papers was scored regarding the rigorousness of the evaluation technique used, and this was then taken into account in the final analysis. This methodology ensured that the actual state of the evidence on RBF is well reflected. In addition, RBF related knowledge and operational experience in LLMICs of the authors and other GDC experts were tapped into when interpreting the findings from the literature review and making recommendations.

Three outcome categories were developed and used to gauge the effectiveness of a particular approach:

1. Quantity of services provided, number of services utilised, coverage of the services

2. Quality of the services and satisfaction by consumers
3. Targeting of the services and equity among consumers

A number of criteria were defined and used to select and evaluate studies and reviews (including their methodological strengths and weaknesses). Studies were scored for the strength of their evidence as follows:

1. Very low: for example descriptive study using stakeholder interviews and no before and after comparison with or without a control.
2. Low: comparison of data obtained before and after the intervention, but no control
3. Medium: comparison before-after with control or other sophisticated design controlling for confounding factors.
4. High: very good study design with rigorous control of confounding factors.

Most studies on RBF, especially on vouchers, had already undergone such scoring in rigorous reviews, which are presented in Annex 2, e.g. the review on vouchers by Meyer et *al.* [44].[13] Those scores were also used in this evidence review (see appendix, column strength of evidence). In addition, the publication status of the studies was also considered as one criterion for appreciating the strength of the evidence, ranging from grey literature to publication in a peer-reviewed journal with high impact factor. Although a peer-reviewed journal publication with high impact factor is not a guarantee of good methodological quality, the peer review process and selection criteria of the journal can somehow reflect the quality and rigorousness of the study.

Studies which had a relative low score for the strength of the evidence were included as well, because data from this type of studies is still interesting, when interpreted carefully, they can assist in providing a hint on the direction of the results and as such contribute to the overall evidence. From an operational perspective, they are also often insightful.

The study technique used in the individual papers was defined rigorous if the score for strength of evidence was medium or high. The following conclusion categories were established:

1. Robust evidence: if 4 or more rigorous studies found a positive effect and none a negative effect
2. Modest evidence: if 2 or 3 rigorous studies found a positive effect and none a negative effect
3. Insufficient evidence: 0 or 1 rigorous study found positive effect or 1 or more studies a negative effect
4. Conflicting evidence: if 2 or more rigorous studies had findings in opposite directions
5. No effect: if more than half of the rigorous studies found no effect

These conclusion categories should be interpreted with care because of the well-known publication bias towards positive results.

[13] In 2010 a rigorous review of vouchers was implemented by Meyer at al, commissioned by DfID. This review used a Cochrane type of methodology to rank the research papers with low, medium, high

4. Findings

Fourteen review papers and 70 individual studies related to PBC, PBF, RBB and vouchers were found and reviewed. The 70 studies investigated 37 RBF programs in 25 different LLMICs countries. First the findings from the 14 reviews are presented, followed by the findings from the 70 individual studies.

4.1 Findings from the papers reviewing various RBF approaches

Fourteen review papers were reviewed on positive and negative effects and associated conditions of various RBF approaches in different countries, mainly in LLMICs. Most of the 70 individual papers investigate the effect of the intervention on MNH care. In the case of the reviews many do not look specifically at MNH care; however the reviews did include studies treating MNH care. Many of the 70 individual RBF-related papers were included in one or more of these review papers. The results of the 14 reviews are presented in Annex 2 and summarized below. Each review was also scored for the strength of its evidence, 6 reviews had a low score, 5 a medium score and 3 a high score (see for more details Annex 2).

4.1.1 Performance-Based Contracting

Two review papers focus on contracting out services to non-state providers (PBC) in LLMICs. Liu et al. (strength of evidence: medium) included 16 individual papers that assessed 13 separate PBC interventions in 12 LLMICs [45], whereas Lagarde and Palmer (strength of evidence: high) included only three individual papers [46], of which two were among those included in Liu's review. Findings from both reviews suggest that **PBC can increase access to and utilisation of health services, mainly for targeted indicators**. In Bolivia where maternal health indicators were targeted, a significant increase in institutional deliveries associated with the intervention was found. The contracting out of nutritional services in Senegal and Madagascar was found to be associated with diminished malnutrition rates. In Cambodia, there was a reduction in out-of-pocket health expenditures and improvements in some health outcomes. In Bangladesh and Cambodia, PBC targeting poor areas where public provided services were irregular or unavailable was found to be associated with increased access to basic health services and reduced health spending among the poor. However, according to the review, **little is known about the system-wide effects of contracting-out, and the effects on equity, quality and efficiency are often unknown.** Moreover, reliability and generalizability of these findings is limited by the methodological weaknesses and particularities of the reported program settings. **The context in which contracting-out is implemented and the design features of the interventions appear to greatly influence the chances for success.** More evidence on the program effects of contracting-out is needed.

Oxman and Fretheim (two reviews, both with a strength of evidence of medium) reviewed various RBF approaches, including contracting out services to non-state providers in Bolivia, Cambodia, Haiti and Pakistan and also found **some evidence on positive effects of PBC on increased access to and use of health services** [4,47]**. However, they cautioned that the observed effects might not be attributed to PBC, but to higher technical and financial inputs to the contracted facilities.** Evidence from high-income countries shows that financial incentives targeting individual health care professionals are effective in the short run for simple and distinct, well-defined behavioural goals. Along with positive effects, **RBF can have undesirable effects, including motivating unintended behaviours, distortions (undermining or ignoring unrewarded activities or targets), gaming or fraud (exaggerating or cheating on reporting rather than improving performance), widening the resource gap between rich and poor, dependency on financial incentives and dilution of professionals' intrinsic motivation.** The authors proposed some considerations to make RBF effective, including careful design taking into account the level at which financial incentives are targeted, the choice of targets and indicators, the type and magnitude of incentives, the proportion of financing that is paid based on results, and the ancillary components of the scheme. According to the authors, RBF must be implemented as part of an appropriate package of interventions, for which technical capacity or support must be available, and should be closely monitored and evaluated for intended and unintended effects using rigorous study designs.

4.1.2 Performance-Based Financing

Witter et al. (strength of evidence: high) in their recent Cochrane systematic review on pay for performance to improve the delivery of health interventions in LLMICs, which included 9 PBF interventions in 8 LLMICs, found that **PBF is not a uniform intervention, but rather a range of approaches** [48]**. There are few robust studies on PBF available from LLMICs and it is premature to draw conclusions on PBF effectiveness and its success factors**. Some schemes were found to have had some success, but direction and magnitude of change vary across settings. In line with the findings by previous reviews, they pointed out that the effects of PBF depend on the interaction of several factors, including the design of the intervention (e.g. who receives payments, the magnitude of the incentives, the targets and how they are measured), the amount of additional funding, other ancillary components such as technical support, and contexts, including the organizational context in which it is implemented.

Toonen et al. (strength of evidence: low) in their review of PBF experiences in Burundi, DRC, Tanzania and Zambia found **considerable difference of staff and health service productivity between before and after the introduction of PBF in several projects; with an increase in health service utilisation for almost all targeted indicators, including maternal health indicators and in quality of care as perceived by the clients; and no perverse effects were directly observable** [49]**.** However, the attribution of improved results to PBF is debatable. Considering the contextual and other confounding factors as well as the reliability of the available information, the authors concluded that in general PBF can be instrumental in achieving better results in the health sector if compared to input-based financing approach. The review also found a number of institutional issues that can have a positive influence on provider performance and outputs: autonomy of health providers and other key stakeholders at operational level; creating national ownership from the start of introducing PBF; use of contracts with agreed upon expected results between actors at different levels; the presence of a local fund holder; a purchaser-provider split; and a functioning monitoring system.

4.1.3 Vouchers

Three review papers focus on vouchers for health goods and services in different countries, mainly in LLMICs. The systematic review by Bellows et al. (strength of evidence: medium) identified 23 studies that assessed 13 reproductive health voucher programs in 10 countries, of which seven programs were quantitatively evaluated in 15 studies [50]. **All evaluations reported some positive findings about the program effects on increased utilization of reproductive health services, improved quality of care, and improved population health outcomes, suggesting the positive potential of vouchers.** However, the authors called for more research to examine program effectiveness, in particular cost-effectiveness and population health impacts, using strong study designs.

Meyer et al. (strength of evidence: medium) reviewed 24 studies that assessed 16 voucher programs, 10 for health services and 6 for health goods such as bed nets [44]. The findings from 64 outcome variables provided five levels of evidence on the program effects: modest evidence on their effectiveness in targeting specific populations for health goods/services (4 programs); insufficient evidence on their comparative efficiency (only 1 program); robust evidence on increased utilization of health goods/services (13 programs); modest evidence on improved quality of health services (3 programs); and no evidence on population health outcomes, however, only small changes in the evidence base could change this conclusion (6 programs). Although the available evidence needs strengthening, **the findings strongly suggest that voucher programs have been successful in targeting specific populations for health goods/services, including bed nets and reproductive health services, in increasing utilisation of these health goods/services, and in improving the quality of services**.

A recent review by Gorter et al. (strength of evidence: low) identified 40 voucher programs (which started voucher distribution before 28 February 2011) and examined their management and implementation issues, including the contexts in which they were or have been implemented [16]. They found that **vouchers have been successfully used to achieve multiple objectives, such as targeting limited public**

subsidies to the most in need but underserved population groups, increasing access to and accelerate utilization of a particular service or a set of services, and leveraging private sector provision. Based on the findings, they drew some considerations for an effective and efficient voucher program, including type and scope of services to be targeted, type and conditions of health providers to be contracted, and level and sources of funding.

4.1.4 Various RBF approaches

Two review papers focus on the effects of various RBF approaches on maternal health, mainly in LLMICs. Kinoti (strength of evidence: low) did a rapid review of evidence about positive and negative effects of RBF (including PBC, PBF, vouchers) on access, utilisation, coverage, quality of services, and impact on maternal health gathered at major donor-supported RBF program websites [51]. They found that **various RBF approaches have been tested, leading to increased access, quality and utilisation of maternal health services**. Some key findings were highlighted: a large and statistically significant impact of PBF on the probability of institutional deliveries found by a prospective quasi experimental design study in Rwanda; a PBF associated increase in the rate of assisted births (of 50-60%) and uptake of FP in Burundi, and in skilled deliveries in Haiti (of 19%); and the positive effects of vouchers (e.g. Kenya and Uganda) on increased utilisation and coverage of maternal health services. But the effects of RBF on improving maternal health outcomes were not clear because of weaknesses in evaluation methods. The review highlighted also a **number of potential negative effects of RBF**: reduced use of services not paid for; fraudulent sale of vouchers and fraudulent reporting; sense of coercion and control of choice by providers; providers' dependency on incentives; poor team work; government defunding of services not under PBF; politicization and corruption of PBF payments; and excessive provision of unnecessary or potentially harmful services, especially for highly rewarded services. It was also hypothesized that increased facility-based deliveries could also lead to unnecessary C-sections although there is no published evidence on this in developing countries. Leadership, especially at the top political level, is increasingly recognised as necessary to assure support for RBF to be institutionalized and sustained, using national funding mechanisms. The review also recommends key research areas to identify best ways to design, implement, manage, and evaluate RBF programs and assess positive and negative effects of RBF on maternal health services and outcomes.

The extensive review of published and grey literature in English, coupled with an online survey on performance-based incentives for maternal health in developing countries by Morgan et al. (strength of evidence: low) identified and examined 5 PBC, 12 PBF, 5 voucher, 4 CCTs and some performance-based aid programs in at least 23 countries [52]. **RBF is generally an important approach to addressing demand- and supply-side barriers to improving maternal health**. **Although it is difficult to disentangle the effect of the incentive from other interventions, the findings show that where RBF is being tried, it is making a big difference. Despite a wide range of RBF models with varying results and much still to be learned about what works best, the available evidence suggests that carefully designed and implemented RBF can increase the use and quality of key maternal health services (FP, ANC, institutional deliveries)**. In order to improve maternal health, many things are needed, including technological advances and political commitment, but RBF is an important piece of the puzzle for addressing the often-neglected drivers that determine health and for strengthening the health system generally. No side effects of RBF were documented, but the review highlighted a number of limitations of the current 'first generation' of RBF schemes, which tend to focus on outputs rather than outcomes and on quantity rather than quality. For output indicators, they focus on facility-based and single outputs rather than a continuum of care, which include community-based care. For quality indicators, they focus more on infrastructure and input availability rather than real technical quality content. To address these limitations in the 'second generation' of RBF schemes, the authors recommended redouble efforts to reward quality in addition to quantity; reward delivery of the entire continuum of care that is effective in improving maternal health; expand RBF to address supply chain management issues, and invest more in the demand side.

One of the 14 review papers, Touré et al. (strength of evidence: medium) focuses on the effects of RBF schemes on prevention of mother-to-child transmission (PMTCT) of HIV programs in resource-poor settings [53]. They found few studies evaluating the effects of financial and non-financial incentives on performance

in the public health sector, especially in the field of HIV and PMTCT, in resource-limited settings. In addition to the review of six-year PBC experience in Haiti and PBF experience in Rwanda, which included MNCH and HIV/AIDS indicators as target performance, they examined a pilot PBF (with private and faith-based facilities) initiated in 2008 by the Elizabeth Glaser Paediatric AIDS Foundation (EGPAF) in Ivory Coast and found that PBF was associated with improvement in quantity and quality of HIV prevention, care and treatment. They concluded that **in LLMICs where public sector salaries are rarely associated with educational level or cost of living, financial incentives may be important determinants of worker motivation for PMTCT, but cannot resolve all worker motivation problems**. Over-paying professionals to encourage them to commit to their job may pose ethical problems. Human resource management should be considered in the design and implementation of PMTCT performance-based initiatives.

Canavan et al. (strength of evidence: low) reviewed not only the effects, but also institutional arrangements, including factors determining success, costs and sustainability of RBF in LLMICs [54]. They found that **the introduction of RBF in various settings led to remarkable improvements, mainly in targeted output and outcomes indicators such as utilisation, coverage and emergency referrals, with enhanced quality of provider performance**. While RBF achieved some positive results on the level of meeting qualitative health indicators, the extent to which it contributes to improved quality of care remains a question. As for RBF, **there is a risk of compromising quality of care to meet utilisation targets**. The per capita cost of RBF varies from US$0.25 in DRC to US$4.82 in Afghanistan. Based on the early RBF experiences in LLMICs, the authors concluded that RBF approaches are promising and demonstrate potential for improvement in health service utilisation and quality of health care.

However, there is still ambiguity among health system professionals about the extent of attribution of the success by increased investment in resources and technical assistance rather than just RBF strategy alone, a question that requires further research. All RBF programs use output and facility-based indicators as a means of target setting and rewards performance rather than community-based, outcome and impact indicators, mostly because of costs and non-feasibility associated with the measurement of such indicators. They also highlighted some disadvantages and potential risks of RBF, by referring mainly to those indicated by Meessen, Kashala and Musango [22], with no particular results found by the review itself.

Annear (strength of evidence: low) reviewed 92 published and grey literatures on the effectiveness and operation of health equity funds (HEFs) and some other related interventions such as PBC, vouchers, community-based health insurance and user fees and exemptions in Cambodia between 2001 and 2010 [55]. **HEFs were found to be effective in lowering financial barriers for poor people to use public health facilities, and thus increasing the utilisation of public health services, and reducing (but not eliminating) debt for health care.** HEFs are considered a significant source of additional revenue to public health facilities and staff incentives, and thus, improve their attitude toward poor patients. The targeting of the poor in HEFs was found accurate and cost-effective. There was evidence on the impact of HEFs on improved quality of care, but not conclusive. He found limited evidence on HEF impact on reduced household health expenditures as well as reduced impoverishment due to health care costs and on improved health outcomes. One study included in the review found hospital-based HEFs to be effective in complementing health centre-based vouchers and other midwifery incentives to increase institutional delivery for poor women in rural areas. The review also highlighted the common design features of HEFs and implementation issues, including pre-requisites for HEFs and their potential in linking with and complementing to other health financing interventions.

4.1.5 Summary of the most relevant results of the reviews

There is a wide range of RBF approaches, including PBC, PBF, RBB and vouchers, being initiated, piloted and scaled up in LLMICs. Despite a growing number of studies on RBF there are few robust ones from LLMICs. The reviews show varying results of RBF across programs and settings. It is also good to remind that the set of reviews used different methodologies and are a mix of more or less rigorous reviews; either carried out by independent researchers or by experts with substantial involvement in RBF schemes. However, the last can be a strength from an operational perspective.

Although it is often difficult to disentangle the effects of the incentives from other interventions, **the findings show that where RBF is introduced, it can make a substantial difference in terms of utilisation and coverage of those health services which are incentivised, especially for targeted indicators, including maternal health indicators.** There is growing evidence on the positive effects of RBF on access to and utilisation of maternal health services, but evidence on the effects on service quality and maternal health outcomes is limited. Also there has been little or no investigation on the long-term and system-wide effects of RBF on overall health service provision in a country. Although no study focuses on negative effects of RBF, **anecdotal evidence suggests that some potential undesirable effects of RBF, such as motivating unintended behaviours, distortions, gaming or fraud, dilution of professionals' intrinsic motivation, are possible and need to be carefully monitored and evaluated**. In general, when compared to traditional input-based approach, RBF – be it PBC, PBF, RBB or vouchers – appears to be more effective in increasing the utilisation of services, especially those incentivised. **If carefully designed and implemented, RBF can be instrumental to complementing other interventions to address supply and demand barriers to effective maternal and neonatal health care.**

A word of caution, not only the evaluation techniques used are relatively weak (which is inherent to this type of investigations, where it is notorious difficult to design and apply a fully controlled experiment over a longer period of time taking into account all confounding factors) but important dimensions of RBF have not been well documented; e.g. efficiency compared to the status quo or other health financing approaches; the long-term effect of RBF on providers' behaviours and expectations; and sustainability. While more RBF schemes are being implemented, research will be needed to disentangle the positive and negative effects of RBF in order to analyse the overall impact on the health system.

4.2 Findings from the review of 70 individual RBF-related papers

Many LLMICs are implementing RBF schemes that include essential interventions to improve maternal and newborn health. The main types include PBC, PBF, RBB, vouchers and other incentive schemes for safe motherhood services.

4.2.1 What types of schemes are reported in the literature?

Table 3 shows the number of RBF studies which were identified and reviewed for each type or approach and country. A total of 70 studies that assess 37 RBF programs in 25 different LLMICs[14] were included. The largest number of studies is for vouchers (33 studies), followed by PBF (18 studies), PBC (11 studies) and RBB (8 studies).

In some countries several RBF approaches were and have been concomitantly implemented, e.g. PBC, vouchers and RBB in Cambodia; PBC and PBF in Indonesia; and PBC and vouchers in Uganda. While PBF, PBC and RBB are mostly one single large program in a particular country, there can be several voucher schemes, e.g. in both Bangladesh and Uganda there was a small voucher pilot which provided technical input for the larger programs; India has several voucher schemes in different states; and the three voucher programs in Nicaragua all tackled a different health problem.

Of the 37 studied programs 24 are still on-going. Most PBF programs and a bit more than half of the identified PBCs are still on-going, whereas a large number of voucher programs has been ended for a number of reasons: objective reached (Taiwan and Korea); small and pilot programs integrated in larger voucher programs (Bangladesh, Cambodia, India, Uganda) or in other social protection mechanism (China); and only for 3 programs no further funding could be secured (all in Nicaragua).

The table also presents the strength of the evidence of the studies, with 43 studies scoring very low or low, 23 medium and 4 high. This finding indicates that it is rather complicated to develop and implement a rigorous research design for RBF programs in health – something which they have in common with supply-

[14] Taiwan and Korea are now classified as high-income countries, but the studies took place when they were still among LLMICs.

side interventions. Most study designs made use of cross-sectional surveys before and after intervention, sometimes with and sometimes without a control area (see Appendix 1 where the 70 studies and findings are shortly described and Annex 3 with the references for the 70 studies).

Table 3: Number of the reviewed RBF studies and programs by type and country

Characteristics	PBC	PBF	Voucher	RBB	Total
Number of countries with studies	7	8	11	4	**25****
Number of programs studied:					
• Total number	7	8	18	4	**37**
• Number still on-going	4*	8	8*	4	**24**
Number of studies	**11**	**18**	**33**	**8**	**70**
Strength of evidence studies					
• Very low	-	4	4	-	**8**
• Low	5	10	13	7	**35**
• Medium	5	3	14	1	**23**
• High	1	1	2	-	**4**

*see Appendix 1 for more details why programs are not active anymore

** in some countries there is more than one RBF approach, the total sum is the number of countries with one or more RBF

Table 4 presents key features of the various programs reviewed, such as the objectives, type of services provided, target groups, and the scale of the program. Of the 37 programs included in the review, 11 voucher and RBB programs focus entirely on the reduction in maternal and neonatal mortality (MNM) by providing only Safe Motherhood (SMH) services. Six other voucher programs address both MNM and other aspects of Sexual and Reproductive Health (SRH), such as family planning (FP), gender-based violence and/or child health services, whereas 5 other voucher programs focus on other aspects of SRH (FP, STIs, cervical cancer) or child health.

While the overarching objective of most voucher and RBB programs is the reduction in MNM, PBF and PBC have a much wider objective – increased quantity and quality of production and utilisation of essential health services. Most PBF and PBC programs include MNCH indicators for their target performance (such as FP, ANC, institutional delivery, and PNC) together with other indicators for the essential primary health care package (such as outpatient consultations, child vaccination, HIV testing, malaria and TB). An innovative PBC approach linked annual aid in the form of block grants to villages in Indonesia to performance indicators. The experiment showed improved health indicators. The four reviewed RBB programs (Cambodia, Ghana, Nepal, Senegal) are government initiated and have as overarching objective to increase the number of institutional deliveries. In Nepal this approach is accompanied by a CCT for women giving birth in a health facility.

In general, RBF approaches have more than one objective. All aim to increase the performance of providers and motivate staff to produce more and better quality health services. One PBF program (Philippines) focuses entirely on improving the quality of services purchased by PhilHealth – the largest social health insurance scheme in the country. All programs, except RBB, ensure a split between the purchaser/regulator and the providers.

There are 19 RBF programs (2 PBCs in Haiti and Uganda, 1 PBF in Egypt, 1 RBB in Ghana and 15 voucher programs) leveraging the use of private and/or NGO sector facilities to provide essential services. Of these, two voucher programs in Armenia use the vouchers also to curb informal payments asked for by private facilities contracted to provide State-Guaranteed Free basic package of health services. Using private health facilities to provide essential services is especially relevant when most providers are private (vouchers in Taiwan, Korea); or where there are important gaps in public service provision (e.g. India voucher programs). In addition to filling gaps in public service provision, using private providers in RBF can empower clients by providing them more choice and can create competition among participating providers to improve the quality of their services – being more innovative, efficient and responsive to clients. Several

voucher schemes funded by KfW also have as objective to build the country's capacity for social health insurance (contracting of private providers, accreditation, quality assurance, price policies, claims processing etc.).

Table 4: Key features of the reviewed RBF programs

Objectives, type of services, for whom and where	PBC N=7	PBF N=8	Voucher N=18	RBB N=4	Total N=37
Overarching objective					
• Reduce maternal/neonatal mortality	-	-	8	4	**12**
• MNM + other aspects SRH/child health	-	-	5	-	**5**
• No MNM, focus on other aspects SRH/child health	-	-	5*	-	**5**
• Increase quality/use essential package of services with focus on MNCH	6	7	-	-	**13**
• Increase quality/use essential package with no particular focus MNCH	1	1	-	-	**2**
Other objectives					
• Motivate health staff to produce better and more services	7	7	18	4	**37**
• Set up to improve quality of services	-	1	-	-	**1**
• Split purchaser/regulator and provider	7	8	18	-	**33**
• To be able to use private-for-profit or NGO/FBO sector for provision of essential services	2	1	15	1	**19**
• Regulate private sector provision of services	-	-	2	-	**2**
• To use a private/NGO organisation for improved management of health providers	4	-	-	-	**4**
• Build capacity social health insurance	-	-	3	-	**3**
• Improve efficiency of aid grants to villages	1	-	-	-	**1**
Type of services incentivised:					
• Only MNCH, SRH and child services	-	-	18	2	**22**
• Critical services of essential package of services	7	8	-	-	**15**
Target groups:					
• Poor**	7	7	12	3	**29**
• Specific: sex workers, adolescents	-	-	2	-	**2**
• All: poor and non-poor	-	1	4	1	**6**
Scale:					
• Particular geographical area(s)	6	2	13	-	**21**
• National scale (and state level in India)	1	6	5	4	**16**

** Concerns: Family Planning (2), STIs for sex workers (1), cervical cancer screening (1), child health (1).*

*** Can be by targeting the poor or by improving performance health facilities which are used by the poor.*

The Haiti PBC contracted successfully NGOs to deliver essential services. However, the Uganda PBC was less successful and the reasons for this were described in two papers (Appendix 1) such as delays in fund disbursements, small and complex incentives not well understood by health staff and not provided to individual staff. An interesting approach of 4 PBCs is the contracting of private/NGO sector agencies to manage health facilities in order to improve performance, which is or was done in Afghanistan, Bolivia, Cambodia and Pakistan.

A wide range of services are provided in the various RBF approaches. While vouchers and RBB incentivise selected reproductive, maternal and child health services, PBF and PBC provide incentives for a whole package of essential services in which mother and child health services are also prioritized.

Another difference between RBF programs exists in the definition of the target groups. Many voucher programs target poor and vulnerable population groups (e.g. poor pregnant women). Several voucher programs do not target the poor, but specific population groups in need of a particular service (e.g. all couples in fertile age in Taiwan and Korea and all pregnant women or children in Armenia). This is similar for RBB which often targets essential services to particular population groups (e.g. pregnant women). In PBC and PBF, all people living in a particular coverage area of the participating health facilities are the target group. However, PBC often operates in poor and remote settings and is thus primarily beneficial to the poor and vulnerable, as evidenced by the case of PBC in Cambodia.

Voucher programs are mostly limited to a particular geographical area, although there are schemes which were scaled nationally or state-wide (Gujarat-India, Korea, Taiwan, and 2 in Armenia). On the contrary almost all PBF programs have been or are being scaled nationally, often rather quick after a pilot was successful. In the case of PBC only in Afghanistan it is applied at national scale. RBB is mostly at national scale as it concerns a government measure.

4.2.2 Context in which the RBF programs are implemented

Table 5 shows the context and characteristics of countries where the various RBF approaches have been implemented. There are many more countries implementing one or more of these approaches, but no documented evidence or studies, and therefore, these are not included in the review.

Of the 37 reviewed RBF programs, 20 are in Asia, 12 in Africa and only 5 in Latin America and Caribbean (LAC). Over half of PBC are in Asia (4/7) while most PBF programs are in Africa (6/8). Two RBB programs are in Asia and two in Africa. Most vouchers are in Asia (12/18). The three voucher programs in LAC are not active anymore. Currently, there are over 15 new voucher programs being developed, half of them in Asia and another half in Africa. It seems there is a preference for PBF in Africa, while PBC, vouchers and RBB are favoured in Asia.

Table 5: Details of context of the reviewed RBF programs

Some details context programs	PBC N=7	PBF N=8	Voucher N=18	RBB N=4	Total N=37
Region					
• Africa	1	6	3	2	**12**
• Asia	4	2	12	2	**20**
• Latin America and Caribbean	2	-	3	-	**5**
Income of country					
• Low-income countries	4	5	10 [1]	2	**21**
• Lower-middle-income countries	3	3	8 [2]	2	**16**
Political stability:					
• Stable	4	5	18	4	**31**
• Fragile state or post-war/conflict	3 [3]	3 [4]	-	-	**6**
Ownership					
• Donor-initiated	4	1	8	-	**13**
• Gov.-initiated	2	-	6	4	**10**
• Donor-initiated, scaled by Gov.	1	7	4	-	**14**

1. *Of the 10 voucher programs in low income countries, 3 were in Nicaragua and 1 in China (these countries were classified as low-income countries when the schemes were implemented), a further 6 are or were in Bangladesh (2), Cambodia (1), Kenya (1) and Uganda (2)*
2. *Of the 8 voucher programs in lower-middle income countries, one was in Korea and one in Taiwan (these countries were classified as lower-middle income countries when the schemes were implemented). The other 6 schemes are in Armenia (2) Pakistan (1) and India (3)*
3. *Afghanistan, Cambodia and Haiti*
4. *Burundi, DRC and Rwanda*

All RBF approaches reviewed are in LLMICs. PBC is often used where the public sector is absent or too weak. This is the case for under-served areas or post-conflict settings, such as Haiti and Afghanistan. In such context, it might be more efficient to use public (government and/or donor) funds to contract private agencies (mainly private with public orientation or private not-for-profit) to assist in managing the public system or to contract private sector providers to make essential health services rapidly available rather than to build up a public health system. However, PBC can also be used for strengthening the public health system and can even evolve to become a PBF, such as has been the case in Cambodia. Moreover, there are also cases of PBF being successfully implemented in post-conflict settings (e.g. in Democratic Republic of Congo).

The level of ownership was gauged and 3 levels defined, those initiated by donors and not taken over by the government, those initiated by the government, and those initiated by donors and scaled by government. Almost all PBF and RBB programs have good government ownership, as they were initiated or scaled by the government. In vouchers a bit more than half (10/18) have good government ownership. In the PBC programs this is only true for 3 programs out of 7.

4.2.3 What type of MNH interventions is incentivized?

Table 6 provides a list of essential interventions to improve maternal and neonatal health (MNH) included in the reviewed RBF approaches. As presented in Annex 1, these essential interventions are grouped in four periods of adolescent and pre-pregnancy, pregnancy, childbirth and postnatal.

Table 6: Summary of MNH interventions included in the reviewed RBF programs

List of MNCH interventions	PBC N=7	PBF N=8	Voucher N=18	RBB N=4	Total N=37
Adolescents & pre-pregnancy					
Family planning	4	6	6	-	**16**
Prevent and manage STI	-	5	4	-	**9**
Pregnancy					
Management of unintended pregnancy (abortion and post-abortion care)	-	-	-	-	0
Appropriate antenatal care package and other relevant interventions during pregnancy (includes folic acid fortification)	7	7	13	-	**27**
Childbirth					
Institutional or skilled normal delivery and related care	7	7	13	4	**31**
Referral of complicated deliveries, including Caesarean section for maternal/foetal indication	7	7	13	4	**31**
Postnatal					
Postnatal check and care of mother	7	7	13	4	**31**
Postnatal care of child	7	7	13	4	**31**

Most RBF programs (31/37) address the interventions in the period of childbirth, which include institutional or skilled delivery and referral of complications plus proper postnatal care. RBB does not incentivise antenatal care, but all other schemes addressing safe motherhood do. None of the reviewed RBF schemes were reported to incentivise management of unwanted pregnancy. Nine of the 37 programs pay incentives for the management of STIs: 4 voucher programs and 5 PBF programs and 16/37 pay incentives for the provision of FP.

4.2.4 What types of barriers are addressed?

As presented in **Table 2**, barriers to accessing essential health services, including MNH care services, can stem from both supply and demand side, and are grouped in three interrelated dimensions of access: availability, affordability and acceptability. Table 7 shows the number of the reviewed RBFs addressing the three dimensions of access barriers according to supply-side and demand-side.

All RBF schemes address one or more barriers related to supply-side availability, such as waiting time, motivation of staff, readiness of the facility to provide services (availability of drugs, supplies, equipment), and improved referral. The same counts for acceptability such as staff interpersonal skills. Of the 37 programs, 27 also address supply-side affordability by directly subsidizing the user fees (vouchers and some RBB) or by indirectly incentivising providers, regulating the prices of services, and controlling informal payments. Ten RBF programs (4 PBC and 6 PBF) did not primarily address this barrier, although several were accompanied by a policy to abolish fees.

Most RBF schemes (31/37) address barriers related to demand-side availability, mostly through the provision of information on health care services and providers. One scheme organised transporters and paid for transport through vouchers (Uganda). The mechanism of distribution of vouchers guarantees that communities and individual clients receive information. Most PBF (7/8) and PBC (5/7) improve their outreach work in order to be able to reach the performance targets. Outreach does increase the provision of information to the communities. One PBF did not carry out outreach as the emphasis was entirely on the technical quality of the services (Philippines). Two PBCs did not conduct outreach because incentive payment of staff implementing outreach activities was not included in the PBC (Pakistan) or because the program was never well understood by health staff (Uganda). In the Nepal RBB scheme, provision of information about the scheme to the population is part and parcel of the RBB. This is not the case for the other RBBs.

Most RBF schemes (31/37) address demand-side acceptability. Alike demand-side availability, outreach activities also reduce barriers related to demand-side acceptability, by increasing health awareness, and helping to overcome cultural barriers. Vouchers increase health awareness; empower the holder improving self-esteem; and assist in overcoming cultural barriers.

Table 7 Number of individual RBF programs addressing particular barriers

Barrier	PBC N=7	PBF N=8	Voucher N=18	RBB N=4	Total N=37
Supply-side barriers addressed:					
Availability	7	8	18	4	37
Affordability	3	2	18	4	27
Acceptability	7	8	18	4	37
Demand-side barriers addressed:					
Availability	5	7	18	1	31
Affordability	1	1	9	1	12
Acceptability	5	7	18	1	31

The barriers related to demand-side affordability are only addressed in 12 schemes: in the Nepal RBB which is accompanied by a CCT; in the Indonesia PBC which is a community intervention; in the PBF implemented in Egypt where the services were organised such that opportunity costs were lowered. Although last counts for most PBF which include waiting times in their quality checks, but if this translates in lower opportunity costs was unclear. Nine voucher programs paid for transport and food costs and 1 of these also provided a CCT (Bangladesh).

4.2.5 What is the evidence on impact of RBF schemes on MNH?

Table 8 presents data on the impact of the RBF approaches on MNH. Relevant provider related factors and those related to MNH indicators were ordered in the following outcome categories:

1. Quantity of services provided, number of services utilised, coverage of the services

2. Quality of the services and satisfaction by consumers
3. Targeting of the services and equity among consumers

The table presents the number of programs and studies identified which investigated the impact on each of the outcome categories. It provides the percentage of the studies which found an effect, which had a positive effect and which had used a rigorous study design (those which scored medium or high for strength of evidence in Appendix 1). It also shows the number of studies which had a positive effect and used a rigorous methodology.

Table 8: Number and percentage of programs/studies with effect and/or rigorous evaluation

Type of Effect	**# of programs**	**# of studies**	**% with effect** *(of number of studies investigated the issue)*	**% with positive effect** *(of those with effect)*	**% with rigorous study design** *(of those which investigated issue and had positive effect)*	**# of studies with rigorous design and positive**
PBC (7 programs, 11 research papers)						
Quantity/utilisation/coverage	7/7	8/11	75%	100%	50%	3
Quality / satisfaction	2/7	2/11	100%	100%	50%	1
Equity / targeting	2/7	3/11	100%	100%	67%	2
PBF (8 programs, 18 research papers)						
Quantity/utilisation/coverage	6/8	14/18	64%	100%	11%	1
Quality / satisfaction	7/8	8/18	100%	100%	50%	4
Equity / targeting	3/8	4/18	100%	75%	25%	1
Vouchers (18 programs, 31 research papers)						
Quantity/utilisation/coverage	15/18	22/33	100%	100%	45%	10
Quality / satisfaction	11/18	16/33	100%	100%	50%	8
Equity / targeting+	13/18	17/33	100%	100%	53%	9
RBB (4 programs, 8 research papers)						
Quantity/utilisation/coverage	4/4	7/8	100%	100%	14%	1
Quality / satisfaction	¼	1/8	0%	-	0%	-
Equity / targeting	2/4	2/8	100%	50%	0%	0
Total (37 programs, 70 research papers)						
Quantity/utilisation/coverage	32/37	51/70	86%	100%	29%	15
Quality / satisfaction	21/37	27/70	96%	100%	48%	13
Equity / targeting	20/37	26/70	100%	92%	46%	12

Studies finding an effect versus those finding "no effect"

The percentage of studies which found *an effect* was mostly 100% with some exceptions. In total 8 studies found no effect: 7 studies investigation utilisation (7/51) and 1 investigating quality (1/27).

In PBC programs 2 studies out of 8 found *no effect* on utilisation, one in Uganda (Morgan 2010) and one in Pakistan (Loevinsohn et al 2009), both scoring medium for strength of evidence. However 6 PBC studies found an effect, all positive and 3 had a score of medium or high for the strength of evidence. See Appendix 1 for details. In the case of PBF programs 5 studies out of 14 found *no effect* on utilisation. Of these 5 studies, one scored very low (in DRC), 3 scored low (Indonesia, Tanzania, Zambia) and only 1 scored

medium (in DRC) for strength of evidence. Nine of the 14 studies found an effect, but only one had scored high for strength of evidence (Basinga 2011). The only study investigating service quality in RBBs found *no effect* (an RBB program in Ghana), the study design scored low for strength of evidence.

Studies finding a positive versus those finding "a negative effect" (within those studies finding an effect)

The percentage of studies with a *positive effect* (of those studies with an effect) was also mostly 100%, with 2 exceptions. Two studies found a *negative effect*, both related to the outcome category equity and targeting, and both had a low score for strength of evidence. One PBF study in Burundi (Soeters et al, 2011) found an increase in OOP. The other study on a RBB was in Nepal (Powell-Jackson et al, 2009): women using the program were found to be wealthier.

The following conclusion categories were established as described also in the methodology:

1. Robust evidence: if 4 or more rigorous studies found a positive effect and none a negative effect
2. Modest evidence: if 2 or 3 rigorous studies found a positive effect and none a negative effect
3. Insufficient evidence: 0 or 1 rigorous study found positive effect
4. Conflicting evidence: if 2 or more rigorous studies had findings in opposite directions
5. No effect: if more than half of the rigorous studies found no effect

Table 9 is a summary table of the impact of the various approaches on the outcome categories, using the conclusion categories. In total only 27 of the 70 research papers scored medium (23 studies) or high (4 studies) for the strength of evidence, 16 of these rigorous studies being on vouchers (see also Table 3). Except for vouchers the number of studies with a rigorous study design investigating one of the RBF approaches is limited and therefore the frequency of robust evidence in one of the outcome categories is low in these RBFs, except for vouchers. For none of the outcome categories in any RBF conflicting evidence was found.

It is important to note that vouchers were developed (see Annex 5 history of vouchers) many years before the other types of RBF discussed in this review and there are much more studies on vouchers than on other RBFs, and more for which the strength of evidence is at medium or high level (longer implementation periods and more time to collect pertinent data). This has to be taken into account when comparing the effectiveness of the various RBF approaches.

Table 9: Summary table impact of RBF approaches on the three outcome categories

Type of Effect	Robust evidence >3 studies	Modest evidence 2-3 studies	Insufficient evidence <2 studies or no effect	# rigorous studies positive effect
PBC				
Quantity/utilisation/coverage		X		3
Quality / satisfaction			X	1
Equity / targeting		X		2
PBF				
Quantity/utilisation/coverage			X	1
Quality / satisfaction	X			4
Equity / targeting			X	1
Vouchers				
Quantity/utilisation/coverage	X			10
Quality / satisfaction	X			8
Equity / targeting	X			9
RBB				
Quantity/utilisation/coverage			X	1
Quality / satisfaction			X	-
Equity / targeting			X	0

4.2.6 Impact in terms of quantity, utilisation, and coverage

Impact on the outcome category quantity/utilisation/coverage was far out the most investigated issue, in 32 of the 37 programs. Only in 5 programs this was not studied because the RBF explicitly addressed quality issues or because not utilisation but outcome[15] was studied (e.g. STI prevalence in sex workers). Of the 70 studies reviewed, 51 investigated this outcome category, of which 86% had an effect, all positive. As described above seven studies (14%) found no effect. Five of these studies were on PBF (2 in DRC, 1 in Indonesia, 1 in Tanzania, 1 in Zambia) and 2 on PBC (Pakistan, Uganda). Reasons given in the publications for no effect were failings in implementation of the program or too early to draw conclusions.

Of those with a positive effect, 15 (29%) used a rigorous evaluation technique. Most of these 15 rigorous studies with a positive effect were done in voucher programs (10 studies), 3 in PBC programs, and only 1 for PBF and 1 for RBB. Hence, currently only for vouchers and PBC enough robust evidence exists that these RBF approaches can impact on quantity/utilisation/coverage, for PBF and RBB there is insufficient evidence (see also Table 9).

In the case of PBF there were quite some studies (14), however 5 had no effect and 8 studies scored low or very low for evidence of strength and just 1 scored high for the strength of evidence. This underwrites the difficulties encountered to measure an effect in one of the outcome categories. However, as the number of rigorous studies on PBF and RBB will increase the picture might change.

4.2.7 Impact in terms of quality of care and satisfaction

Impact on the outcome category quality/satisfaction was investigated in 21 of the 37 programs, producing 27 studies of which 26 had a positive effect. As described above one study found no effect, but reported no deterioration of quality even though the number of deliveries had increased (RBB-Ghana). Only 2 quality studies were identified for PBC, both with a positive effect but only 1 had used a rigorous technique. Hence there was insufficient evidence that PBC can impact on quality. For vouchers 8 rigorous studies were identified which had a positive effect and for PBF 4 studies, indicating robust evidence that vouchers and PBF can impact on the quality of care and/or patient satisfaction. Only one quality study was done for RBB and this one found no effect as described above.

4.2.8 Impact in terms of equity and targeting

Impact on equity/targeting was investigated in 20 of the 37 programs through 26 studies. All studies found an effect of which 24 were positive and 2 negative as described above (both from studies which scored low in strength of evidence). The negative effect was seen in an RBB in Nepal (RBB combined with CCT), where richer mothers made more use of the program, because of more education and more knowledge about the program. Furthermore, the universal nature of the program means that its recipients are disproportionately from richer households, who are more likely to use maternity services. The other program which found a negative impact was in Burundi where OOP increased. The PBF complemented the user fee abolition policy, but this was not enough to protect the poor and vulnerable.

Of the 24 positive studies 12 used a rigorous technique. No rigorous studies on this issue were identified for RBB and only 1 for the PBF approach. For vouchers and PBC there were respectively 9 and 2 studies, indicating robust evidence for vouchers and modest evidence for PBF of impact on equity/targeting.

4.2.9 Summary of impact on the outcome categories

Table 9 above summarised the evidence found. For vouchers there is robust evidence for all three outcome categories. A Cochrane type of review of vouchers which did include studies up to the end of 2010, only

[15] Only a few programs did investigate outcomes, and this was only in voucher programs

found robust evidence for utilisation, and modest evidence for quality and equity (see chapter 4.1). However, in the last two years new studies have been published investigating these outcome categories. .

For PBF robust evidence was found for its impact on quality/patient satisfaction, but insufficient evidence for the other outcome categories. As with vouchers, when more studies become available it will become more clear if indeed PBF can increase service utilisation, and when it does if this is then in favour of the more vulnerable and poor.

PBC does have robust evidence for increased utilisation, modest for equity and insufficient for quality. For RBB there were simply not enough programs, and hence studies to come to any firm conclusions.

4.3 Potential negative or unintended side-effects of RBF

None of the studies investigated explicitly negative or unintended side-effects. The body of rigorous evidence on side-effects of RBF in LLMICs is therefore close to inexistent. However, some studies found or mentioned potential negative effects as did other papers describing RBF. Below, the potential negative or unintended side-effects of RBF (incentives) on health provider motivation and performance which were found in the literature are summarised and ordered:

- focus on 'contracted' indicators which can lead to:
  - neglect of non-remunerated activities/ crowding out of other services;
  - adverse selection of patients (only for those services for which incentives are paid)
  - focus on quantity rather than quality of services;
  - over-servicing and moral hazard (e.g. vaccinating a child who does not need vaccination)
  - cherry-picking / cream-skimming patients that make it easy to meet targets;
- fraud or abuse:
  - 'gaming', data manipulation: improving or cheating on reporting rather than improving performance
  - corruption: falsification of documents, false reporting (ghost patients)
  - counterfeiting of vouchers or black market sales
  - collusion between providers and voucher bearers or voucher distributors
  - bribery and kickbacks to verification agencies or voucher management agencies delusion of intrinsic motivation, demoralisation;
- motivating unintended behaviours including distortions:
  - ignoring important tasks that are not rewarded with incentives
  - irrational behaviour to fulfil requirements
  - paper work instead of clinical work
  - bureaucratisation;
- undermining goals and motives:
  - crowding-out intrinsic motivation, social responsibility and professionalism restricting self-assignment of public health and clinical priorities
  - unsustainable improvement of services, dependency on financial incentives
- creating inequity
  - increasing inequity by rewarding providers and facilities that are in better position to reach targets
  - widening the resource gap between rich and poor

In fact, our review confirms that **there is a whole monitoring and evaluation program to be developed at this level**. One of its prime objectives will be to contribute to improving design and implementation of RBF schemes. Several problems can indeed probably be well addressed (for instance, fees can be structured in a way to favour facilities in remote areas).

The development of this knowledge program will also have to take into account the different nature of the side-effects. A RBF generating medical hazards for patients (e.g. if health providers are incentivised to deliver services for which they are not qualified) cannot be put on the same footing as fraud – which is an issue of fairness across rewarded providers and of efficiency. Focus on contracted indicator is, by essence, the principle of RBF. It is not necessarily bad per se. The question is whether some important activities (from the perspectives of the population) are overlooked and the reasons behind the neglect (impossibility to measure them, preference of donors?). Similarly, intrinsic motivation is not a goal or a value per se: it is instrumental to get the best outcome for patient: the issue is to find the optimal balance of intrinsic and extrinsic motivation.

4.4 Prerequisites for RBF and RBF effects on health system

In this chapter we try to tease out some of the prerequisites necessary to ensure that a particular approach is feasible and contributes to the strengthening of the health system rather than weakening the system. The chapter is based on the authors' own experience as well as the various articles read during the review. RBB has not been included in the more detailed prerequisites as the experience with this type of scheme is still limited, but the general prerequisites are also valid for RBB (see also Annex 6 on relevant differences between RBF approaches).

4.4.1 Prerequisites to make the use of a RBF approach feasible

General

- Country ownership: all stakeholders at all levels should be involved in and agree with overall design and details of particular crucial elements of the approach.
- Country's health strategies and policies are in accordance with the implementation of a particular RBF approach i.e. the approach should not work against the policies being developed and implemented.
- Functionality of the country´s health management and information system. For example a RBB needs a fully functional information system, preferably computerized, while a PBC and vouchers can function without such a system. PBF needs a functional system, but PBF itself can contribute to making the system more functional.
- Characteristics of the country's health providers should be in accordance with the RBF approach, specifically the number, type and distribution of health providers. Countries or specific geographical areas may have mainly public providers or FBO/NGO providers or private providers or combinations. Also the distribution of providers can be varied and should be taken into account (e.g. concentration in urban areas and few in remote rural areas and slums). A country where for example, most providers are private may be more a challenge for a PBF intervention than for a voucher scheme. On the contrary a country where most providers are public providers is probably better served with a PBF.
- The public and private not-for-profit providers participating in the schemes should have enough autonomy, so they can use the extra payments according to providers' priorities enabling the provider to produce the services and attract clients.

Performance Based Contracting

- There should be clear objectives in order to justify the costs of contracting out, e.g. when services must be rolled out in areas without existing infrastructure or service providers (e.g. in post-conflict areas) or where contractors take over the management of service delivery from an underperforming public

sector. Also if the contracting is with donor money, the situation which will develop after this funding is over should be taken into account; i.e. how can the continuity be ensured, e.g. through public funding?

- There should be no legal impediments for contracting out the management of provider networks to a private (for profit or non-profit) agency.
- Capacity of the country to control the contracted agencies, that is drafting a contract, closing a contract, monitoring the results and taking sanctions when needed should be adequate.

Performance Based Financing

- There should be a strong wish/vision in the country at all levels of the health system to introduce this new approach to make its public health system, eventually including FBO, NGO providers, more responsive to the needs of the clients and improve the quality and quantity of the services produced.
- Strong political commitment is crucial, but not enough for PBF. Experience (e.g. in Tanzania) has shown that appropriate design and implementation with community participation is crucial for its success and hence the country should have the capacity to design, albeit with technical assistance, and more importantly should have the corresponding capacity to implement the approach, again supported by technical assistance, which is able to guide and train all professionals involved in the PBF. For example the country should be capable to separate functions i.e. organise independent verification and checks and balances, organise a functional HMIS and be able to implement rigorous monitoring of results and link the results in a meaningful manner to the payment of the incentives, again guided and supported by technical assistance, as the capacity needed is today often not present in many countries.
- Autonomy of health providers, but also of other relevant stakeholders at operational level

Vouchers

- Vouchers can be used in many contexts, but the approach is best used where other solutions, such as improving the provision of services through the use of a PBF, will not solve the problem. This is the case when there is a special requirement for certain actions in order to reach the expected MNCH objectives such as the need:
  - to target a particular population (e.g. poorest segment of the population)
  - to accelerate the use of a particular services (e.g. FP)
  - to use private providers in countries and areas where most providers belong to the private sector (e.g. in rural areas in India)
- Vouchers can also be applied when there is a need to curb informal payments (e.g. Armenia) or where the country wants to build its capacity to implement social health insurance (accreditation, quality assurance, price policies, claims processing etc.).
- To justify the costs of voucher distribution and claims processing, interventions should be priority services. Services should be related to relatively common conditions, clearly definable, and time limited. There seems to be a practical upper limit to the number of services offered. Vouchers work better if services can be grouped, like a package of MNCH services.

4.4.2 What can the RBF mechanisms contribute to the health system

General

- The traditional function of health ministries in LLMIC has been to provide health services, not stewardship. For a variety of reasons, more and more people, including the poor, seek care in the private sector, resulting in a large and growing, unregulated private health sector (private for profit or non-profit FBO/NGO). To regulate this market, health ministries are faced with the unfamiliar and complicated task of 'steering' rather than 'rowing' in the health system. RBF, such as PBF and vouchers, might be able to assist governments in developing the much needed skills and capacity for stewardship, not only of the private but also of the public system.

- Once the evidence base is built and more knowledge available of what works when and how, it will be more clear how RBF can contribute to one or more of the six building blocks of a health system as outlined by WHO: 1) Good health services i.e. effective, safe, quality services; 2) a well-performing health workforce; i.e. there are sufficient staff, fairly distributed; competent, responsive and productive; 3) Well-functioning health information; 4) Equitable access to essential medical products, vaccines and technologies; 5) Good health financing system which ensures people can use services, are protected from Catastrophic Health Expenditures and gives incentives for providers and users to be efficient; 6) Leadership and governance ensuring strategic policy frameworks exist and are combined with effective oversight, coalition building, regulation, attention to system-design and accountability.
- RBF approaches could also be used during health reforms, when the system is transiting from pure public input based system to a more dynamic system in which the split between purchaser and provider, strategic purchasing [56], inclusion of private sector, stronger regulation, and accountability towards the population become important elements. It could also be used when countries want to increase health care coverage for its disadvantaged populations, such as those for maternal and child health.

Performance Based Contracting

- PBC can be considered a potential effective tool to assist in provision of services where current public health service provision is failing.
- Contracting can provide the opportunity to have greater control over providers in countries with poor regulatory capacity, and if used judiciously can improve health system performance.

Performance Based Financing

- Can be considered a potential tool to assist MOH in a change from only input based approach towards partly output/result based systems, providing MOH staff leverage over the system: the payments make it possible to demand the production of services of a given quality, and hence assists in regulating providers.
- Assist in strengthening the health and management information system and in strengthening the monitoring and evaluation function of the MOH.

Vouchers

- Can help develop country's capacity to purchase services (accreditation, pricing, contracting, quality assurance, monitoring, claims processing and reimbursement), including from private sector, and target the subsidies to particular needy populations, capacities also necessary for the development of social health insurance.
- Provider approval and accreditation, quality assurance and contracting of providers are all powerful tools to regulate providers and improve their quality, not only of private, but also public providers.

4.5 Summary of findings

There is an emerging body of evidence showing that RBF, if used wisely, can assist a country not only to increase the quantity and quality of the health services produced and utilised, but also to improve overall health system performance.

The reviews of RBF approaches found a wide range of approaches being initiated, piloted and scaled up in LLMICs. Despite a growing number of studies on RBF there are few robust ones from LLMICs. The reviews show varying results of RBF across programs and settings, however, in many cases, where RBF was introduced, it could make a difference in terms of utilization and coverage of health services, as reported in a variety of publications. There is growing evidence on the positive effects of RBF on access to and utilisation of maternal health services, but evidence on the effects on service quality and maternal health outcomes is limited. In general, RBF appears to be better than traditional input-based approach with regard

to the reported outcomes. If carefully designed and implemented, RBF can be instrumental to complementing other interventions to address supply and demand barriers to effective maternal and neonatal health care.

The review of the individual papers showed robust evidence that vouchers can impact on all three outcome categories investigated in this review (quantity/utilisation/coverage; quality/satisfaction; Equity/targeting). For PBF, robust evidence was found for its impact on quality/patient satisfaction, but insufficient evidence for the other outcome categories. As with vouchers, which developed much earlier, once more studies become available the evidence will show if indeed PBF can increase service utilisation. Nevertheless, the studies show great potential but only if the PBF is appropriately designed and implemented and sufficient commitment exists at all levels of the health system. It is unclear today if PBF can improve equity/targeting. One study in DRC showed a decrease in out-of-pocket (OOP), no studies showed increased capacity to target particular populations.

For PBC there is robust evidence for increased utilisation, modest evidence for improved equity and insufficient evidence for quality. For RBB there were simply not enough programs, and hence the review of the studies did not come to any firm conclusions.

Most programs studied are in Asia, followed by Africa and just a few in Latin America and the Caribbean (LAC). Most PBCs are in Asia, while PBF is mostly implemented in Africa. Half of the RBB programs are in Asia, the other half in Africa. Most vouchers are in Asia, just a few in Africa. However, half of the new voucher programs are being developed in Africa, half in Asia, but none in LAC.

5. Conclusions and recommendations

The review found that the evidence base of RBF is not yet stabilised and is still growing[16]. A good indication of this status is the still very shallow content of the few Cochrane reviews dedicated to schemes which can be identified as RBF. It is also in accordance with a recent evaluation (June 2012) of the main financial instrument of development of RBF in LLMICs, the World Bank coordinated Health Results Innovation Trust Fund (HRITF) [57].. The fact that the evidence base is still being built is particularly the case for PBF – which is very new – but also for PBC and RBB. There is more evidence on vouchers – one of the older RBF approaches, although the scope of evidence is limited to some dimensions and does for example not include cost-effectiveness.

MNH services have been a major area of application of the RBF logic, possibly the main one. The output-based payment logic has been applied to family planning, prevention and management of STI, antenatal care package, skilled normal delivery, and referral of complicated delivery, neonatal and postnatal care, and child care. There have been RBF experiences applied to MNH in Africa, Asia and Latin America and Caribbean, both in low-income countries and lower-middle income countries. There is evidence that RBF can be applied in very different settings, including post-conflict situations and fragile states.

External players have had a leading role in the initiation of RBF in many cases, but this is not an absolute rule. There is growing ownership at country level. A few countries have integrated RBF as a full component of their national health policy funded by the national budget. RBF schemes can and do address different access barriers to health – there is high creativity in this respect. RBF implementers adapt the strategy to the local bottlenecks and priorities and this might well be the major reason why RBF is considered to have great potential.

As for the impact of RBF schemes on MNH, there is an emerging body of evidence showing that RBF is able to improve relevant parameters related to maternal and neonatal health care services. Impact on utilisation of those incentivised services has been the most investigated issue and findings are rather supportive, even if the evidence is rarely of a randomised controlled trial standard. The fact that RBF increases the amount of services utilised by the target population (or coverage rates) is true for specific priority groups (with vouchers) and also for large populations (with PBF for instance).

There is also some evidence that RBF can lead to improvement in quality of services, specifically for PBF and vouchers. There is good evidence for vouchers and emerging evidence for PBC that these approaches can impact on equity in health care utilisation.

The review confirms that some important dimensions are under-documented; this is particularly the case for efficiency of RBF compared to the status quo or other health financing approaches and obviously for other dimensions even more complex to document such as the long-term effect of RBF on providers' behaviours and expectations. There is no substantial evidence on the negative and unintended side-effects of RBF, mainly hypotheses. Few studies specifically investigated these effects. While more RBF schemes are being implemented, research will be needed to disentangle the positive and negative effects in order to analyse the overall impact on the health system. Other dimensions, such as sustainability are neither well documented.

Another area still insufficiently studied is the effect of a combination of two or more RBF approaches which might well have a greater impact than each on its own. For example a nationally implemented PBF which increases the quality combined with vouchers to reach the most underserved populations. Unfortunately

[16] Even in developed countries the evidence base on RBF is far from stabilised although there are more advanced studies and richer evidence on provider incentives. A recent study published in the New England Journal of Medicine [58] found that an incentive scheme in hospitals did not decrease mortality, i.e. quality of care had not improved. However, the paper comments that the study might have been too early as it can take years to reconfigure the underlying approach to delivering care; and that the incentive model and its results may not be generalizable to all pay-for-performance programs. Alternative models that incorporate larger incentives and are focused on outcomes maybe more effective.

none of the more rigorous papers investigated the concurrent impact of two or more RBF approaches, with the exception of RBF approaches such as vouchers and RBB combined with a conditional cash transfer.

Societies of the 21st century are much more pluralistic than those of the previous century. RBF belongs to a policy paradigm acknowledging this reality. According to this paradigm, the prime responsibility of the health authorities is to ensure that the health sector – whatever the affiliation of their providers – delivers quality health services to all in an efficient way, without pushing households into poverty.

To move towards this goal – a quest much more than a result one can reach – it is crucial to acknowledge the status of the country´s health sector. Today, health systems of many LLMICs are characterised by i) a public health system which does not perform as expected and ii) an unregulated private health market whose quality is not assured and prices not regulated. On these two segments of the market, there are both supply side and demand side barriers which prevent the population to access critical services.

This diagnosis probably applies to the great majority of countries where development cooperation agencies intervene. The strategic question for them then is how RBF approaches can assist countries to strengthen their health systems and empower health authorities in their position of stewards... RBF creates systemic opportunities (e.g. it is an opportunity for the ministry of health to be more acquainted with strategic purchasing), but also risks (e.g. if the RBF approach leads to improved MNCH care to the detriment of the provision of other priority services).

There are also questions more specific to development cooperation agencies. Changes in the global environment probably dictate new orientations for development cooperation agencies at country level. In Africa, Asia and Latin America, there is strong economic growth. In many countries, the financial contribution of a single donor becomes marginal. This indicates new priorities and modalities for development assistance. Bilateral development cooperation agencies can certainly contribute positively, on the one hand, by piloting innovative strategies and on the other hand, by consolidating a broad commitment for better outcomes for vulnerable populations. The first objective is about taking risks, trying out new approaches and evaluating them. The second one is about introducing a culture of performance, accountability, good governance and harmonisation. RBF can be part of this development policy program.

There is a role for technical assistance and expertise in RBF. For instance, preparatory analytical work is required. Some of the first steps to be taken to be able to decide on the most suitable type of RBF to be used in a given context are to investigate the following:

1. **Socio-economic situation** of a country: low income country or low-middle income country.
2. **Type of political system**: well developed political system responsive to the parliament, or fragile state (post-war; no strong political system with low governance….), or other factors playing an important role, such as extreme low income or huge socio-economic differences.
3. **Type of health system:** e.g. predominantly public system and small private health sector basically catering for the rich; or a public system alongside which a private health market developed to cater not only to the rich, but also to the poor due to serious deficiencies in the public system; or a predominantly private sector which needs regulating.
4. **Revision of strategic documents on health financing**: what are the plans, for example is the country well on its way to develop health insurance for all (has it developed purchaser mechanisms, including mechanisms to assure quality and to develop pricing policies?); or is it planning to maintain the public health system (which can include private not-for-profit providers) and continue to invest in its public health system; or is it interested to develop both?
5. Revision of documents describing the most relevant **supply and demand-side barriers in MNCH in the country**, are they more related to supply than demand, or are they a combination?
6. Revision of **MNCH health indicators** of various population groups, does the problem affect the whole population, or is it more pronounced in particular groups, poor, ethnic minorities, and young people.

7. Which RBF approaches do already exist in the country?

The collection of the above data will help to decide whether it is relevant to support RBF or not, but will already give some indications on which RBF scheme is the most appropriate. The review provides some more interesting insights in terms of choice between RBF schemes.

While RBF can be considered as an option in very different settings, one can also observe some patterns of 'specialisation'. PBC has mainly been adopted in post-conflict settings or fragile states. Vouchers and RBB allow accelerating progress for specific groups which lag behind for the utilisation of some high impact services. PBF is adopted as a more universal/systematic approach. Table 10 provides a quick overview of what is known so far regarding the potentials, pitfalls and relevant contexts of the various RBFs. This table is far from finished, but rather a first collection and ordering of the data. In Annex 6 some more relevant differences between RBF approaches are presented.

Table 10: Potentials, pitfalls and relevant context of the various RBFs

Type	Potentials	Pitfalls	Relevant context
PBC	Address most access barriers (affordability to a lesser extent), robust evidence it increases utilisation, modest evidence for equity, insufficient evidence for quality Using private sector to overcome government health bureaucracy to improve health management and provision of basic health services	Undermine institutional sustainability Country's capacity to contract and monitor contract is critical	Post conflict or fragile states with poor health system
PBF	Broad instrument in terms of health services and systemic effects. Address most access barriers (affordability to a lesser extent), robust evidence for improving quality, not yet for other outcome categories Incentives allow increasing provider performance and stimulating health system reform (package of reform)	Good design and implementation critical, if failings, then no increase in use and quality Cost of monitoring Distorted attention to unremunerated activities Unable to address relevant demand barriers	Good governance and strong leadership All services are of priority
Vouchers	Addresses most access barriers, robust evidence for all 3 outcome categories Address demand barriers through financial assistance, health information and education, empowerment, and supply barriers through provider remuneration Allow targeting specific MNH interventions for underserved women Allow contracting of private sector for service provision	Cost of targeting and claims processing Fragmentation Crowding out effects	MNH should be a priority. Political interest to target particular vulnerable population; or accelerate use of critical MNH services (e.g. to reach MDGs). Or political interest to work with private sector (fill gaps in public service provision, or as building block for Health Insurance)
RBB	Addresses only supply-side barriers. Insufficient evidence on all 3 outcome categories	Needs a well functional health information system, otherwise it will not work Needs commitment at all levels of MOH	Countries which want to accelerate the use of institutional deliveries

The following general recommendations should also be taken into account and can certainly inspire the development cooperation agency operations:

1. for choosing an RBF approach (or the mix of it), best is to start from the context using the data collected, including preferences of relevant stakeholders at national and lower levels but also potential

resistance against a particular RBF approach, relevance and quality of existing health financing strategies and stage of implementation, the local burden of diseases, the main bottlenecks at the level of the health system, and the existing mix of available providers (public, private, NGO, FBO); the final selection should also consider factors such as the availability of financial resources and the values, culture and political orientation of the partner country;

2. it is relevant to acknowledge from the very beginning the potential spill-over effects of the RBF approach on the whole health system and the possible alignment with other goals (e.g. universal health coverage); this must be an object of dialogue with senior cadres of the ministry of health.
3. as for the design and the implementation, emerging good practices can be very helpful – and when necessary search for technical assistance from experts (RBF is new and the know-how and experiences are still being developed on a daily basis); to remain well connected with the global development of RBF knowledge is also a good practice (e.g. through communities of practice, networks and the literature).
4. in order to build local ownership, set up comprehensive monitoring and evaluation, and disseminate the lessons learned, enough resources should be available;
5. successful pilot experiences can be endorsed; e.g. by assisting to scale up, including through a progressive shift of aid instruments consolidating country ownership and donor harmonisation (e.g. budget support).

RBF experimentation is a very dynamic field today for development cooperation agencies. There are growing risks associated with the emerging pattern of different development cooperation agencies testing simultaneously different RBF strategies or having RBF projects next to each other in a same recipient country. Thus, instead of helping the country to harmonize and consolidate the health system, agencies and RBF entrepreneurs may compete among each other for financial and political resources. This may compromise the chance of sustainability and integration within the public finance. Starting an RBF intervention should mean a permanent concern to look for coordination with the national authorities, but also with other donors. RBF should not be seen as a project, but as a process of change.

There is demand by many local actors for greater accountability at country level. This review shows for instance that Governments themselves have initiated RBF approaches specifically RBBs, but also PBC and vouchers and that most PBF and several vouchers have been scaled up by national governments, even with their own public budgets. Aid agencies can accompany the movement.

In terms of generating new knowledge, donors and development cooperation agencies can contribute in many ways. Of course, more evidence on the effectiveness and even efficiency of RBF schemes in terms of MNH is welcome. However, our recommendation would be to take a more holistic approach to the possible effects of RBF on health systems and even societies themselves. A priority would certainly be to explore how RBF can consolidate the objective of universal health coverage at country level.

Annexes

Annex 1: Essential interventions for improving maternal and newborn health

Interventions	Referral level	First level	Comm-unity
Adolescents & pre-pregnancy			
Family planning	√	√	√
Prevent and manage STI including MTCT of HIV and syphilis	√	√	√
Folic acid fortification and/or supplementation for preventing Neural Tube Defects	√	√	√
Pregnancy			
Management of unintended pregnancy ▪ Availability and provision of safe abortion care when indicated ▪ Provision of post-abortion care	 √ √	 √ √	 √
Appropriate antenatal care package ▪ Screening for maternal illnesses ▪ Screening for hypertension disorders of pregnancy ▪ Screening for anaemia ▪ Iron and folic acid to prevent maternal anaemia ▪ Tetanus immunization ▪ Counselling on family planning, birth and emergency preparedness ▪ Prevention and management of HIV, including with antiretrovirals ▪ Prevent and manage malaria with insecticide treated nets and antimalarials ▪ Smoking cessation	√	√	√
Reduce mal-presentation at term with External Cephalic Version	√		
Prevention of pre-eclampsia ▪ Calcium to prevent hypertension ▪ Low dose aspirin to prevent hypertension	 √ √	√	
Magnesium Sulphate for eclampsia	√	√	
Induction of labour to manage pre-labour rupture of membrane at term	√		
Antibiotics for preterm pre-labour rupture of membranes	√	√	
Corticosteroids to prevent respiratory distress syndrome in newborns	√		
Childbirth			
Induction of labour for prolonged pregnancy	√		
Prophylactic uterotonics to prevent postpartum haemorrhage	√	√	√
Active management of third stage of labour to prevent postpartum haemorrhage	√	√	
Management of postpartum haemorrhage (e.g. uterotonics, uterine massage)	√	√	√
Caesarean section for maternal/foetal indication	√		
Prophylactic antibiotics for caesarean section	√		
Postnatal (mother)			
Family planning	√	√	√
Prevent and treat maternal anaemia	√	√	
Detect and manage postpartum sepsis	√	√	
Screen and initiate or continue antiretroviral therapy for HIV	√	√	
Postnatal (new-born)			
Immediate thermal care	√	√	√
Initiation of exclusive breastfeeding (within first hour)	√	√	√
Hygienic cord and skin care	√	√	√
Neonatal resuscitation with bag and mask (professional health workers)	√	√	
Case management of neonatal sepsis, meningitis and pneumonia	√	√	
Kangaroo mother care for preterm and for less than 2,000g babies	√	√	
Management of new-borns with jaundice	√	√	
Surfactant to prevent respiratory distress syndrome in preterm babies	√		
Continuous positive airway pressure to manage babies with respiratory distress syndrome	√		
Extra support for feeding small and preterm babies	√	√	
Presumptive antibiotic therapy for new-borns at risk of bacterial infection	√		

Source: adapted from [30], the Partnership for Maternal Newborn and Child Health

Annex 2: Results from 14 reviews related to PBC, PBF, vouchers, RBB and HEF

<table>
<tr><th colspan="2">Performance-Based Contracting (PBC)</th></tr>
<tr><td colspan="2">1. Liu X, Hotchkiss DR, and Bose S: The effectiveness of contracting out primary health care services in developing countries: a review of the evidence. Health Policy and Planning 2008, 23:1-13.</td></tr>
<tr><td colspan="2">Strength of the evidence: medium; not a Cochrane type of review, but published in a peer-reviewed journal with good impact factor (2.973)</td></tr>
<tr><td colspan="2">RBF interventions included in the review by group: an intensive, but not systematic review of peer-reviewed papers and technical reports on the effectiveness of contracting out of private health care providers for multiple primary health care services, which can be categorized as Performance-Based Contracting (PBC). Authors identified 130 publications and selected 16 research articles that assess</td></tr>
<tr><td>PBC</td><td>• 13 PBC interventions in 12 LLMICs: Bangladesh (2), Bolivia, Cambodia, Costa Rica, Croatia, Guatemala, Haiti, India, Madagascar, Romania, Senegal and South Africa.
• 7 of them use performance-based payments to providers and others do not
• 8 of them cover primary health care (PHC) of which 5 include key maternal, neonatal and child health (MNCH) performance indicators, while 5 others (Bangladesh, Haiti, India, Madagascar, Senegal) focus specifically on MNCH services, including nutrition and growth monitoring</td></tr>
<tr><td>PBF</td><td>n.a.</td></tr>
<tr><td>Vouchers</td><td>n.a</td></tr>
<tr><td>RBB</td><td>n.a.</td></tr>
<tr><td>HEF</td><td>n.a</td></tr>
<tr><td colspan="2">Major Findings:
The review of the selected studies suggests that contracting out for PHC has in many cases improved access to services, as measured by coverage rates, availability of services and quantity of services provided and used. However, the effects on other dimensions such as equity, quality and efficiency are often unknown. Moreover, little is known about the system-wide effects (be it positive or negative) of contracting-out. The context in which contracting-out is implemented and the design features of the interventions appear to greatly influence the chances for success. More evidence on the program effects of contracting-out is needed.</td></tr>
<tr><td colspan="2">Findings on general positive effects/impact:
Quantity/utilisation/coverage: In most cases, increased utilisation rates of PHC, mainly for targeted indicators, and the increase was higher in contracting-out than in the control, except in Guatemala where coverage of immunisation, antenatal care and oral rehydration treatment under contracting out was similar to traditional public delivery model but inferior to contracting-in model.
Quality/satisfaction: client satisfaction higher in contracting-out than in traditional public delivery (Guatemala), statistically significant increase in qualitative indicators for treatment of childhood illness according to WHO guidelines (India), but structural quality and knowledge on correct treatment of sexually transmitted infections was lower among contracted general practitioners than among public clinic staff (South Africa).
Efficiency: No evidence
Equity/targeting: although all of them use universal supply-side approach, most of them tend to target urban and rural poor areas where public provided services were irregular or unavailable. As a result, they increased access to PHC for the urban poor (Bangladesh), increased access to basic health services and decreased per capita private spending by the under-served poor (Cambodia)
Health outcomes: Almost not assessed: decrease in incidence of illnesses (Cambodia), decreased malnutrition rates (Madagascar, Senegal), but no clear additional effect on child nutritional status (Bangladesh); mortality the same for both groups (Costa Rica).</td></tr>
<tr><td colspan="2">Findings on positive effects related to MNH care:
Institutional deliveries increased by 41% and deliveries in PHC centres grew from 5% to 9% (Bolivia)</td></tr>
<tr><td colspan="2">Findings on negative or side effects: One study in Cambodia found that contracting out did not specifically affect the utilization of non-targeted health care services, after controlling for other factors, indicating that contracting out did not harm health system performance in terms of access to non-focal services.</td></tr>
<tr><td colspan="2">2. Lagarde M, Palmer N: The impact of contracting out on health outcomes and use of health services in low and middle-income countries. Cochrane Database of Systematic Review 2009, Issue 4. Att. No.: CD008133. DOI: 10.1002/14651858.CD008133.</td></tr>
<tr><td colspan="2">Strength of the evidence: high; a Cochrane type of review</td></tr>
<tr><td colspan="2">RBF interventions included in the review by group: a systematic review of peer-reviewed and unpublished papers on the impact of contracting out (PBC), defined as the provision of health care services on behalf of the government by non-state providers, on health outcomes and use of health services in LLMICs. Authors identified 14 publications and through several screening stages, included only 3 studies (1 cluster randomised controlled trial, 1 controlled before-after and 1 interrupted time series).</td></tr>
<tr><td>PBC</td><td>3 separate PBC interventions located in 3 countries: Bolivia, Cambodia and Pakistan</td></tr>
<tr><td>PBF</td><td>n.a.</td></tr>
<tr><td>Vouchers</td><td>n.a</td></tr>
</table>

RBB	n.a.
HEF	n.a

Major Findings:
The review of the selected studies suggests that contracting out services to non-state providers can increase access to and utilisation of health services. One study (Cambodia) found a reduction in out-of-pocket health expenditures and improvement in some health outcomes (as measured by reduced self-reported illness in the past 30 days and incidence of diarrhoea). However, reliability and generalizability of the findings is limited by the methodological weaknesses and particularities of the reported program settings.

Findings on general positive effects/impact:
Quantity/utilisation/coverage: In Bolivia, there was an increase of 20.8% (% recalculated by reviewers) in the number of deliveries attended by health personnel, but no effect on bed occupancy and the average length of stay in hospital. In Cambodia, there were differences in 2 of 8 outcomes measured: an absolute increase of 21% and 19% in use of public facilities and uptake of vitamin A respectively. The study in Pakistan showed an immediate increase of more than 130% in consultation visits to the basic health units (+144% on daily visits and +135% for monthly visits), but this increase did not sustain as both outcomes declined considerably in the 18 months following the start of the intervention.
Quality/satisfaction: none
Efficiency: Reduced out-of-pocket health expenditures in Cambodia
Equity/targeting: none
Health outcomes: reduced self-reported illness in the past 30 days and incidence of diarrhoea in Cambodia

Findings on positive effects related to MNH care:
Increase of 20.8% in the number of deliveries attended by health personnel (Bolivia), as reviewers recalculated the data, and hence, the difference with the Liu review.

Findings on negative or side effects: none

3. Oxman AD and Fretheim A: Can paying for results help to achieve the Millennium Development Goals? Overview of the effectiveness of results-based financing. *Journal of Evidence-Based Medicine* 2009: 70-83.

The results of this review can also be found in **Oxman AD and Fretheim A: An overview of research on the effects of results-based financing. Report from the Norwegian Knowledge Centre for the Health Services nr 16-2008. Systematic review.**

Strength of the evidence: medium; not Cochrane type of review, but published in a peer-reviewed journal – an official English language journal of the Chinese Cochrane Centre, part of the international Cochrane Collaboration.

RBF interventions included in the review by group: an overview of systematic reviews of peer-reviewed and unpublished papers on the effectiveness of RBF. Authors identified 12 systematic reviews that met their selection criteria and divided them in 4 groups by the level at which the RBF targeted: (1) 3 reviews on RBF targeting at recipients of care (conditional cash transfers); (2) 6 reviews on RBF targeting at individual or groups of health care professionals (PBF); (3) 1 review on RBF targeting at private sector organisations (PBC); and (4) RBF targeting at government or public sector organisations (performance-based aid or budgeting). These reviews had overlapping scopes and included studies mostly from high-income countries (some studies were included in more than one review). Only two reviews included studies from LLMICs: Lagarde et al 2007 and Lagarde & Palmer 2009. The former review was on conditional cash transfers, whereas the latter review assesses PBC

PBC	3 PBC interventions in three countries: Cambodia, Pakistan and Bolivia
PBF	n.a
Vouchers	n.a
RBB	n.a
HEF	n.a

Major Findings:
There is very limited evidence on the effects of RBF in LLMICs. Conditional cash transfers to poor and disadvantaged groups in Latin America are effective in increasing the uptake of some preventive services. Review on contracting out services to non-state providers showed some evidence on its positive effects on increased access and use of health services, but these effects might not be attributable to PBC, but to higher technical and financial inputs to the contracted facilities. Evidence from high-income countries shows that financial incentives targeting individual health care professionals are effective in the short run for simple and distinct, well-defined behavioural goals. RBF can have undesirable effects, including motivating unintended behaviours, distortions (undermining or ignoring unrewarded activities or targets), gaming or fraud (exaggerating or cheating on reporting rather than improving performance), widening the resource gap between rich and poor, dependency on financial incentives and dilution of professionals' intrinsic motivation.

Findings on general positive effects/impact:
Since we focus on RBF in LLMICs targeting at individuals or groups of health professionals or health service organizations, there is no finding to be described in this section, except those from Lagarde & Palmer 2009, which is described separately.
Quantity/utilisation/coverage: n.a
Quality/satisfaction: n.a
Efficiency: n.a
Equity/targeting: n.a
Health outcomes: n.a

Findings on positive effects related to MNH care: n.a

Findings on negative or side effects: As indicated in the major findings, RBF can have undesirable effects. Those undesirable

effects that have been found include:

- Unintended behaviours: An example from conditional cash transfers shows that some mothers kept their child malnourished in order to retain eligibility for the program; an increase in fertility by 2%-4% and slight increase in children's weight gain possibly due to the effect of conditional cash transfers.
- Distortions/gaming/frauds: Financial incentives may be stolen or misused or cause recipients to undermine or ignore unrewarded tasks and targets or those difficult to be carried out and reached by providers, including life-saving care-related activities. Some providers may only show changes in reporting (improving or cheating figures) without necessarily changes in practices.
- Widening resource gap between the rich and the poor; dependency on financial incentives, dilution of professionals' intrinsic motivation, demoralization due to feeling of injustice, and bureaucratisation that can increase administrative burden and costs.

4. Oxman AD and Fretheim A: Can paying for results help to achieve the Millennium Development Goals? A critical review of selected evaluations of results-based financing. *Journal of Evidence-Based Medicine* 2009: 184-195.

The results of this review can also be found in **Oxman AD and Fretheim A: An overview of research on the effects of results-based financing. Report from the Norwegian Knowledge Centre for the Health Services nr 16-2008. Systematic review.**

Strength of the evidence: medium; not Cochrane type of review, but published in a peer-reviewed journal – an official English language journal of the Chinese Cochrane Centre, part of the international Cochrane Collaboration.

RBF interventions included in the review by group: a critical appraisal of selected evaluations of RBF schemes in the health sector in LLMICs. In addition to the review of the evaluation reports or papers, the authors also interviewed some scheme-related key informants. Authors identified 13 examples of RBF scheme evaluations, but only 4 met their inclusion criteria: 1 on Janani Suraksha Yojana (JSY) conditional cash transfer scheme in India, 1 on contracting NGOs to deliver health services (PBC) scheme in Haiti, 1 on GAVI result-based funding for national governments in 52 countries, and 1 on incentives targeting patients and providers for improvements in tuberculosis detection and treatment in 16 countries.

PBC	1 PBC intervention in Haiti
PBF	n.a
Vouchers	n.a
RBB	n.a
HEF	n.a

Major Findings:
The use of RBF in LLMICs has commonly been a part of a reform package that may include increased funding, technical support, training, changes in management, and new information systems. Although the findings from the evaluations suggest the possible contribution of conditional cash transfers to increased institutional deliveries in India, of PBC to an increased child immunization coverage and attended deliveries in Haiti, of GAVI results-based finding to increase child immunization coverage, and of performance-based incentives to improved tuberculosis detection and cure-rates in many countries, it is not possible to disentangle the effects of financial incentives as one element of RBF schemes, and there is very limited evidence of RBF per se having an effect. Moreover, RBF schemes can have unintended effects (see above). Based on the findings, the authors proposed some considerations to make RBF effective, including careful design taking into account the level at which financial incentives are targeted, the choice of targets and indicators, the type and magnitude of incentives, the proportion of financing that is paid based on results, and the ancillary components of the scheme. RBF must be implemented as a part of an appropriate package of interventions, for which technical capacity or support must be available, and should be closely monitored and evaluated for intended and unintended effects using rigorous study designs.

Findings on general positive effects/impact:
Since we focus on RBF in LLMICs targeting at individuals or groups of health professionals or health service organizations, there is no finding to be described in this section, except those from Eichler et al 2007 (Haiti), which is described separately in this study.
Quantity/utilization/coverage: n.a
Quality/satisfaction: n.a
Efficiency: n.a
Equity/targeting: n.a
Health outcomes: n.a

Findings on positive effects related to MNH care: n.a

Findings on negative or side effects:
See above

Performance-Based Financing (PBF)

5. Witter S, Fretheim A, Kessy FL, Lindahl AK: Paying for performance to improve the delivery of health interventions in low- and middle-income countries. *Cochrane Database System Review* 2012, 2: CD007899

Strength of the evidence: high; a Cochrane type of review

RBF interventions included in the review by group: a systematic review of peer-reviewed and unpublished papers on RBF. Authors identified 1,374 publications and through several screening stages, only 9 studies were included (1 randomised controlled trial, 6 controlled before-after, 2 interrupted time series)

PBC	n.a
PBF	9 PBF interventions in 8 countries were selected: Burundi, China, Democratic Republic of Congo (DRC), Philippines, Rwanda (2), Tanzania, Uganda and Vietnam.
Vouchers	n.a
RBB	n.a
HEF	n.a

Major Findings:
PBF is not a uniform intervention, but rather a range of approaches. There are few robust studies on PBF available from LLMICs and it is premature to draw conclusions on PBF effectiveness and factors determining its success. There is some evidence that some schemes have had some success, but direction and magnitude of change vary across settings. The effects of PBF depend on the interaction of several variables, including the design of the intervention (e.g. who receives payments, the magnitude of the incentives, the targets and how they are measured), the amount of additional funding, other ancillary components such as technical support, and contextual factors, including the organizational context in which it is implemented.

Findings on general positive effects/impact:
Quantity/utilization/coverage: Seven studies reported effects of change in utilization of various services, including MNH CARE services. In general, the utilisation of service may increase due to PBF, but the impact of PBF on service delivery is highly uncertain
Quality/satisfaction: Three studies measured the quality of care. A study on a PBF in the Philippines by Peabody 2010 found a significant improvement of 10% in quality of care (as measured by index score using clinical vignettes) in the intervention arms and of 6% in the control ones, and this change was only found after 12 months of intervention. Basinga 2010 also found in his study on PBF in Rwanda a significant increase in quality of antenatal care (as measured by compliance to clinical guidelines). But other studies showed different results.
Efficiency: n.a
Equity/targeting: n.a
Health outcomes: One study (Peabody 2010) assessed the impact of PBF on health outcomes. Of the four outcome measures, wasting and self-reported health showed a significant improvement whereas C-reactive protein in blood and anaemia did not.

Findings on positive effects related to MNH care:
Antenatal care and institutional delivery are the only utilisation indicators assessed by more than one study. Basinga 2010 reported a statistically significant impact on the probability of institutional delivery (from 35% before to 42% after), but not on the probability of any antenatal care. Similarly, a statistically significant difference was found for institutional deliveries in Burundi with rate ratio of 1.79 favouring the study sites. But in DRC the opposite was found for this indicator.

Findings on negative or side effects: Authors of two studies in Zambia and Tanzania voiced their concern about the curative nature of the coverage targets, which may squeeze out preventive care. However, no conclusive evidence was found.

6. Toonen J, Canavan A, Vergeer P, Elovainio R: Learning lessons on implementing performance-based financing: from a multi-country evaluation. *KIT Development Policy & Practice; Amsterdam*, 2009.

Strength of the evidence: low; it is a formative evaluation, published as a synthesis report of the KIT Development Policy and Practice.

RBF interventions included in the review by group: a formative evaluation of PBF experiences, mainly drawing lessons from country study reports on pilot PBF projects supported by Cordaid/HNI that assess:

PBC	n.a
PBF	• 5 PBF interventions (respectively in the provinces of Cankuzo, Bubanze, Gitega, Makanba, and Bururi) in Burundi; 3 PBF interventions (respectively in Kasai, South Kivu and North Kivu) in DRC; 1 PBF intervention in Tanzania; and 1 PBF intervention in Zambia • PBF in Rwanda was not included in the study, but reviewed focusing on the national level scaling-up of the approach.
Vouchers	n.a
RBB	n.a
HEF	n.a

Major Findings:
Considering the contextual factors, confounding factors and the reliability of the available information, the authors concluded that in general PBF can be instrumental in achieving better results in the health sector if compared to input-based financing approach. Staff and health service productivity increased in several study projects explained by important difference between before and after introduction of the PBF. Health service utilisation increased for almost all health indicators, including maternal health indicators (antenatal care, institutional deliveries), but this increase varied across PBF projects and health facilities within the same project, and no perverse effects were directly observable. The quality of care as perceived by the clients also improved. However, the attribution of improved results to PBF is debatable. Apart from the contextual factors, the review found a number of institutional issues that can have a positive influence on provider performance and outputs of health facilities: autonomy of health providers and other key stakeholders at operational level; creating national ownership from the start of introducing PBF; use of contracts with agreed upon expected results between all actors at different levels; the presence of a local fund holder; the split of responsibilities between providers, purchaser/fund holder and regulator; and a functioning monitoring system.

Findings on general positive effects/impact:
Quantity/utilisation/coverage: In almost all cases, considerable increase in curative consultations, family planning, antenatal care and institutional deliveries was observed after the introduction of PBF, compared to before, and the increase was higher

than in some areas with no PBF.
Quality/satisfaction: increase in client satisfaction, but no evidence on the improvement in real quality.
Efficiency: no evidence
Equity/targeting: none
Health outcomes: no evidence

Findings on positive effects related to MNH care:
Remarkable increase in family planning, antenatal care and institutional deliveries.

Findings on negative or side effects: no directly observable side effects

Vouchers

7. Bellows NM, Bellows BW, and Warren C: The use of vouchers for reproductive health services in developing countries: systematic review. *Tropical Medicine & International Health*, 2011:16(1), 84-96

Strength of the evidence: medium; not Cochrane type of review, but published in peer reviewed journal with a good impact factor (2.841)

RBF interventions included in the review by group: a systematic search of the peer-reviewed and grey literature on voucher programs providing reproductive health services identified 23 studies that assess

PBC	n.a.
PBF	n.a.
Vouchers	13 voucher programs in 10 countries: Bangladesh, Cambodia, China, Kenya (2), Korea, India, Indonesia, Nicaragua (3), Taiwan, and Uganda of which seven were quantitatively evaluated in 15 studies.
RBB	n.a.
HEF	n.a.

Major Findings:
All evaluations reported some positive findings, indicating that voucher programs increased **utilization** of services, improved **quality** of care, and improved **health outcomes**. The potential for vouchers appears positive; however, more research is needed to examine program effectiveness using strong study designs. In particular, stronger evidence on cost-effectiveness and population health impacts are needed.

Findings on general positive effects/impact:
Quantity/utilisation/coverage: Four studies (Bangladesh, Cambodia, Nicaragua, Uganda) examined utilisation and found a significant increase in utilisation of services
Quality/satisfaction: one study found improved quality (Nicaragua) and one found no deterioration in quality (Bangladesh).
Efficiency: One study found that vouchers had higher costs per patient with sexually transmitted infection treated but lower costs per effectively cured case, compared to costs in public sector facilities (Nicaragua). Hence, the program was cost-effective. One study found lower out-of-pocket costs (Bangladesh).
Equity/targeting: 2 studies (Nicaragua, Taiwan) examined targeting and found that vouchers can target services to poor and high-risk populations.
Health outcomes: Three studies investigated impact and 1 found reduced fertility (Taiwan), 1 reduced prevalence of sexually transmitted infection in sex workers (Nicaragua), 1 reduced sexually transmitted infection in general population (Uganda). Two studies (Nicaragua, Uganda) examined and showed capacity vouchers to increase health knowledge.

Findings on positive effects related to MNH care. All programs were related to MNCH. Hence, the above findings are all valid for MNCH. In general, the studies found that vouchers can have a positive impact on provider performance (quantity, coverage, quality, efficiency) as well as on MNCH indicators (utilisation, satisfaction, equity/targeting, health outcomes)

Findings on negative or side effects: none

8. Meyer C, Bellows N, Campbell M, Potts M: The Impact of Vouchers on the Use and Quality of Health Goods and Services in Developing Countries, a systematic review. *London: EPPI-Centre, Social Science Research Unit, Institute of Education, University of London*, May 2011.

Strength of the evidence: medium; a review by Evidence for Practice and Policy Information (EPPI) Centre.

RBF interventions included in the review by group: few studies could be adequately assessed using guidelines recommended by the Cochrane Collaboration. Authors therefore adapted Cochrane tools and others identified in the literature to better serve the review purposes. They identified 24 studies that assess

PBC	n.a.
PBF	n.a.
Vouchers	16 voucher programs (10 for health services and 6 for goods, such as bed nets)
RBB	n.a.
HEF	n.a.

Major Findings:
The findings from 64 outcome variables informed five main conclusions: (1) modest evidence that vouchers effectively target specific populations for health goods/services (4 programs); (2) insufficient evidence to determine whether vouchers deliver health goods/services more efficiently than competing health financing strategies (only one program and therefore evidence is insufficient); (3) robust evidence that vouchers increase utilization of health goods/services (13 programs); (4) modest evidence that vouchers improve the quality of health services (only 3 programs and therefore evidence is modest); and (5) evidence indicated that voucher programs do not have an impact on the health of populations (based on 6 programs); however, only small changes in the evidence base could change this conclusion. The evidence indicates that health voucher programs have been successful in increasing utilisation of health goods/services, targeting specific populations, and improving the quality of

services.

Findings on general positive effects/impact:

Quantity/utilization/coverage: 16 studies on 13 programs: 8 programs for services in Bangladesh, Cambodia, India (2), Nicaragua (2), Uganda (1), Zambia (1) and 5 programs for bed nets in Mozambique, Niger, Senegal, Tanzania and Zambia. Of 30 outcome variables 83% had effect, of which 96% was increased utilisation.

Quality/satisfaction: 6 studies on 3 programs for services: 1 in Bangladesh and 2 in Nicaragua. Two programs all outcomes positive. In one Nicaragua program: 4 of the 9 outcomes positive, 5 with no effect.

Efficiency: One study (for services). Findings: higher costs per STI patient treated but lower costs per STI effectively cured compared to costs in public sector facilities (Nicaragua): hence program was cost-effective.

Equity/targeting: 6 studies on 4 programs (2 for services in India and Nicaragua, 2 for bed nets in Tanzania and Zambia). Findings, all positive, except 1 of the 3 studies on bed nets in Tanzania (2 studies were positive, but one study had 1 negative outcome and 1 outcome with no effect).

Health outcomes: 6 studies on 6 programs (5 for services in Bangladesh, India, Nicaragua, Taiwan and Uganda, 1 for bed nets in Tanzania). Findings: 3 of the 5 programs on services had positive findings and 2 had no effect. In the bed net program no effect was found.

Findings on positive effects related to MNH care:

Health voucher programs can have a positive impact on provider performance (quantity, coverage, quality, efficiency) as well as on MNCH indicators (utilisation, satisfaction, targeting/equity and health outcomes).

Findings on negative or side effects: none

9. Gorter A, Grainger C, Okal J, Bellows B: Systematic Review of Structural and Implementation Issues of Voucher Programs, Analysis of 40 Voucher Programs, In-depth Analysis of 20 Programs. *Report commissioned by Population Council*, 2012.

Strength of the evidence: low; findings are based on the revision of a considerable number of voucher programs, but the review is descriptive. Accepted for presentation at an International Union for the Scientific Study of Population (IUSSP) Scientific Panel on Reproductive Health in August 2012.

RBF interventions included in the review by group: an exhaustive review of all published and grey literature on older and existing voucher programs (which started voucher distribution before 28 February 2011). The authors identified 40 voucher programs and examined program management and implementation issues, including the contexts in which they were or have been implemented.

PBC	n.a.
PBF	n.a.
Vouchers	40 voucher programs
RBB	n.a.
HEF	n.a.

Major Findings:

Vouchers are successfully used to address multiple objectives, such as increased utilization for a particular service or set of services, leveraging of private sector provision, and targeting a particular group. To justify the costs of voucher distribution and claims processing, interventions should be priority services, which are insufficiently consumed by target population, while relevant for their health (all known programs issued vouchers for safe motherhood services and some included child care). Services should be related to relatively common conditions, are clearly definable, time limited. Vouchers work better if the services can be grouped, like a package of maternal health services. There seems to be a practical upper limit to the number of services offered, most programs provide access to just one service, with a maximum of four. However, a continuum seems to exist with programs providing access to a single service for a specific group at one end, and programs which resemble social health insurance at the other, i.e. programs which give access to a wider basket of services for a defined period of time. Health providers of successful programs can come from all sectors and indeed the most successful contract providers from all three (public, private for profit and non-profit). Usually the context defines the type of providers. Where providers are from a single sector, this is mostly the private sector. Programs with only public providers were also successful. Provider approval & accreditation, quality assurance and contracting are all powerful tools to regulate providers and improve quality. However, these tools were/are not used to their full capacity. It seems that on-going, successful programs require (and indeed have) annual budgets in excess of US$ 1 million. Exceptions are small or medium programs working in combination with a social franchise or health equity funds. Some level of facility autonomy at the provider level is important (and beneficial) for the voucher approach to work effectively. This enables providers to reinvest voucher payments to improve service quality. Public providers have the least autonomy, but seem over time to be able to learn how to overcome bureaucratic hurdles to spend voucher revenue.

Findings on general positive effects/impact:

Quantity/utilisation/coverage: n.a

Quality/satisfaction: Provider approval and accreditation, quality assurance and contracting of providers are all powerful tools to regulate providers and improve their quality. However, these tools were/are not used to their full capacity.

Efficiency: n.a

Equity/targeting: n.a

Health outcomes: n.a

Findings on positive effects related to MNH care:

All 40 programs provided services related to MNH care

Findings on negative or side effects: none

Various RBF approaches

10. Kinoti S: Effects of Performance-Based Financing on Maternal care in Developing Countries: Access, Utilization, Coverage, and Health Impact. Rapid Review of the Evidence. *USAID-TRAction Project*, 2011.

Strength of the evidence: low, it is a grey literature published as a report of USAID-Traction Project

RBF interventions included in the review by group: a rapid review of evidence gathered from the USAID-funded Health Systems 20/20, the RBF for health programs supported by the multi-donor Health Results Innovation Trust Fund (HRITF), WHO publications, the Joint Learning Initiative and others. Although authors mention examples of RBF and countries implementing RBF, they do not precise their selection criteria, and the number of studies and countries included in their review. However, this rapid review seems to focus on positive and negative effects of RBF (including PBC, PBF, vouchers and other incentive schemes for maternal care) on access, utilisation, coverage, quality of maternal health services, and impact on maternal health in developing countries.

PBC	Not specified
PBF	Not specified
Vouchers	Not specified
RBB	n.a.
HEF	Not specified

Major Findings:
Various RBF approaches (vouchers, PBF, PBC and other incentives schemes) have been tested and are leading to increased access, quality and utilisation of maternal health services. But it is not entirely clear how they are improving maternal health (outcome) because of weaknesses in evaluation methods. Leadership, especially at the top political level, is increasingly recognised as necessary to assure support for RBF to be institutionalized and sustained, using national funding mechanisms. The review also recommends key research areas to identify best ways to design, implement, manage, and evaluate RBF programs as well as to assess the positive and negative effects of RBF interventions on maternal health services and outcomes.

Findings on general positive effects/impact:
Quantity/utilization/coverage: In Rwanda, a prospective quasi experimental design study involving 165 facilities found that PBF had a large and statistical significant impact on the probability of institutional deliveries, p value 0.0074 with 95% confidence. In Burundi, it was observed that the introduction of PBF leads to an overall average increase of 50-60% in the rate of assisted births and uptake of family planning. In Haiti, it was found that PBC achieved about a 19% increase in skilled deliveries. The positive effects of vouchers (e.g. Kenya and Uganda) and conditional cash transfers (e.g. JSY in India) on increased utilisation and coverage of maternal health services were also found.
Quality/satisfaction: Improved staff motivation, increased resources with conditions to comply with quality standards and verification of results can lead to improved quality of care. The study in Rwanda also showed that PBF leads to improved quality of services measured by quality index score.
Efficiency: No evidence on cost-effectiveness or efficiency was found, but findings show that RBF leads to increased expenditures on maternal health services (e.g. in Tanzania and Rwanda)
Equity/targeting: The study pointed out that by targeting specifically the poor with maternal health services, some RBF schemes (e.g. vouchers and conditional cash transfers) may contribute to enhancing health equity.
Health outcomes: PBF reduced mortality in Belize and JSY (conditional cash transfers) reduced perinatal mortality

Findings on positive effects related to MNH care:
See findings on general positive effects/impact

Findings on negative or side effects: The review highlighted a number of negative effects of RBF: Reduced use of services not paid for, fraudulent sale of vouchers and fraudulent reporting (vouchers in Kenya), sense of coercion and control of choice by providers, providers' dependency on incentives and poor team work, government defunding of services not under PBF, politicization and corruption of PBF payments. Anecdotal evidence in developing countries suggests that RBF can also result in excessive provision of unnecessary or potentially harmful services, especially for highly rewarded services. It was also reported that increased facility-based deliveries could also lead to unnecessary C-sections although there is no published evidence on this in developing countries.

11. Morgan L, Beith A, Eichler R: Performance-Based Incentives for Maternal Health: Taking Stock of Current Programs and Future Potentials. *Health System 20/20 Project, Abt Associates Inc, Bethesda MD,* 2011.

Strength of the evidence: low; it belongs to grey literature, published as a report for Health System 20/20 Project.

RBF interventions included in the review by group: an extensive, but not systematic review of published and grey literature in English; coupled with an online survey; and telephone calls and email exchanges between the authors and program managers, designers, and providers of technical assistance; and authors' knowledge on performance-based incentives schemes in developing countries. They identified and reviewed a number of studies assessed 28 RBF schemes in at least 23 countries.

PBC	5 PBC interventions in Afghanistan, Haiti, Liberia, South Sudan (2 supported by USAID, WB)
PBF	12 PBF interventions in Afghanistan, Belize, Benin, Burundi, DRC (3 supported by Cordaid, EC, WB), Egypt, Honduras, Rwanda, Senegal, Tanzania.
Vouchers	5 voucher schemes in Bangladesh, Cambodia, Kenya, Pakistan, Uganda
RBB	n.a.
HEF	n.a.

Major Findings:
Many of the reviewed RBF schemes have been evaluated (of which rigorous impact evaluations have been conducted for 2 schemes in Rwanda and India, and most other have been evaluated using before and after comparisons) and 9 for which

evaluations were planned (conditional cash transfers in Rwanda and Afghanistan; PBC in South Sudan, Liberia and DRC and PBF in Benin, Senegal, Tanzania and Zambia). Although it is difficult to disentangle the effect of the incentive from other interventions, the available evidence strongly suggests that where RBF is being tried, it is making a big difference. In general, RBF is an important approach to addressing demand- and supply-side barriers to improving maternal health. Despite a wide range of RBF models with varying results and much still to be learned about what works best, available evidence suggests that responsible application of RBF can increase the use of key maternal health services (family planning, antenatal care and institutional deliveries) and can improve the quality of those services. Many things are needed to improve maternal health, including technological advances and political commitment, but RBF is an important piece of the puzzle for addressing the often-neglected drivers that determine health and for strengthening the health system generally.

Findings on general positive effects/impact:

Quantity/utilization/coverage: Within a limited time period, measurable outputs such as deliveries (together with immunization and curative consultations) have shown a dramatic increase in RBF schemes. In Rwanda, PBF had larger impact on services associated with higher payments and for those more in control of the providers and less dependent on patients' decision, e.g. institutional deliveries almost doubled (from 12 to 23%) during the pilot phase from 2001-2004, but no significant difference for the probability of any antenatal care visit or completing 4 or more antenatal care visits. PBF pilots in Burundi found an average of 50-60% increase in the rate of assisted deliveries, an increased use and uptake of family planning services (by 8.5%), and a significant increased provider motivation as a result of increased autonomy in determining incentive allocation among themselves and in negotiating indicators prices. Evidence also shows that PBC in fragile states can make a difference, even in the context of extremely weak governance. In Haiti, performance-based NGOs outperformed the input-based NGOs throughout the first 5 years of the program, mainly for assisted deliveries. In Afghanistan, a steep increase was observed in the percentage of facilities providing delivery care, skilled attendance at births, and the availability of family planning methods. In Liberia, the PBC scheme documented solid results during the first year of implementation, with a progress in general management and increases in facility-based deliveries, couple-years of family planning protection, and the number of pregnant women receiving a second dose of preventive treatment of malaria. Positive results on maternal health services were also found for voucher schemes in Pakistan and Kenya.

Quality/satisfaction: PBF improved quality of antenatal care (Rwanda). In Egypt, 4 major assessments suggest that PBF was associated with improvements in the quality of care and with an increased satisfaction levels among both health care providers and beneficiaries. The evaluation also found that health care providers were more satisfied with their jobs, as evidenced by lower turnover rates.

Efficiency: no evidence

Equity/targeting: none

Health outcomes: no evidence

Findings on positive effects related to MNH care:

See findings on general positive effects/impact

Findings on negative or side effects: no side effects were documented, but the review highlighted a number of limitations of the current 'first generation' of RBF schemes. They tend to focus more on outputs rather than outcomes, on quantity rather than quality. For output indicators, they focus on facility-based and single outputs rather than a continuum of care, which include community-based care. For the quality indicators, they focus more on infrastructure and input availability (facility preparedness to provide services) rather than real technical quality content. To address these limitations for the 'second generation' of RBF schemes, authors made some recommendations: redouble efforts to reward quality in addition to quantity; reward delivery of the entire continuum of care that is effective in improving maternal health; expand RBF to address supply chain management issues, and invest more in the demand side.

12. Touré H, Audibert M, Dabis F: To what extent could performance-based schemes help increase the effectiveness of prevention of mother-to-child transmission of HIV (PMTCT) programs in resource-limited settings? A summary of the published evidence. BMC Public Health 2010, 10: 702

Strength of the evidence: medium, not Cochrane type of review, but published in a peer-reviewed journal – an official English language journal with good impact factor.

RBF interventions included in the review by group: an extensive, but not systematic review of literature on incentives, especially pay for performance schemes, and human resource management in HIV care and treatment programs, particularly those that offer PMTCT. No clear inclusion criteria and no information on the number of studies and countries included in the review. According to the text, the six-year PBC experience in Haiti and PBF experience in Rwanda, which included MNCH and HIV/AIDS indicators as target performance, were reviewed. In addition, a pilot PBF (with private and faith-based facilities) initiated in 2008 by the Elizabeth Glaser Paediatric AIDS Foundation (EGPAF) in Ivory Coast was examined.

PBC	Not specified
PBF	Not specified
Vouchers	n.a
RBB	n.a.
HEF	n.a.

Major Findings:

There are few studies evaluating the effects of financial and non-financial incentives on performance in the public health sector, especially in the field of HIV and PMTCT, in resource-limited settings. In LLMICs where public sector salaries are rarely associated with education level or cost of living, financial incentives may be important determinants of worker motivation for PMTCT, but cannot resolve all worker motivation problems alone. Over-paying professionals to encourage them to commit to their job may pose ethical problems. Human resource management should be considered in the design and implementation of PMTCT

performance-based initiatives.

Findings on general positive effects/impact:
Quantity/utilization/coverage: In Haiti, over six years with PBC health centres showed remarkable improvements in a range of performance indicators, including percentage of pregnant women attending antenatal care visits at least 3 times and of deliveries attended by trained personnel. In Rwanda PBF experience, it was observed that among other indicators, deliveries in a health facility increased from 25% to 60%, offering a good opportunity of linkage with PMTCT. A pilot PBF project for HIV services such as voluntary counselling and testing in Rwanda showed that in the first 9 months HIV voluntary counselling and testing at targeted health centres increased by 155%. In the case of Ivory Coast, comparing data for 22 selected indicators before the inception of the program and one year after, it was found that PBF was associated with improvement in quantity and quality of HIV prevention, care and treatment, as well as 100% increase in health worker effort. PBF was associated with improvement in quantity and quality of HIV prevention, care and treatment in Ivory Coast
Quality/satisfaction: n.a
Efficiency: n.a
Equity/targeting: n.a
Health outcomes: n.a

Findings on positive effects related to MNH CARE: See findings on general positive effects/impact

Findings on negative or side effects:
None

13. Canavan A, Toonen J, Elovainio R: Performance-Based Financing: An international review of the literature. KIT Development Policy & Practice; Amsterdam, 2008.

Strength of the evidence: low; it belongs to grey literature published as a working paper/report of the KIT Development Policy and Practice

RBF interventions included in the review by group: an intensive, but not systematic review of peer-reviewed papers and technical reports. Although authors emphasized that the review was based on selected PBF literature from developing countries, they did not include in their report any method section to explain their criteria for selecting studies and countries in their review. However, the review seems to focus not only on the effects or results, but also on institutional arrangements, including factors determining success, costs and sustainability of RBF (including PBF, PBC and other forms of RBF).

PBF	Not specified
PBC	Not specified
Vouchers	n.a
RBB	n.a.
HEF	Not specified

Major Findings:
Early RBF experiences in developing countries show that RBF approaches are promising and demonstrate potential for improvement in health service utilisation and quality of health care. However, there is still ambiguity among health system professionals about the extent of attribution of the success by increased investment in resources and technical assistance rather than just RBF strategy alone, a question that requires further research.

Findings on general positive effects/impact:
Quantity/utilization/coverage: RBF in various settings (e.g. DRC, Rwanda, Burundi, Haiti, and Afghanistan) show remarkable improvements in health indicators, (mainly targeted indicators such as utilisation, coverage and emergency referrals) with associated enhanced quality of provider performance.
Quality/satisfaction: While RBF achieved some positive results on the level of meeting qualitative health indicators, the extent to which RBF contributes to quality improvement of health care remains a question. It was observed in the RBF that there is a risk of compromising quality of care in order to meet utilisation targets.
Efficiency: No evidence on cost-effectiveness or efficiency was found, but findings show a variety of per capita cost of RBF, ranging from US$0.25 in DRC to US$4.82 in Afghanistan.
Equity/targeting: None
Health outcomes: All projects use output and facility-based indicators as a means of target setting and rewards performance rather than community-based, outcome and impact indicators due to costs and non-feasibility associated with the measurement of such indicators in most cases.

Findings on positive effects related to MNH care:
Although the findings show that most RBF schemes include family planning, antenatal care and institutional delivery as performance indicators, no particular findings on positive effects of RBF on MNCH were indicated.

Findings on negative or side effects: Disadvantages and potential risks of RBF were highlighted, by referring mainly to those indicated by Meessen and Kashala (2007), but no particular results were found by the review.

14. Annear P: A comprehensive review of the literature on health equity funds in Cambodia 2001-2010 and annotated bibliography. Health Policy and Health Finance Knowledge Hub, Nossal Institute for Global Health; 2010.

Strength of the evidence: low, it is a grey literature published as a working paper series

RBF interventions included in the review by group: a comprehensive review of 92 published and grey literature on the effectiveness and operation of HEFs. Some other related interventions such as user fees and exemptions, community-based health insurance, vouchers and PBC were also included in the review.

PBC	Not specified

PBF	n.a.
Vouchers	Not specified
HEFs	Not specified
RBB	n.a.

Major Findings:
HEFs are an effective form of financial protection for health, which lowers financial barriers to access for poor people to use public health facilities, and thus increases the utilisation of public health services, and reduces but does not eliminate debt for health care. HEFs are considered a significant source of additional revenue to public health facilities and staff incentives and thus improve their attitude toward poor patients. The targeting of the poor in HEF is found to be accurate and cost-effective. There was evidence on the impact of HEFs on improved quality of care, but not conclusive. It was also found that there is limited evidence on HEF impact on reduced household health expenditures as well as reduced impoverishment due to health care costs and on improved health outcomes. The review also highlighted the common design features of HEFs and implementation issues, including pre-requisites for HEFs and their potential in linking with and complementing to other health financing interventions.

Findings on general positive effects/impact:
Quantity/utilization/coverage: It was found that since the pilot in 2000, the HEF coverage increased significantly from a few to over than half of the health districts in Cambodia and from hospital services only to also including health centre services. In most cases, the introduction of HEFs led to increased utilisation of public health services, mainly hospital services, by the poor while the utilisation by the non-poor did not decrease.
Quality/satisfaction: HEF patients appear satisfied with services, but limited evidence on the change of their health behaviour. HEFs were also found to improve quality of care, but the evidence was mixed.
Efficiency: None
Equity/targeting: The study pointed out that using public subsidy to purchase public health services for the poor is feasible although challenging. While pre-identification of the eligible poor (systematically identify them at home before they get sick and seek care) appears to be more effective than post-identification (identify them at health facility when they seek care), both methods are complementary. In general, the targeting of the poor in HEF in Cambodia was found to be accurate and cost-effective.
Health outcomes: Little evidence on the impact of HEFs on health outcomes.

Findings on positive effects related to MNH care:
Hospital-based HEFs are found to be effective in complementing health centre-based vouchers and other midwifery incentives to increase institutional delivery for poor women in rural areas.

Findings on negative or side effects:
Anecdotal evidence on inappropriate hospitalisation by poor people possibly induced by HEFs.

Annex 3: References for the 70 individual research papers

Performance Based Contracting

Afghanistan

- Arur A, Peters D, Hansen P, Mashkoor MA, Steinhardt L, Burnham G, Contracting for health and curative care use in Afghanistan between 2004 and 2005, *Health Policy and Planning* 2010;25:135–144.
- Amelia O, Newbrander W, Contracting for health services: effects of utilization and quality on the costs of the Basic Package of Health Services in Afghanistan, *Bulletin of the World Health Organization* 2008, 86 (12).
- Cockcroft1 A, Khan A, Ansari NM, Omer K, Hamel C, Andersson N, Does contracting of health care in Afghanistan work? Public and service-users' perceptions and experience, *BMC Health Services Research* 2011, 11(Suppl 2):S11.

Bolivia

- Lavadenz F, Schwab N, Straatman H, Redes públicas, descentralizadas y comunitarias de salud en Bolivia, *Rev Panam Salud Publica/Pan Am J Public Health* 2001; 9(3).

Cambodia

- Schwartz JB, Bhushan I, *Reducing inequity in the provision of primary health care services: contracting in Cambodia*, Conference on Reaching the Poor with Effective Health, Nutrition and Population Services What Works, What Doesn't, and Why February 18-20, 2004, Washington, D.C
- Bloom E, King E, Bhushan I, Kremer M, Clingingsmith D, Loevinsohn B, Hong R, Schwartz JB, Contracting for Health: Evidence from Cambodia; August 2007. Available at: http://faculty.weatherhead.case.edu/clingingsmith/cambodia13jun07.pdf
- Soeters R, Griffiths F, Improving government health services through contract management: a case from Cambodia, *Health Policy and Planning* 2003; 18(1): 74–83.

Haiti

- Eichler R, Auxila P, Antoine U, Desmangles B, Performance-Based Incentives for Health: Six Years of Results from Supply-Side Programs in Haiti, CGD Working Paper #121 April 2007.
- Eichler R, Auxila P, Antoine U, Desmangles B, Haiti: Going to Scale with a Performance Incentive Model, in Eichler R, Performance incentives for global health: potential and pitfalls, 2009, BROOKINGS INSTITUTION PRESS, Baltimore.

Indonesia

- Olken BA, Onishi J, Wong S: Should aid reward performance? Evidence from a field experiment on health and education in Indonesia. Working paper 17892 from the National Bureau of Economic Research, Cambridge, March 2012

Pakistan

- Loevinsohn B, Haq IU, Couffinhal A, Pande A: Contracting-in management to strengthen publicly financed primary health services--the experience of Punjab, Pakistan. *Health Policy* 2009, 91: 17-23.
- Ali SM: Addressing Best Practices in Devolution. Innovative Health Management – Rahimyar Khan District. CIDA Devolution Support Project. A consultancy report

Uganda

- Morgan L: Some Days Are Better Than Others: Lessons Learned from Uganda's First Results-Based Financing Pilot. A Feature Story published in April 2010 . Available at http://www.rbfhealth.org/rbfhealth/system/files/RBF_FEATURE_Uganda.pdf
- Ssengooba F, McPake B, Palmer N: Why performance-based contracting failed in Uganda - An "open-box" evaluation of a complex health system intervention. *Soc Sci Med* 2012, 75: 377-383.

Performance Based Financing

Burundi

- Falisse JB: *Analyse des donneés quantitative financement basé sur la performance de Cordaid au Burundi* (2006-2011). An evaluation report of Cordaid. Avaialble at http://www.cordaid.nl/nl/%2813491%29-Publications/Health-and-well-being.html
- Soeters R, Gashubiji L, Kimanuka C, van Heteren G, Bossuyt M: *Résultats de l'Enquête Ménage et de l'Enquête Qualité de Base pour le programme Achat de Performance dans les provinces de Cankuzo, Karuzi, Ruyigi, Rutana, Makamba, Bururi, Bubanza, Gitega, et Muramvya* 2006-2008-2010. An evaluation report of Cordaid. Avaialble at http://www.cordaid.nl/nl/%2813491%29-Publications/Health-and-well-being.html
- Busogoro JF, Beith A: Pay-for-performance for Improved Health in Burundi. Bethesda,Maryland: Health Systems 202/20 project, Abt Associates Inc, 2010.

Democratic Republic of Congo (DRC)

- Soeters R, Peerenboom PB, Mushagalusa P, Kimanuka C: Performance-based financing experiment improved health care in the Democratic Republic of Congo. *Health Aff (Millwood)* 2011, 30: 1518-1527
- Bertone MP, Mangala A, Kwété D, Derriennic Y: *Review of Results-Based Financing Experiences in the Democratic Republic of the Congo.* Bethesda, MD: Health Systems 20/20 project, Abt Associates Inc; March 2011.

Egypt

- Huntington D, Zaky HH, Shawky S, Fattah FA, El-Hadary E: Impact of a service provider incentive payment scheme on quality of reproductive and child-health services in Egypt. *J Health Popul Nutr* 2010, 28: 273-280.

Indonesia

- EPLM Schoffelen, Haryoko, JPM Tacoy: Performance-Based Financing can help to increase coverage in remote areas. Published in October 2010 on cordaidpartners.com

Philippines

- Peabody J, Shimkhada R, Quimbo S, Florentino J, Bacate M, McCulloch CE *et al*.: Financial incentives and measurement improved physicians' quality of care in the Philippines. *Health Aff (Millwood)* 2011, 30: 773-781.

Rwanda

- Meessen B, Musango L, Kashala JP, Lemlin J: Reviewing institutions of rural health centres: the Performance Initiative in Butare, Rwanda. *Trop Med Int Health* 2006, 11: 1303-1317.
- Meessen B, Kashala JP, Musango L: Output-based payment to boost staff productivity in public health centres: contracting in Kabutare district, Rwanda. *Bull World Health Organ* 2007, 85: 108-115.
- Soeters R, Habineza C, Peerenboom PB: Performance-based financing and changing the district health system: experience from Rwanda. *Bull World Health Organ* 2006, 84: 884-889.
- Basinga P, Gertler PJ, Binagwaho A, Soucat AL, Sturdy J, Vermeersch CM: Effect on maternal and child health services in Rwanda of payment to primary health-care providers for performance: an impact evaluation. *Lancet* 2011, 377: 1421-1428
- Kalk A, Paul FA, Grabosch E: 'Paying for performance' in Rwanda: does it pay off? *Trop Med Int Health* 2010, 15: 182-190
- Rusa L, Ngirabega JD, Janssen W, Van BS, Porignon D, Vandenbulcke W: Performance-based financing for better quality of services in Rwandan health centres: 3-year experience. *Trop Med Int Health* 2009, 14: 830-837.
- Sekabaraga C, Diop F, Soucat A: Can innovative health financing policies increase access to MDG-related services? Evidence from Rwanda. *Health Policy Plan* 2011, 26 Suppl 2: ii52-ii62.

Tanzania

- Canavan A, Swai G: Payment for Performance (P4P) Evaluation. Tanzania Country Report for Cordaid, KIT Development Policy & Practice; Amsterdam, 2008.
- Morgan L, Eichler R: *Pay for Performance in Tanzania*. Bethesda, Maryland: Health Systems 20/20 project, Abt Associates Inc; September 2009.

Zambia

- Vergeer P, Chansa C: Formative Evaluation Cordaid Performance Based Financing Project in Zambia. KIT Development Policy & Practice; Amsterdam, 2008.

Vouchers

Armenia

- Truzyan N, Grigoryan R, Avetisyan T, Crape B, Petrosyan V: *Protecting the right of women to affordable and quality health care in Armenia, analysis of the obstetric care state certificate program.* Yerevan, Armenia: Center for Health Services Research and Development of the American University of Armenia; 2010.
- Crape B, Demirchyan A, Grigoryan R, Martirosyan H, Petrosyan V, Truzyan N: *Evaluation of the Child Health State Certificate Program.* Yerevan, Armenia: Center for Health Services Research and Development of the American University of Armenia; 2011.

Bangladesh

- Hatt, L, Nguyen H, Sloan N, Miner S, Magvanjav O, Shrama A, Chowdury J, Chowdury R, Paul D, Islam M, Wang H: *Economic Evaluation of Demand-side Financing (DSF) Program Maternal Health in Bangladesh*. Bethesda, MD, Abt Associate Inc.; 2010.
- Schmidt, JO, T Ensor, Hossain A, Khan S: Vouchers as demand side financing instruments for health care: A review of the Bangladesh maternal voucher scheme. *Health Policy* 2010, **96**(2): 98-107.
- Ahmed S, Kahn MM: A maternal health voucher scheme: what have we learned from the demand-side financing scheme in Bangladesh? *Health Policy and Planning* 2010, 1–8

- Ahmed S, Kahn MM: Is demand-side financing equity enhancing? Lessons from a maternal health voucher scheme in Bangladesh. *Social Science and Medicine* 2011, **72**(10): 1704-10.
- Nguyen HTH, Hatt L, Islam M, Sloan NL, Chowdhury J, Schmidt JO, Hossain A, Wang H: Encouraging Maternal Health Service Utilization: An Evaluation of the Bangladesh Voucher Program. *Social Science and Medicine* 2012, **74**(7): 989-96.
- Rahman, M, Rob U, Tasnima K (2009). *Implementation of the Maternal Health financial Scheme in Rural Bangladesh.* Bangladesh: Population Council; 2009.
- Rob U, Rahman R, and Bellows B: Using vouchers to increase access to maternal health care in Bangladesh. *International Quarterly of Community Health Education* 2010, **30** (4): 293-304.

Cambodia

- Ir P, Horemans D, Souk N, van Damme W: Using targeted vouchers and health equity funds to improve access to skilled birth attendants for poor women: a case study in three rural health districts in Cambodia. *BMC Pregnancy and Childbirth* 2010, **10**: 1-11.

China

- Du K, Zhang K, Tang S: *Draft report on MCHPAF study in China*. Washington, D.C., World Bank; 2001.

India-Gujarat

- Bhat R, Mavalankar DV, Singh PV, Singh N: Maternal healthcare financing: Gujarat's Chiranjeevi Scheme and its beneficiaries. *Journal of Health, Population, and Nutrition* 2009, **27**(2): 249-258.
- Mavalankar D, Singh A, Patel SR, Desai A, Singh PV: Saving mothers and newborns through an innovative partnership with private sector obstetricians: Chiranjeevi scheme of Gujarat, India. *International Journal of Gynecology and Obstetrics* 2009, **107**; 271–276

India-Delhi

- Nandan D, Nair KS, Tiwari VK: *Evaluation of MAMTA Scheme in National Capital Territory of Delhi, Report*. New Delhi, Department of Planning & Evaluation, National Institute of Health and Family Welfare; 2010.

India-Uttar Pradesh

- Mishra AK, Singh S, Sharma S, Sharma S, Singh S, Dixit M, Ja S: *Does Demand Side Financing Help in Better Utilization of Family Planning & Maternal & Child Health Services? Evidence from Rural Uttar Pradesh.* India. Dakar, Senegal, International Conference on Family Planning 2011, Nov 29 –Dec 2.

Kenya

- Bellows B, Kyobutungi C, Mutua MK, Warren C, Ezeh A: Increase in facility-based deliveries associated with a maternal health voucher program in informal settlements in Nairobi, Kenya. *Health Policy and Planning* 2012, Mar 21. [Epub ahead of print].
- Population Council. *End of phase 1 investment analysis of health facilities in the OBA program, working draft report*. Nairobi, Kenya; 2011.

Korea

- Cho, Nam Hoon, Moon Hee Seo, and Boon Ann Tan. 1990. "Recent Changes in the Population Control Policy and Its Future Directions in Korea." *Journal of Population, Health, and Social Welfare* 1990, **10** (2): 152–172.
- Kim TI and Ross JA: The Korean Breakthrough, in Warren C. Robinson and John A. Ross (editors), *The global family planning revolution : three decades of population policies and programs.* Washington D.C., The World Bank; 2007.

Nicaragua-sex workers

- McKay JE, Campbell DJ, Gorter AC: Lessons for management of STI treatment programs as part of HIV/AIDS prevention strategies. *American Journal of Public Health* 2006, **96**: 7-9.
- Borghi J, Gorter A, Sandiford P and Segura Z: The Cost-Effectiveness of a Voucher Scheme to Reduce Sexually Transmitted Infections in High Risk Groups: the case of Managua, Nicaragua. *Health Policy & Planning* 2005, **20**(4): 222-31.

Nicaragua-adolescents

- Meuwissen LE, Gorter AC, Knottnereus A: Impact of accessible sexual and reproductive health care on poor and underserved adolescents in Managua, Nicaragua: A quasi-experimental intervention study. *Journal of Adolescent Health*, 2006a;38(1):56.
- Meuwissen LE, Gorter AC, Kester ADM and Knottnerus JA: Can a comprehensive voucher program prompt changes in doctors' knowledge, attitudes, and practices related to sexual and reproductive health care for adolescents? A case study from Latin America. *Tropical Medicine and International Health* 2006b;**11**(6): 889–898.
- Meuwissen LE, Gorter AC, Kester ADM and Knottnereus A: Does a competitive voucher program for adolescents improve the quality of reproductive health care? A simulated patient study in Latin America. *BMC Public Health* 2006c, **6**: 204.
- Meuwissen LE, Gorter AC, Knottnereus A: Perceived quality of reproductive care for girls in a competitive voucher program. A quasi-experimental intervention study, Managua, Nicaragua. *International Journal for Quality in Health Care* 2006d;**18**(1): 35-42.

- Meuwissen LE, Gorter AC, Segura Z, Kester ADM and Knottnerus JA: Uncovering and responding to needs for sexual and reproductive health care among poor urban female adolescents in Nicaragua. *Tropical Medicine and International Health* 2006e, **11**(12), 1858-1867.

Nicaragua-cervical cancer screening

- Howe SL, Vargas DE, Granada D, Smith JK: Cervical cancer prevention in remote rural Nicaragua: A program evaluation. *Gynaecologic Oncology* 2005, **99**: S232 – S235.

Pakistan

- Agha S: Impact of a maternal health voucher scheme on institutional delivery among low income women in Pakistan. *Reproductive Health* 2011a, 8:10.
- Agha S: Changes in the proportion of facility-based deliveries and related maternal health services among the poor in rural Jhang, Pakistan: results from a demand-side financing intervention. *International Journal for Equity in Health* 2011b, **10**:57

Taiwan

- Chang M, Liu TH, Chow LP: Study by Matching of the Demographic Impact of an IUD Program: A Preliminary Report. *The Milbank Memorial Fund Quaterly* 1969, **47**(2): 137-157.
- Chow LP: A Study on the Demographic Impact of an IUD Program. *Population Studies* 1968, **22**(3): 347-359
- Trewinnard: FP in Taiwan, *British journal of family planning* 1998, **24**(2):78-80.
- Cernada G, Sun TH, Chang MC, Tsai JF: Taiwan's Population and Family Planning Efforts: An Historical Perspective. *International Quarterly of Community Health Education* 2006, **27**(2): 99-120

Uganda-KfW

- Bellows B, Hamilton M, Bagenda F, Mulogo E: Associations between Uganda output-based voucher facilities, utilization of clinic treatment of sexually transmitted infections (STIs) and syphilis prevalence. Accepted for publication in BMC, 2012.
- Population Council: *The reproductive health vouchers program in Uganda, Summary of findings from program evaluation, report.* Nairobi, Kenya: Reproductive Health Vouchers Evaluation Team, Population Council; 2011.

Uganda-Makerere University

- Ekirapa-Kiracho E, Waiswa P, Rahman MH, Makumbi F, Kiwanuka N, Okui O, Rutebemberwa E, Bua J, Mutebi A, Nalwadda G, Serwadda D, Pariyo GW, Peters DH. Increasing access to institutional deliveries using demand and supply side incentives: early results from a quasi-experimental study. *BMC International Health and Human Rights* 2011, **11**(S1):S11

Results Based Budgeting

Cambodia

- Ir P, Bigdeli M, Jacobs B, Van Damme W: Toward achieving the Millennium Development Goal 5: Early lessons from midwifery incentives to promote facility delivery in Cambodia. Manuscript submitted to a journal.
- Ir P, Horemans D, Souk N, Van Damme W: Using targeted vouchers and health equity funds to improve access to skilled birth attendants for poor women: a case study in three rural health districts in Cambodia. *BMC Pregnancy Childbirth* 2010, 10: 1.

Ghana

- Witter S, Arhinful DK, Kusi A, Zakariah-Akoto S: The experience of Ghana in implementing a user fee exemption policy to provide free delivery care. *Reprod Health Matters* 2007, 15: 61-71.
- Witter S, Adjei S, rmar-Klemesu M, Graham W: Providing free maternal health care: ten lessons from an evaluation of the national delivery exemption policy in Ghana. *Glob Health Action* 2009, 2.

Nepal

- Powell-Jackson T, Neupane BD, Tiwari S, Tumbahangphe K, Manandhar D, Costello AM: The impact of Nepal's national incentive programme to promote safe delivery in the district of Makwanpur. *Adv Health Econ Health Serv Res* 2009, 21: 221-249.
- Powell-Jackson T, Morrison J, Tiwari S, Neupane BD, Costello AM: The experiences of districts in implementing a national incentive programme to promote safe delivery in Nepal. *BMC Health Serv Res* 2009, 9: 97.
- Powell-Jackson T, Hanson K: Financial incentives for maternal health: impact of a national programme in Nepal. J Health Econ 2012, 31: 271-284.

Senegal

- Witter S, Dieng T, Mbengue D, Moreira I, De B, V: The national free delivery and caesarean policy in Senegal: evaluating process and outcomes. *Health Policy Plan* 2010

Annex 4: Summary of findings from key individual papers on Health Equity Fund

Health Equity Funds (HEFs) are a demand-side health financing mechanism, initiated in Cambodia as a strategy to improve access to public health services for the poor and protect them from catastrophic effects of health care costs. HEF schemes are district-based and their management is entrusted to a third party, usually a national NGO. HEF beneficiaries are identified according to eligibility criteria, either at the community before accessing health services (pre-identification) or at the health facilities through interviews (post-identification), or a combination of the two. At the health facilities, the eligible poor patients receive full or partial support from the HEF for the cost of user fees (mainly hospital user fees), plus transport costs and other related costs during hospitalization such as food allowance and cost of funeral in case of death. Since the first pilots in 2000, HEFs have been gradually scaled up nationwide, covering about 70% of the health districts in Cambodia by 2010 [59]. Inspired by the experience in Cambodia, HEFs have been introduced in other LICs such as Laos, Mali, Madagascar, Mauritania and recently Myanmar [60-63].

A number of HEF studies have been carried out in Cambodia and some of their results have been well documented and published. In addition to the comprehensive review of literature on the effectiveness and operation of HEFs in Cambodia [55] described in chapter summarising 14 reviews, the findings from six additional key individual papers on HEFs is presented.

1. Hardeman and colleagues [64] conducted a first in-depth evaluation of a hospital-based HEF pilot in Sotnikum after two years of operation. The evaluation was based on routine data, key informant interviews and in-depth interviews of 68 randomly selected hospitalised and non-hospitalised patients. The findings suggested that HEF effectively improved financial access to hospital care for poor and had the potential to protect poor households from the negative effects of health care costs through direct cost subsidies at the hospital and preventing unnecessary expenditure in the private sector. They highlighted three conditions that made the HEF effective: (1) a relatively well-functioning health service, in which health staff are present, drugs available and informal charges absent; (2) the socio-economic context in rural Cambodia which allows charging (low) user fees to the majority of the population, while targeting support to those unable to pay; and (3) management of the HEF by a local NGO which has solid knowledge of the local socio-economic context, good skills to target and a strong motivation to serve the genuinely poor.

2. Studies of a pagoda-managed HEF in Kirivong, comparing data from two cross-sectional household surveys, suggested an impact of HEF on improving access to public health services and reducing health care expenditure for the poor. The study also highlighted the importance of community participation in the management and financing of the HEF, which in turn can enhance its sustainability [65].

3. A comparative analysis of four hospital-based HEF schemes by Noirhomme et al. [12], mainly based on routine data and key informant interviews, provided more evidence on the impact of HEF on increased utilisation of public hospital services by the poor and identified several key design aspects that can make the HEF scheme effective, including the existence of subsidies, the presence of a leading agent, a clear separation of roles, appropriate identification techniques and a holistic consideration of different barriers to health service utilisation. They proposed an analytical framework for comparing different targeted subsidy schemes, which may be a useful tool for the design, operation and evaluation of similar strategies in other contexts.

4. Flores and colleagues [66] recently assessed the impact of HEFs on financial protection for the poor, using data from Cambodia Socio-Economic Surveys 2004, 2007, 2008 and 2009 and the geographic spreads of HEFs over the period between 2000 and 2010. They found that among households with some out-of-pocket payment, HEFs reduce the amount by 29% and households' health related debt by around 25% on average. The effect is larger for households that are poorer, mainly use public health care and live closer to a district hospital. HEFs are more effective in reducing out-of-pocket payments

when they are operated by a NGO, rather than the government, and when they operate in conjunction with the contracting of public health services.

5. Ir and colleagues assessed the effectiveness of HEFs and vouchers in improving access to skilled birth attendants for poor women in three rural districts in Cambodia [67]. They found a sharp increase in facility deliveries in the three districts and that increase was more substantial in the comparison districts, especially after the introduction of vouchers. They concluded that HEFs combined with vouchers, if carefully designed and implemented, can effectively complement other interventions to improve access for poor women to skilled birth attendants.

6. A study of health centre-based HEF in Madagascar was carried in 2006 with the aim to assess the outcomes in terms of accuracy of targeting; improvement in health care access for the poor; and reduction in financial burden on the poor. The results showed that the HEF members were in general poorer than the non-members, but both leakage and under-coverage occurred under the HEF scheme with varying degree across sites. HEF members were more likely to seek care at public health centres than non-members, although variation existed among study sites, with particularly negative results at one site. HEF members who were aware of their member status were more likely to seek care at public health centres. Although out-of-pocket payments for outpatient consultation were significantly lower for members than for non-members, no significant difference was found for medicine payments at public health centres [62].

As quoted in Ir *et al.* [11], a key stakeholder stated, *"HEF is a pragmatic concept that allows reaching the dual objective of ensuring access for poor patients to government health facilities, while at the same time helping these facilities to generate income – a solution to the failure of user fees waivers and exemptions".*

Annex 5: History of vouchers and sustainability

The use of vouchers started much earlier than the use of PBF approaches. Three main phases can be identified in the growth of voucher programs in low and lower-middle income countries:

- The oldest voucher programs started in 1964 and 1965 in Taiwan and Korea and successfully increased the use of family planning. There were five research papers available for this evidence review. The programs lasted over 25 years until fertility had reached replacement levels and family planning was included in the national health insurance schemes;
- A small number of pilot voucher schemes were developed in the 1990s in China, India, Indonesia, Kenya and Nicaragua. Several research papers exist for programs in China and Nicaragua (3 programs). The programs mostly lasted 3 to 5 years, but some continued through the following decade (Nicaragua and Kenya);
- The past decade saw a surge in interest when the development of voucher programs started in earnest (Armenia, Bangladesh, Cambodia, India, Kenya, Madagascar, Myanmar, Pakistan, Uganda, Sierra Leone, Vietnam etc.), and this has continued. All programs provide sexual and reproductive health (SRH) services, mostly safe motherhood and family planning services. Research papers exist for programs in Armenia (2 programs) Bangladesh (2), Cambodia, India (3), Kenya, Pakistan and Uganda (2).

Currently there is a further proliferation of new voucher programs being designed, financed and supported by a wide range of international agencies and governments in different parts of the world. At present there are over 30 active voucher programs.

Sustainability of vouchers

'Sustainability' usually refers to both financial and institutional sustainability. It is often said that voucher programmes are not sustainable, and it is true that the majority of programs entail the subsidization of the costs of service provision, either by a donor organization or by a government. In terms of financial sustainability, there are no fully sustainable programme approaches which have succeeded to date in increasing access to basic health services for the poor and other underserved groups. In terms of institutional sustainability, there are examples of voucher programs which are (or were) on-going for many years and which were a fully integrated component of the country's health service delivery system (Taiwan, Korea, Bangladesh).

The review by Gorter et al [16] mentions that of the wider review of 40 voucher programs only 7 programmes ceased to operate due to lack of funding, almost all of them initiated in the 1990s. All programs initiated by governments during the last decade are still on-going and most are being scaled up; evidence that the approach is considered useful. Those voucher programmes which were initiated by government or where government is closely involved in its implementation tend to have larger budgets and a broader geographical spread, such as the Bangladesh program implemented by the MOH, the Taiwan and Korea FP programmes, and the KfW-funded program in Kenya where the government is increasingly involved in the governance, management and financing of the programme.

Voucher programs that were initiated by donors or NGOs with the aim of piloting innovative financing approaches to maternal and newborn mortality reduction tend to start small and then be scaled up, or produce research results that inform new, larger programs (i.e. programs in Bangladesh, Cambodia, India, Kenya, Pakistan and Uganda). The donor funded voucher programs in Kenya and Uganda are among the most sustainable models currently in operation. Both programmes began distributing vouchers more than five years ago in 2006; the Kenya programme is entering its third phase, expanding geographically to new areas and is now benefiting from a sizeable financial contribution by the government, while the Uganda programme has expanded to include new services (STI, SMH and FP) and has attracted new donors (USAID in addition to the original donors WB/GPOBA and KfW). The KfW-funded program in Cambodia which began in 2010 is already developing a second phase and is planning the expansion of SRH services to

include cervical and breast cancer screening and to include other services in the voucher package such as treatment of hypertension, diabetes, and cataracts. These programmes aim to introduce and build knowledge and skills for social health insurance using the voucher approach and, in the longer-term, support a move towards the introduction of Social Health Insurance as in the KfW-funded Tanzania programme. Sustainability is a fundamental part of the design process from the outset.

Voucher programmes have endured because they have been shown to reach their objectives. The early programmes in Korea and Taiwan, which lasted over 25 years, both accelerated the reduction of fertility such that they have been described in many papers as among the world's most successful FP programs. In China the programmes were successful in bringing poor mothers and children into primary health care, significantly reducing health inequities in access to maternal and child health services, and improving the health status of the poorest people. Voucher schemes for SRH in Asia (Bangladesh, Pakistan and particularly in India), showed similar results, indicating that vouchers can reduce inequities in access to health care through increasing demand more among the poor than the non-poor. The small programmes in the nineties successfully targeted highly disadvantaged populations (such as sex workers, young people and slum dwellers) and preliminary results of the Population Council's evaluation of five voucher schemes in Bangladesh, Cambodia, Kenya, Uganda and Tanzania also show positive results on utilization and equity.

Why do voucher programs cease to exist?

Of the 40 voucher programmes in the Gorter review, 22 were still active as of December 2011. Only seven of the 40 programmes ceased to continue due to lack of funding, almost all of them initiated in the 1990s. Only one of these seven programs was implemented in the last decade, which was a small pilot project in Vietnam to provide STI services to sex workers. The reasons why the 18 programs ceased to exist are as follows:

- 5 programmes met their original objectives and were no longer necessary: Taiwan, Korea, Indonesia, 2 in China;

- 5 programmes were studies or pilots either taken over by or informing new programs: 3 small pilot/research programmes in Bangladesh which were absorbed by the large MOH programme, one small pilot in Cambodia taken over by a larger programme, one small pilot in Pakistan also taken over by a larger programme;

- 1 program was incorporated into a Health Equity Fund: Cambodia;

- 7 programs were unable to find new funding: 3 in Nicaragua, 1 in Rajasthan, 1 in Kolkata, 1 in Kenya (all belonging to the older programmes which started in the nineties), and 1 in Vietnam.

Annex 6: Some relevant differences between RBF approaches

In this annex we describe some differences between PBC, PBF, vouchers and RBB which are relevant for policy makers in deciding for a particular RBF approach.

Type of providers

PBC: In this approach the service providers are often private (for profit and not-for-profit) facilities or a private agency who is contracted to manage public facilities. Most of these programs are donor-initiated and the role of government is limited to stewardship.

PBF: Service providers are mostly public providers, but a growing number includes private (not-for-profit) facilities. Most programs are donor-initiated, but scaled by the government. A third party is tasked with verifying the services and payment of the results

Vouchers: Service providers can come from all 3 sectors: public, FBO/NGO and private. Half of the programs is initiated or scaled by the government and in those schemes the role of the government is often the voucher management agency which contracts providers from the private or NGO/FOB sector in order to provide critical health services. When the program is donor-initiated there is often a mix of providers (public, FBO/NGO and private) and a private or NGO is contracted to manage the program.

RBB: Uses mostly public providers, some include private providers, mostly government-initiated and also financed. The role of government is steward and owner of the facilities, and also verifies if the results have been obtained, there is no third party involved.

Other differences

RBF programs are not only different for the type of indicators used, but also in relation to objectives, type of health problem addressed, how the program is organised etc. Some relevant differences are:

- The program is integrated within the health system as opposed to a more 'vertical' approach addressing specifically one health issue, such as malaria, TB or safe motherhood.

  Most PBF schemes – this is seen as a key strength of the strategy – usually opt for an integrated approach. The great majority of vouchers mostly address just one to five health issues. However, there are voucher programs, for example in India where the MOH uses the existing MOH structures to manage and monitor the voucher program, while contracting the private sector to provide the services.

  When a PBF scheme is strongly skewed to a few health services the program can have 'vertical' elements. HEF basically finance all services obtained at a particular public health facility. RBB programs address mostly just one health problem, but are completely integrated within the public health system.

- Another difference can be the type of population benefiting from the RBF strategies. Most programs have an explicit objective in terms of equity: the poor or particular vulnerable populations such as pregnant women, adolescents, populations at high risk of HIV etc. These programs need to rely on some targeting mechanisms to reach the groups of concerns. The targeting can go through different routes: self-selection, geographical targeting, categorical targeting (e.g. pregnant women) or means-testing. Combining the methods is also an option (e.g. a voucher program for poor pregnant women in the poorest regions of the country). Often this is done through improving the health service provision in facilities mostly used by the poor, such as public facilities or sometimes private not-for-profit facilities, as mostly done in supply-side RBF approaches. HEF targets the poor by assisting them when accessing public health facilities. Most vouchers target particular populations, although there are also programs which target all women and young children (e.g. Armenia).

References

1. Pearson.M., Johnson M, Ellison R: *Review of major Results Based Aid (RBA) and Results Based Financing (RBF) schemes. Final Report*. London: DFID Human Development Resource Centre HLSP and UKAID; 2010.

2. Kaberuka D: **Africa's health and the Commission on Macroeconomics and Health.** *Lancet* 2011, **378:** 1904-1905.

3. Musgrove P: *Financial and Other Rewards for Good Governance or Results: A Guided Tour of Concepts and Terms and a Short Glossary*. Washington: World Bank; 2011.

4. Oxman AD, Fretheim A: **Can paying for results help to achieve the Millennium Development Goals? A critical review of selected evaluations of results-based financing.** *J Evid Based Med* 2009, **2:** 184-195.

5. Naimoli J: *Building Strong Health Systems: The promise and reality of Performance-Based Finanicng*. Global Health Initiative Launch Team, USAID, Africa Bureau's Population, Health and Nutrition Officers; state of the art meeting; 2010.

6. Loevinsohn B: *Performance-Based Contracting for Health Services in Developing Countries. A Toolkit*. Washington: The World Bank; 2008.

7. Meessen B, Soucat A, Sekabaraga C: **Performance-based financing: just a donor fad or a catalyst towards comprehensive health-care reform?** *Bull World Health Organ* 2011, **89:** 153-156.

8. Brenzel L, Measham A, Naimoli J, Batson A, Bredenkamp C: *Taking Stock: World Bank Experience with Results-Based Financing for Health*. Washington: The World Bank; 2009.

9. Low-Beer D, Afkhami H, Komatsu R, Banati P, Sempala M, Katz I *et al.*: **Making performance-based funding work for health.** *PLoS Med* 2007, **4:** e219.

10. Sandiford P, Gorter A, Rojas Z, Salvetto M: *A guide to competitive vouchers in health*. Washington DC: Private Sector Advisory Unit, the World Bank Group; 2005.

11. Ir P, Bigdeli M, Meessen B, Van Damme W: **Translating knowledge into policy and action to promote health equity: The Health Equity Fund policy process in Cambodia 2000-2008.** *Health Policy* 2010, 200-209.

12. Noirhomme M, Meessen B, Griffiths F, Ir P, Jacobs B, Thor R *et al.*: **Improving access to hospital care for the poor: comparative analysis of four health equity funds in Cambodia.** *Health Policy Plan* 2007, **22:** 246-262.

13. Lagarde M, Haines A, Palmer N: **The impact of conditional cash transfers on health outcomes and use of health services in low and middle income countries.** *Cochrane Database Syst Rev* 2009, CD008137.

14. Cueto S: **Conditional cash-transfer programmes in developing countries.** *Lancet* 2009, **374:** 1952-1953.

15. Lim SS, Dandona L, Hoisington JA, James SL, Hogan MC, Gakidou E: **India's Janani Suraksha Yojana, a conditional cash transfer programme to increase births in health facilities: an impact evaluation.** *Lancet* 2010, **375:** 2009-2023.

16. Gorter A, Grainger C, Okal J, Bellows B: *Systematic Review of Structure and Implementation Issues of Voucher Programs. Analysis of 40 Voucher Programs, In-depth Analysis of 20 Programs. Draft Report*. Nairobi: Population Council; 2012.

17. Vinyals I, Torres L, Shyam Gautam G, Fuerst F, Mani Adhikari C: **Assessment of the Government Health Financing Systems in Nepal: Suggestions for Reform.** Edited by Sellars-Shrestha S. Kathmandu: Deutsche Gesellschaft für Internatianale Zusammenarbeit (GIZ), GmbH and health Sector Support Program; 2011.

18. Flodgren G, Eccles MP, Shepperd S, Scott A, Parmelli E, Beyer FR: **An overview of reviews evaluating the effectiveness of financial incentives in changing healthcare professional behaviours and patient outcomes.** *Cochrane Database Syst Rev* 2011, CD009255.

19. Holmstrom B, Milgrom P: **Multitask Principal–Agent Analyses: Incentive Contracts, Asset Ownership, and Job Design.** *Jnl of Law, Economics and Organization* 1991, **7:** 24-52.

20. Alchian A, Demsetz H: **Production, Information Costs, and Economic Organization.** *The American Economic Review* 1972, **62:** 777-795.

21. Stiglitz JE: **Incentives and risk sharing in sharecropping.** *The Review of Economic Studies* 1974, **41:** 219-255.

22. Meessen B, Kashala JP, Musango L: **Output-based payment to boost staff productivity in public health centres: contracting in Kabutare district, Rwanda.** *Bull World Health Organ* 2007, **85:** 108-115.

23. Bertone MP, Meessen B: **Studying the link between institutions and health system performance: a framework and an illustration with the analysis of two performance-based financing schemes in Burundi.** *Health Policy Plan* 2012 (In Press).

24. *Trends in Maternal Mortality: 1990 to 2008. Estimates developed by WHO, UNICEF, UNFPA and the World Bank*. Geneva: World Health Organization; 2010.

25. *Levels and Trends in Child Mortality: Report 2011. Estimates developed by the UN Inter-agency Group for Child Mortality Estimation*. New York: United Nations Children's Fund; 2011.

26. *Trends in Maternal Mortality: 1990 to 2010. WHO, UNICEF, UNFPA and the World Bank estimates*. Geneva: World Health Organization; 2012.

27. Ronsmans C, Graham WJ: **Maternal mortality: who, when, where, and why.** *Lancet* 2006, **368:** 1189-1200.

28. Lawn JE, Cousens S, Zupan J: **4 million neonatal deaths: when? Where? Why?** *Lancet* 2005, **365:** 891-900.

29. Adam T, Lim SS, Mehta S, Bhutta ZA, Fogstad H, Mathai M *et al*.: **Cost effectiveness analysis of strategies for maternal and neonatal health in developing countries.** *BMJ* 2005, **331:** 1107.

30. Campbell OM, Graham WJ: **Strategies for reducing maternal mortality: getting on with what works.** *Lancet* 2006, **368:** 1284-1299.

31. Darmstadt GL, Bhutta ZA, Cousens S, Adam T, Walker N, de BL: **Evidence-based, cost-effective interventions: how many newborn babies can we save?** *Lancet* 2005, **365:** 977-988.

32. Nyamtema AS, Urassa DP, van RJ: **Maternal health interventions in resource limited countries: a systematic review of packages, impacts and factors for change.** *BMC Pregnancy Childbirth* 2011, **11:** 30.

33. Prata N, Sreenivas A, Greig F, Walsh J, Potts M: **Setting priorities for safe motherhood interventions in resource-scarce settings.** *Health Policy* 2010, **94:** 1-13.

34. Kerber KJ, de Graft-Johnson JE, Bhutta ZA, Okong P, Starrs A, Lawn JE: **Continuum of care for maternal, newborn, and child health: from slogan to service delivery.** *Lancet* 2007, **370:** 1358-1369.

35. The Partnership for Maternal Newborn and Child Health: *A global review of the key interventions related to reproductive, maternal, newborn and child health (RMNCH)*. Geneva, Switzerland: PMNCH; 2011.

36. Prata N, Passano P, Sreenivas A, Gerdts CE: **Maternal mortality in developing countries: challenges in scaling-up priority interventions.** *Womens Health (Lond Engl)* 2010, **6:** 311-327.

37. Koblinsky M, Matthews Z, Hussein J, Mavalankar D, Mridha MK, Anwar I *et al*.: **Going to scale with professional skilled care.** *Lancet* 2006, **368:** 1377-1386.

38. Jacobs B, Ir P, Bigdeli M, Annear PL, Van DW: **Addressing access barriers to health services: an analytical framework for selecting appropriate interventions in low-income Asian countries.** *Health Policy Plan* 2012, **27:** 288-300.

39. Ensor T, Cooper S: **Overcoming barriers to health service access: influencing the demand side.** *Health Policy Plan* 2004, **19:** 69-79.

40. McNamee P, Ternent L, Hussein J: **Barriers in accessing maternal healthcare: evidence from low- and middle-income countries.** *Expert Rev Pharmacoecon Outcomes Res* 2009, **9:** 41-48.

41. Matsuoka S, Aiga H, Rasmey LC, Rathavy T, Okitsu A: **Perceived barriers to utilization of maternal health services in rural Cambodia.** *Health Policy* 2010, **95:** 255-263.

42. Gage AJ: **Barriers to the utilization of maternal health care in rural Mali.** *Soc Sci Med* 2007, **65:** 1666-1682.

43. Parkhurst JO, Rahman SA, Ssengooba F: **Overcoming access barriers for facility-based delivery in low-income settings: insights from Bangladesh and Uganda.** *J Health Popul Nutr* 2006, **24:** 438-445.

44. Meyer C, Bellows N, Campbell M, Potts M: *The Impact of Vouchers on the Use and Quality of Health Goods and Services in Developing Countries: A systematic review*. London: EPPI Centre, Social Science Research Unit, Institute of Education, University of London; 2011.

45. Liu X, Hotchkiss DR, Bose S: **The effectiveness of contracting-out primary health care services in developing countries: a review of the evidence.** *Health Policy Plan* 2008, **23:** 1-13.

46. Lagarde M, Palmer N: **The impact of contracting out on health outcomes and use of health services in low and middle-income countries.** *Cochrane Database Syst Rev* 2009, CD008133.

47. Oxman AD, Fretheim A: **Can paying for results help to achieve the Millennium Development Goals? Overview of the effectiveness of results-based financing.** *J Evid Based Med* 2009, **2:** 70-83.

48. Witter S, Fretheim A, Kessy FL, Lindahl AK: **Paying for performance to improve the delivery of health interventions in low- and middle-income countries.** *Cochrane Database Syst Rev* 2012, **2:** CD007899.

49. Toonen J, Canavan A, Vergeer P, Elovainio R: *Learning lessons on implementing performance-based financing: from a multi-country evaluation*. Amsterdam: KIT Development Policy & Practice; 2009.

50. Bellows NM, Bellows BW, Warren C: **The use of vouchers for reproductive health services in developing countries: systematic review.** *Trop Med Int Health* 2011, **16:** 84-96.

51. Kinoti S: *Effects of Performance-Based Financing on Maternal Care in Developing Countries: Access, Utilization, Coverage, and Health Impact. Rapid Review of Evidence*. USAID-TRAction Project; 2011.

52. Moran L, Beith A, Eitchler R: *Performance-Based Incentives for Maternal Health: Taking Stock of Current Programs and Future Potentials*. Bethesda MD: Health Systems 20/20 Project, Abt Associates Inc.; 2011.

53. Toure H, Audibert M, Dabis F: **To what extent could performance-based schemes help increase the effectiveness of prevention of mother-to-child transmission of HIV (PMTCT) programs in resource-limited settings? A summary of the published evidence.** *BMC Public Health* 2010, **10:** 702.

54. Canavan A, Toonen J, Elovainio R. Performance-based financing: An international review of the literature. Amsterdam: KIT Development Policy and Practice; 2008.

55. Annear P: *A comprehensive review of the literature on health equity funds in Cambodia 2001-2010 and annotated bibliography*. Melbourne: Health Policy and Health Finance Knowledge Hub, Nossal Institute for Global Health; 2010.

56. Kutzin J: **Anything goes on the path to universal health coverage? No.** *Bull World Health Organ* 2012, **90:** 867-868.

57. Martinez J, Pearson M, Holm Soresen B, James B, Sambo C: *Evaluation of the Health Results Innovation Trust Fund: Report 4/2012 Evaluation*. Oslo, Norway: Norad Evaluation Department, Norwegian Agency for Development Cooperation; 2012.

58. Jha AK, Joynt KE, Orav EJ, Epstein AM: **The long-term effect of premier pay for performance on patient outcomes.** *N Engl J Med* 2012, **366:** 1606-1615.

59. *Annual Health Financing Report 2010*. Phnom Penh: Bureau of Health Economics and Financing, Department of Planning and Health Information, Ministry of Health; 2011.

60. Annear PL, Akkhavong K, Thomé JM, Haegeman F, Bonné F, Phommavong C *et al*.: **Moving towards greater equity in health: recent initiatives in the Lao PDR and their implications.** In *Health and social protection: experiences from Cambodia, China and Lao PDR*. Edited by Meessen B, Pei X, Criel B, Bloom G. Antwerp, Belgium: Institute of Tropical Medicine; 2008:227-259.

61. Criel B, Ba AS, Noirhomme M, Waelkens MP: **Une expérience de protection sociale en santé pour les plus démunis: le fond d'indigence de Dar-Naim en Mauritanie.** Antwerp, Belgium: Institute of tropical Medicine; 2010.

62. Honda A, Hanson K: **Do equity funds protect the poor? Case studies from north-western Madagascar.** *Health Policy Plan* 2012 (In Press).

63. Noirhomme M, Thome JM: **Les fonds d'équité, une strategie pour améliorer l'accès aux soins des plus pauvres en Afrique.** In *L'assurance maladie en Afrique francophone*. Edited by Dussault G, Letourmy A, Fournier P. Washington: World Bank; 2006:432-451.

64. Hardeman W, Van Damme W, Van Pelt M, Por I, Kimvan H, Meessen B: **Access to health care for all? User fees plus a Health Equity Fund in Sotnikum, Cambodia.** *Health Policy Plan* 2004, **19:** 22-32.

65. Jacobs B, Price N: **Improving access for the poorest to public sector health services: insights from Kirivong Operational Health District in Cambodia.** *Health Policy Plan* 2006, **21:** 27-39.

66. Flores G, Ir P, Men CR, O'Donnell O, van Doorslaer E. Financial protection of patients through compensation of providers: the impact of health equity funds in Cambodia. Amsterdam: Tinbergen Institute Discussion Paper ; 2011.

67. Ir P, Horemans D, Souk N, Van Damme W: **Using targeted vouchers and health equity funds to improve access to skilled birth attendants for poor women: a case study in three rural health districts in Cambodia.** *BMC Pregnancy Childbirth* 2010, **10:** 1.

Characteristics of the various RBF programs reviewed and results research papers for PBC, PBF, vouchers and RBB

Country & scheme	Period	Objective of the scheme	Description	Important contextual factors
Performance Based Contracting				
1 **Afghanistan**	Ongoing. 2005-present	To increase access to basic health services, mainly for the rural poor. PBC indicators include MNCH indicators.	Two PBC forms: contracting out (CO) to NGOs and contracting-in to the Management Unit of the Ministry of Public Health (MoPH) started in 2005 and covering about 77% of the health districts by 2006.	Post-conflict with security problems. All services provided by public health facilities were free of charge to patients
2 **Bolivia**	Possibly ongoing. Started 1999- and was scaled in 2001, as part of health reform.	Expand the coverage and improve the quality of primary health care services in rural and remote areas and thereby contributing to promoting equity. PBF indicators include MNCH indicators.	The MoH, the department of La Paz and municipality of El Alto signed an agreement with NGO for management of one of the health services networks in El Alto. The transfer was based on a management contract that had process and outcome indicators for the network.	The PBC was implemented in 1 district (1 referral hospital and 8 health centres) - an urban poor area next to La Paz. The contracting started first at the hospital and then expanded to health centres
3 **Cambodia**	Not active. 1999-2008	Increase coverage of primary health care services (at health centres and referral hospitals) in rural areas. PBF indicators include MNCH indicators.	Pilot contracting management and delivery of PHC services to INGOs: 2 districts as contracting-out in which contractor was given full power in financial and human resource management; 3 districts as contract-in using existing management structure with technical assistance (sometimes financial assistance) from INGOs.	Post conflict settings with relatively poor governance. The intervention areas received more budget than the control and have other interventions than just contracting
4 **Haiti**	Not active 1999-2011	Improve performance of contracted NGOs in delivering essential health services to Haiti's population. PBF indicators include MNCH indicators.	The PBC started in 1999 shifting from input-based to performance-based approach to paying the contracted NGOs as a pilot with 3 NGOs and extended to 25 NGOs in 2005	A low-income country with complicated context of violence, poverty, and limited government leadership.
5 **Indonesia - block grants to villages**	Ongoing. 2007-present	To test the role of performance incentives in improving the efficiency of aid programs (performance-based aid). PBF indicators include MNCH indicators.	Experimental program in which villages in 1/3 of 264 subdistricts received a block grant of USD10,000 to support activities related to 12 selected MCH and education indicators + 20% of subsequent year block grant based on performance relative to other villages in the subdistricts. Villages in remaining subdistricts were randomly assigned to either a block grant with no financial link to performance or to a pure control group.	A relatively big low-incomce country with remote areas. Relative large coverage of social health insurance. Certain level of autonomy has been given to most public health facilities
6 **Pakistan - Rahimyar Khan**	Ongoing. 2003-present	To improve the poorly performed primary health care services in rural Pakistan. No specific MNCH indicators.	In response to low utilisation and the community's lack of confidence in basic health units in rural areas, in March 2003 the Government of Punjab contracted with a local NGO to manage the basic health units in one district. Scaled in 2006 as People´s Primary Healthcare Initiative, paid by Gov.	A relatively big low-incomce country with poorly performing public health services and a growing and dominating private sector.
7 **Uganda**	Not active. 2003- 2005. Incentives not maintained by MoH, but freedom on how to spend grant was.	To improve quality of and access to health services at private not-for-profit (PNFP) facilities. PBF indicators include MNCH indicators.	In 2003, the Government of Uganda launched a pilot PBC scheme which included performance incentives and freedom for health facilities to decide how to allocate resources.	Up to 30% of care facilities in Uganda belong to the private not for profit sector (FBO): 44 hospitals (42,3% of the total) and 558 health centres, the majority in rural, very remote, areas. A minimum package of activities was defined in 2000 and nationwide user fee abolition began in 2001.

Country & scheme	Period	Objective of the scheme	Description	Important contextual factors
Performance Based Financing				
1 **Burundi**	Ongoing. 2006-present	To complement the user fee abolition policy by enhancing the utilisation and quality of health services and improving provider motivation. PBF indicators include MNCH indicators.	PBF scheme started in Burundi in 2006 as pilot projects, first supported by Cordaid and later HealthNet. Inspired by the encouraging results from the pilot projects, the Government of Burundi decided to scale it up nationwide in April 2011.	LIC with relatively poor governance. At same time PBF introduction, gov. launched natiowide user fees abolition for children<5 and pregnant women. But evaluation of user fee abolition policy in 2008 showed it did not work well.
2 **Democratic Republic of Congo (DRC) - mixed PBF/PBC scheme**	Ongoing. 2000-present	To ensure that the target population of selected health zones have access to, and use, a well-defined package of quality essential health services. PBF indicators include MNCH indicators.	Initiated in 2000 as pilot projects & revitalized in 2005 expanding to more districts. Public, FBO/NGO/private facilities participate and can define user fees (lower fees so to increase incentives as # patients increase). Several PBF schemes implemented by different organisations. Gov. and DPs have approved National RBF approach, which will assist in harmonizing the schemes and provide a foundation for scaling up at national level.	Rather poor governance and health indicators. Alongside PBF, there are other interventions initiated and supported by donors
3 **Egypt - mixed PBF/PBC scheme**	Ongoing. 2001- present. Largely paid now through user fees, with exemption mechanism for the poor	To improve the behaviours of public and private sector service providers in delivering basic package of maternal and child health services in Egyptian primary health care units. PBF indicators include MNCH indicators.	As part of Egyptian Health Sector Reform Program, a social health insurance scheme (Family Health Fund) through District Provider Organizations contracted with public and private providers to offer Basic Benefit Package to covered population. Initially, fund was disbursed to providers on a per-capita basis and later shifted to link part of fund (salary supplements) to performance.	A middle-income country with relatively strong governance
4 **Indonesia**	Ongoing, 2009-present, a small pilot project.	Improve access to quality health services by the poor and vulnerable which are not sufficiently protected by the social health insurance subsidies in remote areas in Indonesia. PBF indicators include MNCH indicators.	Cordaid started PBF in 2009 with its Indonesian partner in two remote districts on the island of Flores in eastern Indonesia where there are no other donor assistance, high poverty indicators, low health status of the population and poor condition of health care providers. Contracted facilities are paid monthly for quantitative indicators and quarterly for qualitative indicators.	Most of poor and vulnerable people in Indonesia are enrolled in the social health insuranc e scheme with tax-based subsidies
5 **Philippines**	Ongoing 2004-present	Improving quality of care for the population, especially members of PhilHealth. PBF indicators did not include specific MNCH indicators, but quality indicators for child health care.	As part of PhilHealth Quality Improvement Demonstration Study, an assessment of financial incentives (individual bonuses and hospital-based incentives) on physician practices in public hospitals, health behaviour and health status of children under 5 years of age.	A middle-income country with relatively high insurance coverage (PhilHealth) for wage-based formal sector, premium-based informal sector and tax-based subsidized poor people.
6 **Rwanda**	Ongoing. 2002-present	Increase efficiency and coverage of defined package of services delivered by health centres and hospitals. PBF indicators include MNCH indicators.	PBF introduced in 2002 by INGOs through pilots in 2 provinces. In 2005 MoH with support from health partners gradually scaled up PBF nationwide with standardised model. Two-level performance contracts (between president and district; between district and providers) include performance indicators for promotional, preventive and curative services, both quantitative and qualitative.	PBF is impemented as part of a package of reforms, including decentralization and autonomy and community-based health insurance. Good technical governance; substantial support by a well coordinated aid actors

Country & scheme	Period	Objective of the scheme	Description	Important contextual factors
Performance Based Financing				
7 **Tanzania**	Ongoing. 2006-present	To improve MCH outcomes; strengthen information systems and its use; motivating health care providers. PBF indicators include MNCH indicators.	PBF was initiated in 2006 when Cordaid changed its input-based approach to PBF. In 2008, the government decided to scale it up nationwide, but designing and implementing this new policy was controversal and challenging.	A low-income country with relatively poor governnce.
8 **Zambia**	Ongoing. 2007-present	To improve access and quality of services, especially for poor / vulnerable, mainly through empowering users and strengthening performance of health workers. PBF indicators include MNCH indicators.	PBF was initiated in 2007 when Cordaid changed its input-based approach to PBF. Preparations for scaling to national scale have started.	LIC. Removal of user fees at rural primary health care facilities in 2006 led to huge increase in utilisation for a while, but later dropped again because of lack of medicines and funding.

	Country & scheme	Period	Objective of the scheme	Description	Important contextual factors
			Vouchers		
1	**Armenia, Obstetric Care State Certificate (OCSC) program**	Ongoing. 2008-present	Curb informal payments, regulate private providers and assure equity in access to free, quality services for delivery for all women.	Named OCSC, but functions as voucher and guarantees free obstetric care. All pregnant women eligible, certificate distributed during ANC. The State Health Agencies reimburse the largely privatised facilities registered as providers of State-Guaranteed Free care. MoH tripled budget allocation to obstetric care.	Health system inherited from Soviet period well developed but focus on hospital care, deficient PHC, low medical quality and high OOP, caused by informal payments (which has become an ingrained habit for both providers and patients) and therefore low access for the poor.
2	**Armenia, Child Health State Certificate (CHSC) Program**	Ongoing. 2011-present	Curb informal payments, regulate private providers, assure affordability and increase quality of pediatric hospital care services for children and reduce child hospital mortality.	Named CHSC, but functions as voucher and guarantees free hospital care for all children<7 and for vulnerable groups<18. Emergency care free for all<18. Functions the same as the OCSC. Certificate is distributed to newborn and to all children registed in PHC facility. MoH doubled budget allocation to child hospital care.	Same as above.
3	**Bangladesh MOH**	Ongoing. 2006-present	Reduce MM through vouchers which pay providers and give a CCT when women delivers assisted by skilled birth attendant (home or health facility)	Large. 2006-on-going, currently 10% of districts. Free SMH vouchers to poor in most districts (in few districts all women). Transport paid. Financed by SWAp, MOH intents to scale further. Most providers are from public sector, few from private sector.	Large programme. High gov. ownership, GIZ provides TA. Managed by MOH, WHO assist with supervision, including payment of coordinators.
4	**Bangladesh - Population Council**	Not active, 2007-2008 pilot study to assist large MoH program	Test feasibility and effectiveness vouchers for safe motherhood services	Small. Lasted 9 months. Free SMH vouchers for poor (no CCT). Paid Transport. VMA a combination of 2NGOs (intern. + national) + district ctees under MOH, each with designated tasks. 2 public providers, 1 NGO and 1 private hospital. Providers received training.	At request of MOH in order to pilot vouchers at smaller scale and use experiences to overcome certain problems in the existing one.
5	**Cambodia (BTC scheme)**	Not active. 2007-2010 Pilot, taken over by other voucer program	Increase use SMH services at health center level, complementary to HEF. For hospital care referred to HEF	Small pilot. Free SMH vouchers. Transport paid. Work alongside Health Equity Funds (HEF) which are almost in all districts and target the poor. Only providers from public sector. Two NGO contracted as VMAs for two different geographical areas.	Inititated by donor. Relevant because informed other on-going voucher programs in Cambodia.
6	**China**	Not active. 1998-2001. Led to capitation payment of MCH services	To reduce maternal and child mortality	Medium program. Operational research in Yunnan province. Free MCH vouchers to poorest. Was scaled to 71 counties in 7 provinces. In 2005-2007 vouchers also implemented in Chongqing province. Only public providers.	Initiated, financed, managed by World Bank in close collaboration with Gov. Results led Gov. later to subsidize public health services (e.g. MCH) through capitation payments.
7	**India-Gujarat - Chiranjeevi Yojana Scheme**	Ongoing. 2005-present	Reduce Maternal Mortality. Using private sector providers to fill gap in public sector service capacity	Large program. Free SMH vouchers. State wide voucher program targeting BPL population to deliver at private facilities. Only private-for-profit providers.	Initiated, financed, and managed by State government.

	Country & scheme	Period	Objective of the scheme	Description	Important contextual factors
			Vouchers		
8	**India-Delhi - Mamta Scheme**	Ongoing. 2008-present	Reduce Maternal Mortality. Using private sector providers to fill gap in public sector service capacity.	Medium. 2008-ongoing. Free SMH vouchers. Targeting BPL population of Delhi living in informal settlements. Only private-for-profit providers.	Initiated, financed, and managed by State Gov. Fund under the National Rural Health Mission (NRHM).
9	**India-Uttar Pradesh (UP) - Agra/ Sambhav scheme.**	Not active. Small pilot 2007-2009. Gov. used experience to develop larger scheme.	Reduce Maternal and neonatal mortality, increase FP use and pilot voucher scheme using private sector	Small. Free SMH vouchers to poor. Pilot voucher scheme in 7 rural blocks of Agra (UP). Only private-for-profit providers.	Initiated by USAID. Managed by State Gov. Later scaled to other states. In UP government developed other voucher scheme at same moment, last still ongoing.
10	**Kenya**	Ongoing. 2006-present	Increase access to quality SMH,FP, GBV services and prepare road for Health Insurance	Large program being scaled. Vouchers are sold at symbolic price to poor. FP, SMH and GBV services. Providers are from all sectors: public, NGO/FBO, private.	High government ownership, with PMU at MOH. Financed by KfW, but increasing contribution from GoK. VMA is private company (PwC).
11	**Korea**	Not active. 1964-up to end decade 80-90. Ended because fertility reached replacement levels	Accelerate FP use and reduce fertility (socio-economic reasons). Vouchers used to facilitate use of private sector in provision of FP services.	Large national program lasted over 20 years. Free FP vouchers for all couples. Gov. used vouchers to channel subsidies for FP by buying IUD and sterilisation services from private sector (because most medical care is provided by the private sector).	Initiated, financed, managed by Gov. Vouchers were part of a very strong FP program with major investments in IEC. Emphasis on field workers visiting families providing IEC as well as vouchers
12	**Nicaragua-sex workers**	Not active. 1995-2009. Could not assure cont. funding	Reduce STI and HIV among sex workers and their clients	Small. Free vouchers for management of STIs and diagnosis and referral HIV. Public, NGO and private providers (element of competition, especially in capital city). VMA is a NGO	Initiated by NGO, financed by various donors. One of the first voucher programmes. Ceased because unable to find new funding.
13	**Nicaragua-adolescents**	Not active. 2000-2005. Could not assure cont. funding	Increase access of adolescents to improved sexual and reproductive health services	Small. Free vouchers distributed to poor adolescents in urban areas of major cities. Public, NGO and private providers (element of competition, especially in capital city). VMA is a NGO	Initiated by NGO, financed by various donors. Ceased because unable to find new funding.
14	**Nicaragua-cervical cancer screening**	Not active. 1999-2009. Could not assure cont. Funding	Reduce mortality due to cervical cancer	Small. Free vouchers to increase cervical cancer screening by women at highest risk (older, rural). Incl. QA program for Pap smears and rigorous follow-up of abnormal lesions. Providers are from all sectors: public, NGO/FBO, private. VMA is NGO.	Initiated by NGO, financed by various donors. Ceased because unable to find new funding.
15	**Pakistan - Greenstar**	Ongoing. 2008-present	To motivate poor pregnant women to use ANC, PNC, safe delivery and FP services	Small. Vouchers are sold at symbolic price to poor. First pilots in Punjab (rural, urban) and later further scaling in Punjab and Sindh province. Providers are private (franchisees) and public. VMA is Greenstar, a social franchisor.	Voucher program linked to a Social Franchise (SF) Greenstar (related to international SF PSI).

Country & scheme	Period	Objective of the scheme	Description	Important contextual factors
		Vouchers		
16 **Taiwan**	Not active. 1964-up to end decade 80-90. Ended because fertility reached replacement levels	Accelerate Family Planning use and reduce fertility (socio-economic reasons). Vouchers used to facilitate use of private sector in provision of FP services.	Large. 1964- up to end decade 80-90. Free discount vouchers for all couples for IUD or sterilisation (subsidy 1/2 to 2/3 of cost). Gov. used vouchers to channel subsidies for FP by buying services from private sector (most medical care provided by private sector).	Initiated, financed, managed by Gov. Vouchers were part of a very strong FP program with major investments in IEC. Emphasis on field workers visiting families providing IEC as well as vouchers
17 **Uganda - KfW.**	Ongoing, 2006-present	Reduce STI/HIV incidence. Reduce maternal and infant morbidity and mortality and prepare road for Health Insurance. Increase FP.	Large. 2006 - ongoing. Vouchers are sold at symbolic price to poor. Services for STI (since 2006), for SMH (since 2009), and for FP (since 2011). Providers are from two sectors: NGO/FBO and private.	KfW funded. Relative low Gov. ownership, probably because public providers do not participate. This might change: Gov. more interested now. MSI is the VMA.
18 **Uganda - University**	Not active. Was investigation to inform other schemes.	Increase access to quality maternal care. Research to pilot SMH and transport vouchers.	Small. 2009-2011. Two year study with free SMH and transport vouchers. Implemented by Makerere University. Providers are from all sectors: public, NGO/FBO, private.	Was a study on vouchers and provision of supplies and training.

	Country & scheme	Period	Objective of the scheme	Description	Important contextual factors
			Results Based Budgeting		
1	**Cambodia**	Ongoing. 2008-present	Promote institutional delivery and ultimately reduce maternal mortality	Government Midwifery Incentive Scheme (GMIS), Midwives and other skilled attendants receive $10-15 per live birth in public health facilities	Besides GMIS, other interventions started in different times
2	**Ghana**	2003-presently and being gradually replaced by expansion of National Health Insurance Coverage	Reducing financial barriers to using maternity services to help reduce maternal and perinatal mortality and contribute to poverty reduction	Exemption payment deliveries in public, FBO, private facilities for all pregnant women. Providers could claim lost user fees according to agreed tariff. Policy launched in 2003, scaled in 2005. Funded through Highly Indebted Poor Countries debt relief funds, channeled to districts to reimburse contracted facilities according to number and type of deliveries (e.g. normal deliveries, CS)	A poor country with high maternal mortality, and as in many other countries, the existing exemption policy without compensation to providers did not work
3	**Nepal**	Ongoing. 2005-present	Increase utilisation of professional care at childbirths	Conditional cash transfer of $7.8-23.4 to women for a delivery in public health facilities + <2 living children or 1 obstetric complication. Provider incentives of $4.7-15.6 for attending delivery at home/ facility: Delivery Incentives Programme (formerly Maternity Incentives Scheme)	Along with CCT, free delivery policy with compensation to providers was applied to eligible women and those living in poor areas. In addition to the cash transferred, women get free services for delivery.
4	**Senegal**	2005-probably until present	Reducing financial barriers to using public maternal health services, which in turn lead to increase in the number of skilled attendance at births, thereby contributing to a reduction in maternal and perinatal mortality	Exemptions of pregnant women from payments for deliveries and C-sections in public health facilities, while providers at health posts and health centres are compensated in kind (kits with basic supplies for delivery), those at hospital are paid in cash. This policy was launched as pilot in 2005 and scaled up in 2006.	A poor country with high maternal mortality, and as in many other countries, the existing exemption policy without compensation to providers did not work

	Country & scheme	Reference	Focus of the paper	Research design & data	Strength of the evidence	Main findings, as for provider performance	Findings MNCH	Relevance
				Performance Based Contracting				
1.1	**Afghanistan**	Arur et al, 2010	Outpatient visits at public sector facilities	Before-after with a control, using routine data and data from facility surveys 2004-2005.	Medium (with control, but comparability between the intervention and control is questionable)	Double difference in outpatiant visits for all 3 groups of contracting out- CO (to NGOs) and group contracting in - CI (Management Unit of MoH) compared with control. 2 groups had performance incentives, 2 payment subject to satisfactory performance. No significant difference between groups of CO and CI.	Increase in outpatient visits for women and children (not specific to MNCH). Overall increase but also stronger increase in use by the poor, female patients and children under-5 compared to controls (targeting/equity succesful).	Large-scale contracting for health services in Afghanistan is associated with substantial increase in curative servie use, mainly for the poor and women.
1.2	**Afghanistan**	Ameli & Newbrander 2008	Effects of changes in utilisation & quality on costs	Sequential longitudinal facility-based data 2006-2007 with regression	Low (despite logistic regression to draw causal link between policies and changes, there are still many potential confounding factors)	No correlation between utilisation & cost; but significant between utilisation and quality (satisfaction)	None	Access to health services can be extended through contracting mechanisms in a post-conflict state even in the presence of security problems
1.3	**Afghanistan**	Cockcroft et al, 2011	Qualitative study on users' perceptions	Cross-sectional household surveys in areas covered by NGO contracted and by provincial health department contracted facilities	Low (risk of bias)	Households use public health services, but preferred private services. Similar users' experiences, including extra-payments for both groups of contracted facilities	None	Despite improvement by PBC, people still prefer private services
2.1	**Bolivia**	Lavendenz et al 2001 (in Spanish)	Effects on the utililization of primary health care services, mainly maternal health services	Pre-designed before and-after study with no control based on routine reporting system data.	Low (with no control and risk of bias). *Lagarde in 2009 recalculated data in Cochrane review and compared with control dictricts strengthening evidence*	Increase in institutional deliveries. According to authors: improved utilisation is result of improved quality and integrated network of PHC centers and hospitals.	Outpatient consultations increased by 55% in contracted network (83% in hospital and 18% in the network's primary care centres); institutional deliveries increased by 41% and % of deliveries in primary health care centres grew from 5% of the total to 9%.	Change in organization and management of health services network, with a purchaser-provider split, combined with RBF management and community participation can improve quality and efficiency of health services
3.1	**Cambodia**	Schwartz & Bhushan, 2004; Bloom et al 2006	Effects on access and use primary health care services at health centres and hospitals and OOP	Before-after with controls, using household survey data	Medium (comparison biased: control districts selected without proper matching criteria + received much less technical and financial inputs than intervention districts)	PBC contributes to higher coverage rates and equity for primary health care and reduce OOP	Increase in MNCH indicators, but deliveries increased modestly	With higher funding, the contracted facilities outperform the traditional government facilities, mainly for targeted indicators
3.2	**Cambodia**	Soeters & Griffiths, 2003	Primary health care in one contracting-in OD (Pearang)	Before/-after without a control, using household survey data	Low (no control and risk of bias)	Staff did perform better and as a result significant increase in use of primary health care. Lower OOP	Sharp increase in MNCH indicators, especially facility deliveries, but also ANC, use of FP, immunisation and use of ORS for diarrhoea	Innovative and decisive management proved to be essential, which is more likely to be achieved by a contracted manager than by regular government managers with life-long employment
4.1	**Haiti**	Eichler 2001; Eichler et al 2007	Effects of utilisation on key indicators	Before-after without a proper control, using hosuehold survey data	Low (no proper control and wrisk of bias)	Remarkable improvements in key health indicators, mainly immunization coverage and attended deliveries, have been achieved in the six years since payment for performance was introduced	Significant increase in attended deliveries, prenatal and postnatal care visits	Difficult to disentangle effects PBC from efforts in strengthening NGOs, but results suggest that new payment incentives were responsible for considerable improvements in immunization and attended deliveries.

	Country & scheme	Reference	Focus of the paper	Research design & data	Strength of the evidence	Main findings, as for provider performance	Findings MNCH	Relevance
				Performance Based Contracting				
5.1	**Indonesia - block grants to villages**	Olken et al 2012	Maternal and child health and education at village level	A rondomized (cluster) controlled trial	High (a community experimental study in which a number of selected villages were randomly assigned to intervention and control and potential confounding factors were addressed)	Significantly higher increase in ANC and assisted deliveries after the introduction of PBF. This difference was more pronounced in areas with low baseline with a net of 50-75% of the total impact could be attributed to incentives. But no effect on education. Moreover, they found no unintended effects.	Over 2 program years, 8 targeted MCH health indicators (e.g. ANC, assisted delivery, immunisation, growth monitoring) were an average of 0.03 standard deviations higher in incentivised areas than in non-incentivised areas.	Properly designed, performance based incentives can increase program performance
6.1	**Pakistan - Rahimyar Khan**	Loevinsohn et al 2009; Ali 2005	Changes in health service utlization and quality of care at basic health units and costs	Before-after with a control, using household survey, facility survey and rountine data	Medium (with a control and careful comparison of the results between the intervention and control districts despite low comparability of both districts)	The contracting led to over 50% increase in curative consultations and higher community satisfaction with the services in the intervention district compared to the control one with similar costs, but little change in coverage of preventive services and technical quality of care.	No difference in coverage of preventive services: FP, ANC, skilled birth attendance and child vaccination between intervention and control, because NGO had no authority over staff implementing these activities (vaccinators, Lady Health Workers) and no explicit incentives for these services. But community more satisfied with services.	PBC in the Punjab led to important improvements in service delivery at almost no additional cost to the Government.
7.1	**Uganda**	Morgan 2010	Effects on provider performance, service utilisation, and issues related to design + implementation	Propspective quasi experimental design (before-after with control), using routine facility-based data, data from household survey, patient exit interviews and key informant interviews. Three arms: 1 pre-existing financial arrangements; 2 base grant and freedom on how to spend; 3 same as 2 plus performance bonus	Medium (with control, but comparability between the intervention and control is questionable)	No discernable impact of bonuses on provision of health services by PNFP facilities, but freedom to decide how to allocate resources did. Problems in design and implementation could explain failure: too small with too complex structure and often not given to individual workers; competing incentives by increased salaries of government workers; delays in fund disbursement; poor information management, lack of supervision and coordination.	No increase in utilisation of services in the group with PBC. Indicators did include MNCH service utilisation.	To be successful, PBC requires significant investment (of time and money) and careful design and implementation. By granting facilities to choose how to spend their money (which can be obtained for free) can have significant impact on facility performance
7.2	**Uganda**	Ssengooba et al 2012	How and why PBC pilot failed to achieve its objectives	A qualitative case study, using two related theories: complex adaptive system and expectancy theory.	Medium (with a relatively good quality in data analysis)	Echo the findings by Morgan on the reasons of the failure	None	PBC should not attempt 'on the cheap' and requires a plan to boost local institutional and technical capacities of implementers as well as careful consideration of the responses of multiple actors, both insiders and outsiders, to the intended change process.

	Country & scheme	Reference	Focus of the paper	Research design & data	Strength of the evidence	Main findings, as for provider performance	Findings MNCH	Relevance
Performance Based Financing								
1.1	**Burundi**	Falisse 2011 (a project evaluation report in French)	Utilisation of health services, including HIV/AIDS, at both health centres and hospitals	Before-after without a control, using longitudinal routinely collected data	Very low (high risk of bias)	A general trend of clear increase in key health indicators, mainly family planning, institutional deliveries, outpatient consultations and hospitalizations after the introduction of PBF, but the difference is less clear at hospital level than at health centres. But no improvement in indicators related to HIV/AIDS and child vaccination.	Sharp increase in family planning and institutional deliveries after the introduction of PBF	PBF can contribute to improving quantity and quality of health services, but need other enabling factors: staffing, supplies and infrastructure…
1.2	**Burundi**	Soeters et al 2011 (in French)	Health service utilisation at both health centres and hospitals and OOP health expenditures	Before-after without a control, using data collected through household surveys, qualitative assessment and exit interviews	Low (no control and risk of bias)	A general trend of clear increase in key health indicators, mainly FP and assisted deliveries, from 7% and 53% to 16% and 82% resp. Also a significant increase in quality of care. However, decrease in HIV/AIDS related activities and child immunisation and OOP increased. PBF complements user fee abolition policy, but not enough to protect poor and vulnerable and a Health Equity Fund is needed.	Sharp increase in family planning and institutional deliveries after the introduction of PBF	PBF can contribute to improving quantity and quality of health services, but need other enabling factors.
1.3	**Burundi**	Busogoro & Beith 2010	Description of the PBF pilot scheme to illustrate how the pilot influenced design of nation-wide scaling-up and draw lessons learns	Case study (a policy analysis) combining a mixed data collection methods	Very low (a descriptive study with high risk of bias)	Positive results from the evaluation of pilot scheme in 2008 (increase on average of about 50-60% in key indicators of utilisation rate, assisted births and use and uptake of new family planning services as compared to baseline in 2006) inspired the decision for natiowide scaling-up of PBF	Increase in assisted births and FP	Implementing PBF in LIC is challeng, but possible even in post-conflict countries, where PBF may assist in building new regulatory structure, improve service utilisation, outcomes. A clear institutional framework, community engagement in PBF is crucial for success.
2.1	**Democratic Republic of Congo (DRC) - mixed PBF/PBC scheme**	Soeters et al 2011	Effects of quantity and quality of services at health centres and hospitals and OOP	Before-after with controls, using household surveys. 2 intervention + 2 control districts. Intervention: cash bonus paid to workers for reaching targets related to output/process indicators: 70% is "prime fixe", 30% performance-related. Control: no performance-based incentives, but fixed bonuses.	Medium (confounding is relatively well addressed and the risk of bias is minimized)	Increase in service utilisation was not consistent among key indicators between PBF participating facilities and non-participating; but increase in (perceived) quality of services for some indicators and decrease in OOP in participating facilities outweights those not participating. Also increased transparency and reduced corruption in PBF facilities was observed.	None	PBF can be effective even in a troubled nation like DRC
2.2	**Democratic Republic of Congo (DRC) - mixed PBF/PBC scheme**	Bertone et al 2011	Review of all PBF schems focusing on key features and institutional arrangements, and identify prerequisites for PBF implementation	Formative evaluation, using secondary data and key informant interviews (face-to-face or through telephone or email) and workshop	Very low (high risk of bias)	PBF contributes to improving health system performance, and increasing services-use. Prerequisites: upgrading infrastructure and equipment; rationalization of human resources; availaibility of consumables. Payment to facility is preferrable. Assessing quality is crucial for PBF but challenging. For PBF, reorganization of institutional arrangements health system is necessary.	Although data on institutional deliveries presented, but no conclusive evidence	It shows a variety of fragmented PBF schemes which need to be harmonized before further scaling-up

	Country & scheme	Reference	Focus of the paper	Research design & data	Strength of the evidence	Main findings, as for provider performance	Findings MNCH	Relevance
				Performance Based Financing				
3.1	**Egypt - mixed PBF/PBC scheme**	Huntington et al 2010	Quality of reproductive and child health services at primary health care units	Post intervention with controls, using data from key informant interviews with providers and managers and exit interviews with femal clients aged 15-49 years. Routine data on service utilization was used to compare the case-load of health workers between the two groups.	Medium (in the same district, some primary health care units are selected for intervention and some for control, which also receives a top up salary, but not based on performance)	Measure of various indicators, including technical and inter-personal communication, showed significant improvements in the quality of family planning, antenatal care, and child health services reported by women seen in clinics where the incentive payment scheme was in operation	Significant improvements in the quality of family planning, antenatal care, and child health services reported by women seen in clinics where the incentive payment scheme was in operation	A well designed and carefully implemented incentive scheme can influence provider behaviours
4.1	**Indonesia**	Schoffelen et al 2011	Service utilisation and quality in contracted health facilities, including also private providers	A formative evaluation with unclear design and methods	Low (while results in health facilities with PBF were compared with those in non-PBF, no clear explanation of the methods and the risk of bias is high)	Considerable and higher increase in many selected indicators, especially the quality score, in the PBF facilities than in the non-PBF	Too early to draw any firm conclusions, results suggested that the number of patients undergoing medical services increased in the two remote pilot districts.	PBF can be used as a provider payment method for health insurance (e.g. subsiding the costs for the poor and vulnerable)
5.1	**Philippines**	Peabody et al 2011	Quality of care at hospitals	Before-after with control: clinical performance assessments + MD survey with 3 groups. Group 1: bonus for MDs meeting higher quality; group 2: increased enrolment into PhilHealth for indigent children<5; group 3: control.	Medium (a relatively well designed study with comparability between intervention and control, included in recent PBF Cochrane review)	Significantly higher improvement in clinical performance vignette scores in the bonus intervention as well as in the expanded insurance intervention, as compared to control site after 12 months, 18 months, 24 months, 30 months and 36 months.	None	Performance-based incentives, both for individuals and facilities, can affect clinical quality performance.
6.1	**Rwanda**	Meessen et al. 2006	The effects of PBF pilot in two rural health districts (one changing from no bonus to PBF and another from fixed bonus to PBF) on the performance (service utilization) of health centres	Before-after with controls, using longitudinal routine data between 2001-2004	Low (weak comparability between intervention/control; risk of bias); health centres in intervention areas received more technical and financial inputs, and might have better infrastructure, staffing, management than those in the control areas)	In the intervention areas (in both districts), health centre service utilization increased for almost all measured indicators, over the study period and this increase was much higher than in the control group, especially for maternal health services	Institutional and assisted deliveries, referred deliveries and antenatal care increased over 200% in both intervention districts, compared with about 50% in the control districts over the same period	Output-based payment + greater autonomy (PBF) is a feasible and effective strategy for improving the performance of public health centres, and can be an option for acieving MDGs
6.2	**Rwanda**	Meessen et al 2007	The effects of PBF (output-related payments) on the performance of health centres (staff productivity)	Before-after with no control, using PBF monitoring data	Low (relatively well controlled for institutional changes within 15 study health centres, but no control for changes outside health centres)	The institutional changes (from fixed annual bonuses to output-based payment incentive scheme) increased health centre performance (staff productivity) on average with 80%.	None	Output-based payment can boost staff productivity in low-income settings

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Performance Based Financing								
6.3	**Rwanda**	Soeters et al 2006	The effects of PBF (changes in institutional set up) on health facility performance	Before-after with no control, using household survey data	Low (no control and small sample size; risk of bias)	Sharp increase in the coverage rates of maternal health services and decrease in OOP by 62% within 3 years after the introduction of PBF and this increase was consistent with results from a World Bank study	Sharp increase in institutional deliveries (by 144%) and family planning coverage (by 115%)	PBF is feasible strategy in SSA. It requires a new, effective, independent third party to separate purchasing and service delivery roles in district health system and participation by the community in performance monitoring
6.4	**Rwanda**	Basinga et al 2010 and 2011	Impact of PBF on ANC, institutional deliveries, quality of ANC, child preventive care visits, immunization at PHC centres	Before-after with controls (a quasi cluster RCT), using household and facility survey data (in 2006 + 2008). (difference-in-difference model used to estimate effect intervention)	High (study commissioned by World Bank and published in Lancet - control facilities received the same funding as the intervention facilities)	PBF had a large and positive impact on institutional deliveries and preventive care visits by children and improved quality of prenatal care, but no impact on completion of 4 prenatal care visits and fully immunized children.	It was estimated that PBF contributed to a 23% increase in the number of institutional deliveries and 56% and 132% increase in the number of preventive care visits by children aged below 23 months and aged between 24-59 months respectively in the treatment facilities.	The PBF can improve both the use and quality of maternal and child health services and its greatest impact was found on those services with highest payment rates and which need the least effort from service providers
6.5	**Rwanda**	Kalk et al 2010	Analysis of strengths and weakenesses of PBF	Qualitative research, combining literature review and key informant interviews	Low (risk of bias), but of high interest by looking at negative aspects of PBF	Apart from the often reported strengths, some PBF side effects were found, including 'gaming' (neglect of non-remunerated activities, irrational behaviour to fulfil requirements, falsification of documents). Two potential confounders are: (1) four-fold increase in health expenditure 2000-2006 and (2) large coverage of CBHI.	None	The positive effects of PBF (P4P) in Rwanda were accompanied by considerable negative effects, which urgently need to be followed up with more robust research
6.6	**Rwanda**	Rusa et al 2009	Effects of PBF on health centre performance: quantity and quality of services	Quasi interrupted time series, using formative supervision system data	Low (risk of bias)	Increased utilisation only for activities previsouly less organized (growth monitoring, institutional delvieries). Quality services (compliance with norms) rose considerably for all services. Estimated cost of PBF = $0.25/cap/year of which 0.20 for subsidies and 0.05 for administration, supervision and training.	Considerable increase in institutional deliveries	The only impact of PBF on previously less organised services indicates the importance of new institional arrangements introduced by PBF and the appropriateness of remuneration with consderation of quality indicators
6.7	**Rwanda**	Sekabaraga et al , 2011	Impact of innovative health care financing policies (community-based health insurance and PBF) on MDGs-related indicators	Sequential longitudinal study, using nationwide population-based survey data over a period of 507 years (2000-2007)	Low (despite logistic regression to draw causal link between the policies and the changes, there are still many potnetial confounding factors)	Steadily improved financial access for all, mainly poor increased utilisation of services, mainly MGD4 and MDG5-indicators (FP, assisted deliveries, children<5 under ITN, immunization), reduced OOP+ catastrophic health expenditures from 2000 to 2007, after introduction of innovative health financing policies, mainly CBHI and PBF.	Sharp increase in MCH indicators, mainly assisted deliveries for the population, especially for the poorest from 12.1% in 2000 to 27.1% in 2005 and to 42.7% in 2007	Expansion of PBF together with community-based health insurance contributes to improving access to and utlisation of essential health services for the poor and reducing OOP health expenditures.

	Country & scheme	Reference	Focus of the paper	Research design & data	Strength of the evidence	Main findings, as for provider performance	Findings MNCH	Relevance
Performance Based Financing								
7.1	**Tanzania**	Canavan & Swai 2008	Institutional structure, management practices, effects PBF on health staff at health centres and hospitals	Formative evaluation, using secondary data (with somehow before-after with control) and key informant interviews with key stakeholders	Low (poor control and risk of bias)	Although health workers reported increased level of motivation, comparison of service utilisation data between PBF facilities and non-PBF ones over the three years (2005-2007) did not show any particular difference.	No increase in maternal health indicators	Although PBF showed a potential in motivating health worker performance, but its impact on health service utilisation and outcomes in the Tanzanian context is questionable.
7.2	**Tanzania**	Morgan et al 2009	Analysis of decision process in moving from concepts to design and implement nationwide a PBF without pilot	Case study (a policy analysis) combining a mix of data collection methods)	Very low (descriptive analysis with high risk of bias)	Against advice from development partners to first implement PBF as a pilot, the gov. decided to go for national scale. Despite strong concensus among key stakeholders, mainly those in gov., it remains a challenge to appropriately design and effectively implement this natiowide PBF scheme.	Maternal health is one of the target performance of PBF	Strong political commitment is crucial, but not enough for PBF. Appropriate design and implementation with community participation is also necessary for its success
8.1	**Zambia**	Vergeer & Chansa 2008	PBF design and implementation process. Results in service utilization were also examined to assess efficiency of approach.	Formative evaluation, using secondary data (with somehow before-after with control) and key informant interviews with key stakeholders	Low (poor control and risk of bias)	Although necessary conditions to provide quality of care in PBF facilities were better than the non-PBF ones, comparison of service utilisation between these two groups before and after the introduction of the PBF did not show any significant difference. There were many	No increase in maternal health indicators. Patients using PBF facilities were more satisfied than patients using non/PBF facilities	Although PBF showed potential in motivating staff performance, no impact on health service utilisation. There were many failings in implementation. Period of evaluation was short and concurred shortly after fee abolition policy which can increase utilisation in all facilities.

	Country & scheme	Reference	Focus of the paper	Research design & data	Strength of the evidence	Main findings, as for provider performance	Findings MNCH	Relevance
				Vouchers				
1.1	**Armenia, Obstetric Care State Certificate (OCSC) program**	Truzyan et al, 2010 (report)	Assess the functionality of OCSC through a qualitative stakeholder analysis and provide recommendations for improvement	Qualitative study: focus groups and semi-structured in-depth interviews with mothers, health care providers and managers	Very low, descriptive study, stakeholder interviews analysed. Report, not peer reviewed article.	MDs indicated that they cannot get information on how their salaries are calculated and that the calculations at facility level lack transparency and recommended to further regulate and monitor the money flow in the maternity hospitals. Providers perceived quality in rural areas as better than before, now competing with urban providers.	Informal payments substantially declined, although still some gifts to health staff. women for free quality services Improved patient-provider relationships: women felt more relaxed and self-confident to use services. Mothers satisfied with quality of services received and attitude of health staff. Increased early ANC registration and number of ANC visits.	Vouchers can curb informal payments in countries in transition and working with private sector registered as providers of State-Guaranteed Free care and services within Basic Benefit Package.
2.1	**Armenia, Child Health State Certificate (CHSC) Program**	Crape et al, 2011 (report)	Quantitative /qualitative assessment CHSC 1 estimates of informal payments before and after launch CHSC, 2 health staff perception CHSC.	Quasi-experimental random sampling of caregivers of children <7 who received in-patient care before and after introduction program. Qualitative assessment among convenience sample of providers.	Very low, before and after, no control. Report, not peer reviewed article.	Providers satisfied with increased official salaries of pediatric providers, reduced informal payments, improved access, increased trust population in State and improved control of financial flows through MoH. But complaints about increased workload.	Number of children properly referred increased. Sharp decrease in informal payments. In case there were payments these were for drugs from pharmacies and gifts to health staff. High rating of satisfaction, but only significantly increased after launch in rural areas, not in urban areas. Mothers reported increased affordibility of child hospital care.	Vouchers can curb informal payments in countries in transition and working with private sector registered as providers of State-Guaranteed Free care and services within Basic Benefit Package.
3.1	**Bangladesh MOH**	Hatt et al, 2010, report.	Long report on the evaluation of the voucher scheme, several aspects	Cross-sectional analysis of intervention and control areas (n=2,208 women)	High (is score in Meyer review)	SMH services. Quantity has increased considerably. Somewhat better supplies and equipment for SMH services and more facilities upgraded for EOC. No competition. Room for increasing quality using voucher revenue	Statistically significant lower OOP and increases in SMH use: at least 3 ANC: 34% to 55%; deliveries attended by skilled providers: 27% to 64%; % facility-based deliveries: 19% to 38%; PNC 21% to 36%. CS no statistical difference (9% and 10%)	Improved equity. reduced OOP, increased utilisation, somewhat increased service capacity in EOC
3.2	**Bangladesh MOH**	Schmidt et al, 2010	Rapid review several aspects voucher scheme	Cross-sectional analysis of intervention and control areas	Low (is score in Meyer review)	No increased proportion of CS compared to controls because of financial incentives. No competition between providers, QA needed	n.a.	Incentives did not lead to perverse behaviour
3.3	**Bangladesh MOH**	Ahmed and Khan, 2010	Efficiency and performance of the scheme	Semi-structured interviews with stakeholders	Low (design not strong, based on relatively few interviews, peer reviewed in HPP)	Failed to increase market competitiveness (payment too low, only public facilities interested), incentives did motivate higher level of services (clients satisfied). Service delivery capacity too low for increased volume, more supply-side investments needed	Increassed satisfaction. Vouchers created significant purchasing power	Perceived quality increased
3.4	**Bangladesh MOH**	Ahmed and Khan, 2011	Maternal healthcare service utilization	Cross-sectional analysis of intervention and control areas	Medium (peer reviewed in SSM, good design)	n.a.	Increased use of maternity services (2.5 x more likely to deliver in facility). Vouchers reduced inequality: difference rich/poor SMH use reduced considerably.	improved equity, increased utilisation
3.5	**Bangladesh MOH**	Nguyen et al, 2012		Cross-sectional analysis of intervention and control areas	High (is score in Meyer review)	No increased proportion of CS compared to controls as a result of financial incentives.	See also under Hatt. Increase in ANC, delivery, PNC same as above. All p<0.001. OOP 34% less (p<0.001). Effects intensified over time. Multivariate analysis: 1.7 x more skilled delivery. Increase greater in poorest quintile compared to 4 higher quintiles (SS+).	improved equity, increased utilisation, incentives did not lead to perverse behaviour

	Country & scheme	Reference	Focus of the paper	Research design & data	Strength of the evidence	Main findings, as for provider performance	Findings MNCH	Relevance
				Vouchers				
4.1	**Bangladesh - Population Council**	Rahman et al, 2009	Measuring changes in utilisation of SMH services and quality of the SMH services	Before and after survey of service providers, field workers and poor pregnant women (n=850)	Medium (is score in Meyer review)	SMH. Quality improved. SS (p<0.01) more services during ANC (e.g. measuring weight, BP, blood tests). % providers performing well increased for all ANC quality indicators (SS). SS increase of % women experiencing NO life threatening complications during pregnancy, delivery, post-partum.	Increase in use: at least 3 ANC: 30% to 63% (p<0.01). Delivery attended by trained provider: 5.5% to 21.6% (p<0.01). Facility-based delivery: 2.3% to 18.3% (p<0.01). PNC: 45% to 60% (p<0.01)	Increased utilisation among poor (no comparison with non-poor)
5.1	**Cambodia (BTC scheme)**	Ir et al, 2010	Effectiveness vouchers/HEF, compared to areas with only Delivery Incentive scheme (RBB) with or without PBC.	Extraction of delivery rates and outcomes from routine health information systems at health facilities; expected births estimated (DHS)	Low (is score in Meyer review)	SMH services. Cash incentives from PBC + delivery incentive increased commitment staff to ensure 24-hour services at health centres and to provide IEC and promote facility deliveries during outreach. HC paid incentives to TBA and VHV for referral.	Facility deliveries increased in 2 years more in areas with vouchers and HEF (with also PBC and incentive delivery incentives): 28.6%, in other areas this was 14.5% (only PBC and delivery incentives) and 8.6% (only delivery incentive scheme), however, no reported test of SS. Vouchers paid for 2.4% of deliveries in 2007 and for 7% in 2008.	Increased utilisation among poor because of vouchers and HEF (no comparion with non-poor). PBC and delivery incentives increased service delivery capacity (24/7)
6.1	**China**	Du et al, 2001	Increase in service utilisation among poorest compared to less poor and non-poor	Comparison before and after as well as between intervention and control areas	Medium (very strong design, although not published in peer reviewed journal. Study report became available after Meyer review)	Mother and Child Services. No data on provider performance.	Service use increased more among poorest, with 19% and 21% in two different intervention areas and only 2% in control area. Difference in use between poor and non-poor was not statistically significant anymore.	Improved equity (poor benefitted more), increased utilisation
7.1	**India-Gujarat - Chiranjeevi Yojana Scheme**	Bhat et al, 2009	To explore the targeting, coverage, socio-economic profile of beneficiaries and assess financial protection	Cross-sectional survey on demographic information of randomly selected rural pregnant women (n=656), 262 beneficiaries, 394 non-beneficiaries	Low (is score in Meyer review)	SMH services. Voucher services more efficient. Prices paid to private facilities lower than usual prices charged to patients	Targeting poor accurate. Considerable reduction of OOP. Reduction deliveries at home (21% to 0.4%), increase deliveries at private facilities (77% to 97%). Rest in public facilities (2.6% and 2%). No data on SS reported for these findings.	Targeting poor OK. Reduced OOP. Increased utilisation. Efficient contracting private providers.
7.2	**India-Gujarat - Chiranjeevi Yojana Scheme**	Mavalankar et al, 2009	Estimate lives of mothers / newborns potentially saved	Descriptive analysis of the scheme and analysis of secondary data	Very low (because of weak research design and data)	SMH services. >800 private obstetricians participate.	>269,000 deliveries in 2 years. Increase in facility deliveries: 27% to 48% (April 2007 to Sept 2008). Estimate of >500 maternal lives saved and >7,000 newborn lives.	Increased utilisation by BPL pop. Estimated pos. impact on MNM. Service capacity increased
8.1	**India-Delhi - Mamta Scheme**	Nandan et al, 2010	Evaluation of several aspects of the programme during pilot phase 2008 and 2009	In-depth interviews with beneficiary and non-beneficiary women delivering at hospitals and with other stakeholders	Low (is score in Meyer review)	SMH services. 2/3 of private providers dropped out of scheme after 1.5 year because prices considered paid too low (lower than actual costs) and too much paper work and late payment.	Increased facility based delivery. 30% of beneficiaries and 23% of non-beneficiaries had previous delivery at home.	Increased utilisation by BPL pop. Good targeting. If prices too low private providers not interested
9.1	**India-Uttar Pradesh (UP) - Agra/ Sambhav scheme.**	Mishra et al, 2011	Increase in utilisation of FP and SMH services	Before and after comparison (n=3446)	Low (design not strong, abstract at FP conference)	SMH services. Competition, improved quality (no details given)	Increase in FP use (27% to 31%), increase in facility delivery (30% to 53%), SS not reported. OOP reduced considerably	Reduced OOP. Increased utilisation by BPL pop.

	Country & scheme	Reference	Focus of the paper	Research design & data	Strength of the evidence	Main findings, as for provider performance	Findings MNCH	Relevance
					Vouchers			
10.1	**Kenya**	Bellows et al, 2012	Increase in utilisation of SMH services	Before and after comparison. Secundary data used to assess if observed trend was indeed result of intervention	Medium (peer reviewed in HPP, design not strong but good falsification exercise to control for other factors)	SMH services. No data on provider performance.	Statistically significant increase in attended deliveries with OR=1.4 (95%CI: 1.19 – 1.58)	Increased utilisation among poor (slum dwellers)
10.2	**Kenya**	Population Council 2011, working draft report	Analysis of investnents by voucher clinics, using voucher revenu	Interviews with voucher clinics at end of phase 1 program (about 2 years of participation)	Very low (internal report)	SMH services. Voucher revenu used to expand service capacity and improve aspects of perceived quality (painting, curtains etc). Technical quality improvement not measured.	n.a.	Service capacity enhanced and services made more attractive for clients (perceived quality).
11.1	**Korea**	Kim TI and Ross JA, 2007 and Cho et al, 1990	Increase in FP	Descriptive analysis of the scheme and analysis of secondary data	Low (analysis secondary data before-after and not possible to disentangle effect IEC from effect vouchers)	FP services. Through vouchers gov. provided subsidies to couples to access long term FP services (IUD and sterilisation) at private providers. Quality was low at start but increased quickly through monitoring and training gov. selected providers interested.	Increase of FP use: from <10% in 1964, to 45% by the mid 70s to 80% in the eighties, after which it remained stable. Use by groups with lower education rose faster than among groups with a higher education. The total fertility rate decreased from 6.0 to 1.6 over the period 1960-87, that is below replacement level which is 2.1 (ref for TFR decline is Cho).	Improved equity. Increased utilisation. Vouchers can assist gov. to subsidise priority health services bought from private sector.
12.1	**Nicaragua-sex workers**	McKay et al, 2006	Impact on level of STIs	Medical record extraction on timing of treatments and prevalence of STIs. Change over time through time series analysis	Medium (is score in Meyer review)	STI / HIV services. n.a.	Reduction of STI prevalence in sex workers over 10 years. More frequent distribution of STI treatment vouchers (shorter lag times between treatment rounds) is associated with significant decrease. Linear relationship: p=0.004.	Paper proofs that vouchers can reach "hard-to-reach" populations and have an impact on STIs (reduced prevalence).
12.2	**Nicaragua-sex workers**	Borghi et al, 2005	Cost-effectiveness of vouchers	Cost-effectiveness comparison between program and in absence of programme using baseline data, reports and literature	Medium (is score in Meyer review)	STI services. Because treatment is more effective when voucher is used (use of protocol) program is cost-effective compared to "usual" situation (STI treatmet provided in public clinics ineffective). Technical quality improved.	Voucher programme had higher per STI patient treated costs, but lower per patient STI effectively cured costs at $118 compared to status quo of $200.	The only paper so far which did a cost-effectiveness study, comparing vouchers with the usual situation in the absence of the program.
13.1	**Nicaragua-adolescents**	Meuwissen et al, 2006a	Impact of vouchers on the use of SRH by adolescents	Cross-sectional community-based survey comparing voucher receivers to non-receivers	Medium (is score in Meyer review)	SRH services, including some SMH services: pregnancy test, first ANC and referral	Higher use of reproductive health: 34% vs.19% (adjusted odds ratio, 3.1; 95% confidence interval, 2.5–3.8). Higher levels of FP knowledge (OR 1.3), STIs (OR 2.6). Use of different FP methods (pills, condoms) increased in different subgroups.	Capacity vouchers to increase utilisation of SRH services by a "difficult-to-reach" population; adolescents
13.2	**Nicaragua-adolescents**	Meuwissen et al, 2006b	Change in provider knowledge and attitudes due to voucher program (included training)	Pre/post intervention interviews with providers at SRH clinics	Medium (is score in Meyer review)	SRH services. Knowledge MDs: mean scores FP increased from 6.4 to 8.0 (P = .003) and for STIs 2.7 to 5.2 (P < .001). Some attitudinal changes but not SS. Provider-related barriers (knowledge, values) to FP use in young girls reduced (SS).	n.a.	Capacity of vouchers to improve provider capacity and quality, even for services for which many other interventions have been unsuccessful

	Country & scheme	Reference	Focus of the paper	Research design & data	Strength of the evidence	Main findings, as for provider performance	Findings MNCH	Relevance
					Vouchers			
13.3	**Nicaragua-adolescents**	Meuwissen et al, 2006c	Change of quality aspects of SRH due to vouchers	Female simulated patient visits before, during and after intervention	Medium (is score in Meyer review)	Some aspects quality improved from before to after – increase in patients leaving with FP method / receipt (50% to 80%, NSS), patient given method choice (31% to 73%, SS), increase condom promotion (53% to 93%, SS). Several aspects improved during intervention but dropped afterwards	n.a.	Technical quality improved somewhat
13.4	**Nicaragua-adolescents**	Meuwissen et al, 2006d	Change in perceived quality due to vouchers	Cross-sectional community-based survey comparing voucher receivers to non-receivers	Medium (is score in Meyer review)	Patient satisfaction higher (AOR 2.23, SS). Increased satisfaction with reception (OR 1.99, SS). Clarity of doctors explanations same (OR 1.4, NSS).	n.a.	Improved perceived quality
13.5	**Nicaragua-adolescents**	Meuwissen et al, 2006e	SRH needs of adolescents using vouchers	Cross-sectional analysis of medical files	Low (descriptive study, not in DfID review, but included in Bellows review)	n.a.	Girls using vouchers had real needs. A new category of SRH users emerged: sexually active girls (neither pregnant nor mothers) who sought FP or STI/RTI services. Intended use of FP doubled among sexually active non-pregnant voucher redeemers.	Vouchers not used for unnecessary demands, encouraged girls who otherwise would need but not use, to access services.
14.1	**Nicaragua-cervical cancer screening**	Howe et al. 2005	Evaluation of effectiveness of cervical cancer screening voucher program in remote	Clinical records review of Pap screenings and pathology reports for >25 and < 25 yr olds. % high-risk screened and treated compared to standard benchmarks (n=1,448).	Medium (is score in Meyer review)	Good quality of the reliability of detection (PPV) of cancerous lesions and good follow-up and treatment when compared to international benchmarks	Program sucesfully targeted women at highest risk (those with abnormal screens) according to different international benchmarks: 3.7% compared to 1-5% ACCP; 0.2-1.5% NBCCEDP; and 0.45% Bethesda	Accurate targeting of under-consumed services by population at risk. Improved quality.
15.1	**Pakistan - Greenstar**	Agha 2011a	Change in utilisation of SMH services in urban area of Punjab: DG Khan	Before and after comparison of survey data from a random sample of mothers who delivered before and during the intervention (n=1,423)	Low (weak design, no control area, small sample size)	SMH services. No data on provider performance.	Targeting was not effective, all wealth quintiles bought vouchers, although poorest quintile bought most. Crude effect: Use of ANC and PNC increased in several wealth quintiles, use of facility delivery only increased in poorest quintile.	Poorest quintile did benefit most: increased utilisation. For facility delivery no increase in 4 higest quintiles, only financial benefit (voucher just replaced OOP).
15.2	**Pakistan - Greenstar**	Agha 2011b	Change in utilisation of SMH services in rural area of Punjab: Jhang	Comparison before and after as well as between intervention and control areas (n=4,051)	Medium (strong design, published in Open Access Journal)	SMH services. No data on provider performance.	Increase in facility-delivery among poor relative to non-poor SS greater in intervention area compared to control. SS increases in use ANC, facility-delivery, PNC for fourth and fifth quintiles in intervention area and not in control area.	Equity enhancing: poor benefitted more. Differentials in use between poor and rich reduced
16.1	**Taiwan**	Chang et al, 1969	Change in fertility due to FP program	Case-control study using gov. registries and matching IUD acceptors to non-acceptors and looking at fertility rates before and after intervention (n=6,362).	Medium (is score in Meyer review)	n.a.	Fertility reduced more in IUD acceptors (cases) than in matched controls. For first three years, programme prevented 121 live births a year per 1,000 first insertions (births in acceptors reduced on average from 381 to 77; and in controls from 376 to 195)	Vouchers accelerated fertility decline
16.2	**Taiwan**	Chow 1968	Investigation of needs of voucher receivers.	Cross-sectional analysis of administrative data on voucher users compared to sample of general population.	Low (not included in DfID review, included in Bellows review)	n.a.	Voucher users (IUD acceptors) had higher number of births, higher rates of abortion use, and a higher proportion wanted no more children compared to general population of women in childbearing years.	Shows that vouchers can target women most in need of FP services

	Country & scheme	Reference	Focus of the paper	Research design & data	Strength of the evidence	Main findings, as for provider performance	Findings MNCH	Relevance
					Vouchers			
16.3	**Taiwan**	Trewinnard, 1998, Cernada, 2006	These papers relate sharp fertility decline to increase in FP use	Administrative data a	Low (descriptive analysis)	n.a.	Decline of Taiwan's natural population increase rate from 3% in 1963 to 1.9% in 1973 is attributed primarily to an increasing use of contraception facilitated by the voucher program.	Vouchers can assist gov. to subsidise priority health services bought from private sector and achieve objective of reduced fertility.
17.1	**Uganda - KfW.**	Bellows et al, 2012 (working paper sumitted to BMC)	Change in utilisation of STI services and prevalence of Syphilis (reactive VDRL)	Before and after study with comparison between respondents>10 km and those<11 km from the contracted clinic (n=3,438 and for syphilis test n=3.201)	Medium (is score in Meyer review)	n.a.	Respondents near clinic: 30% increase in use of STI services for those with symptoms (30% to 39% p=0.01) compared to no increase in those far from clinic (24% to 24%). Decrease in syphilis was 57% in group near clinic (7.3% to 2.9% p<0.01)and only 20% in group far from clinic (5% to 4.4% p=0.60).	Shows that vouchers can increase STI service utilisation among general population in poor areas
17.2	**Uganda - KfW.**	Population Council 2011, working draft	Report describes functioning programme and results on utilisation STI and SMH services	Comparison before and after as well as between intervention and control areas.	Low (internal report, good study design, papers being developed)	SMH. Quality improved. SS more services during ANC (e.g. measuring weight, BP). History taking during ANC and PNC not improved. Perceived quality of STI services improved.	Increase in facility delivery from 52% to 61%. Detailed data analysis is ongoing.	Shows some changes in quality of voucher clinics
18.1	**Uganda - University**	Ekirapa-Kiracho et al, 2011	Investigate impact of demand and supply side strenghtening	Comparison before and after as well as between intervention and control areas. However, preliminary analysis of 3 months pilot intervention	Low (strong design, but preliminary results and descriptive analysis, no SS given etc)	Providers in both intervention and control area received refresher training and medicines and supplies	Number of institutional deliveries in intervention area more than doubled, ANC and PNC more than tripled, while service utilisation in control area remained more or less the same.	Shows sharp increase in utilisation. It seems that adding transport vouchers increases the impact of service vouchers.

	Country & scheme	Reference	Focus of the paper	Research design & data	Strength of the evidence	Main findings, as for provider performance	Findings MNCH	Relevance
Results Based Budgeting								
1.1	**Cambodia**	Ir et al, 2009 (Manuscript submitted to a journal)	GMIS and Institutional deliveries	Longitudinal routine data (before-after) without control with qualitative data from focus group discussions with pregnant women and key informant interviews	Low (no control with risk of bias and many potneital confounding factors)	GMIS contributes to increase in performance of midwives	Sharp increase in institutional deliveries, mainly in areas with other interventions. Apart from institutional deliveries, the GMIS tend to have effects on health system strengthening. No major negative and unintended effects were found	Right (appropriate amount and targeted on priority and measurable services or outputs) incentives can change health workers behaviour and contribute to strengthening health system
1.2	**Cambodia**	Ir et al, 2010	Vouchers and Institutional deliveries	Before/-after routine data (one province only)	Low (no control with risk of bias)	GMIS contributes to increase in performance of midwives	Sharp increase in institutional deliveries, mainly in areas with other interventions	Incentives are good, but not enough and should be supported by other interventions which share the same objectives and intend to address the same problems
2.1	**Ghana**	Witter et al, 2007	An analysis of provider-compensated exemption policy for institutional deliveries and C-sections	A policy analysis type of study based on data collected through key informant interviews	Low (a qualitative study)	The exemption mechanism was well accepted and appropriate, but important problems with disbursing and sustaining funding, and with budgeting/ management. Staff workloads increased as more women attended, and levels of compensation for were important to the scheme's acceptance. In 2005 not yet clear how scheme would fit into National Health Insurance.	Perceived potential effects on increased institutional deliveries, but unclear based on routine data. It was felt to have effect on encouraging women to come to the facilities early and thus complications were detected and better managed, saving lives, as it was reflected in the increase in more complex interventions.	Despite limitations and pitfals, this scheme was found to have potential in reducing financial barriers to users and hence increase skilled attendance at births. The detailed design and management of this kind of scheme is critical to its success
2.2	**Ghana**	Witter et al, 2009	Drawing 10 lessons from an evaluation of the national delivery exemption policy in Ghana	A descriptive study, using data from informative evaluation	Low (a qualitative study)	10 lessons : 1) delivery exemptions can be cost-effective; 2) despite its universalism poor did benefit; 3) adequate funding is critical; 4) build ownership early on is important; 5) exemptions should address main household cost barriers; 6) facilities should be reimbursed for costs, but not over-generously ; 7) staff must be motivated to provide appropriate care; 8) quality did not deteriorate, but need to improve quality; 9) the whole range of providers should be included; 10) strong M&E component should be built in.	Exemptions were effective in raising utilisation significantly, with some modest equity gains. The results from the evaluation suggest that inequalities can decrease in response to a universal exemption. Largest increase in facility utilisation in one region amongst the poorest (first quintile), in another amongst the poor (second quintile). OOP reduced.	The move towards making delivery care free to all women is a evidence-base, bold and timely action. However, the potential for this to translate into reduced mortality for mothers and babies fundamentally depends on the effectiveness of its implementation.

	Country & scheme	Reference	Focus of the paper	Research design & data	Strength of the evidence	Main findings, as for provider performance	Findings MNCH	Relevance
3.1	**Nepal**	Powell-Jackson et al, 2009, in BMC	Why low uptake of the programme	Qualitative study through key informant interviews and focus group discussion	Low (qualitative study with risk of bias)	Low uptake of the programme because of delays in fund disbursement, poor communications, complexity of the design	None	Design and how effective the program is implemented have an effect on the outcome in this type of incentive schemes.
3.2	**Nepal**	Powell-Jackson et al, 2009 in Adv Health Econ Health Serv Res.	Impact on maternal and neonatal services and outcomes	Interrupted time series data	Low (risk of bias)	Women using the program (CCT) were more wealthier women, with mixed picture of impact. The universal nature of CCT means its recipients are disproportionately from richer households, who are more likely to use maternity services.	Increase in skilled birth attendance, no impact on neonatal mortality & C-section. Impact only in areas with women groups and no impact in areas without women groups.	Importance of women network for the success of such scheme
3.3	**Nepal**	Powell-Jackson & Hanson, 2012	Impact on utilisation of maternity services	Propensity score matching	Medium (potential confounding factors are relatively well controlled)	Modest impact which is strongly associated with amount of incentives and quality of care and coverage. Implementation failings limited program impact and suggest a missed opportunity	Modest increase in deliveries with skilled attendants.	The relevance of size of the CCT, quality of care, and effective program implementation for the success of such scheme (CCT, free delivery, incentive for providers).
4.1	**Senegal**	Witter et al, 2010	Provider-compensated exemption policy for institutional deliveries and C-sections in public health facilities	Case study with mixed methods: key informant interviews, focus group discussions, financial flows tracking and clinical record extraction and analysis	Low (a case study)	Despite considerable implementation difficulties, mainly related to allocation of funds, kits and adequacy of their contents, significant increases in normal deliveries (from 40% to 44% of expected deliveries over 2004–5) and in caesarean rates (from 4.2% to 5.6%) in policy coverage areas. These trends not found in non-policy coverage areas. Cost per additional CS under policy was US$467 and of additional supervised normal delivery US$21.	Increases in normal deliveries and C-sections in policy coverage areas and not in non-policy coverage areas.	Despite its young age, this policy of free delivery and C-sections shows its potential to address costs of deliveries, particularly for C-sections. To achieve full potential, it requires improved systems for planning/ allocating resources/new channels to reimburse lower level facilities/comlementary supply-side strategy of investment in facilities, transportation, staffing.

	Country & scheme	Reference	Focus of the paper	Research design & data	Strength of the evidence	Main findings, as for provider performance	Findings MNCH	Relevance
					Vouchers			
3.5	**Bangladesh MOH**	Nguyen et al, 2012		Cross-sectional analysis of intervention and control areas	High (is score in Meyer review)	No increased proportion of CS compared to controls as a result of financial incentives.	See also under Hatt. Increase in ANC, delivery, PNC same as above. All p<0.001. OOP 34% less (p<0.001). Effects intensified over time. Multivariate analysis: 1.7 x more skilled delivery. Increase greater in poorest quintile compared to 4 higher quintiles (SS+).	improved equity, increased utilisation, incentives did not lead to perverse behaviour
4.1	**Bangladesh - Population Council**	Rahman et al, 2009 (in DfID review), Rob et al, 2010 (same study as the one by Rahman; published in journal)	Measuring changes in utilisation of SMH services and quality of the SMH services	Before and after survey of service providers, field workers and poor pregnant women (n=850)	Medium (is score in Meyer review)	SMH. Quality improved. SS (p<0.01) more services during ANC (e.g. measuring weight, BP, blood tests). % providers performing well increased for all ANC quality indicators (SS). SS increase of % women experiencing NO life threatening complications during pregnancy, delivery, post-partum.	Increase in use: at least 3 ANC: 30% to 63% (p<0.01). Delivery attended by trained provider: 5.5% to 21.6% (p<0.01). Facility-based delivery: 2.3% to 18.3% (p<0.01). PNC: 45% to 60% (p<0.01)	Increased utilisation among poor (no comparison with non-poor)
5.1	**Cambodia (BTC scheme)**	Ir et al, 2010	Effectiveness vouchers/HEF, compared to areas with only Delivery Incentive scheme (RBB) with or without PBC.	Extraction of delivery rates and outcomes from routine health information systems at health facilities; expected births estimated (DHS)	Low (is score in Meyer review)	SMH services. Cash incentives from PBC + delivery incentive increased commitment staff to ensure 24-hour services at health centres and to provide IEC and promote facility deliveries during outreach. HC paid incentives to TBA and VHV for referral.	Facility deliveries increased in 2 years more in areas with vouchers and HEF (with also PBC and incentive delivery incentives): 28.6%, in other areas this was 14.5% (only PBC and delivery incentives) and 8.6% (only delivery incentive scheme), however, no reported test of SS. Vouchers paid for 2.4% of deliveries in 2007 and for 7% in 2008.	Increased utilisation among poor because of vouchers and HEF (no comparion with non-poor). PBC and delivery incentives increased service delivery capacity (24/7)
6.1	**China**	Du et al, 2001	Increase in service utilisation among poorest compared to less poor and non-poor	Comparison before and after as well as between intervention and control areas	Medium (very strong design, although not published in peer reviewed journal. Study report became available after Meyer review)	Mother and Child Services. No data on provider performance.	Service use increased more among poorest, with 19% and 21% in two different intervention areas and only 2% in control area. Difference in use between poor and non-poor was not statistically significant anymore.	Improved equity (poor benefitted more), increased utilisation
7.1	**India-Gujarat - Chiranjeevi Yojana Scheme**	Bhat et al, 2009	To explore the targeting, coverage, socio-economic profile of beneficiaries and assess financial protection	Cross-sectional survey on demographic information of randomly selected rural pregnant women (n=656), 262 beneficiaries, 394 non-beneficiaries	Low (is score in Meyer review)	SMH services. Voucher services more efficient. Prices paid to private facilities lower than usual prices charged to patients	Targeting poor accurate. Considerable reduction of OOP. Reduction deliveries at home (21% to 0.4%), increase deliveries at private facilities (77% to 97%). Rest in public facilities (2.6% and 2%). No data on SS reported for these findings.	Targeting poor OK. Reduced OOP. Increased utilisation. Efficient contracting private providers.
7.2	**India-Gujarat - Chiranjeevi Yojana Scheme**	Mavalankar et al, 2009	Estimate lives of mothers / newborns potentially saved	Descriptive analysis of the scheme and analysis of secondary data	Very low (because of weak research design and data)	SMH services. >800 private obstetricians participate.	>269,000 deliveries in 2 years. Increase in facility deliveries: 27% to 48% (April 2007 to Sept 2008). Estimate of >500 maternal lives saved and >7,000 newborn lives.	Increased utilisation by BPL pop. Estimated pos. impact on MNM. Service capacity increased