

# An overview of research on the effects of results-based financing

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Systematic Review



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**Background:** Norway is the lead promoter of results-based financing (RBF) as one of five actions being taken as part of the Global Campaign for the Health Millennium Development Goals and plans to support the use of RBF through the World Bank and in bilateral agreements with selected countries focusing on achieving the Millennium Development Goals (MDGs) of reducing child and maternal mortality (MDG 4 and 5). RBF-schemes can be targeted at different levels: recipients of healthcare, individual providers of healthcare, healthcare facilities, private sector organisations, public sector organisations, sub-national governments, and national governments. • **Method:** This report consists of an overview of systematic reviews and a critical appraisal of four evaluations of RBF schemes in the health sector in low and middle-income countries (LMIC). **Results:** • Ten systematic reviews that met the inclusion criteria for this report were summarised. In addition, four evaluations of RBF schemes in LMIC were critically appraised, including financial incentives targeted at patients, individual providers, organisations, and governments.

*(fortsetter på baksiden)*

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*(fortsettelsen fra forsiden)*

There are few rigorous studies of RBF and overall the evidence of its effects is weak. • Financial incentives targeting recipients of healthcare and individual healthcare professionals appear to be effective in the short run for simple and distinct, well-defined behavioural goals. There is less evidence that financial incentives can sustain long-term changes. • The use of RBF in LMIC has commonly been as part of a package that may include increased funding, technical support, training, changes in management, and new information systems. It is not possible to disentangle the effects of RBF and there is very limited quantitative evidence of RBF per se having an effect, other than in the context of conditional cash transfers to poor and disadvantaged groups in Latin America to motivate preventive care.

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Norwegian Knowledge Centre for the Health Services  
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# Key messages

- The terms result-based financing and pay-for-performance (P4P) are used interchangeably. The Working Group on Performance-Based Incentives suggests the following working definition for P4P: “Transfer of money or material goods conditional on taking a measurable action or achieving a predetermined performance target.”
- There are few rigorous studies of results-based financing (RBF) and overall the evidence of its effects is weak.
- Conditional cash transfers and other types of economic incentives targeting healthcare recipients can increase the use of preventive services.
- Financial incentives can also influence professional practice, such as increasing the delivery of immunisations or screening.
- RBF is typically part of a package of interventions and it is difficult, if not impossible to disentangle the effects of RBF from other components of the intervention packages, including increased funding, technical support, training, new management structures and monitoring systems.
- The flows of money required for RBF may be substantial, including the incentives themselves, administrative costs, and any additional service costs.
- There is almost no evidence of the cost-effectiveness of RBF.
- RBF can have unintended effects, including motivating unintended behaviours, distortions, gaming, corruption, cherry-picking, widening the resource gap between rich and poor, dependency on financial incentives, demoralisation, and bureaucratisation.
- RBF can only be cost-effective if the intervention or behaviour it is intended to motivate is cost-effective and worth encouraging and there is low compliance with the desired behaviour.
- Financial incentives should be designed to motivate desired behaviours based on an understanding of the underlying problem and the mechanism through which financial incentives could help.
- Financial incentives are more likely to influence discrete individual behaviours in the short run and less likely to influence sustained changes.
- The mechanisms through which financial incentives given to governments or organisations can improve performance are less clear.
- RBF schemes should be designed carefully, including the level at which they are targeted, the choice of targets and indicators, the type and magnitude of incen-

tives, the proportion of financing that is paid based on results, and the ancillary components of the scheme.

- Stakeholders should be involved in the design of RBF.
- The focus should be on addressing important health system problems in order to achieve health goals – i.e. starting with the problem, not the solution.
- RBF should be used if it is an appropriate strategy to help address priority problems and goals.
- For RBF to be effective technical capacity or support must be available and it must be part of an appropriate package of interventions.
- RBF schemes should be monitored, among other things, for possible unintended effects, and evaluated, using as rigorous a design as possible to address important uncertainties.

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# Executive summary

Norway is the lead promoter of results-based financing (RBF) as one of five actions being taken as part of the Global Campaign for the Health Millennium Development Goals and plans to support the use of RBF through the World Bank and in bilateral agreements with selected countries focusing on achieving the Millennium Development Goals (MDGs) of reducing child and maternal mortality (MDG 4 and 5).

The terms result-based financing and pay-for-performance (P4P) are used interchangeably. The Working Group on Performance-Based Incentives suggests the following working definition for P4P: “Transfer of money or material goods conditional on taking a measurable action or achieving a predetermined performance target.”

RBF-schemes can be targeted at different levels: recipients of healthcare, individual providers of healthcare, healthcare facilities, private sector organisations, public sector organisations, sub-national governments, and national governments.

This report summarises the results of the first phase of a two phase project with the objectives of undertaking a review of RBF research in the health sector and outlining the field.

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## METHODS

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This report consists of an overview of systematic reviews and a critical appraisal of four evaluations of RBF schemes in the health sector in low and middle-income countries (LMIC). In addition, key informants were interviewed to identify key literature relevant to the use of RBF in the health sector in LMIC, key examples, evaluations, and other key informants.

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## RESULTS

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Ten systematic reviews that met the inclusion criteria for this report were summarised. In addition, four evaluations of RBF schemes in LMIC were critically appraised, including financial incentives targeted at patients, individual providers, organisations, and governments.

There are few rigorous studies of RBF and overall the evidence of its effects is weak. Financial incentives targeting recipients of healthcare and individual healthcare professionals appear to be effective in the short run for simple and distinct, well-defined behavioural goals. There is less evidence that financial incentives can sustain long-term changes.

The use of RBF in LMIC has commonly been as part of a package that may include increased funding, technical support, training, changes in management, and new information systems. It is not possible to disentangle the effects of RBF and there is very limited quantitative evidence of RBF per se having an effect, other than in the context of conditional cash transfers to poor and disadvantaged groups in Latin America to motivate preventive care. Evaluations suggest that RBF may have contributed to improvements in the number of mothers delivering at an accredited institution in India, NGOs delivering basic healthcare in Haiti, TB detection and cure rates, and immunisation coverage. It is not possible to determine how much RBF contributed to improvements and there have not been consistent improvements in the indicators that have been used.

RBF can have undesirable effects, including motivating unintended behaviours, resulting in distortions (ignoring important tasks that are not rewarded with incentives), gaming (improving or cheating on reporting rather than improving performance), corruption, cherry-picking patients that make it easier to reach targets and earn bonuses and selecting out more difficult patients, widening the resource gap between rich and poor, dependency on financial incentives, demoralisation due to feelings of injustice, and bureaucratisation.

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## **DISCUSSION**

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There is limited evidence of the effectiveness of RBF and almost no evidence of the cost-effectiveness of RBF. RBF can only be cost-effective if the intervention or behaviour it is intended to motivate is cost-effective and worth encouraging.

If RBF is used, the financial incentives should be designed to motivate desired behaviours based on an understanding of the underlying problem and the mechanism through which financial incentives could help. Based on the available evidence and likely mechanisms through which financial incentives work, they are more likely to influence discrete individual behaviours in the short run and less likely to influence sustained changes. Although financial incentives given to governments or organisations may improve performance, the mechanisms through which they work are more variable, difficult to predict and uncertain.

In designing RBF, careful consideration should be given to the level at which financial incentives are targeted, the choice of targets and indicators, the type and magni-

tude of incentives, the proportion of financing that is paid based on results, and the ancillary components of the scheme. Key stakeholders should be involved in the design of RBF.

Policy makers and other key stakeholders should focus on addressing important problems to achieve priority health goals. Deciding how best to do that should begin with the problem, not with the solution. RBF should only be used if it is an appropriate strategy to help address important problems with performance in order to achieve health goals. RBF schemes are only likely to be helpful if a lack of motivation or resources is at least partially responsible for the underlying problems and financial incentives can be effectively targeted to motivate changes in behaviour at whatever levels these are needed. If RBF is used, for it to be used effectively, and to avoid unintended effects, technical capacity or support must be available and RBF must be part of an appropriate package of interventions.

Given the lack of good quality evidence about the effects and cost-effectiveness of financial incentives, and the risk of unintended effects, ongoing monitoring of RBF schemes is critical to determine whether incentives are working and whether they are having unintended effects. To discern the effects of financial incentives from the package of interventions of which they normally are one part, rigorous evaluations are needed. When possible, randomised trials are ideal because they can control for the many possible confounders and they may give answers more quickly as well as more reliably. In addition, both quantitative and qualitative process evaluations are needed, given the complexity of most interventions, behaviours and systems.

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# Sammendrag (norsk)

Norge spiller en sentral rolle i å fremme resultatbasert finansiering (RBF) som ett av fem satsningsområder i den globale kampanjen for tusenårsmålene ("Global Campaign for the Health Millennium Development Goals"). Fra norsk side planlegges det også å støtte bruk av RBF gjennom Verdensbanken og bilaterale avtaler med utvalgte samarbeidsland, med fokus på å nå tusenårsmålene (MDGs) om redusert barne- og mødredødelighet (MDGs 4 og 5).

Uttrykket resultatbasert finansiering (result-based financing) og pay-for-performance (P4P) brukes om hverandre. The Working Group on Performance-Based Incentives foreslår følgende arbeidsdefinisjon for P4P: "Transfer of money or material goods conditional on taking a measurable action or achieving a predetermined performance target."

RBF-ordninger kan være rettet mot forskjellige nivåer av helsetjenesten: mottakere av tjenester, helsepersonell, helseinstitusjoner, organisasjoner i privat sektor, organisasjoner i offentlig sektor, kommunale og fylkeskommunale myndigheter, og nasjonale myndigheter.

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## METODE

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Denne rapporten består av en gjennomgang av systematiske oversikter, samt en kritisk vurdering av fire evalueringer av RBF-ordninger fra helsesektoren i lav- og mellominntekts land. I tillegg ble en rekke nøkkelpersoner intervjuet for å identifisere sentral litteratur med relevans for bruk av RBF i helsesektoren i lav- og mellominntekts land, viktige eksempler, evalueringer, og andre nøkkelpersoner.

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## RESULTATER

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Ti systematiske oversikter som oppfylte inklusjonskriteriene for denne rapporten er oppsummert. I tillegg ble fire evalueringer av RBF-ordninger i lav- og mellominntekts land kritisk vurdert. Disse omfattet økonomiske incentiver rettet både mot pasienter, helsepersonell, organisasjoner og myndigheter.

Det er et fåtall metodologisk gode studier av RBF, og alt i alt er dokumentasjonen om virkningene av slike ordninger svak. Økonomiske incentiver for mottakere av helsetjenester eller som rettes mot den enkelte helsearbeider, ser ut til å være effektive på kort sikt for enkle, avgrensede og klart definerte atferdsmål. Hvorvidt økonomiske incentiver kan gi vedvarende endring over tid, vet man mindre om.

RBF i lav- og mellominntektsland har vanligvis inngått som del av en større tiltakspakke som for eksempel har omfattet økte bevilgninger, teknisk støtte, opplæring, administrative endringer og nye informasjonssystemer. Det er ikke mulig å skille ut effekten av RBF fra slike sammensatte tiltak og det er svært begrenset med kvantitativ dokumentasjon om hvorvidt RBF i seg selv har en effekt. Ett viktig unntak er utbetaling av kontanter til fattige og utsatte grupper i Latin-Amerika betinget av at mottakerne benyttet seg av tilbudet om forebyggende helsetjenester.

Evalueringsene gir holdepunkter for at RBF kan ha bidratt til forbedringer når det gjelder økning i antall kvinner som føder ved akkrediterte fødselsinstitusjoner i India, ikke-statlige organisasjoner som leverer grunnleggende helsetjenester på Haiti, oppdagede og behandlede tilfeller av tuberkulose, og vaksinasjonsdekning. Det er ikke mulig å avgjøre i hvilken grad RBF har bidratt til forbedringene som har vært målt, og resultatene varierer.

RBF kan ha uønskede virkninger ved for eksempel å bidra til utilsiktet atferd, vridningseffekter (viktige oppgaver som ikke blir belønnet blir ignorert), "spill" (forbedring av rapporterte resultater uten at tjenestene blir bedre), korrupsjon, utvelgelse av pasientgrupper som gjør det lettere å nå måltall og oppnå bonusutbetalinger framfor andre vanskeligere pasienter, utvidelse av gapet mellom fattige og rike, avhengighet av økonomiske incentiver, demoralisering som følge av opplevd urettferdighet, og byråkratisering.

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## **DISKUSJON**

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Det er begrenset dokumentasjon om effektene av RBF og nesten ingen kunnskap om forholdet mellom kostnader og effekter ved slike ordninger. RBF kan bare være kostnadseffektivt når tiltaket eller atferden det er ment å føre til i seg selv er kostnadseffektivt og verdt å oppmuntre.

Dersom RBF skal brukes bør utformingen av de økonomiske incentivene bygge på en forståelse av de underliggende problemene og hvilke mekanismer ved RBF som kan tenkes å bidra til å minske disse. Basert på forskningsresultatene som er tilgjengelige og de sannsynlige virkningsmekanismene ved RBF, er det mer sannsynlig at økonomiske incentiver kan føre til endringer av avgrenset og klart definert atferd hos enkeltpersoner på kort sikt, enn vedvarende endringer. Selv om økonomiske incentiver rettet mot myndigheter eller organisasjoner kan forbedre prestasjonene, er virkningsmekanismene her mer varierende, vanskelige å forutsi, og usikre.

Når RBF-ordninger skal utformes bør det tenkes nøye gjennom hvilket nivå incentivene skal rettes inn mot, hvilke mål og indikatorer som skal velges, type og størrelse på incentivene, hvor stor andel av finansieringen som skal være resultatbasert og hvilke tilleggskomponenter som skal inngå.

Helsemyndigheter og andre interessenter bør rette oppmerksomheten mot viktige helseproblemer med tanke på å oppnå prioritert helsemål. Avgjørelsen om hvordan dette best kan gjøres bør begynne med problemet - ikke løsningen. RBF bør bare benyttes hvis det kan forventes å redusere problemer knyttet til innsats og yteevne, for å oppnå helsemålene. RBF-ordninger vil antakelig kun være til nytte hvis det underliggende problemet - eller deler av det - er manglende motivasjon eller ressurstilgang, og dersom økonomiske incentiver kan målrettes på en effektiv måte for å oppmuntre atferdsendring, på det riktige nivået. For at en RBF-ordning skal kunne fungere effektivt og for å unngå uheldige virkninger, bør teknisk kompetanse og støtte være tilgjengelig, og de økonomiske incentivene bør inngå som ledd i en større tiltakspakke.

Fordi det mangler solid kunnskap om effektene, kostnadseffektiviteten og risikoen for uønskede virkninger ved bruk av økonomiske incentiver, bør RBF-ordninger som innføres følges nøye for å avgjøre om incentivene virker slik de var tenkt å virke eller ei. For å skille ut virkningene av økonomiske incentiver fra en større pakke av tiltak må det gjennomføres grundige evalueringer. Hvis mulig er et randomisert forsøk den ideelle metoden for slike evalueringer fordi man da kan kontrollere for de mange tenkelige og utenkelige faktorene som kan innvirke på resultatene. Et slikt forsøk kan dessuten gi raske og pålitelige svar. I tillegg er det behov for både kvantitative og kvalitative prosessevalueringer, ikke minst med tanke på kompleksiteten det her er snakk om - både når det gjelder tiltak, atferd og systemer.

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## **RELEVANS FOR NORSK HELSETJENESTE**

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De systematiske oversiktene som denne rapporten baserer seg på er ikke avgrenset til forskning utført i lav- og mellominntektsland. Resultatene kan derfor også være overførbare til norske forhold og være relevante for beslutninger om finansieringsordninger i det norske helsevesenet.

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# Preface

The Norwegian Agency for Development Cooperation (Norad) commissioned the Norwegian Knowledge Centre for the Health Services to review existing experiences with results-based financing and results-based management in the health sector, including the “demand”- and “supply”-perspectives, and with emphasis on low-income countries.

Norad requested a critical analysis of these experiences taking into account types of initiatives, contexts, capacity-needs, effectiveness (results), quality and long-term sustainability.

The request also included identifying the potential and limitations of different types of results-based financing in health development aid.

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## **CONFLICTS OF INTEREST**

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ADO is an editor for the Cochrane Effective Practice and Organisation of Care (EPOC) Group, which has published four of the systematic reviews included in this report, and is a co-author of one of those reviews. AF heads the unit at the Norwegian Knowledge Centre for the Health Services which hosts a Norwegian satellite of the EPOC group.

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## **ABBREVIATIONS**

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ASHA	Accredited Social Health Activist (in India)
BRAC	Bangladesh Rural Advancement Committee (an NGO)
CCT	Conditional cash transfers
CGD	Center for Global Development
CIDA	Canadian International Development Agency
CMI	Christian Michelsen Institute
DFID	United Kingdom Department for International Development
DOT	Directly observed therapy
DOTS	Directly observed therapy short course (a comprehensive tuberculosis management programme)
DTP	Diphtheria, tetanus, pertussis vaccine
EPOC	Cochrane Effective Practice and Organisation of Care group
FFS	Fee for service
GAVI	GAVI Alliance (formerly the Global Alliance for Vaccines and Immunisation)
ISS	Immunisation Services Support (GAVI)
LICUS	Low-income country under stress
LMIC	Low and middle-income countries
MCH	Maternal child health
MDG	Millennium Development Goals
NGO	Non-governmental organisation
P4P	Pay for performance
RBF	Results-based financing

**RBM** Results-based management

**ROS** Return of service

**TB** Tuberculosis

**USAID** United States Agency for International Development

**WHO** World Health Organization

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# Objective

This report summarises the results of the first phase of a two phase project with the following objectives:

- Undertake a literature review of results-based financing (RBF) and management in the health sector with the primary focus on low and middle-income countries (LMIC), including both demand and supply side RBF schemes
- Critically appraise key evaluations of RBF in the health sector in LMIC taking into consideration the characteristics of the initiative, context, effectiveness in achieving desired results, unanticipated effects, costs, sustainability
- Summarise the implications of this research and identify important uncertainties
- Identify potential limitations of using different types of RBF in providing aid to achieve health goals

The aim of the first phase of this project, reported here, is to provide an outline of the field and to propose further development of this work. Following consultation with Norad, further work will be negotiated in areas where there is agreement that this would be most relevant.

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# Background

Promoting the use of results-based financing (RBF) is one of five actions being taken as part of the Global Campaign for the Health Millennium Development Goals (1). This is based on an assumption that “the evidence suggests that small financial incentives targeted at the right level” . . . “are enough to change behaviour significantly and achieve results.” There are many ways of implementing RBF and “learning by doing” is an essential component of the focus on RBF.

The Global Campaign, in a brochure describing its launch, does not define RBF, but refers to “linking funding to measurable results.”<sup>1</sup> Three examples are given: subsidies for transportation to encourage mothers to give birth in health facilities as part of the ASHA scheme in India (2), payments from the national government to municipalities in Rwanda based on how many children sleep under mosquito nets, and payments by GAVI to countries for each additional child immunised (3).

The World Bank, in its proposal to the Norwegian Government for a Health Results Innovation Grant with the goal of targeting and sustaining financing for the achievement of Millennium Development Goal (MDG) 4 and 5 results through RBF, defines RBF as “the provision of payment for the attainment of well-defined results” (4). In its proposal the World Bank refers to RBF schemes from both the demand and supply perspective. Schemes focusing on demand referred to in the proposal include conditional cash transfer programmes in Mexico and Nicaragua, the use of vouchers for predefined interventions such as those used for maternal care in Yemen, and monetary support given to women if they deliver their babies in accredited facilities in India. Schemes focusing on supply referred to in the proposal include contracting public health service provision in Cambodia to NGOs and conditioning transfers from national to local governments based on the attainment of locally developed and agreed results, as in Plan Nacer in Argentina, which links transfers from the national to provincial governments to agreed performance targets for 10 indicators for maternal and child health.

The Norwegian government is also exploring the use of RBF in bilateral agreements with selected countries focusing on achieving the Millennium Development Goals (MDGs) for reducing child and maternal mortality (MDG 4 and 5). Notably, Norad has supported a feasibility study of performance-based financing in Tanzania, which

recommends the use of a scheme that provides a monetary team bonus, dependent on a whole facility reaching facility-specific service delivery targets (5).

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## **DEFINITION OF RESULTS-BASED FINANCING AND SCOPE OF THIS REPORT**

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The terms result-based financing (RBF) and pay-for-performance (P4P) are used interchangeably. The Working Group on Performance-Based Incentives suggests the following working definition for P4P: “Transfer of money or material goods conditional on taking a measurable action or achieving a predetermined performance target” (6).

The Working Group suggests a framework for P4P based on:

- the level of the problem (household/community level, the service provision level, or the health sector level) and
- the constraint or underlying performance problem (financial, physical and information barriers at the household/community level; staffing, management and supply challenges at the service provision level; and problems with resource allocation, planning and management, procurement and distribution, quality assurance, cooperation and incentives at the health service level).

In response to these different problems a wide range of possible P4P solutions are suggested, including:

- food support
- transportation subsidies
- regulations that require health screening or evidence of good health as a condition of participation in other valued programmes
- conditional cash transfer programmes
- financial rewards to providers for results (and/or penalties for poor performance)
- social insurance that provides universal coverage and pays providers based on performance
- per diems and vehicles to enable providers to reach remote areas
- performance-based incentives in inventory management and distribution
- contracting out drug procurement, storage, and distribution
- national to local transfers based on results
- international to national transfers based on results

While RBF or P4P is a relatively simple concept, it includes a wide range of interventions that vary with respect to the:

- *Level at which the incentives are targeted* - recipients of healthcare, individual providers of healthcare, healthcare facilities, private sector organisations, public sector organisations, sub-national governments (municipalities or provinces),

national governments. RBF schemes can function at more than one of these levels.

- *Targeted results* - health outcomes, delivery of effective interventions (e.g. immunisation), utilisation of services (e.g. prenatal visits or birth at an accredited facility), quality of care, provision of facilities, human resources or supplies, development goals (e.g. building institutional capacity and sustainability)
- *Indicators used to measure results* – what is measured, how it is measured and who measures it, including the use of independent assessments and monitoring
- *Choice of targets* - who sets the targets (the provider of the incentives, the recipient of the incentives, both) and the type of target (pay per result (e.g. per immunisation) or pay only if a target is achieved (e.g. 90% coverage))
- *Type and magnitude of the incentive* - the amount of cash, vouchers, or material goods provided for achieving results and the frequency of transfers
- *Proportion of financing* that is based on results and how the rest of the financing is allocated, including the proportion of the payer's financing based on results, the proportion of the total financing based on results, and how flexible the financing is
- *Ancillary components of RBF schemes*, such as increasing the availability of resources, education, supplies, technical support or training; monitoring and feedback; other quality improvement strategies; increasing salaries; construction of new facilities; improvements in planning and management or information systems; changes in governance (e.g. decentralisation); priority setting and rationing (e.g. establishment of essential drug lists or services covered by insurance); processes to involve stakeholders

Results-based management (RBM) is a broader concept that may or may not incorporate RBF. The objective of RBM is to “provide a coherent framework for strategic planning and management based on learning and accountability in a decentralised environment” (World Bank 1997, quoted in (7)). Introducing a results-based approach aims to improve management effectiveness and accountability by “defining realistic expected results, monitoring progress toward the achievement of expected results, integrating lessons learned into management decisions and reporting on performance” (CIDA 1999, quoted in (7)).

Conditionality refers to specific policy prescriptions imposed by the International Monetary Fund (IMF) and the World Bank and other donors that are designed to ensure that the borrowers, or recipients of aid, take steps to implement economic reforms to achieve the objectives of programmes supported by foreign loans and grants (8). Conditionality, or policy-based lending, is controversial. In particular, traditional conditionality has been criticised because of tensions with country ownership, for being too intrusive or ineffective, and in some cases undermining government ownership and implementation of sustainable policies in LMIC. Approaches to conditionality have shifted. There is generally more focus on ownership, a stronger focus on development, and different views and approaches. One approach

to conditionality is outcome-based conditionality, which links release of funds to outcomes rather than policy reforms. Outcome-based conditionality has been tested in Burkina Faso by the Special Programme of Assistance for Africa and has been used increasingly by the World Bank.

The scope of this report is limited to the use of RBF to achieve health development goals. However, systematic reviews of specific types of RBF in the health sector (e.g. “target payments”) were included, regardless of whether included studies were conducted in LMIC. Reports of RBF schemes targeted at achieving health goals in LMIC that include “the provision of payment for the attainment of well-defined results” were considered for inclusion, regardless of the level of the incentives, type of incentives, targeted results, or ancillary components of the scheme. The focus of the report is on evaluations of the impact of RBF schemes and general guidance for designing, implementing, managing, monitoring and evaluating RBF schemes. The broader concepts of RBM and conditionality are only considered within the context of RBF schemes within the health sector.

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# Method

This report consists of an overview of systematic reviews and a critical appraisal of key evaluations of RBF schemes in the health sector in LMIC. In addition, the following key informants were interviewed to identify key literature relevant to the use of RBF in the health sector in LMIC, key examples, evaluations, and other key informants: Jennie Barugh, DFID; Amie Batson, World Bank; Sara Bennett, Alliance for Health Policy and Systems Research; Abdallah Bchir, GAVI Alliance; Logan Brenzel, World Bank; Rena Eichler, CGD Working Group on Performance-Based Incentives; Tessa Tan-Torres Edejer, WHO; Timothy Evans, WHO; Matt Gordon, DFID; Daniel Low-Beer, Global Fund; Don de Savigny, Swiss Tropical Institute; Susan Stout, World Bank.

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## OVERVIEW OF SYSTEMATIC REVIEWS

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### **Selection criteria:**

Reviews with a methods section, which address the effects of any type of RBF.

We searched for relevant systematic reviews of RBF targeted at any level in the Cochrane Effective Practice and Organisation of Care (EPOC) register of systematic reviews, a database of over 1000 systematic reviews of the effects of health systems interventions. These were identified through electronic searches of MEDLINE (up to August 2007) and the Cochrane Database of Systematic Reviews (CDSR), the Database of Abstracts of Reviews of Effectiveness (DARE) and EMBASE (up to October 2006).

### **Search strategy:**

We searched for the following terms in the title or abstract: cash, conditional, contract\*, finance\*, pay\*, performance-based, results-based, subsid\*. In addition we reviewed the list of EPOC reviews in progress, used personal contacts, and checked the reference lists of articles that were retrieved. Finally, we searched for related articles in PubMed restricted to systematic reviews (using systematic [sb]) for the following articles: Bosch-Capblanch 2007 (9), Chaix-Couturier 2000 (10), Chien 2007 (11), Giuffrida 1999 (12), Giuffrida 1997 (13), Kane 2004 (14), Lagarde 2007 (15), Petersen 2006 (16), Sturm 2007 (17), Town 2005 (18).

### **Data collection and analysis:**

We screened citations identified using the above methods. For each included systematic review we summarised the characteristics of the review and the main findings. Quality assessment was done informally taking into consideration widely used criteria (19), and no systematic reviews were excluded based on our judgements of quality.

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## **CRITICAL APPRAISAL OF FOUR EXAMPLES OF RBF SCHEMES IN LMIC**

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We critically appraised a sample of evaluations of RBF schemes in LMIC. We included evaluations that are used as examples by the Global Campaign for the Health Millennium Development Goals (1), the World Bank proposal to the Norwegian Government (4), in the discussion paper of the Working Group on Performance-Based Incentives (6), or the key informants identified above. All of the evaluations that were identified and the reasons for excluding evaluations are summarised in the Appendix. RBF schemes that were included in a recent systematic review (e.g. conditional cash transfers and contracting) or for which we could not find an evaluation were excluded. The 4 evaluations were selected to include RBF at different levels, and include two single country cases and two multi-country studies. For each included example we outlined the key characteristics of the RBF scheme, the evaluation, and the main findings.

# Results 1:

## Systematic reviews of results-based financing

The 10 systematic reviews that met the inclusion criteria for this report are summarised in Table 1. The reviews had overlapping scopes and some studies were included in more than one review.

Table 1. Systematic reviews of results-based financing

First author	Year	Reference	Focus
<b>RBF targeted at recipients of care</b>			
Lagarde	2007	(15)	Conditional cash transfers
Kane	2004	(14)	Effects of economic incentives on preventive behaviour
Giuffrida	1997	(13)	Financial incentives to enhance patient compliance
<b>RBF targeted at individual or groups of healthcare professionals</b>			
S Sturm	2007	(17)	Effects of financial incentives for prescribers
Chien	2007	(11)	Effects of pay for performance and public reporting on racial disparities
Petersen	2006	(16)	Effects of pay for performance on quality of care
Town	2005	(18)	Economic incentives for delivery of preventive care
Sempowski	2004	(20)	Effects of financial incentives for service in rural and underserved areas
Giuffrida	1999	(12)	Target payments in primary care
<b>RBF targeted at private sector organisations</b>			
Lagarde	2008	(21)	Contracting between government and non-state providers
<b>RBF targeted at government or public sector organisations</b>			
S Sturm	2007	(17)	Effects of financial incentives for prescribers
Petersen	2006	(16)	Effects of pay for performance on quality of care

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## RBF TARGETED AT RECIPIENTS OF HEALTHCARE

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### Conditional cash transfers

Table 2. Effects of conditional cash transfers (Lagarde 2007) (15)

Objective: To assess the effectiveness of conditional monetary transfers in improving access to and use of health services, as well as improving health outcomes, in low and middle-income countries.

	What the review authors searched for	What the review authors found
Interventions	Direct monetary transfers made to households conditioned on a particular behaviour or action (e.g. visit to a health facility for regular check ups). In-kind transfers and unconditional transfers were excluded.	Cash provided that children attended school and appointments for preventive healthcare with or without incentives for mothers to attend education courses and prenatal care (5 studies). Financial incentives for collecting HIV test results (1 study).
Participants	Populations who would potentially access health services	Poor and disadvantaged groups in Latin America, mostly infants and children, and pregnant and lactating women (5 studies), people tested for HIV in Malawi (1 study)
Settings	Low and middle-income countries	5 studies in Latin American middle-income countries (Mexico, Brazil, Nicaragua, Colombia, and Honduras), 1 small study in Malawi
Targeted behaviours	Healthcare utilisation or access to healthcare (also household health expenditure, or health or anthropometric outcomes)	Attendance for preventive care, school and health education (5 studies), collecting HIV test results (1 study)
Study designs	Randomised trials, interrupted time series analysis, and controlled before-after studies	4 randomised trials, 1 quasi-randomised trial, 1 controlled before-after study
Date of most recent search: April 2006		
Limitations: This is a good quality systematic review, with only minor limitations.		

Overall, the evidence suggests that conditional cash transfer (CCT) programmes are effective in increasing the use of preventive services for children and women, and sometimes improving health status. The observed increase in the proportion of children visiting health centres ranged from 11% to 33% (across studies and outcome measures). Despite some methodological limitations, the overall evidence is quite robust, particularly in the light of the consistent effects in a number of different settings, that CCT programmes can increase utilisation of preventive services by children and mothers. The impact appears to vary with disadvantaged populations having greater benefits.

The impact on immunisation coverage (4 programmes) was less robust and appears smaller (from 0 to 7%). Positive findings were reported (2 programmes) for the impact on mothers' reports of health outcomes of their children (reported ill, diarrhoea, or respiratory disease), whereas the impact on objectively measured health outcomes (anaemia or haemoglobin values) was mixed (3 programmes).

Only one study evaluated the effect of different amounts (from \$1 to \$3). The overall effect was a near doubling in the proportion of people returning for their HIV test results (72% of people who received incentives compared to 39% without the incentive). A positive association was found between the size of the incentive and the effect: a 9% absolute increase per extra dollar.

The flows of money required for CCT programmes may be significant with an average cost of between \$60 and \$560 per family, and the actual transfer budget accounting for only 4 to 28% of the total budget of a CCT programme. The cost-effectiveness of CCT programmes compared with classic supply-side interventions (eg, improving quantity and quality of infrastructure and services) has not been examined, as most CCT programmes have so far been implemented in settings with relatively adequate (health) infrastructures.

Unanticipated perverse effects can occur, for instance with one programme the fertility rate increased unexpectedly with CCT, possibly because only pregnant women were eligible for the subsidy.

**Economic incentives for preventive behaviours**

Table 3. Effects of economic incentives on preventive behaviour (Kane 2004) (14)

Objective: To assess the effects of economic incentives on consumers' preventive health behaviours.

	What the review authors searched for	What the review authors found
Interventions	Economic incentives including cash, gifts, lotteries, and other free or reduced-price goods and services for the benefit of the specific consumer. More diffuse incentives (e.g. waiving co-payments) were excluded.	Few reports outlined a clear link between the design of the economic incentive and the specific population intended to receive the incentive. 3 studies justified the chosen economic incentive. The following incentives were offered: 10 lotteries, 7 gifts, 11 cash incentives, 15 coupons for free or reduced-price goods or nonmedical services, 6 free or reduced-price medical services, and 10 incentives involving negative reinforcement or the opportunity to avoid punishment (e.g., losing access to services or benefits). Several studies in-

		cluded additional intervention components, particularly social pressures, which potentially confound the impact of the incentive.
<b>Participants</b>	Consumers who are healthy or physically at risk but not yet labelled with a diagnosis. Self-care and management of diagnosed chronic illnesses such as diabetes and heart disease was also excluded.	16 of 24 studies of simple preventive care (e.g. immunisation, cancer screening) included vulnerable populations of low socioeconomic status. 19 of 23 studies of more complex health promotion (eg. lifestyle change) included generally healthy, middle-class populations, recruited from work sites or the general population.
<b>Settings</b>	Clinical and non-clinical settings	Studies were conducted in the US (41), Australia (1), Denmark (1), New Zealand (2), and the UK (2).
<b>Targeted behaviours</b>	Adoption of preventive health behaviours. Mental health, substance abuse, health protection concerns such as injury prevention, and oral health were excluded.	Seventy-eight percent of incentives required a specific target behaviour (e.g., going for a preventive service) from the participant as a condition for incentive distribution. The remainder required the participant to attain a particular outcome.
<b>Study designs</b>	Randomised trials and quasi-experimental studies	Randomised trials (39), quasi-experimental (8)
<b>Date of most recent search:</b> Articles published between 1966 and 2002 were included.		
<b>Limitations:</b> This review was limited to articles published in English. 27 of 47 included studies provided only weak evidence.		

Overall, the studies achieved a positive result 73% of the time (74% for simple preventive behaviours and 72% for complex preventive behaviours). All of the simple preventive care studies used a discrete, readily measurable outcome. Complex preventive care studies used physical measures as well as self-report in some instances. For simple behaviours, the proportion of studies with positive findings ranged from 40% (for lotteries and gifts) to 100% (for cash and punishment); and for complex behaviours, it ranged from 50% (for cash and free medical services) to 100% (for gifts). Incentives in the form of rewards for participating in and adhering to goals, whether for simple or complex prevention, were generally effective inducements for behaviour change.

Most studies matched a short-term incentive with a short-term behavioural change or outcome. The technique of rewarding the achievement of specific outcomes was reserved for more complex preventive behaviours, like weight loss. These behaviours were generally not sustained. While many of the studies that rewarded specific outcomes showed positive effects in the short run, of the four studies that checked for long-term results, all of the significantly improved measures had returned to their original levels.

The type of incentive mattered less than the specific nature of the incentive. Cash incentives had the expected rank ordering: The higher the cash incentive, the higher the response to the incentive. Coupons, more convenient and flexible, were preferred to gifts. Both studies that pitted a coupon incentive against a gift incentive found the coupon more effective. Whereas coupon incentives were effective, with 12 of 15 incentives showing positive results, only 4 of 7 gift incentives had positive results, and 2 of the positive results were potentially confounded by additional lottery or competition intervention components.

In 5 of 7 cost-effectiveness analyses that were reported, an intervention that consisted of a similar intervention without the economic incentive itself was reported to be a more cost-effective approach. For example, in one study it was estimated that the cost per prevented influenza related death was \$3,990 for those who received an invitation letter reminding the patient of the upcoming flu season, versus \$17,860 for those who received the letter plus free flu shots. No study attempted to estimate the cost-effectiveness ratio for impacts of the economic incentive over time on population morbidity or mortality.

Many of the targeted services were not identified elsewhere as being adequately cost-effective. Unless the preventive service itself is cost effective, it is highly unlikely that economic incentives to encourage its use would be cost-effective.

## Financial incentives to enhance patient compliance

Table 4. Effects of financial incentives on patient compliance (Giuffrida 1997) (13)

Objective: To determine whether financial incentives increase patients' compliance with health-care treatments.

	What the review authors searched for	What the review authors found
Interventions	Financial incentives (money, cash, or vouchers) versus "free" treatment (no financial charge to the patient). Reimbursement payments such as travel expenses were excluded.	The incentives were mostly small (\$5-10), but ranged from \$5 to nearly \$1000 (for a treatment programme for cocaine dependency). Lotteries were used in 3 studies and vouchers or gifts in 4.
Participants	Any patients	The participants were low-income or disadvantaged populations in 6 studies.
Settings	Any setting	All 11 studies were conducted in the US between 1976 and 1996.
Targeted behaviours	Compliance with medication, medical advice, or medical appointments	Attendance + completion - anti-TB treatment (2 studies), attendance - dental care for children (2), postpartum attendance (2), child immunisation (1), attendance - children with behavioural difficulties (1), cocaine free (1), antihypertensive treatment attendance + target BP (1), weight loss (1)

Study designs	Randomised trials	11 randomised trials
Date of most recent search: April 1997		
Limitations: This is a good quality systematic review, but most of the studies were small and no study indicated that the randomisation process was concealed.		

Improvements in compliance ranged from -1% (for compliance with clinic appointments by parents of children with behavioural difficulties offered a lottery for \$10 vouchers for toys, meals, or bus tokens) to 37% (for compliance with appointments for prevention by mainly immigrants with tuberculosis offered a mixture of cash, tokens and vouchers worth \$5 to \$10 per appointment), absolute changes. The median improvement in compliance was 17 %. For 5 of 13 main comparisons there was an improvement of less than 10% and the results for 11 of the 13 main comparisons were not statistically significant ( $p > 0.05$ ).

No evidence of cost-effectiveness ratios was provided, but the review authors note that “financial incentives are likely to be cost effective if substantial treatment benefits accrue not only to the patient but to society at large - in economic parlance, if there are positive externalities to treatment. Treating or preventing tuberculosis is an example of this. If patients comply badly with treatment this not only leads to more expensive treatment for the individual patient later in the disease cycle but increases the possibility of the development of drug resistant strains of the disease and the infection of other people.”

None of the included studies directly compared cash payment to payment in kind; although it was hypothesized that cash payment would be expected to be more effective. In an excluded (non-randomised) study of attendance at an AIDS prevention programme, when monetary payments were changed to food or gift vouchers, attendance declined considerably (22).

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## **RBFB TARGETED AT INDIVIDUAL OR GROUPS OF HEALTH PROFESSIONALS**

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### **Financial incentives for prescribers**

Table 5. Effects of financial incentives on prescribing (Sturm 2007) (17)

Objective: To determine the effects on drug use, healthcare utilisation, health outcomes and costs (expenditures) of policies that intend to affect prescribers by means of financial incentives.

	What the review authors searched for	What the review authors found
Interventions	Policies that intend to affect prescribing by means of financial incentives for prescribers	General practice fund holding (10 studies), drug budgets for physicians in private practice (2), indicative drug target savings scheme (1)
Participants	Healthcare consumers and providers within a large jurisdiction or system of care	General practitioners
Settings	Any	UK (10 studies), Germany (2), Ireland (1)
Targeted behaviours	Prescribing	Prescribing
Study designs	Randomised trials, non-randomised trials, repeated measures studies, interrupted time series analyses, controlled before-after studies	Interrupted time series analyses (6 studies), controlled before-after studies (10)

Date of most recent search: October 2005

**Limitations:** This is a good quality systematic review, but the included studies had serious limitations and no studies of performance-based payment met the inclusion criteria.

The only studies meeting the inclusion criteria of this review were evaluations of policies in the UK, Germany and Ireland. All three policies were targeted at controlling prescription drug costs. In the UK savings could be invested by each fund holder (general practice) to improve services or in the following year's budget. In Germany regional physician associations were responsible for overspending and could request payment from individual practices. In Ireland the savings were divided between general practitioners and the health authority and equally divided amongst all GPs to improve services.

Drug expenditure (per item and per patient) and prescribed drug volume decreased with budgets in all three countries. Evidence indicated increased use of generic drugs in the UK and Ireland, but was inconclusive on the use of new and expensive drugs. Overall the quality of evidence was very low. The authors found no clear evidence of increased healthcare utilisation and no studies reporting effects on health. Administration costs were not reported. The authors identified a range of other

budgetary policies for which no evaluations meeting the inclusion criteria of the review could be found. They provide brief descriptions and examples of these. No studies on the effects of performance-based payments were found that met the inclusion criteria.

### **Pay for performance and public reporting effects on racial disparities**

Table 6. Effects of pay for performance and public reporting on racial disparities (Chien 2007) (11)

Objective: To assess the effects of performance incentive programmes on racial disparities in healthcare.

	What the review authors searched for	What the review authors found
<b>Interventions</b>	Programmes that explicitly link rewards and sanctions to performance on measures of specific healthcare processes and/or outcomes. Incentives could be either monetary (e.g., bonus payments or higher per member per month reimbursements) or reputation based (e.g., public report cards)	Publicly reporting risk-adjusted coronary artery bypass graft (CABG) mortality rates (1 study)
<b>Participants</b>	Any	Hospitals providing and patients eligible for CABG
<b>Settings</b>	US	New York State
<b>Targeted behaviours</b>	Any	CABG rates
<b>Study designs</b>	Empirical studies	Controlled before-after study
<b>Date of most recent search:</b> March 2006		
<b>Limitations:</b> This review was limited to studies reported in English and conducted in the US. Only one study met the inclusion criteria.		

**No empirical studies of the effects of financial incentives on racial disparities in the US were found. The only study included in this review was of publicly reported performance.**

### **Pay for performance for quality of care**

Table 7. Effects of pay for performance on quality of care (Petersen 2006) (16)

Objective: To assess the effect of explicit financial incentives for improved performance on measures of healthcare quality.

	What the review authors searched for	What the review authors found
<b>Interventions</b>	Explicit financial incentives designed to improve healthcare quality	Physician level financial incentives (6 studies), provider group-level financial

		incentives (9), payment system level financial incentives (2)
Participants	Any	Not reported
Settings	Any	Not reported
Targeted behaviours	A quantitative measure of healthcare quality	Process of care (mostly preventive services) (13 studies), access to care (3 studies)
Study designs	Empirical studies	9 randomised trials, 4 controlled before-after studies, 4 cross-sectional studies
Date of most recent search: November 2005		
Limitations: This review was limited to studies reported in English and used a limited search strategy.		

Five of 6 studies found partial or positive effects of incentives directed at individual physicians. A randomised trial tested 2 types of incentives for child immunisations. Sixty physicians were randomly assigned to 1) bonus and feedback (\$1000 for a 20% improvement from baseline, \$2500 for a 40% improvement from baseline, and \$5000 for reaching 80% up-to-date coverage regardless of baseline performance level); 2) enhanced fee-for-service and feedback (\$5 for each vaccine administered within 30 days of its due date and \$15 for each visit at which 1 vaccine was due and all due vaccines were administered); 3) feedback only; or 4) control. The bonus group improved significantly in documented up-to-date immunisation status, with an overall change of 25%, but none of the other groups improved statistically significantly compared with controls. However, there were only 15 physicians per group. By the end of the study, more than two thirds of the physicians in the bonus group had improved enough to earn a bonus. Only 2 of the physicians in the enhanced fee-for-service group and 2 in the feedback-only group improved as much as those in the bonus group.

Nine studies evaluated the use of financial incentives directed to provider groups. Of these, 7 found partial or positive effects of financial incentives on measures of quality. Most of the effect sizes were small. In 2 studies the improvement in the measure of quality of care was statistically significant. In the 5 other studies there was a partial effect. For example, one found a small improvement in rates of cervical cancer screening between the intervention and comparison groups after the quality incentive programme (difference, 4%;  $p=0.02$ ). Improvements in mammography screening rates and haemoglobin A1C testing were not statistically significant. In 2 randomised trials, the group-level incentives for preventive health services were ineffective.

Two studies evaluated financial incentives provided at the payment system level. One evaluated the effectiveness of an incentive to improve access to healthcare for nursing home patients with debilitating acute and chronic conditions. The programme included incentives to admit severely dependent patients, incentives for attainment of health status goals, and an incentive to discharge clinically appropriate

patients. The intervention sites admitted statistically significantly more severely ill patients than nursing homes in the control group. Despite the administrative and incentive costs of the program, the author's Markov model estimated an average cost savings to the Medicaid programme of \$3000 per nursing home stay over time. This was principally due to shorter stays. Therefore, the author asserted that the incentive and administrative costs were small compared with potential gains in improved health and lower overall healthcare expenditures. The other (negative) study of incentives at the payment system level was on performance-based contracting for substance abuse. One potentially important finding was an unintended effect of "adverse selection". There was a significant decrease in the likelihood of the most severely ill group receiving treatment from providers that received financial incentives for achieving predetermined quality measures.

Several other studies identified the potential to "game the system". For example, "there was an incentive for nursing homes to claim that they were admitting extremely disabled patients who then 'miraculously' recovered over a short period". In two other trials the authors pointed out that improvement was due primarily to improved documentation of up-to-date immunisation status rather than actual vaccines given at the practice and that missed opportunities to vaccinate (i.e. visits where vaccines were due but no vaccine was given) did not change. Another study examined the effect of bonus payments for both identifying smokers and for providing tobacco cessation advice. Again, the incentive was associated with an increased documentation of tobacco use status, but not in the provision of advice to quit smoking.

### **Economic incentives for delivery of preventive care**

Table 8. Effects of economic incentives on the delivery of preventive care (Town 2005) (18)

Objective: To examine the impact of financial incentives on provider preventive care delivery.

	What the review authors searched for	What the review authors found
Interventions	Explicit economic incentives for preventive care targeted at specific individual providers, including direct payments or bonuses to the provider or his/her group. Multi-component interventions were excluded.	Bonuses for reaching a target (5 studies), per input bonuses for immunisation (2). Potential payments ranged from \$50 to a bonus of \$4682, where such data were reported.
Participants	Any	Vulnerable populations (Medicaid enrollees) (6 of 8 findings). All incentives were aimed at physicians.
Settings	Any	Primary care in the US (6 studies)
Targeted behaviours	Primary or secondary preventive care or health promotion	Immunisations (4), cancer screening (2), assorted preventive services (1)

Study designs	Randomised trials	6 randomised trials
Date of most recent search: Articles published between 1966 and 2002		
Limitations: This review was limited to English language publications.		

The papers were not clear on whether the financial incentives were paid to the physician or the practice, and if the payment was made to the practice, how the practice financial incentives were transmitted to the individual physician.

Only one of the eight results found that increasing financial incentives translated into a statistically significant increase in the provision of preventive care. This study used fee for service (FFS) payments to physicians for providing immunisations. The remaining studies were roughly evenly split between using bonuses and increased FFS payments. One study found that most of the increase in measured immunisation rates due to the financial incentives was a consequence of better documentation and not the result of physicians providing more immunisations.

Performance incentives inherently include an element of performance feedback (23). Feedback may be formal through the use of reports, or informal in which the receipt of the incentive itself functions as feedback of performance levels. Several studies examined the impact of formal physician performance feedback without economic incentives. For example, in one study the “feedback only” cohort increased their mammography screening referrals, but their mean behaviour was not significantly different from the “feedback with a token bonus” (\$50). In another study, the “feedback only” group was also not significantly different from the “feedback plus financial incentive” group or the control group.

Since most interventions were assessed as not being effective, cost-effectiveness analyses were not undertaken. In the one study with a positive finding, revenue increased by an average of \$82 for physicians in the incentive group. That amount of incentive translated into an increase in immunisation rates of 7%, which corresponds to a cost of \$3 per additional influenza immunisation. Influenza vaccines have been shown to save \$117 in direct medical expenditures in the elderly. Thus, in the one case where economic incentives were shown to be effective, they were also cost saving.

## **Financial incentives for service in rural and underserved areas**

Table 9. Effects of financial incentives for service in rural and underserved areas (Sempowski 2004) (20)

Objective: To evaluate the effectiveness of programmes that provide financial incentives to physicians in exchange for a rural or underserved area return-of-service (ROS) commitment.

	What the review authors searched for	What the review authors found
Interventions	Any form of financial support in exchange for restrictions on practice location. Studies not applicable to the Canadian health system were excluded.	5 ROS programmes, 4 multidimensional programmes, 1 no intervention (a survey of career intentions)
Participants	Physicians	Physicians
Settings	All countries	US (6 studies), Canada (3), New Zealand (1)
Targeted behaviours	Practice in rural and underserved areas	Recruitment (3), retention (2)
Study designs	All research design	1 prospective cohort, 1 retrospective cohort, 5 cross-sectional surveys, 3 descriptive studies
Date of most recent search: 1966 to 2002		
Limitations: The quality of the studies included in this review was very low.		

The quality of the existing evidence was very low. Some studies reported effective short-term recruitment. Multidimensional programmes may be more successful than those relying on financial incentives alone. ROS programmes may be successful with respect to short-term recruitment, but may not be successful with respect to long-term retention.

### Target payments in primary care

Table 10. Effects of target payments in primary care (Giuffrida 1999) (12)

Objective: To evaluate the impact of target payments on the professional practice of primary care physicians and healthcare outcomes.

	What the review authors searched for	What the review authors found
Interventions	Target payments, in which a lump sum payment is made if, and only if, the a pre-determined quantity or target level of care is reached	An additional 10% (\$0.80) or 20% payment to the standard fee of \$8 for each influenza immunisation for each influenza immunisation over the target rate of 70% and 85% respectively (1 study), a lump sum payment if > 70% or 90% of childhood immunisations.
Participants	Primary care physicians	General practitioners
Settings	Primary care	US (1 study), Scotland (1 study)
Targeted behaviours	Any	Immunisation rates
Study designs	Randomised trials, interrupted time series analyses, controlled before-after studies	Randomised trial (1 study), interrupted time series analysis (1 study)
Date of most recent search: October 1997		
Limitations: This is a good quality systematic review, but only 2 studies met the inclusion criteria.		

Two studies were included involving a total of 149 practices. The use of target payments in the remuneration of PCPs was associated with improvements in immunisation rates. However, the increase was small for the overall influenza vaccination rate (7%,  $p=0.03$ ) in the randomised trial, and the authors found no evidence that the overall linear trend for childhood immunisation rates changed as a result of the introduction of target payments in the second study.

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## RBF TARGETED AT ORGANISATIONS

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### Contracting between government and non-state providers

Table 11. Effects of contracting between government and non-state providers (Lagarde 2008) (21)

Objective: To assess the effectiveness of contracting out healthcare services in improving access to care in low and middle-income countries

	What the review authors searched for	What the review authors found
Interventions	A formal contractual relationship between the government and a non-state provider had to have been defined	Contracts with private not-for-profit providers. Only one of the contracts (in Cambodia) appears to have used RBF.6
Participants	Populations that would potentially access health services	Primary health services (2), maternal health services (1)
Settings	LMIC	Cambodia, Pakistan, Bolivia
Targeted behaviours	Health services access and utilisation	Immunisation coverage (1 study), household health expenditure (1), bed occupancy rates (1), number of deliveries (1), number of primary care visits (1)
Study designs	Randomised trials, interrupted time series analyses, controlled before-after studies	Randomised trial (1), interrupted time series analysis (1), controlled before-after study (1)

Date of most recent search: April 2006

**Limitations:** This is a good quality systematic review, but only 3 studies, all with methodological limitations, met the inclusion criteria.

All three studies had methodological limitations. These studies suggest that contracting out services to non-state providers can increase access and utilisation of health services. However methodological weaknesses and particularities of the reported programmes' settings limit the strength and generalisability of the results.

The three evaluations did not present evidence on whether this approach was more effective than making a similar investment in the public sector as there was not an exact control available in any of the settings. In addition, the introduction of non-state providers into some settings and not others also brings many potentially confounding variables such as the presence of additional management expertise or expatriate doctors which may improve drug supply or increase utilisation.

In the Cambodian study performance was measured and poor performance could result in sanction and no renewal of the contract. Performance targets were identified for child and maternal health. Otherwise, none of the three contracting schemes used performance-based payments targeted at organisations.

In the 3 districts in the Cambodian study allocated to “contracting in” NGOs were contracted to manage district-level public facilities but had to work with government staff and procurement system. In addition to managing the publicly provided funds, they received an additional \$.25 per capita to use as staff incentives. Performance-based incentives were directed at health workers and health centres. Although some positive impacts were reported for contracting, none of these effects can be attributed to RBF per se and it is not possible to quantify what, if any effects RBF had.

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## **RBF TARGETED AT GOVERNMENT OR PUBLIC SECTOR ORGANISATIONS**

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See “Financial incentives for prescribers”, p. 28 (Sturm 2007) (17), and “Pay for performance for quality of care”, p. 29 (Petersen 2006) (16).



## Results 2:

# Evaluations of RBF schemes in the health sector in LMIC

The 4 RBF schemes in the health sector in LMIC that are included are summarised in Table 12. The include schemes were targeted at recipients of care, providers, organisations and national governments. A list of all of the evaluations that were identified and the reasons for exclusion are provided in the Appendix.

Table 12. Examples of results-based financing

First author	Year	Reference	Country	Provider of incentives	Recipient of incentives	Targeted results
CORT	2007	(2)	India	Government of India	Mothers & community health workers	Institutional delivery
Beith	2007	(24)	16 countries	Diverse	Diverse	Tuberculosis detection and treatment success
Eichler	2007	(25)	Haiti	USAID	NGOs	Immunisation coverage, attended deliveries, pre and post-natal care
Chee	2007	(26)	52 countries	GAVI	National governments	Immunisation coverage

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## **ASHA/JSY SCHEME IN INDIA: RBF FOR MOTHERS AND COMMUNITY HEALTH WORKERS**

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Janani Suraksha Yojana (JSY) is a safe motherhood intervention for reducing maternal and neo-natal mortality launched by the Indian Prime Minister in April 2005 as an integral component of the National Rural Health Mission. The scheme aims to promote institutional deliveries amongst poor pregnant women. Accredited Social Health Activists (ASHA) are female honorary volunteers. One for every village with 1000 population is proposed to act as an interface between the community and the public health system. ASHAs receive performance-based compensation for promoting a variety of primary healthcare services in general and reproductive and child health services in particular such as universal immunisation, referral and escort services for institutional deliveries, construction of household toilets, and other health-care delivery interventions.

According to the brochure describing the Global Campaign for the Health Millennium Development Goals (1) (page 13): *“Births are more likely to go well if there is professional care, advice and equipment on hand. In India, a government scheme directed at mothers living under the poverty line in the poorest states motivated 80% of them to choose to give birth in health facilities – up from just 20% the year before the scheme began. This happened because the scheme subsidized the cost of transport to and from the clinic for mothers, as well as providing incentives for the health workers involved.”*

The government scheme (JSY) includes a package of interventions of which RBF is a small component. The referenced evaluation, outlined below was not designed to evaluate the effects of RBF specifically or the JSY more broadly and does not provide a basis for assessing the potential effects of RBF (2).

### **Evaluation (CORT 2007) (2)**

#### ***Objectives***

Specific objectives for assessing the JSY scheme were to:

1. assess the adequacy and simplicity of the processes set out by the state for claiming benefits under JSY
2. examine the utilisation of the scheme and analyse factors influencing impeding utilisation
3. review engagement of private sector including accreditation and compensation
4. analyse the nature and scope of information, education and communication interventions for raising awareness of JSY.

## **Study design**

Mixed quantitative (survey) and qualitative (interviews) methods.

## **Context**

The study covered three districts in the state of Rajasthan selected based on performance and representing good, average and not so good performance districts.

- Population 56,5 million (27)
- Population in rural areas 43,3 million (27)
- Number of villages 40 thousand (27)
- Below the poverty line 14% (28)
- Literacy rate 60% (27)
- Infant mortality rate 67 per 1000 (27)
- Maternal mortality rate 558 per 100,000 (28)

## **Population**

*Funding* – JSY is 100% centrally sponsored by the Government of India.

*Flow of funds* – The flow of money appears to be from the Government of India to the State Health Society to the District Health Society to a United Fund to an auxiliary nurse midwife, medical officer or staff at an instate accredited for deliveries to the ASHA. Cash assistance for delivering to mothers flowed through a Medical Relief Society or the United Fund, to auxiliary nurse midwives, community health centres, primary healthcare doctors, health centre staff or others to mothers. Only 1% flowed through ASHA.

*Service providers* - ASHA, auxiliary nurse midwives, staff at accredited institutions

*Service recipients* – Mothers giving birth at an accredited institution

## **Intervention**

*Level* – individual providers (ASHA) and recipients of healthcare (mothers)

*Targeted results and indicators* – birth at an accredited institution

*Choice of targets* – Payment is per institutional delivery. It is not clear to what extent the target for institutional deliveries was decided by the Government of India or Rajasthan or what the basis was for setting the target. There does not appear to have been any involvement of the recipients of care or ASHAs.

*Type and magnitude of incentive* – The following financial incentives are provided for institutional delivery.

Cash Assistance Package for JSY Beneficiaries in Rajasthan						
Particulars	Rural areas			Urban areas		
	Mother's package	ASHA's package	Total	Mother's package	ASHA's package	Total
Institutional delivery	1400	600	2000	1000	200	1200
Home delivery (only for BPL* pregnant women)	500			500		

By comparison the compensation package of ASHA was for different services she motivates includes: Motivation for sterilization: Rs. 50 for male and Rs. 25 for female; Motivation for night delivery: Rs. 100; directly observed therapy (DOT) provider-Rs 250; Attending bi-monthly meetings at block-Rs. 100 per meeting.

*Proportion of financing* – ASHAs are volunteers. 100% of what they earn through the JSY programme is through RBF. It is not clear what proportion of the financing of the ASHA programme or the JSY programme is RBF.

*Ancillary components* – Increased funding; detailed guidelines; cascade training of ASHAs; supervision and regular meetings of the ASHA with auxiliary nurse midwives, provision for transport including referral and escort to an accredited institution for deliveries; investment in improving public health institutions and services; flexibility for state governments to use public-private partnership mechanisms and accredit private health institutions for providing institutional delivery services.

*Mechanism of action* – See results. It is not known if any other analyses were undertaken in identifying barriers to institutional deliveries and determining how RBF would address those. Other interventions introduced simultaneously to RBF and the results of interviews with beneficiaries in this report suggest that there were multiple barriers that RBF might partially address.

### ***Comparison***

Two before-after comparisons are made in this report regarding the potential impact of the JSY programme on institutional deliveries. The first is the proportion of institutional deliveries among a sample of 166 JSY beneficiaries compared to their last previous birth prior to the establishment of the programme. The second compared the change in the number of deliveries in public sector institutions before and after establishment of the programme to the change one year prior to the establishment of the programme.

### ***Outcomes***

In addition to institutional deliveries, the report considers a number of other outcomes including the satisfaction of beneficiaries and ASHAs. The delivery of other services, quality of care, health outcomes, costs and cost-effectiveness were not addressed in this report.

### ***Results***

Based on the first comparison, the proportion of institutional deliveries increased from 32.5% to 65.1%. Based on the second comparison, the number of institutional deliveries in the public sector increased by 36% the year after the JSY was established compared to a slight decrease (-0.25%) the previous year.

Only 4 out of 10 ASHAs received some cash remuneration while the majority were yet to receive any, despite having assisted in promoting institutional deliveries. The ASHAs who had received money earned an average of about Rs. 400 for cases motivated over 3 months while the projected estimate of the maximum an ASHA could earn was three times that. 43% of ASHAs were satisfied and 36% were somewhat satisfied with the remuneration received mainly because 'they could earn extra money' (39%) or because being an ASHA gave an opportunity to learn many new things and work within the village. Some ASHAs were unsatisfied with the cash assistance because it involved 'too much work for too little money' (21%), the money was not given on time (15%), and the feeling that some ASHAs were being favoured.

The most common suggestions from ASHAs for strengthening their work are summarised below:

Suggestions for further strengthening their work as ASHAs and challenges faced by ASHA in Rajasthan	
Total number of ASHAs interviewed	173
Percent giving suggestion for improving the JSY	71.7 (124)
Suggestions made by ASHA for improving the scheme	%
Cash assistance should be more	35.5
Should give complete information	30.6
Should use posters, role play, drama for training ASHA	26.6
Should get good/practical training for ASHA	20.2
More propagation/advertise on TV/newspaper/camp/rally	16.1

Motivation for institutional delivery reported by beneficiaries are summarised as:

Motivation for institutional delivery among JSY beneficiaries who had institutional delivery, Rajasthan, 2007	
Particulars	Total
Total number of JSY beneficiaries who had an institutional delivery	173
Motivation for opting for institutional delivery*	%
Money available under JSY	56.1
Better access to institutional delivery services in the area	43.9
Support provided by ASHA	22.0
Support provided by health personnel	7.5
Previous child was born in an institution	8.1
Safe delivery of child/safety of both mother and child	7.5
Complicated delivery, had health problem, white discharge	4.6
Others / Previous history of still birth/miscarriage	5.2

ASHA's played a limited role in facilitating and arranging transport. On an average, the beneficiaries spent Rs. 280 on transport to reach the place of delivery. Nine out

of 10 beneficiaries paid money for the transport expenses on their own and an insignificant proportion were reimbursed later.

88% of the beneficiaries interviewed received JSY cash assistance for delivery in an institution and 76% of those who delivered at home.

The majority of women (64%) had to pay for services at the institution where they delivered; including medicines and IV fluids (94%), delivery, caesarean or operation charges (60%), food and accommodation charges (11%).

*Sustainability* – This is not discussed anywhere in the report and it is not clear what if any attention has been given to this elsewhere.

### **Comments**

It is difficult to draw conclusions about the effectiveness of the JSY on increasing institutional deliveries generally and even more difficult to infer to what extent RBF contributed to the increase in institutional deliveries indicated by this report. The first comparison noted above is confined to women who availed JSY benefits and cannot be generalised to those who did not. The second comparison suggests a substantial increase in institutional deliveries that can likely be attributed to the JSY programme, but provides a very limited basis for assessing the effects of the JSY programme and no basis for assessing the role that RBF played in increasing institutional deliveries.

The quantitative and qualitative data collected for this evaluation suggest that the cash assistance for mothers likely played an important role in motivating institutional deliveries, but it is not possible to quantify the effectiveness of RBF targeted at mothers. The evidence for the effects of RBF for ASHA is less compelling and suggests that RBF for ASHA probably played a small if any role in motivating institutional deliveries.

The report indicates that the programme has had some positive effects in reducing inequities, and indirectly that RBF targeted at mothers contributed to that.

The report provides only limited information about limitations and potential unintended consequences of RBF. These include:

- problems with auxiliary nurse midwives handling substantial amounts of money for the first time
- problems with delays in payment
- potential problems with nepotism

Other concerns that are not addressed include:

- corruption

- It appears unlikely that gaming would be a problem for institutional deliveries, but more broadly it is possible that the RBF could lead ASHAs to ignore tasks that were not rewarded or for which the reward was considered too small and gaming could be a problem for other incentives.
- It is possible, although it does not appear to be a problem, that both the RBF for mothers and ASHAs could coerce mothers to deliver in an institution against their wishes.
- It appears unlikely that RBF motivates substantial unintended behaviours or has other substantial unintended consequences, but this cannot be ruled out (e.g. in relationship to planning for the birth, transportation, accidents, adverse effects of institutional deliveries)
- It is not clear how large the administrative costs of RBF are.
- It is not clear whether RBF for ASHA has any impact on institutional deliveries.
- It is not clear what the cost-effectiveness ratio of RBF for mothers is, how it compares to cost-effectiveness ratios for other interventions, and thus whether it is a good investment of resources or not.
- The sustainability of the JSY programme generally and RBF specifically is uncertain.

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## TUBERCULOSIS DETECTION AND TREATMENT: RBF FOR PATIENTS AND PROVIDERS

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A variety of incentives has been used to try to motivate improvements in the detection and treatment of TB. Most of these appear to have been targeted at patients, including:

- Direct payment
- Deposit return
- Food (hot meals, dry rations, vouchers)
- Transportation subsidies
- Vouchers for material goods
- Packages of personal hygiene products

For individual providers incentives have included:

- Direct Payment
- Food packages
- Vouchers
- Other material goods
- Free drugs to private providers

Direct payments have also been used as incentives for teams, organisations, and local governments.

It is difficult to isolate the effects of RBF using routine TB data and there are few rigorous evaluations. This summary is based on a non-systematic review of that evidence and they also do not provide strong evidence of effects that can be attributed to RBF.

### RBF targeted at patients (from Beith 2007) (24)

Country/ Organisation implementing the incentive	Incentive type and population covered	Financing mechanism and management responsibility	Results*
Russian Federation/ Orel Oblast Government	Food parcel, hot meal, hygienic kits and bus tickets are part of a package of interventions for all TB patients in the oblast who adhere to treatment norms (N=~1200 since initiation)	WHO/Russia and USAID financed the scheme at initiation; now local government has complete funding responsibility. The Russian Red Cross managed the scheme at initiation but now this is also the responsibility of the local administration	Default rates dropped from 15-20% to 2-6% Default rates dropped from 15-20% to 2-6% Little evidence of perverse effects was reported. This may be due to strict monitoring and reporting. In rare cases, patients tried to sell the food

<b>Russian Federation/ Vladimir Oblast Government</b>	Food parcel (for out-patients only), travel expenses, clothing and hygienic articles (for all patients) are provided to patients who do not interrupt treatment (N=~3200 since initiation)	The scheme was initially financed by WHO and local administration with management by the local Department for Social Affairs and TB service; since 2005, management and financing has been fully transferred to the local oblast administration	parcel in order to buy alcohol.
<b>Tajikistan/ Project HOPE</b>	Food support if provided to DOT* patients who adhere to treatment and their families who are determined to be vulnerable using standard WFP criteria (N=~6700 total since initiation)  In practice, very few TB patients qualified as "not vulnerable". However, the programme felt that many patients who were classified as "not vulnerable" based on WFP criteria were vulnerable, and the decision was made expand the programme to cover almost all TB/DOT patients.	Food is provided by the WFP while funding comes from USAID and Project HOPE. PH and the WFP manage the scheme	Cure rates were higher for the vulnerable group that received food support: 89.5% vs. 59.4%  Treatment failure was 3.9% in the food support group vs. 15.6% in the comparison cohort  2.9% of patients in the food support group died, vs. 12.5% in the comparison group  Default rates were lower for the food support cohort: 3.7% vs. 9.4%  Given small numbers a larger-scale study is necessary to confirm these findings
<b>Kazakhstan/ American Red Cross (ARC)</b>	Monetary payment versus hot meals versus nurse home visit to TB patients in 20 DOTS corners in one oblast. Patient must complete treatment; if s/he defaults, s/he is responsible for refunding benefits for all drugs taken (N=449)	USAID and the ARC fund the scheme while management is the responsibility of ARC, Oblast national TB programme and DOTS corner staff	No intervention was significantly more effective, though the combined contribution of the three interventions improved treatment success 4.7%.

\*DOT = Directly observed therapy. Most results reported here are from directly observed therapy, short course (DOTS) monitoring data as reported by survey respondents. In many cases other interventions are going on simultaneously; therefore the individual impact of the incentive has not been isolated.

## **RBF targeted at providers**

In Bangladesh a community-based approach to the directly observed therapy, short course (DOTS) strategy that included an incentive for community health workers achieved higher detection rates than the rest of the country (90% versus 82%). It is not possible to assess the contribution of RBF to this apparent improvement.

In Pune, India a private provider payment scheme for referral of suspects to microscopy centers and subsequent directly observed therapy (DOT) found improvements in detection and cure rates. These findings were attributed to a variety of factors that include RBF.

### ***Comments***

The limited evaluations of the use of RBF for TB detection and treatment suggest that RBF may be one element of a broad strategy to achieve TB control goals. This report highlights the importance of stakeholder involvement and undertaking an appropriate assessment of obstacles to the desired behaviours to inform the design of an RBF scheme. Careful incentive design and monitoring are also needed to minimize unintended effects. Unintended effects of RBF for patients include engaging in practices that enable them to continue to qualify for benefits such as avoiding medicines to continue to receive monthly payments, pressuring providers to transfer them to an area with benefits, selling food to buy alcohol, creating false patients to get food for non-TB patients, demoralising health workers who feel that it is unfair that they are not given incentives, and health workers stealing food and money.

Details that need to be considered in designing RBF include:

- Communication of the RBF scheme to recipients
- Performance monitoring
- Management of the incentive
- Ongoing monitoring and evaluation

**Evaluation (25)*****Objectives***

To assess whether paying for results is effective as well as the many “nuts and bolts” details that can be used to inform others considering implementing performance based incentives.

***Study design***

Case study, including analysis of indicator data over 5 years for NGOs reimbursed for expenditures and ones that went over to the RBF scheme, and interviews.

***Context***

Haiti is one of the poorest and most vulnerable countries in the world. Eighty per-cent of the rural population survives on less than US\$1 per day. Life expectancy at birth is estimated at 53 years, infant mortality is 80/1000 live births, and the maternal mortality rate is 523/100,000 live births.

***Population***

*Funding* – USAID

*Flow of funds* – USAID to Management Sciences for Health (a US based NGO) to NGOs in Haiti

*Service providers* – From 3 NGOs in 2000 to 21 in 2005

*Service recipients* – From 534,000 in 2000 to 2.7 million in 2007

***Intervention***

*Level* – NGOs

*Targeted results and indicators* – Improved performance of NGOs. Initially seven performance indicators were used (below) and a private survey research firm was hired to measure these. Subsequent changes are noted in the comments below.

Indicator	Target	Relative weight
Percentage of mothers using oral rehydration solution to treat cases of children with diarrhoea	15% increase	10% of bonus
Full vaccination coverage for children 0-11 months	10% increase	20% of bonus
At least 3 prenatal visits	20% increase	10% of bonus
Reduction in the level of discontinuation rate for injectable and oral contraceptives	25% reduction	20% of bonus

Number of institutional service delivery points with at least 4 modern methods of family planning and number of outreach points with at least 3 or more modern methods	All institutional service delivery points with 4+, 50% of outreach points with 3+	20% of bonus
Reduction in average waiting time before providing attention to a child (in hours and minutes from arrival to beginning of attention)	50% reduction	10% of bonus
Participation in establishment of local community health units (SYLOS) and coordination with the Ministry of Health	Defined by each Local Health Organising Committee	10% of bonus

*Choice of targets* – Targets and budgets are negotiated with the NGOs as part of their contract negotiation, based on the previous years’ budget and performance and taking into account other factors such as migration.

*Type and magnitude of incentive* – RBF up to 10% of the previous expenditure-based budget

*Proportion of financing* – A fixed price contract was equivalent to 95% of the expenditure-based budget.

*Ancillary components* – Increased funding, aggressive technical assistance, data validation, participation in a network of NGOs with shared learning activities.

*Mechanism of action* – Project staff hypothesised that part of the reason for NGOs not achieving adequate performance was due to a payment system that required transparent document for reimbursements and while not emphasising the need for attainment of results. NGOs were expected to improve management and their information systems in response to the combined risk losing (5% of their previous expenditures) and the opportunity for the bonus (5% above their previous expenditures). Management in turn passed some of the financial incentives on to staff as bonus schemes to motivate them. The change from 100% reimbursement-based financing with heavy demands for documenting expenditures to 95% flexible fixed price contract both reduced the burden on organisations to document expenditures and may have motivated them to use the fixed price funds more efficiently.

### ***Comparison***

NGOs reimbursed for expenditures, most of which subsequently switched to the RBF scheme.

### ***Outcomes***

The indicators above are the primary outcomes analysed in this report

### ***Results***

Although it is not possible to isolate the effects of RBF, regression analysis suggest that the new payment incentives contributed to improvements in both immunisation coverage and attended deliveries. Results for prenatal and postnatal care were less clear.

The project went from using an assessment guideline to assess eligibility of NGOs for the RBF scheme, to all NGOs being in the RBF scheme. It is not clear how well the assessment tool worked.

Several changes were made to the indicators. Waiting time was dropped because it was a poor indicator of quality and child visits was dropped because it was difficult to measure. Management indicators were added motivated by concern that attention to short term improvements resulted in neglect of key management functions. Additional technical output indicators were added. Some indicators were developed jointly with the NGOs and some performance indicators were added that could be evaluated throughout the year with immediate payments.

Performance went from being measured by an independent firm to self-report with random audits. To encourage NGOs to focus on all services included in the essential package and reduce costs of verifying performance, the project switched to randomly choosing indicators from an expanded list. Then to encourage NGOs to focus efforts on improving the quality of all services in the basic package, one of two packages of indicators was randomly chosen for evaluation. Then the project switched to random audits of two common indicators across NGOs and an additional randomly chosen indicator from a list of 7. Feedback from the NGOs suggests that the switch from community surveys conducted by an external firm to self-report with random audits not only reduced costs but also encouraged NGOs to strengthen their information systems.

The project has 9 staff members responsible for contracting, monitoring and the payment process. It is not reported what the total administration costs are or how these compare to the reimbursement-based financing scheme or other alternative financing schemes.

### ***Comments***

A rigorous impact evaluation has not been undertaken. The results in this report are difficult to interpret since the comparison groups are not equivalent and the switch to the RBF scheme is completely confounded with switching from 100% reimbursement-based financing to 95% fixed price financing as well as the other ancillary components. The increased autonomy, flexibility and reduced reporting were identified as major motivators. All of these are largely due to the shift from reimbursement-based financing to a fixed price contract rather than to RBF.

It is likely that the combined fixed price contract and RBF financing motivated NGOs to utilise the technical assistance. On this basis it could be argued that there is a synergistic effect of the combined fixed price and RBF financing, and the availability of technical assistance.

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## **GAVI: RBF FOR NATIONAL GOVERNMENTS**

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The GAVI Alliance (formerly the Global Alliance for Vaccines and Immunisation) provided support to country immunisation programmes in the form of Immunisation Services Support (ISS) funding from 2000-2005. Continued ISS funding following an investment period is conditional upon improved performance and high quality coverage data. GAVI commissioned an evaluation of its ISS funding that was released in December 2007.

### **Evaluation (26)**

#### ***Objectives***

To assess the experience of the ISS scheme in Phase 1 (2000-2005), the application [implementation] of ISS funding at country level and its relation to overall immunisation financing, and to identify the relationship between the allocation of ISS funding and immunisation coverage rates (DTP3).

#### ***Study design***

Quantitative (regression models for 52 countries that received ISS funds from 1995 to 2005) and in depth qualitative studies in 6 countries (3 matched pairs of countries with similar circumstances and starting baseline coverage, and different results).

#### ***Context***

22 low-income countries under stress (LICUS) and 29 non-LICUS countries were included in the regression models. Countries with per capita gross national income of less than \$1,000 (which includes 75 of the world's poorest countries) and DTP3 coverage rates (for children at 12 months of age) below 80 percent were eligible for ISS funding. The 3 matched pairs of countries were Tanzania and Zambia (high performers), Cambodia and Lao PDR (mid-level performers), and DR Congo and Guinea-Conakry (low performers).

#### ***Population***

*Funding* – GAVI

*Flow of funds* – From GAVI to countries. Governments can spend ISS funds in any manner they deem appropriate.

*Service providers* – Varies

*Service recipients* – Children

#### ***Intervention***

*Level* – Country

*Targeted results and indicators* – Immunisation (DTP) coverage. The number of children receiving DTP serves as the primary performance indicator for routine im-

munisation. The system for reporting the number of children immunised with DTP is validated through a one-time Data Quality Audit (DQA) conducted by GAVI-retained external auditors. Reward funding is contingent upon both increasing the number of children immunised with DTP3 and on achieving a verification factor of 80 percent on the DQA. If a country did not achieve the 80 percent verification factor on its DQA, it may work to improve data quality and receive reward funding if it passed a subsequent DQA.

*Choice of targets* – ISS “investment” funding was paid in instalments over three years, based on each country’s self-projected number of children to be immunised with DTP3 in the first year after application. Thereafter, additional ISS “reward” funding was paid for immunising additional children above the projected first year targets. The reward funding is calculated at \$20 per additional child receiving DTP3 above the number of children targeted the first year after application.

*Type and magnitude of incentive* – ISS funding is a performance-based strategy that makes continued funding conditional upon improved performance and high quality coverage data to encourage countries to make the necessary allocations and immunisation investments to vaccinate more children. Funding in later years is based on increases in the number of immunised children.

*Proportion of financing* – As of June 2006, US\$145 million of ISS funds have been disbursed to 53 countries. It is estimated that GAVI funds increased immunisation programme funding 15% from pre-GAVI levels.

*Ancillary components* – To receive GAVI support, eligible countries were required to submit an application to GAVI and demonstrate three conditions: 1) an inter-agency coordinating committee (ICC) of partners in immunisation, operating at the national level; 2) a review of its immunisation programme conducted within three years of the application year; and, 3) a multi-year plan for its immunisation program.

*Mechanism of action* – It is hypothesised that ISS funding allows countries flexibility to use the funds where they are most needed and motivates those responsible for immunisation programmes to use the funding in ways that will increase coverage by rewarding increased numbers of immunised children. Normally the decision on how to increase coverage and how to use funds is discussed during ICC (Inter agency coordination committees) meetings.

### ***Comparison***

Immunisation coverage rates with ISS funding were compared with immunisation rates in the same countries prior to ISS funding. Several potential modifying factors were considered, including macroeconomic and political factors, health funding and other health priorities, immunisation programme activities, ISS management and planning, and ISS expenditures by category.

## ***Outcomes***

The primary outcome that was considered was improvements in immunisation coverage. Other outcomes that were considered include impact on overall immunisation financing, the cost per additional child vaccinated, and equity.

## ***Results***

A relationship was found between ISS funding and increased immunisation coverage. The imputed cost of immunising an additional child was approximately \$23 at the lowest coverage rates. Once coverage rates were above 60% to 70% the cost per child immunised increased exponentially. Gross domestic product, political instability, and current conflict were found to reduce the effect of ISS funding. Specific immunisation programme activities, ISS planning and management, and expenditures in different categories were not found to have an impact on immunisation coverage.

It is not clear whether ISS funding displaced other sources of immunisation funding. The majority of funds were used for recurrent expenses (83%) and at a sub-national level (77%). ISS was well-integrated within national immunisation programmes, but harmonisation across health programmes and administrative levels was much more challenging, reflecting the general level of harmonisation within the health system.

Only limited data were available to explore the extent to which RBF per se (rewards) motivated changes. The only factor that was significantly related to approval of reward funding was population growth rate, and only that and baseline DTP coverage rate were related to disbursement of reward funds. Similarly, only limited data were available to test whether the size of the reward affected performance. Neither the size of the reward relative to pre-ISS immunisation expenditure per child nor relative to government health expenditures were found to be related to performance.

No correlation was found between rewards and geographic equity or stability of coverage. Receiving rewards had little effect on performance, although the data for evaluating this were also limited. LICUS were less likely to receive rewards. Rewards were based on the number of children initially projected to be immunised the first year, potentially allowing countries to manipulate their projections and making achievement of projections difficult for countries with declining birth rates.

LICUS countries, more politically unstable countries, and countries with lower population growth rates were less likely to benefit from ISS funding. Countries with higher baseline DTP coverage rates were also less likely to benefit. ISS rewards do not cover actual cost of increasing coverage of the hardest to reach children in these countries and, thus, may not motivate efforts to increase coverage among those disadvantaged populations.

There was no evidence of negative impacts on measles vaccination coverage rates, which was used as an indicator of performance with other vaccines.

## ***Comments***

It is not possible to isolate the effect of RBF from the effect of increased funding based on immunisation coverage. In other words, it is not known whether the same amount of funds provided in a different way would have achieved different results in terms of immunisation coverage. Qualitative data suggest that the flexibility of the funding (which is not specific to RBF) was valued by recipients and may have facilitated good use of the funds under some circumstances. The scheme had an obvious impact on data reporting through the DQAs.

Several factors other than immunisation performance can determine whether a country received rewards. Although this study did not find any evidence of the effectiveness of RBF (rewards), a possible effect cannot be ruled out. Nonetheless, only one factor was found to be significantly related to approval for reward funding, a declining population growth rate, which explained 76% of the likelihood of whether a country received rewards. There was also no evidence of subsequent improvements in performance following receipt of rewards, although that could be explained in part by qualitative reports that much of the funding was not immediately used. Qualitative data suggested that countries generally pursued strategies to improve overall coverage, but few seemed to directly link that goal with increases in GAVI funding or continuity of funding. Moreover, failure to receive an 80% DQA verification factor seemed more likely to elicit a coordinated response from partners than did rewards. Rewards may have had a limited impact because field staff implementing activities had limited awareness of them and did not see any immediate benefits. However, at the national level it is possible that the rewards served to remind senior officials of the importance of improving coverage.

Problems with ISS identified by this evaluation include the need for mechanisms to support underperforming countries, procedures to respond to allegations of misuse of funds, more emphasis on establishment of in country technical capacity, and mechanisms for following up on problems that are reported. It might be added that more rigorous evaluation is needed.

Concerns identified elsewhere (29), not all of which are related to RBF per se, include:

- Lost opportunity costs of the application process and diversion of ministry of health and partner attention from other priorities
- A rapid application process and tight deadlines that may prevent countries from analysing longer term implications and making evidence-based decisions
- Risk of not building wider constituencies of support due to the process being driven by small groups of donors
- Risk of countries reporting inflated improvements in performance due to unreliable information systems and the linking of rewards to immunisation coverage
- Little planning at the country level on ensuring financial sustainability of expensive new vaccines, if GAVI funding stops



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# Discussion

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## STRENGTHS AND LIMITATIONS OF THIS REPORT

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The primary strength of this report is that it systematically and transparently summarises a breadth of evidence of the effects of RBF. It is primarily based on systematic reviews. Systematic reviews have several advantages (30-34). Firstly, they reduce the risk of bias in selecting and interpreting the results of studies. Secondly, they reduce the risk of being misled by the play of chance in identifying studies for inclusion, or the risk of focusing on a limited subset of relevant evidence. Thirdly, systematic reviews provide a critical appraisal of the available research and place individual studies or subgroups of studies in the context of all of the relevant evidence. Finally, they allow others to appraise critically the judgements made in selecting studies and the collection, analysis and interpretation of the results. In addition, we have expanded the evidence base from available systematic reviews with critical summaries of evaluations of RBF schemes in LMIC.

The primary weakness of the report is that we did not undertake a systematic review ourselves. By capitalising on available systematic reviews we were able to prepare this report quickly and to synthesise the findings of 10 systematic reviews published between 1997 and 2008 that are directly or indirectly relevant to the use of RBF in LMIC. However, only one review focused specifically on the use of one type of RBF (CCT) in LMIC. One other review that focused on contracting out in LMIC did not focus directly on RBF. The evidence summarised in the other reviews came largely from high income countries, the reviews addressed overlapping questions, and not all of the reviews were up-to-date. Nonetheless, the primary conclusion of this overview is robust in light of the sparse evidence of the effects of RBF cited in any of the reviews, background documents and evaluations: There are few rigorous studies of RBF and overall the evidence of its effects is weak.

An up-to-date systematic review that specifically addresses the effects of different types of RBF in LMIC is needed, as well as a broader review that addresses in greater depth when to use RBF and how to design and evaluate RBF schemes. Meanwhile, rigorous evaluations of RBF schemes in LMIC are clearly needed and the key messages that emerged from this overview, which are discussed below, can help guide decisions about the use of RBF.

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## DOES RBF WORK?

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Conditional cash transfer (CCT) programmes have been found to be effective at increasing the uptake of some preventive services which were already free. This indicates that properly designed incentives may diminish indirect barriers to access. Their implementation in a context where services are not free remains to be tested. Further, even with important incentives, some programmes did not succeed in improving vaccination coverage, perhaps because they were implemented where rates were already high.

Despite the success of CCT programmes, several questions remain regarding their feasibility in poorer settings. Indeed, they involve relatively complex mechanisms for targeting and logistics for the delivery of transfers, besides the need for good coordination with service providers in health and education for the tasks of monitoring and supervision. As much as these programmes try to bridge important gaps in social provisioning for poor households, they can only be an adequate solution where no supply biases and geographic barriers exist, which is not the case in, for example, many Sub-Saharan African countries. The success of CCT depends on the existence of effective primary health services and local infrastructures. With more complex programmes, it also depends on effective systems for identifying and making payments to low-income families.

More generally, there is some evidence from randomised trials of positive effects of financial incentives on patient compliance and preventive health behaviours. However, most of those trials have been carried out in the United States; the results may not translate directly to other countries with different socioeconomic and cultural contexts. Well designed randomised trials are needed, particularly in low-income settings.

Although financial incentives are considered to be an important element of strategies to change professional practice, there are relatively few well-designed studies and overall the evidence is weak. Most of the literature is descriptive rather than evaluations. There may also be a publication bias because those responsible for RBF schemes may have some disincentive to publish negative or ambiguous findings. A small number of more rigorous evaluations have examined relatively simple preventive interventions, such as the impact on rates of immunisations and screenings, as opposed to more complex interventions. The success of a financial incentive is likely to be inversely related to the complexity of the tasks it seeks to motivate. Few rigorous evaluations have evaluated more complex interventions and outcomes, such as contracting and the four examples of RBF schemes summarised above. In all of these evaluations it is difficult, if not impossible to disentangle the effects of RBF from other components of the intervention packages, including increased funding, technical support, training, new management structures and monitoring systems.

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## RELEVANCE FOR LMIC

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RBF might be more effective in LMIC than in high-income countries, particularly for patients and community health workers. This is because small financial incentives may represent a larger proportion of their income and there may be fewer competing economic incentives. However, there may also be a greater risk of undesirable effects for the same reasons. In the context of LMIC, there are a number of additional uncertainties. These include challenges in sufficiently specifying contracts or arrangements for RBF and monitoring and measuring the attainment of targets. The more remote the point of service delivery, or the more complex the service to be delivered, the more likely it appears that contracts or agreements will be governed by informal means. Government capacity to manage RBF may also be challenging. The broader the services the harder it will be to precisely define targets and negotiate contracts or arrangements. Feasibility of adequately monitoring service delivery in remote areas is also a key implementation issue.

There are also a number of questions regarding the long term desirability of RBF and, particularly, contracting out as an option for service delivery in LMIC. While contracting out appears effective as a means to scale up service delivery in small areas rapidly, there are potential constraints that these schemes face in the longer term. It is unclear, for example, whether capacity exists among non-state providers to scale up their service delivery efforts. It is also not clear whether incentives will hold their effects over the long term or whether adverse effects, such as sophisticated gaming, will emerge over time. Finally, a focus on contracting may encourage donors to by-pass failing or fragile states, thereby overlooking the important role of helping to build the institutional capacity of the Ministry of Health as either a steward or a service delivery organisation. On the other hand, although the impacts of RBF schemes on long-term development goals, including building institutional capacity and human capital, are uncertain, it could be argued that short-term outcomes, such as improved access to and use of health services, represent development goals in themselves.

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## DOES RBF HAVE UNDESIRABLE EFFECTS?

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There is a danger that unanticipated perverse effects may occur with all types of financial incentives. Types of undesirable effects that have been identified include:

- Unintended behaviours
  - For example, with CCT some mothers kept their child malnourished in order to retain eligibility; CCT may have increased fertility by 2% to 4%, because pregnant women only were eligible for a subsidy; and an unexpected small negative impact of CCT on children's weight gain may be explained by a misinterpretation of eligibility rules. Beneficiaries may have mistakenly thought

that having at least 1 malnourished child was necessary for continued membership of the programme (15).

- Distortions
  - Financial incentives may cause recipients to ignore other important tasks.
- Gaming
  - Financial incentives can result in gaming (changes in reporting rather than desired changes in practice).
- Corruption
  - Financial incentives may be stolen or misused, if not adequately managed.
- Cherry-picking
  - Performance incentives for providers can influence whether healthcare is accessible to patients by altering how willing healthcare workers or organisations are to care for sicker patients, more disadvantaged populations, or more difficult patients. For example, with RBF schemes that are based on scoring systems that are sensitive to small changes, eliminating a small number of “difficult” patients with greater co-morbidities, more disability, or lower health literacy may improve a provider’s score dramatically. RBF schemes may cause providers to cherry-pick patients, either by selecting those who may help them score well or by avoiding those who may cause them to score poorly. While there is more than one way to protect against this behaviour, programmes that “risk-adjust” or stratify quality scores on the basis of health or socioeconomic status may reduce the incentives for healthcare organisations to cherry-pick patients. On the other hand, programmes that adjust for risk can also perpetuate disparities if they “excuse” providers from reaching equitable standards of care for disadvantaged populations. RBF schemes can also be targeted specifically at disadvantaged populations.
  - Widening the resource gap between rich and poor
  - Performance incentives for providers may widen the resource gap that exists between organisations that serve disadvantaged patients and those that do not, and between countries, as may be the case to some extent with GAVI’s ISS funding. RBF schemes that inadequately level the playing field may reward organisations for meeting standards that are much less attainable with disadvantaged populations. This problem can be mitigated by RBF schemes that reward improvement, in addition to absolute achievement, as well as RBF schemes that are specifically targeted at disadvantaged populations.
- Dependency on financial incentives
  - Relying on incentives may prove dangerous it may foster dependency on them. If provider behaviours are not ingrained, they may disappear when the incentives end, or when a new topic is selected.
- Demoralisation
  - Financial incentives can result in feelings of injustice and demoralisation. For example, if short-term professionals receive more financial incentives than

those who have established long-term practices, or if there are perceptions of favouritism.

- Bureaucratisation
  - RBF schemes may have substantial administrative costs associated with monitoring performance and managing disbursement of the financial incentives.
- Dilution of professionals' intrinsic motivation
  - It is generally accepted that professionals are motivated by the satisfaction of doing their jobs well (intrinsic motivation). Indeed, it is doubtful whether some valued dimensions of quality that are difficult to measure (such as empathy or listening in the medical encounter) would be provided at all if physicians were solely interested in income. Thus, professionals have both non-monetary (that is, personal ethics, professional norms, regulatory control, clinical uncertainty) and monetary (from the payment system) incentives, all of which affect effort. Hence it is possible that financial incentives may dilute professionals' intrinsic motivation.

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## WHAT ARE THE ETHICAL IMPLICATIONS OF RBF?

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### **Nonmaleficence (do no harm)**

To reduce the risk of doing harm, RBF schemes should be designed to minimise the risk of perverse effects and potential unintended effects should be monitored. RBF schemes that threaten to withhold public benefits as an incentive to induce desired behaviours, such as parents taking their children to be immunised, may also create financial penalties for people already at high risk for economic deprivation. Even simply requiring people to return more frequently to collect benefits imposes additional costs. Incentives may further fracture care for vulnerable populations. For example, low socioeconomic status mothers may not wish to take their children to special clinics for free immunisations because they prefer to see their regular providers for injections. The ethical imperative to “do no harm” requires that people be treated with dignity, respect, and fair procedural justice.

### **Justice**

If non-compliance is associated with low income, financial incentives for recipients of healthcare might also improve equity. All things being equal, we would expect financial incentives to have a greater effect among low-income populations. On the other hand, financial incentives may have negative consequences and may affect other aspects of behaviour.

The success of CCT programmes for improving nutritional and health status among beneficiary children contributed to reduce the burden of disease. However, a proportion of eligible households, i.e. those belonging to disadvantaged groups, did not enrol (15).

Due consideration must be given to the ethical implications of incentives that can change the behaviour of low-income or vulnerable groups. In particular, the ethics of some programmes using monetary incentives to promote irreversible contraceptive methods have been criticized (15).

Performance incentives for healthcare providers have the potential to narrow, widen, or maintain disparities in healthcare. The nature of their effect is likely to depend on how well programmes can promote inclusive approaches to diverse populations, and how able they are to avoid creating cherry-picking opportunities and greater gaps in resources between “rich” and “poor” organisations.

Performance incentives may encourage organisations to rely on a one-size-fits-all approach to their patients. A one-size-fits-all approach could widen disparities if it is more useful for mainstream patients (e.g., those who are literate or have mainstream cultural beliefs) than for minority subgroups; disparities widen because minority groups get left behind. For example, a one-size-fits-all approach to improving haemodialysis dosing for patients with end-stage renal disease, which did not recognise that disease burden and treatment choices may be different across race and ethnicity, led to an overall 40% improvement in dosing across the 8-year study period even though it did not change the disparity between black and white patients. In contrast, an inclusive approach to improving depression care that recognised that disease burden and treatment choices were different across race and ethnicity improved depression care such that the use of antidepressants by minority and nonminority elderly patients improved, and the gap between minorities and nonminorities closed, even though minorities had more severe disease and less antidepressant use at the beginning of the intervention (11). While there are many ways to address disparities, performance incentive programmes that promote disparity reduction or help identify minority subgroups in need of more tailored programmes may be better positioned to reduce disparities at the same time as they improve overall quality.

### **Autonomy**

The use of RBF may create an environment that does not promote personal responsibility and autonomy, particularly when it is targeted at recipients of care.

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## **IS RBF WORTH IT?**

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There are relative few rigorous evaluations of the effects of RBF schemes and almost no cost-effectiveness studies. Indeed, cost-effectiveness studies are of limited value when the effects of an intervention are not known. There is also limited information available regarding the administrative costs of RBF schemes.

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## **IS RBF SUSTAINABLE?**

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The published research tells us little about the sustainability of RBF schemes. The financial sustainability of RBF schemes beyond pilot programmes in low-income settings is uncertain. The flows of money that they require is often very important, which leads back to the question of whether they are worth it compared to other interventions.

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## **WHEN SHOULD RBF BE USED?**

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The following questions (derived in part from (14)) may be helpful in determining when financial incentives are likely to be helpful:

1. Does the intervention or behaviour have a low cost-effectiveness ratio and is it worth encouraging?
2. If so, is there low compliance?
3. If there is, why? Understanding the answer to this question fulfils two purposes. First, it may suggest the best type of intervention to employ to improve compliance or uptake, whether financial incentives are likely to be helpful, and if so what type of financial incentives. Second, it may suggest how strong an incentive may be required to change the targeted behaviour.
4. Are financial incentives likely to be helpful? For example, where important individual and or external effects are associated with non-compliance, financial incentives may be relatively cost effective. Incentives intended as a temporary change in behaviour may be more effective than as an inducement to make a permanent change. Health professionals are often under stress and harried by many competing demands for their time. Incentives may buy a temporary priority, but sustained change may require an investment of energy to address the underlying mechanisms that can reinforce the desired behaviours in a more permanent way. Although some might hope that brief experience in delivering care in a new way that is fostered by financial incentives might lead to permanent changes in the practice, there is little empirical evidence to support this hope. Some incentives may be permanent in the form of a direct reward for doing a defined task. Under those conditions, the necessary shifts in practice behaviour may be incorporated, but it may be possible to catalyze this transition by studying the logistics of the practice. In many cases, the critical actions rely on simple changes to prompt actions and delegate authority to support staff. In those cases, the resources earmarked for incentives could be put to more efficient use elsewhere.

One should ask whether financial incentives constitute the most efficient route to induce changes, in particular sustained changes. Would it be wiser, for example, to invest in information infrastructure changes, such as prompts or reminder systems that might have a longer impact? Or might such innovations go unused without the

spur of a direct incentive? Given the current state of research, it is not possible to answer whether financial incentives constitute the most efficient route.

Financial incentives, if they are large enough, can influence discrete behaviour at the individual level in the short run. The benefits of such incentives may be magnified if they are coordinated with each other and with system level incentives, although this potential synergy remains largely untested. Where provider incentives do work, they may not provide a sustained behaviour change. There is always a danger that they will be displaced by a new set of incentives targeted at a new problem. So, questions remain regarding whether investing in system changes that support long-term changes in practice is a better choice than relying on incentives alone.

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## **HOW SHOULD RBF BE DESIGNED?**

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RBF schemes require very careful design with respect to when they are used, the level at which they 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. Suggested steps in designing an RBF scheme, adapted from Eichler (6) and NorthStar (35), include:

1. Identify which stakeholders will be involved.
2. Specify the health system problem, underlying causes, and goals.
3. Decide whether the problem is a priority.
4. Specify specific performance problems, how RBF will motivate the desired performance, what other interventions are needed to address the underlying problems.
5. Design the intervention package, including RBF, and design the RBF, including
  - a. Who will receive the incentives
  - b. The conditions for receiving the incentives (targets)
  - c. How performance will be measured (indicators)
  - d. The type and magnitude of the incentives, what other funding is needed and how it will be disbursed
  - e. A budget
6. Assess the feasibility of the scheme, including costs, political consequences, availability of personnel and supplies, adequacy of information to measure performance, readiness and capacity to manage the process, adequate technical support
7. Ensure that there is political and institutional support for the RBF scheme
8. Develop detailed service specifications, including the flow of money operational procedures for managing the scheme, contractual arrangements.
9. Ensure there is capacity for managing the RBF scheme.
10. Prepare a plan for monitoring the scheme, including possible unintended effects, and evaluating it, using as rigorous a design as possible to address important uncertainties.

Some messages regarding the design of RBF schemes derived from the evidence reviewed in this report is summarised here.

### **Level of the incentives**

It is important to ensure that incentives go to those who need motivation to change their behaviour. Incentives that go to the wrong people are unlikely to motivate desired changes, unless there are mechanisms in place or reasons to assume that the incentives will have indirect effects; e.g. if they are passed on by managers of organisations to health professionals or motivate managers to change the behaviours of professionals in other ways.

With government, organisation or group level incentives, individual health workers cannot collect the full returns on their individual efforts to improve quality and may not be motivated by incentives. Thus, the potential for some to “free-ride” on the efforts of others may reduce the efforts of all. Alternatively, the problem with rewarding physicians and not organisations or groups is that the required institutional co-operation may not be present, implying that incentives are missing for an important element of the team delivering healthcare. For example, studies evaluating chronic care suggest that multidisciplinary teams produce better patient outcomes. Provider group level or organisation level incentives (if substantial enough) may provide the impetus to create infrastructure changes that are absent from traditional practices (16).

### **Choice of targets and indicators**

The best process-of-care measures are those for which there is good quality evidence that better performance leads to better health outcomes. Also, it is important to note that process-of-care measures may be more sensitive to quality differences than are measures of outcomes, because a poor outcome does not necessarily occur every time there is a quality problem. Therefore, one way to change behaviour so that both quality and documentation improve may be to base the incentive on the combination of a process-of-care measure (for example, documentation of smoking cessation advice) and the outcome of interest (for example, tobacco quit rates). This approach may avoid the pitfalls of process-of-care measures alone that encourage gaming, as well as the disadvantage of basing incentives solely on outcomes that may be relatively rare or difficult to achieve and somewhat beyond the control of the provider. Thus, a combined approach capitalises on the advantages and complementary nature of both types of quality-of-care measures.

Whether the incentive target should be designed as an absolute performance goal (that is, a defined threshold, such as 75% of patients with up-to-date immunisation status), a relative performance goal (for example, 30% improvement from baseline), or a payment for each instance of a service regardless of the overall performance is an important question. One review (16) found 4 that used an absolute performance

target, 2 that used relative performance targets, and 3 that used a combination of relative and absolute performance targets. Two studies showed that individuals or groups with the lowest baseline performance improved the most; however, if threshold performance targets are used, they may garner the least performance pay. This suggests the need to consider combined incentives for both overall improvement and achievement of a threshold, if thresholds are used. Policymakers should consider whether their goal is improving performance at the lower end of the spectrum, maintaining best performance, or both.

### **Type and magnitude of the incentives**

The size of incentives needed in different settings requires careful attention, due to 2 sources of inefficiency. On the one hand, RBF can yield very high costs per marginal change in behaviour that is induced, if the incentive is given to all targeted individuals, regardless of their possible previous compliance with the desired behaviour. Consequently, potential benefits of RBF must be weighted against their cost-effectiveness (and any potential undesirable effects), in particular when incentives and initial compliance in the target population are high.

On the other hand, the existence of possible threshold effects of incentives levels may lead to inefficiency because the incentive will either be too high (reducing efficiency) or too low to induce the desired behaviour. Small incentives produce finite (or no) changes and it is not known what size of an incentive is needed to yield large or sustained effects. It is also possible that those most in need of behavioural change, and most recalcitrant to change, may not be as easily swayed by incentives, and that the size of incentives (or other strategies) needed to reach them may be still higher.

It is possible that the lack of effect or small effect in some studies of RBF, particularly for providers, was due the small size of the bonus. One qualitative study in the US suggested that a bonus of at least 5% of a physician's income may influence behaviour (16). Similarly, when providers are paid by multiple sources, the incentive may affect too few patients, effectively diluting the size of the incentive.

“End-of-year” compensation may not influence provider behaviour as much as a concurrent fee or intermittent bonuses. This is because lack of awareness of the intervention and infrequent performance feedback may be substantial potential barriers to incentive effectiveness.

### **Undesirable effects and development goals**

When designing RBF schemes it is important to anticipate and avoid incentives that may foster undesirable behaviours. In addition, it is important to take into consideration medium to long-term development goals, such as building institutional capacity, as well as immediate targets and indicators.

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## HOW SHOULD RBF BE MONITORED AND EVALUATED?

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Given the lack of good quality evidence about the effects of financial incentives, and the risk of unintended effects, ongoing monitoring of RBF schemes is critical to determine whether incentives are working and whether they are having unintended effects. To discern the effects of financial incentives from the package of interventions of which they normally are one part, rigorous evaluations are needed. When possible, randomised trials are ideal because they can control for the many possible confounders and they may give answers more quickly as well as more reliably (36;37). In addition, both quantitative and qualitative process evaluations are needed, given the complexity of most interventions, behaviours and systems (38).

As noted in another recent report: “Evidence on the impact of performance-based funding in the health sector of low and middle income countries is very limited.” . . . “It is an ethical obligation towards those who suffer from death and disease to put these resources to their most effective use. One should therefore not miss the opportunity to ensure that the impact of the interventions is properly documented and researched. The possibilities for doing so strongly depend on how the interventions are being rolled out.” (39)

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# Appendices

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## APPENDIX 1: INCLUDED SYSTEMATIC REVIEWS

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(Chien 2007) Chien AT, Chin MH, Davis AM, Casalino LP. Pay for performance, public reporting, and racial disparities in health care: how are programmes being designed? *Med Care Res Rev.* 2007; 64(5 Suppl):283S-304S.

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## **APPENDIX 2: EXCLUDED SYSTEMATIC REVIEWS**

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### **User fees**

Austvoll-Dahlgren A, Aaserud M, Vist G, Ramsay C, Oxman AD, Sturm H, Koster JP, Vernby, Å. Pharmaceutical policies: effects of cap and co-payment policies on rational drug use. (Cochrane Review). In: *The Cochrane Library*, Issue 1, 2008.

Simkhada B, van Teijlingen ER, Porter M, Simkhada P. Factors affecting the utilization of antenatal care in developing countries: systematic review of the literature. *J Advanced Nursing* 2008; 61:244–60.

Lexchin J, Grootendorst P. Effects of prescription drug user fees on drug and health services use and on health status in vulnerable populations: a systematic review of the evidence. *Int J Health Services* 2004; 34:101-22.

Lagarde M, Palmer N. The impact of user fees on access to health services in low and middle income countries. *Cochrane Database of Systematic Reviews* 2008, in press.

### **Examples of reviews of private sector strategies**

Patouillard E, Goodman CA, Hanson KG, Mills AJ. Can working with the private for-profit sector improve utilization of quality health services by the poor? A systematic review of the literature. *Int J Equity Health*. 2007 Nov 7;6:17.

Peters,D.H.; Mirchandani,G.G.; Hansen,P.M. (2004///) Strategies for engaging the private sector in sexual and reproductive health: how effective are they?. [Review] [119 refs] *Journal Health Policy & Planning* Pages i5 - i21

Waters,H.; Hatt,L.; Peters,D. (2003/06//) Working with the private sector for child health.

*Journal Health Policy & Planning*. Volume 18 Pages 127 – 137

## **Examples of broad overviews of interventions to improve professional or patient adherence**

Bosch-Capblanch X, Abba K, Prictor M, Garner P. Contracts between patients and healthcare practitioners for improving patients' adherence to treatment, prevention and health promotion activities. *Cochrane Database of Systematic Reviews* 2007, Issue 2. Art. No.: CD004808. DOI: 10.1002/14651858.CD004808.pub3.

8 of 30 included trials (all from high income countries) used economic incentives (5 used deposits by the patients that were totally or partially reimbursed and 3 used tokens or goods, such as cash credits). The included studies were mostly small and all failed to meet 3 or more of 10 quality criteria. The authors concluded that there was not enough evidence to recommend the widespread introduction of patient contracts into health services.

Chaix-Couturier,C.; Durand-Zaleski,I.; Jolly,D.; Durieux,P. Effects of financial incentives on medical practice: results from a systematic review of the literature and methodological issues. *Int J Quality Health Care* 2000; 12:133-42.

89 included studies of which 8 reported results from randomised trials and the others did not describe actual studies. A wide range of financial incentives for healthcare professionals were identified, included different remuneration systems, drug formularies, payments for referrals, shareholding in diagnostic facilities, kickbacks for preferential drug prescriptions or use of supplies, ceilings for annual patient revenue, sanctions or bonuses, and the risk of medical malpractice suits.

Grimshaw JM, Thomas RE, MacLennan G, Fraser C, Ramsay C, Vale L et al. (2004) Effectiveness and efficiency of guideline dissemination and implementation strategies. *Health Technol Assess* 8(6).

The review did not find any evaluations of the use of financial incentives to implement guidelines that met the inclusion criteria (randomised trials, interrupted time series analyses, controlled before-after studies).

Ogden T, Forland F, Kristiansen IS, Sutton M, Leese B, Guiffrida A et al. (2001). Impact of payment methods on behaviour of primary care physicians: a systematic review. *J Health Serv Res & Policy*; 6: 44-55.

This review compared different payment methods: salary, capitation, fee-for-service and target payments. The same authors have published a systematic review that specifically focused on target payments, which we have included in our report.

## **Examples of focused reviews of financial incentives for specific behaviours**

Hey K, Perera R. Competitions and incentives for smoking cessation. *Cochrane Database of Systematic Reviews* 2005, Issue 2.

Lussier JP, Heil SH, Mongeon JA, Badger GJ, Higgins ST. A meta-analysis of voucher-based reinforcement therapy for substance use disorders. *Addiction* 2006; 101:192-203.

Paul-Ebhohimhen V, Avenell A. Systematic review of the use of financial incentives in treatments for obesity and overweight. *Obes Rev* 2007 Oct 23.

### APPENDIX 3: LMIC RBF EVALUATIONS CONSIDERED FOR INCLUSION

Country	RBF scheme	Source	Reason for exclusion
<b>Targeted at recipients of care</b>			
Mexico, Nicaragua	CCT	World Bank P4P Working Group	Included in systematic review of CCT
Yemen	Vouchers for maternal care	World Bank <sup>Error! Bookmark not defined.</sup>	Evaluation not found
<b>Targeted at recipients and providers of care</b>			
India	Incentives for mothers and health workers to give birth in a health facility	Global Campaign World Bank <sup>Error! Bookmark not defined.</sup>	INCLUDED
<b>Targeted at providers</b>			
Democratic Republic of Congo	Incentives for supervisors, inspectors and service providers to deliver public health and health-care services	P4P Working Group	Results not available
Rwanda	Incentives for primary care centres to increase the delivery of health services	World Bank P4P Working Group <sup>Error! Bookmark not defined.</sup>	Evaluation not found (Some results reported by both the World Bank and P4P Working Group; randomised trial ongoing)
<b>Targeted at NGOs</b>			
Afghanistan	Contracting NGOs to deliver basic health services	World Bank	Systematic review of contracting included; evaluation not found
Cambodia	Contracting NGOs to deliver healthcare services	World Bank P4P Working Group	Included in systematic review of contracting
Guatemala	Contracting NGOs to deliver primary health-care services	P4P Working Group	Systematic review of contracting included; results not reported
Haiti	Contracting NGOs to deliver healthcare services	P4P Working Group	INCLUDED
<b>Targeted at sub-national governments</b>			
Argentina	Incentives for provincial governments' health insurance programmes to improve maternal and child health outcomes	World Bank	Evaluation not found

<b>Rwanda</b>	Incentives for municipalities to increase the use of bed nets for children (and other activities)	Global Campaign World Bank	Evaluation not found (No reference provided by Global Campaign. Reference to "June 2007" evaluation by World Bank)
<b>Targeted at national governments</b>			
<b>GAVI</b>	Incentives for national governments to increase immunisation coverage	Global Campaign	INCLUDED
<b>Targeted at diverse levels</b>			
<b>Diverse</b>	Incentives for tuberculosis detection and treatment	P4P Working Group	INCLUDED