

# Impact of Conditional Cash Transfers on Maternal and Newborn Health

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## Abstract

Conditional cash transfers (CCTs) have been shown to increase health service utilization among the poorest, but little is written on the effects of such programs on maternal and newborn health.

We carry out a systematic review of studies on CCTs that report maternal and newborn health outcomes, including studies from eight countries. We find that CCTs have increased antenatal visits, skilled attendance at birth, delivery at a health facility, and tetanus toxoid vaccination for mothers, and reduced the incidence of low birth weight. The programs have not had a significant

impact on fertility or Caesarean sections while impact on maternal and newborn mortality has not been well documented thus far.

Given these positive effects, we discuss priorities for future investment in CCT programs for maternal and newborn health, noting gaps in knowledge and providing recommendations for better design and evaluation of such programs. We recommend more rigorous impact evaluations that document impact pathways, look into outcomes, and take factors such as cost-effectiveness into account.

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## 1. Introduction

Given the slow decline in maternal and newborn mortality since 1990, the achievement of Millennium Development Goals 4 and 5 by 2015 is unlikely. Most of these deaths occur in the intra-partum and immediate post-partum period largely from preventable causes [1] [2]. Annually about 60 million women give birth outside of health facilities, mainly at home, and 52 million without a skilled birth attendant [3]. Family planning needs are satisfied for only about 50% of women [4] and fertility rates are still as high as 4 live births per woman in low-income countries [5]. Further, skilled birth attendance, use of antenatal care and satisfaction with family planning are the most inequitably distributed of 12 key maternal, newborn and child health interventions studied in low and middle income countries (LMIC) with poorer women facing higher barriers to access [4].

The reasons behind the limited use of health services by the poor are myriad, and occur on both the supply (providers) and demand (households, women) sides. On the demand side, poverty, poor health status, illiteracy, language, customs, lack of information regarding the availability of health services and providers, and limited control over household resources and decision-making all play a role in limiting access to care. On the supply side, poor quality provision (both antenatal and obstetric care), mistreatment or sociocultural insensitivity, absence of a trained attendant at delivery, inadequate referral systems for emergency obstetric care, inadequate or lack of transportation facilities, and absence of or poor linkages of health centers with communities are barriers to utilization [6].

Increasingly, maternal and newborn health (MNH) experts are exploring ways in which demand-side barriers – the barriers women and their families face to seeking care – can be overcome. Over the past decades, community-based programs to increase utilization of MNH care have been piloted, most notably through community mobilization, behavior change communications, and volunteer outreach efforts, among others. These programs have in general been small-scale and have not entirely solved the major barrier to care seeking: the direct and indirect financial costs associated with seeking care [7].

Conditional cash transfers (CCT) are one type of demand-side program that has been used to overcome cost barriers. CCT are social programs that condition regular cash payments to poor households on use of certain health services and school attendance. CCT programs have two main objectives: first, to provide a safety net to increase and smooth the consumption of the extreme poor (alleviating short-term poverty), and second, to increase the human capital investment of poor households (alleviating long-term poverty). Payments are usually provided to women and compliance with conditions is verified by the program, and transfer sizes are generally intended to close the gap between average consumption in the bottom quintile of the income distribution and the extreme poverty line. Initially based in Latin America, CCT programs now operate around the world, and are regarded as successful social protection strategies.

Although few CCT programs have explicitly targeted the improvement of maternal and newborn health, many of the “broad” programs included conditionality, associated supply-side strengthening and/or educational talks related to MNH, and many impact evaluations have measured the effects of CCT on MNH interventions and outcomes. Further, as programs that relax a household’s budget constraint, CCT can be expected to affect household spending choices in general, including the potential to improve MNH. Other systematic reviews have documented the effects of CCT on child health care utilization and nutritional status [8], yet no paper has directly reviewed the evidence on CCT impact on MNH or use of appropriate MNH services.

This paper will fill this gap, setting out the hypothesized channels through which CCT impact on MNH may occur, synthesizing the empirical evidence on the impact of CCT on MNH interventions and outcomes, discussing issues emerging from the evidence synthesis, and providing recommendations for the future. Specifically the questions we address are:

- Are CCT linked positively or negatively to maternal and neonatal health outcomes, use or provision of maternal health services, or to care-seeking behavior by women?
- What are the contextual factors that mediate the effectiveness of CCT?

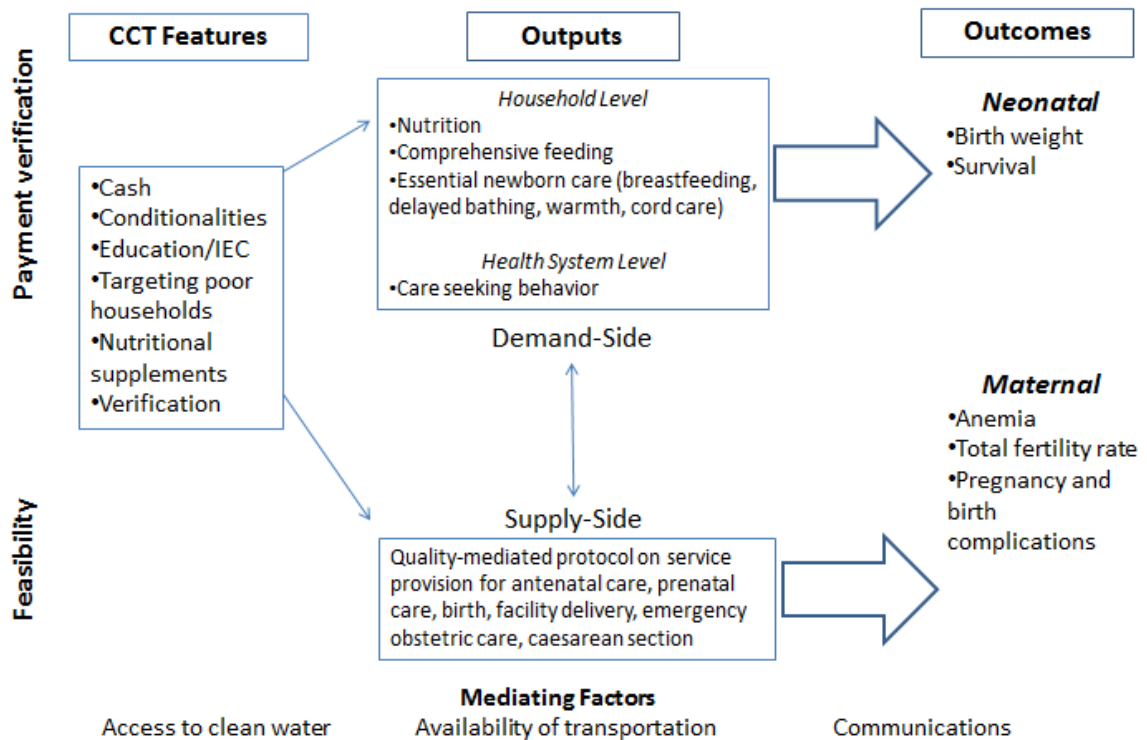
## **2. Conditional Cash Transfers and Maternal Health**

Most CCT programs are broad, aiming to alleviate poverty and increase human capital through transfers that are conditioned on a combination of school attendance, use of well-child visits, vaccination, and/or use of nutritional supplements. Examples of “broad” CCT include Mexico’s *Oportunidades*, Colombia’s *Familias en Accion*, Nicaragua’s *Red de Proteccion Social*, Honduras’ *PRAF*, Turkey’s *JRMP*, among others. However, “narrow” CCT – programs that transfer cash only for the utilization of specific services- are becoming more common; for example, India’s Janani Suraksha Yojana (JSY) and Nepal’s Safe Delivery Incentive Program (SDIP) target MNH improvements specifically. However, unlike the broad CCT, the “narrow” programs like JSY and SDIP do not always or only target low-income groups. In JSY, a mix of geographical and income targeting is used to induce pregnant women to seek care, while in Nepal, cash incentives are offered to all pregnant women [9].

Although programs differ in their specific design features, CCT usually share the following key features (see figure 1):

- Cash transfers that are conditioned on the utilization of a service, as mandated under the program ie health, education, nutrition
- Health information, education and communication (IEC) efforts
- Ex-ante identification (“targeting”) of recipient communities or households, using a variety of criteria
- Verification of compliance with conditions

Figure 1. Conceptual Framework of CCT Programs



These features of CCT programs are potentially associated with MNH outputs and outcomes on both the demand- and supply- sides. On the demand-side, household-level outputs include improved nutrition and feeding, as well as better newborn care, such as exclusive breastfeeding, delayed bathing, warmth and cord care. At the health system level, demand-side outputs involve care-seeking behaviors, such as use of antenatal care (ANC), use of facilities for birth, and use of a skilled birth attendant. Increased demand for services may also trigger improvements in the supply of services via greater and improved provider responsiveness (e.g. less absenteeism).

To support such improvements, some conditional cash transfer programs include components that support the supply-side, such as strengthening health services in program areas. In its initial phase, Nicaragua’s RPS, for example, contracted non-governmental organizations to provide an essential package of services to CCT beneficiaries and non-beneficiaries in intervention communities [10]. Similarly, India’s JSY program has a supply-side component, including incentive payments to community level health workers for bringing pregnant women to a designated facility for delivery [11].

Together demand- and supply-side outputs –mediated by contextual factors- are expected to jointly generate improved newborn outcomes such higher birth weights and survival (both perinatal and neonatal), while maternal health outcomes could include anemia, fertility, survival and complications during pregnancy and birth.

### 3. Methods

Our initial search of “conditional cash transfers & maternal health” resulted in 5,800 results on Google Scholar, of which 470 documents remained after duplicates were removed. A call for relevant papers led to 26 additional documents. A total of 65 documents remained after the screen was applied (see Annex A), categorized according to financial incentive and outcome/s reported. Of these, 9 articles applied to CCT.

In addition, a search for non-financial strategies to increase care seeking for MNH services was conducted using the search terms, “care seeking and maternal”, “care seeking and newborn”, “care seeking and postpartum family planning” and search engines (Medline, Cochrane Collection); 72 hits were received and abstracts reviewed. Final articles selected numbered 24 and included primarily Cochrane reviews, systematic reviews, with single published papers that explored specific issues of interest (e.g., birth preparedness complication readiness).

The characteristics of the CCT programs that have MNH outcomes are reported in Annex 1. Although we do not have more than one study for each program, the studies included are well-designed impact evaluations with experimental or quasi-experimental designs, with output measures that are relatively comparable and consistent across different studies.

Of the CCT studies that report rigorously calculated impacts, outcome variables that were common across at least two studies were identified and baseline values, effect sizes (reported as the average treatment effect, or the difference between treatment and control groups), standard errors, significance, sample sizes and scope of the program, defined as the ratio of beneficiaries over the total population, are reported.

Forest plots are used to depict effect sizes and pooled estimates. In order to mitigate non-comparability, we use a DerSimonian – Laird random-effects model, a widely used method to construct forest plots. Assuming heterogeneity between studies, this method uses a non-iterative method to estimate the inter-study treatment effect variance, without making any assumptions regarding the distribution of within-study or between-study effects. These estimations are generated with the *metan* function on Stata 12. The final forest plots show individual effect sizes with confidence intervals, as well as a final average effect size; the size of the boxes shows the significance of the effect, where larger boxes indicate a wider range and larger confidence intervals. We report pooled average effects only when two or more studies are available. In annex 2, we show forest plots for each outcome variable across available studies. In annex 3, we also provide a table of effect size and confidence intervals for all MNH-relevant variables reported in the studies.

## 4. Results

In this section, we describe the results of qualifying CCT studies on various MNH indicators summarized in Table 1, next page (see annex 4 for how the studies define these terms).

These same results are depicted graphically in forest plots in Annex 2. Results on MNH mortality are also discussed. We aggregate results from CCT programs in 8 countries with 14 evaluations.

### Perinatal, neonatal and maternal mortality

Studies do not report comparable measures of mortality and were thus omitted from the summary table. However, three studies look at mortality measures. The official evaluation of *Oportunidades* reports an 11% decline in maternal mortality in regions that had at least one locality incorporated in the *Oportunidades* program (RR 0.89, IC 0.82, 0.95) [23]. Lim et al report large declines in perinatal and neonatal deaths associated with India's JSY, although findings for maternal death were insignificant [14]. Powell-Jackson et al (2010) report a very small, insignificant decline in neonatal mortality in Nepal [15]. However, estimating impact on maternal mortality is prone to measurement errors and underestimation given issues in data collection, so we do not aggregate these results (see box 1 on criticisms regarding the JSY impact evaluation).

### Low birth weight

Two studies analyze the effect of CCT on the incidence of low birth weight, in Mexico and Uruguay [16], [18]. Both studies report a small but significant decline in the incidence of low birth weight: in Mexico, the proportion of infants born with low birth weight declined by 4.6%, and in Uruguay, by 1.5%.<sup>1</sup> An unpublished job market paper from Indonesia found that the CCT program did not have an impact on low birth weight or other birth outcomes [27].

### Adequate antenatal monitoring

Most studies report on the effect of the CCT program on the average number of antenatal visits. Four studies report positive and significant increases in the average number of beneficiaries that received at least 5 antenatal visits among beneficiaries compared to non-beneficiaries, ranging from an 8 percentage point difference in Mexico to a 19 percentage point increase in Honduras. The Honduran program is also the only program that included a specific conditionality related to antenatal care use; other programs (El Salvador, Mexico and Guatemala) only required preventive health care utilization by children while the remaining programs only conditioned facility births [13]. Two programs - El Salvador and Nepal -

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<sup>1</sup> Overall effects here refer to the effect sizes that are calculated in the DerSimonian – Laird random effects models (see annex 2 for weights assigned by this method).

**Table 1. Maternal Health CCT Programs, Effect Sizes**

<i>Study &amp; Country</i>	<i>Baseline</i>	<i>Effect Size</i>	<i>Standard Error</i>	<i>Significance</i>	<i>Sample Size</i>	<i>% of Population as Beneficiary</i>
<b>Adequate prenatal monitoring<sup>2</sup></b>						
de Brauw and Peterman (2011) (El Salvador) [12]	0.768	-0.065	0.072	NS	494	0.131
Morris, Flores, Olinto and Medina (2004) (Honduras) [13]	0.379	0.187	0.060	***	313	0.150
Lim et al (2010) (India) [14]	0.536	0.107	0.008	***	182869	0.100
Powell-Jackson et al (2010) (Nepal) [15]	<i>1.235</i>	-0.046	0.061	NS	5901	No targeting
Barber and Gertler (2009) (Mexico) [16]	0.612	0.081	0.026	***	892	0.180
IDB; Gutierrez et al (2011) (Guatemala) [17]	<i>2.69</i>	0.11	0.067	**	1163	0.057
Amarante et al (2011) (Uruguay) [18]	<i>6.53</i>	0.144	0.059	**	67863	0.100
<b>Births attended by skilled personnel</b>						
de Brauw and Peterman (2011) (El Salvador) [12]	0.738	0.123	0.070	*	536	0.131
Lim et al (2010) (India) [14]	0.593	0.366	0.006	***	182869	0.100
Powell-Jackson et al (2010) (Nepal) [15]	0.225	0.052	0.016	***	5901	No targeting
Urquieta et al (2009) (Mexico) [19]	0.305	0.114	0.048	**	860	0.180
IDB; Gutierrez et al (2011) (Guatemala) [17]	0.105	0.04	0.031	*	1006	0.057
Amarante et al (2011) (Uruguay) [18]	0.49	-0.002	0.009	NS	68855	
<b>Tetanus toxoid for mother</b>						
Morris, Flores, Olinto and Medina (2004) (Honduras) [13]	0.563	0.042	0.071	NS	313	0.150
Barber and Gertler (2009) (Mexico) [16]	0.924	0.368	0.300	NS	892	0.180
<b>Gave birth in hospital</b>						
Powell-Jackson et al (2010) (Nepal) [15]	0.106	0.04	0.015	***	5901	No targeting
Lim et al (2010) (India) [14]	0.541	0.435	0.006	***	182869	0.100
de Brauw and Peterman (2011) (El Salvador) [12]	0.733	0.153	0.076	*	530	0.131
<b>Post-partum checkups/visits after birth</b>						
Morris, Flores, Olinto and Medina (2004) (Honduras) <sup>3</sup> [13]	0.178	-0.056	0.052	NS	311	0.150
de Brauw and Peterman (2011) (El Salvador) [12]	0.259	-0.059	0.100	NS	478	0.131
<b>Contraceptives</b>						
Feldman et al (2009) (Mexico) [20]	0.37	0.16	0.097	**	16462	0.180
Lamadrid-Figueroa et al (2010) (Mexico) [21]	0.39	0.049	0.036	NS	2239	0.180
Powell-Jackson et al (2010) (Nepal) [15]	0.025	0.012	0.006	*	5901	No targeting
Barber and Gertler (2009) (Mexico) [16]	0.145	0.051	0.031	**	979	0.180
<b>Fertility</b>						
Stecklov et al (2007) (Honduras) [22]	0.172	0.039	0.014	**	12677	0.150
Stecklov et al (2007) (Nicaragua) [22]	0.108	-0.011	0.067	NS	4885	0.027
Stecklov et al (2007) (Mexico) [22]	0.179	-0.003	0.003	NS	17634	0.180
Amarante et al (2011) (Uruguay) [18]	N/A	0.001	0.000	***	1037793	0.100
<b>Low birthweight</b>						
Barber and Gertler (2009) (Mexico) [16]	N/A	-0.046	0.096	**	804	0.180
Amarante et al (2011) (Uruguay) [18]	0.102	-0.015	0.005	***	68858	0.100

1. Defined as 5 or more visits in every paper except for India, where it's defined as 3 or more visits. Numbers in italics are number of visits; other numbers are percentage of the population who have received adequate prenatal monitoring. 2. Defined as a 10-day post-partum checkup Legend: \*: Significant in the 10% level, \*\*: Significant in the 5% level, \*\*\*: Significant in the 1% level, NS: Not significant



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**BOX 1. INDIA'S JANANI SURAKSHA YOJANA (JSY) PROGRAM: ISSUES WITH IMPACT EVALUATIONS**

India's JSY is the largest CCT program in the world and specifically targets MNH. This, coupled with the fact that India has the highest number of maternal deaths in the world, makes JSY's evaluation extremely important. Lim et al (2010) [14], the only published impact evaluation of the JSY program to date (between 2002-2004 and 2007-2008), reports positive results for service uptake as well as neonatal mortality.

However, new studies challenge some of these findings. An unpublished evaluation by Mazumdar, Mills and Powell-Jackson (2012) [24] finds similar results for JSY increases on facility deliveries, also reporting that the program was more effective for less educated, poor and ethnically marginalized women. The study also finds increases in breastfeeding and less use of private health providers. Going beyond the positive impact on service uptake, however, the Mazumdar et al study finds that JSY increases fertility and does not have an effect on antenatal care or neonatal mortality.

Other critics of the program point to gaps in the evaluation. A letter published in the Lancet by Das et al (2011) points to problems in the enforcement of conditions, inconsistencies in the implementation of the program between states, and problems in recording program enrollment status due to an ambiguous question in the household survey [25]. Beyond these concerns, a process evaluation of the program by Devadasan et al (2008) [26] raised issues of women receiving only a portion of the promised cash transfers, as well as the transfer going to women who delivered at home.

These concerns about the world's largest CCT program show the need for a systematized, more rigorous design for impact evaluations, as well as more attention to process evaluation.

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reported a small decline in the average number of antenatal visits, but these results were insignificant [12, 15]. The Indian JSY program conditioned three or more visits, and reports an 11 percentage point increase. It is important to note the relatively short timeframe of these programs; the Indian JSY program generated such an outcome in a span of two years [14]. Overall, the effect is an increase in the uptake of adequate prenatal monitoring services by 8.4%.

A caveat of these studies is their focus on quantity, not quality, of antenatal care, particularly important in light of the null impact that antenatal care utilization on its own can have on maternal and birth outcomes. In the only study that examines quality, Barber and Gertler (2009) report positive effects of Mexico's *Oportunidades* program on the number of Ministry of Health-recommended prenatal procedures provided during antenatal visits, as well as the number of iron supplements provided [16].

### **Births attended by skilled personnel**

Six studies reported on the effect of the CCT program on whether a woman's last birth was attended by skilled personnel. For this variable, every study reported positive and significant outcomes, from a low of a 4 percentage point difference between beneficiaries and non-beneficiaries in Guatemala to a high of 37 percentage point difference in India [14]. The overall effect is a 12% increase; however, this impact has a wide confidence interval given the high variance between effect sizes. A forthcoming study from Indonesia reports a 45% increase in skilled delivery, but is not included here because it does not report a standard error for its effect size [27].

### **Births in health facilities**

Three studies reported on the effect of the CCT program on whether a woman's last birth occurred in a hospital. Each study reported positive and significant effects, and effect sizes much larger than those reported for other outcomes. In Nepal, there was a 4 percentage point difference between beneficiaries and non-beneficiaries [15], while Lim et al reported a 43.5 percentage point difference in India [14]. Due to this high variance, the overall effect of 21% has a very large confidence interval.

### **Cesarean section**

Two studies reported on the CCT effect on cesarean section at last birth among beneficiaries and non-beneficiaries. Both studies reported positive and significant effects; in Nepal, there was a one percentage point difference between the intervention and control groups [15], while this difference was 5 percentage points in Mexico [16]— the overall effect is a 2% increase. However, the Mexico baseline rate among beneficiaries and their controls was already 15% of all births, the top of the WHO-recommended level, so it is not possible to interpret whether this increase is consistent with MNH recommendations for better outcomes.

### **Tetanus toxoid vaccination for mothers**

Two studies reported on the impact of the CCT on the probability that a mother would receive a tetanus toxoid vaccination, an intervention that is essential to ensure survival of both mother and baby in LMIC, especially where there is a large share of home births [13, 28]. While the effects were positive, neither result was statistically significant. Given this, the overall effect is an 8% increase (average is between a 37% increase in Mexico and 4% increase in Honduras).

### **Post-partum visits**

Two studies measured the effect of the CCT program on post-partum visits, considered critical for both mother and newborn, especially in the immediate 48 hours through the first

week following birth [13], [12]. Both studies found negative but insignificant results on this variable, with an overall effect size of 6% decline in post-partum visits.

## **Fertility**

A study looking at the changes in fertility rates from Honduras, Nicaragua, Mexico and Uruguay reports impact on age-specific and total fertility rates. The overall effect is negligible, with a .2% increase, and range from a 4% increase in Honduras to a 1% decrease in Nicaragua [22]. Honduran women were provided per-child benefits from birth, and this design may have resulted in a change in the tempo of fertility or perhaps total fertility among beneficiaries. A study on JSY finds that fertility increased by 1.1 percentage points, but reports non-comparable outcomes and is therefore not included in table 2 [24].<sup>2</sup> A CCT evaluation in Pakistan finds that a beneficiary's probability of giving birth was 8 percentage points less than a non-beneficiary; the beneficiaries were more likely to have a smaller number of children and more likely to be older at marriage [29]. In a Malawi CCT (where conditionality is related to school attendance, not health care use), adolescent beneficiaries were significantly less likely to become pregnant [30].

## **Other outcomes: Contraceptive use, HIV status**

Only one program -Mexico's *Oportunidades*- reported on contraceptive use, finding that beneficiaries were 16 percentage points more likely to use a modern contraceptive method than non-beneficiaries. Another analysis of Mexico's *Oportunidades* looks at heterogeneous effects, finding a small and insignificant effect on contraceptive use [21]. There are also results on risky sexual behavior from both *Oportunidades* and the Malawi CCT: the Malawi study found that those in the CCT program were 0.29 times less likely to have HIV [31].

## **5. Discussion**

The review of effect sizes suggests that CCT can reduce barriers to MNH service utilization such as prenatal monitoring, skilled attendance at birth and use of facility for birth. Further, CCT may have an impact on the incidence of low birth weight, as well as the more distal outcomes of fertility and mortality. However, more studies are required to make a definitive statement.

In this section, we discuss the potential impact pathways for CCT programs and discuss how CCT programs compare to non-financial interventions in terms of outcomes and cost effectiveness.

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<sup>2</sup> The Mazumdar et al study [24] measures fertility by assuming that respondents are pregnant for 6 months when they respond to the questionnaire, whereas the Stecklov study [22] reports fertility based on baseline surveys that were conducted before the program & estimates fertility using differences-in-differences.

Interpreting these results is contingent upon understanding the **channels** leading to results. Studies hypothesize that the impact of CCT on maternal and newborn health is channeled through one or more of the following channels:

- (i) Income effect: Household income increases and/or share of income that women control increases, thus there is more disposable income to spend on health;
- (ii) Conditioning cash specifically on the usage of maternal health services
- (iii) Removal of costs associated with service utilization via subsidies for defined health benefit plans that include maternal care
- (iv) Knowledge effects resulting from health or nutrition training/talks, especially in Latin American programs.

It is difficult, however, to define specific causal pathways and link CCT design features directly to impact, given that the evaluations were not designed to measure the effects of these channels. It is especially difficult to track this as most CCT programs reviewed here have a broad scope and do not focus on maternal and newborn health.

Another key issue that would determine impact channels is whether utilization is related to actual health outcomes, such as low birth weight and decreased maternal and neonatal mortality. Although the studies we report from India, Mexico and Uruguay point out to better outcomes, more needs to be done in the field of connecting utilization to outcome, and future studies might show that encouraging utilization might not necessarily lead to better health outcomes.

While evidence suggests that CCT programs can improve utilization of maternal services and may improve maternal and newborn outcomes, successful implementation depends on a range of **contextual factors**. Their success is dependent on their ability to counter barriers to accessing care, and preferably improve quality care. When the barrier is poverty, CCT provide a direct incentive—but rarely is poverty the only barrier. Care seeking and health outcomes are determined by the interplay of social, cultural, health system factors as well as those that are economic. As these factors vary by context, a CCT that is successful in one context may be unsuccessful in another, with the difference attributable to factors that are not typically assessed during a program evaluation, such as cultural factors or supply-side constraints.

Some contextual enabling factors underpinning the effectiveness of CCTs include the following:

- Macroeconomic stability and economic growth where financial strength allows for increased investments in social infrastructure, especially in education and health.
- Enhanced infrastructure which generates enough supply to meet the additional demand. This includes skilled providers, adequate processes and systems, systematic

reporting, monitoring and evaluation, training and supervision of health staff and appropriate drug supplies and transport.

- Strong information systems including adequate household data to enable effective identification of beneficiaries.
- Strong targeting mechanisms to ensure high coverage and minimize the number of non-poor who benefit from the program.

Conversely many contextual factors can be persistent barriers to the implementation of successful CCT programs:

- *Poor Infrastructure:* CCT can be used to improve access to transportation, but will be ineffective when the transportation infrastructure is so poor that cost is not the major determinant (e.g. areas where there are insufficient vehicles, fuel shortages, roads or where conditions such as floods make transportation impossible).
- *Quality of Care:* CCT can incentivize women to seek antenatal, delivery and postpartum care, but improvement of maternal and newborn health outcomes is dependent on the quality of care delivered. Quality of care is often impaired by drug stock-outs, use of counterfeit drugs, poor training or retention/absenteeism of health care staff, lack of necessary equipment, etc. Low funding, mismanagement of funds, lack of leadership and management, has left many hospitals short of staff and vital supplies essential for delivery of quality care to women.
- *Political Considerations:* Slater et al. (2008) argue that the political context for cash transfers is potentially complex, but understanding it is an essential step in making the context more favorable for transfers [32]. The overall political feasibility of cash transfers depends on, for example, the type and extent of political commitment to poverty reduction and the overall availability of resources for social transfers. Political acceptability on a more day-to-day basis will depend on the size and cost of administrative effort to implement cash transfers, but also on the perceptions of the electorate: prejudices against perceived handouts may limit cash transfers to “cash for work” modalities, in which the poor are seen to be earning transfers.
- *Societal and gender norms:* In some areas strong cultural norms impede women from seeking quality maternal health services. These include preference for traditional healers and prohibitions on a woman traveling far from her home without accompaniment by an appropriate family member. In these instances, a CCT program is only effective when its perceived economic and health benefits outweigh the perceived cost of crossing traditional and societal norms. Strong gender stratification can influence the success of CCT. While the activities of poverty alleviation programs can contribute to women’s empowerment and provide women with greater autonomy, bargaining power and a larger social network, backlash may be possible, including conflict and even violence as husbands or others preferring traditional gender norms protest the women’s greater power. However, in quantitative and qualitative evaluations of CCT to date, there has been no evidence of these negative effects to date [33].

Another important dimension of CCT is the **sustainability of the behavior change** desired and whether and how long improved behavior relies on the existence of the financial incentive. As CCT are relatively new instruments for change, such behavior change regarding the use of maternal health services has not been examined. Some evidence suggests that there can be a *learning effect* whereby women with greater exposure time to a CCT program engage in greater utilization of maternal health services. For example, an increase in the last delivery attended by a physician/nurse vs. a traditional midwife in Mexico was reported although the CCT only specifies use of adequate antenatal care, not facility delivery or use of a skilled birth attendant [34] These studies do not, however, examine the absence of the financial incentive on behavior. More robust research in this area is needed to provide the evidence on sustainability of behavior changes.

The sustainability of behavior change also depends on the **financial sustainability** for improved MNH outcomes depend on the financial sustainability of programs, at least initially. In low-income countries, CCT programs are often funded by external donors, whereas in middle-income countries, national governments are more likely to fund the program directly. In LIC country settings, donor sustainability is a persistent issue, and in both LIC and MIC settings, political support plays a major role in sustainability of programs. Greater country ownership of a program through increased financial contribution and meaningful leadership in designing and administering the program enhances CCT sustainability. The financial sustainability of conditional cash transfer programs depends on both the political will of governments to start them, and a broad political consensus to sustain them to fight poor health, poverty and ensure continued development. Including improved health outcomes and healthcare utilization along with poverty alleviation thus needs to be recognized by both political leaders and program managers in the development and continued support for a CCT program.

Going forward, it is important to consider the **definition of outcome indicators**, which currently vary across studies and should be standardized. For instance, “adequate prenatal care” means different things in different settings, and it was always defined – with the exception of Mexico and Guatemala – as number of prenatal visits, when existing literature suggests that the number of visits is not a good predictor of better maternal health outcomes. Similarly, post-partum visits were defined as a 10-day post-partum checkup in Honduras; it is not clear whether a 10-day post-partum checkup would be a beneficial intervention.

It is likely that the quality and availability of supply-side efforts (e.g., skilled care, emergency care facilities) has major impact, and there is some relationship between including a supply-side component in the CCT and results. Programs in some states of India, Nicaragua and Honduras included a supply-side component and –with the exception of Honduras for study design reasons- report large positive and significant results. However, this issue has not been examined directly and there are no other examples.

One last issue to consider is the **cost-effectiveness** of these programs, particularly compared to non-financial incentives. CCTs are not directly comparable with non-financing demand side approaches as the latter are typically small scale, carried out by non-governmental groups, and project related. Certain non-financing interventions, such as maternity waiting homes, integration of traditional birth attendants, birth preparedness and complication readiness, community referrals, transport systems, and cell phone technologies to increase use of skilled obstetric care, are promising but require further evaluation [35] [36] [37] [38]. There are exceptions as Nepal, Pakistan and India, now have means of connecting women with appropriate MNH services through community workers, either paid or volunteer. These workers are known to provide household visits and/or hold group meetings with health talks, and in some parts of these countries they are trained to include the subjects of birth preparedness, complication readiness and essential newborn care, and may accompany the woman to a facility for birth. Cost data are patchy at best and need to be reported for not only the interventions themselves, but for a standard outcome for comparability (such as DALYs) so that different interventions can be compared in terms of their cost-effectiveness.

## **6. Conclusions and Recommendations**

Conditional cash transfer programs are increasingly common, particularly narrow CCT programs which condition specific outcomes such as maternal health, prevention of risky behavior or vaccination. CCT are particularly gaining popularity in sub-Saharan Africa, where 18 countries are implementing conditional cash transfer programs [39].

Our review of programs found that CCT have increased the uptake of MNH services, especially skilled attendance at delivery and antenatal monitoring where consistent results are reported in a variety of settings: these programs have particularly increased service uptake in middle-income countries with high income inequality. These effects are seen in both broad and narrow CCT programs, and considering the time frame of these programs the time-to-effects can be considered rapid. These results come with three major caveats: rigorous cost-effectiveness data is not available, main impact channels are not evaluated, and effects are not directly comparable across different contexts, given varying definitions of poverty and differences on the supply-side.

We are hoping the evidence we present in this review will be complemented with many more impact evaluations. 3 of the 18 conditional cash transfer programs in sub-Saharan Africa have maternal-health related requirements (Eritrea, Mozambique and Senegal). Similarly, there are ongoing evaluations of maternal health CCT programs in Afghanistan, Bolivia and the Philippines, and these evaluations can help us understand linkages between utilization and outcomes.<sup>3</sup>

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<sup>3</sup> Fernandez, L. and Olfindo, R. 2011. "Overview of the Philippines Conditional Cash Transfer Program: The Pantawid Pamilyang Pilipino Program. World Bank, Philippine Social Protection Note. <http://www->

Regarding the design of both the programs and their evaluations, we recommend the following for the design of both implementation and evaluation of CCT that target MNH:

- Improve evaluation and report standardized outcomes across CCT studies.
- Calculate cost-effectiveness estimates for both financial and non-financial incentives for improved maternal and newborn health.
- Focus on the effectiveness and quality of services delivered on the supply side, in addition to the quantity available.
- Pay attention to program design and measure potential impact pathways.
- Modify the design to enhance MNH effects with respect to conditionalities, non-financing incentives and infrastructure barriers.
- Add supply-side strengthening conditions to CCT programs; implement targeted supply-side interventions and track supply-side baseline and outcome levels.
- Understand the link between utilization and outcomes.

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Chavez, Franz. 2010. "Bolivia: Cash for Checkups to Slash Maternal Deaths"  
<http://www.ipsnews.net/2010/03/bolivia-cash-for-checkups-to-slash-maternal-deaths/>



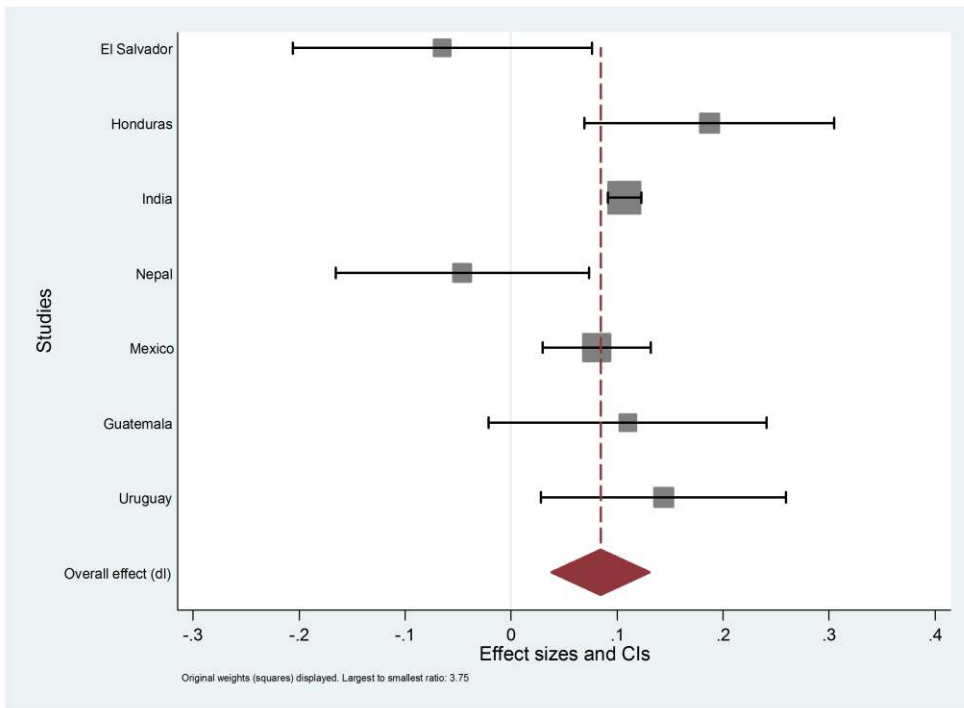
## Annex 1. Features of CCT programs in countries where maternal health outcomes were measured

Country	Program Name	Year Started	Targeting and Eligibility	Number of Beneficiaries	Health Conditions	Education Conditions	Verification	Supply-Side Conditions & Additional Benefits	Type of Evaluation	Reference(s)
<b>El Salvador</b>	Red Solidaria	2005	Geographic / Proxy Means Testing	100,000 households	Compliance with immunization and regular health and nutrition monitoring	Primary school enrollment / 80% school attendance (5-15 yrs.)	Health and education personnel provide information to NGO	Yes; supply-side component to strengthen basic health and nutrition services in the targeted areas	Regression discontinuity design, differences in differences	de Brauw and Peterman (2011)
<b>Guatemala</b>	Mi Familia Progresa	2008	Geographic / Proxy Means Testing	250,000 households	Regular health visits for children (0-16 yr.) and pregnant women	90% of school attendance	Not fully implemented	No	Differences in differences	Gutierrez et al (2011)
<b>Honduras</b>	Programa de Asignación Familiar	1998	Geographic / Proxy Means Testing	240,000 households	Compliance with required frequency of health center visits; children attend growth monitoring; pregnant women receive at least 4 ANC visits	School enrollment / 85% school attendance	None	Yes; promote access to an integrated package of services, including nutrition, healthcare and basic services. Improve quality of facilities due to service-level package	Cluster randomized trial, with a pre-test and post-test cross-section design	Morris, Flores, Olinto and Medina (2004)
<b>India</b>	Janani Suraksha Yojana	2005	Poverty-line estimates	9,500,000 women	Delivery in health facility, antenatal checkups	None	Community-level health workers	Yes; payments to ASHAs who identify pregnant women and help them get to a facility	Matching, with-versus-without comparison, differences in differences	Lim et al (2010)
<b>Mexico</b>	Oportunidades (formerly PROGRESA)	1997	Geographic / Proxy Means Testing	5,000,000 households	Children <2 years fully immunized and undergo growth monitoring. Prenatal visits, breastfeeding, physical checkups	80% school attendance (monthly), and 93% (annually) / Completion of middle school / Completion of grade 12 before age 22	Program state coordination agency	No	Regression discontinuity design, differences in differences	Urquieta et al (2009); Stecklov et al (2007); Sosa-Rubi et al (2011); Barber and Gertler (2009); Feldman et al (2009); Lamadrid-Figueroa et al (2010)
<b>Nepal</b>	Safe Delivery Incentive Program (SDIP)	2005	All women	100,000 women	Deliver in a public health facility and had no more than two living children or an obstetric complication. Skilled attendance at birth.	None	Deliver in health facility	Yes; provider incentives (\$5 for each delivery attended)	Propensity score matching	Powell-Jackson et al (2009); Powell-Jackson et al (2011)
<b>Nicaragua</b>	Red de Protección Social	2000	Geographic	3,000 households	Bimonthly health education workshops / Monthly health care visits (aged 0-2) or bimonthly (aged 3-5) / Adequate weight gain and up-to-date vaccinations (aged 0-5)	School enrollment in grades 1-4 (7-13 yrs.) / 85% school attendance (every 2 months) / Grade promotion at end of every year	Forms (confirmed by service providers and put into information system)	Yes; health education workshops every 2 months, child growth and monitoring, provision of antiparasite medicine, vaccinations, teacher transfer	Differences in differences	Stecklov et al (2007)
<b>Uruguay</b>	Plan de Atención Nacional a la Emergencia Social	2005	Poverty-line estimates	102,000 individuals	Regular ANC health visits for pregnant women and children	N/A	Visits; although not rigorously enforced	No	Regression discontinuity design, differences in differences	Amarante et al (2011)

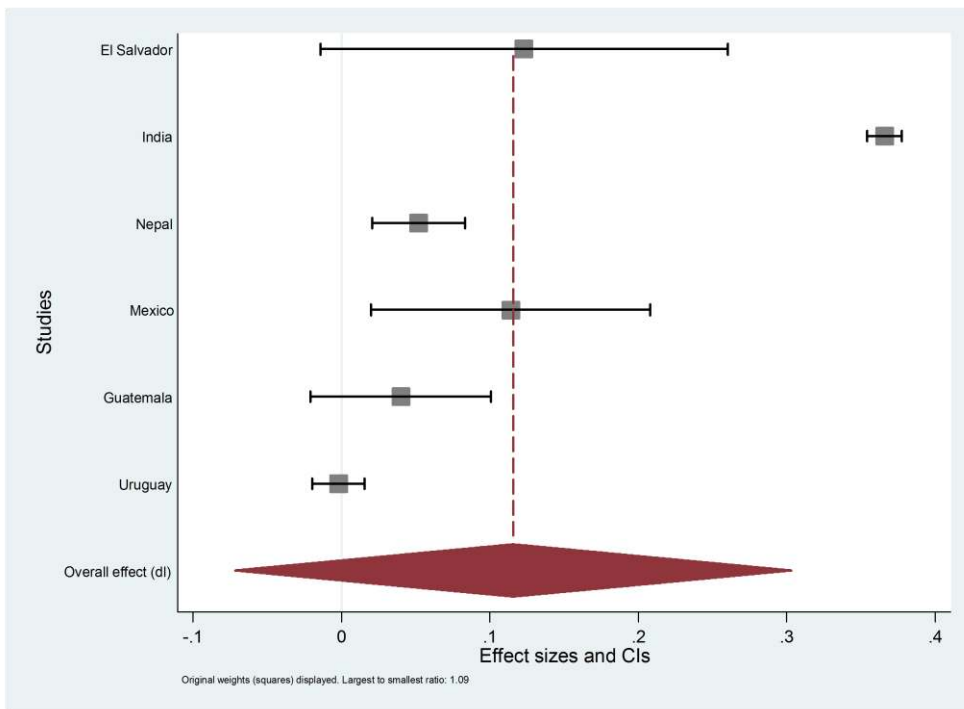
## Annex 2. Forest plot tables and graphs for interventions

<i>Outcome</i>	<i>Country</i>	<i>Effect Size</i>	<i>Lower CI, 95%</i>	<i>Upper CI, 95%</i>	<i>% Weight</i>
<b>Adequate prenatal monitoring</b>	El Salvador	-0.065	-0.206	0.076	7.96
	Honduras	0.187	0.069	0.305	10.29
	India	0.107	0.091	0.123	29.86
	Nepal	-0.046	-0.166	0.074	10.07
	Mexico	0.081	0.03	0.132	22.47
	Guatemala	0.11	-0.021	0.241	8.84
	Uruguay	0.144	0.028	0.26	10.52
	<b>Overall effect (dl)</b>	<b>0.084</b>	<b>0.038</b>	<b>0.131</b>	<b>100</b>
<b>Birth attended by skilled personnel</b>	El Salvador	0.123	-0.014	0.26	15.66
	India	0.366	0.354	0.378	17.08
	Nepal	0.052	0.021	0.083	17.01
	Mexico	0.114	0.02	0.208	16.39
	Guatemala	0.04	-0.021	0.101	16.79
	Uruguay	-0.002	-0.02	0.016	17.07
	<b>Overall effect (dl)</b>	<b>0.116</b>	<b>-0.072</b>	<b>0.303</b>	<b>100</b>
<b>Tetanus toxoid for mother</b>	Honduras	0.042	-0.098	0.182	89.89
	Mexico	0.368	-0.22	0.956	10.11
		<b>Overall effect (dl)</b>	<b>0.075</b>	<b>-0.118</b>	<b>0.268</b>
<b>Mother gave birth in health facility</b>	Nepal	0.04	0.011	0.069	34.08
	India	0.435	0.424	0.446	34.16
	El Salvador	0.153	0.004	0.302	31.76
		<b>Overall effect (dl)</b>	<b>0.211</b>	<b>-0.105</b>	<b>0.527</b>
<b>Post-partum checkups/visits after birth</b>	Honduras	-0.056	-0.157	0.045	79.02
	El Salvador	-0.059	-0.255	0.137	20.98
		<b>Overall effect (dl)</b>	<b>-0.057</b>	<b>-0.146</b>	<b>0.033</b>
<b>Caesarean section</b>	Nepal	0.012	0.001	0.023	80.53
	Mexico	0.051	-0.01	0.112	19.47
		<b>Overall effect (dl)</b>	<b>0.02</b>	<b>-0.011</b>	<b>0.05</b>
<b>Fertility</b>	Honduras	0.039	0.012	0.066	8.48
	Nicaragua	-0.011	-0.142	0.12	0.44
	Mexico	-0.003	-0.009	0.003	42.93
	Uruguay	0.001	-0.003	0.005	48.16
		<b>Overall effect (dl)</b>	<b>0.002</b>	<b>-0.006</b>	<b>0.011</b>
<b>Low birthweight</b>	Mexico	-0.046	-0.234	0.142	0.27
	Uruguay	-0.015	-0.025	-0.005	99.73
		<b>Overall effect (dl)</b>	<b>-0.015</b>	<b>-0.025</b>	<b>-0.005</b>

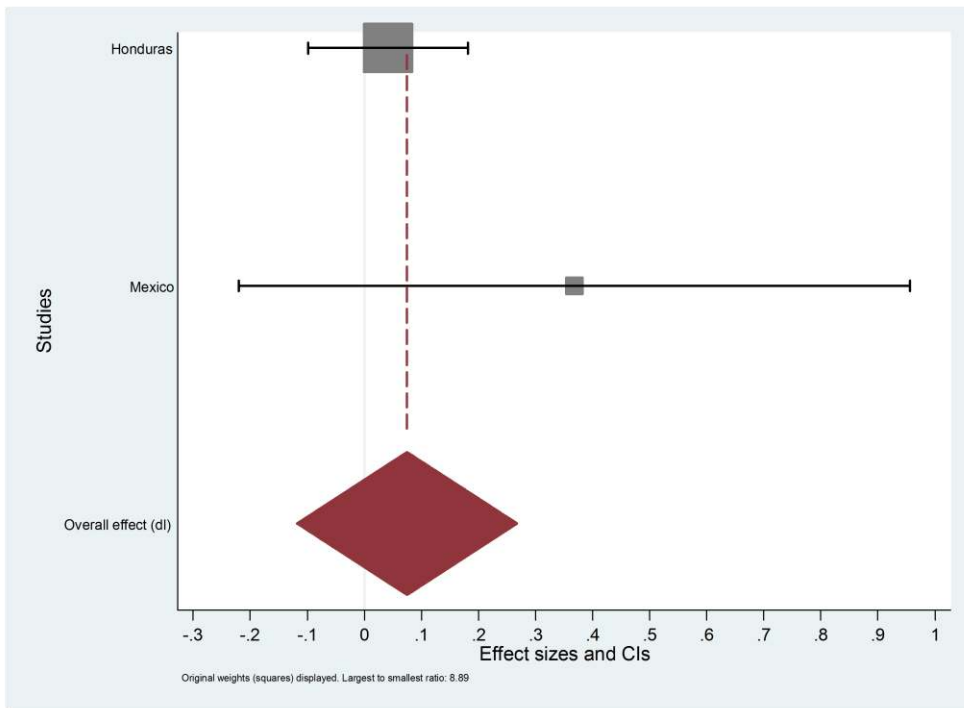
## Adequate prenatal monitoring



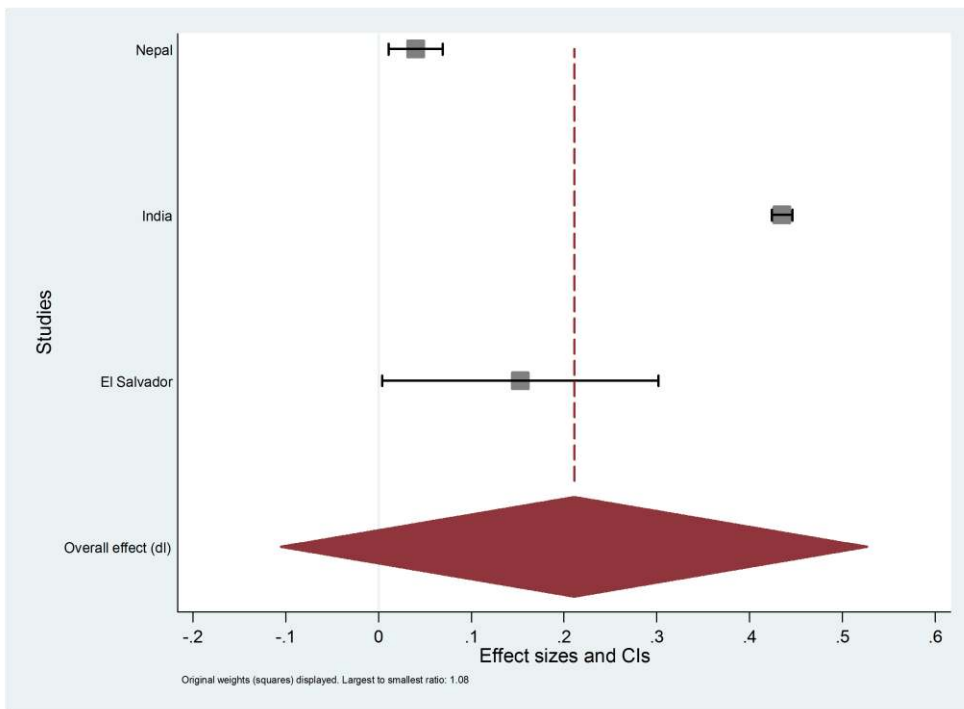
## Skilled attendance at birth



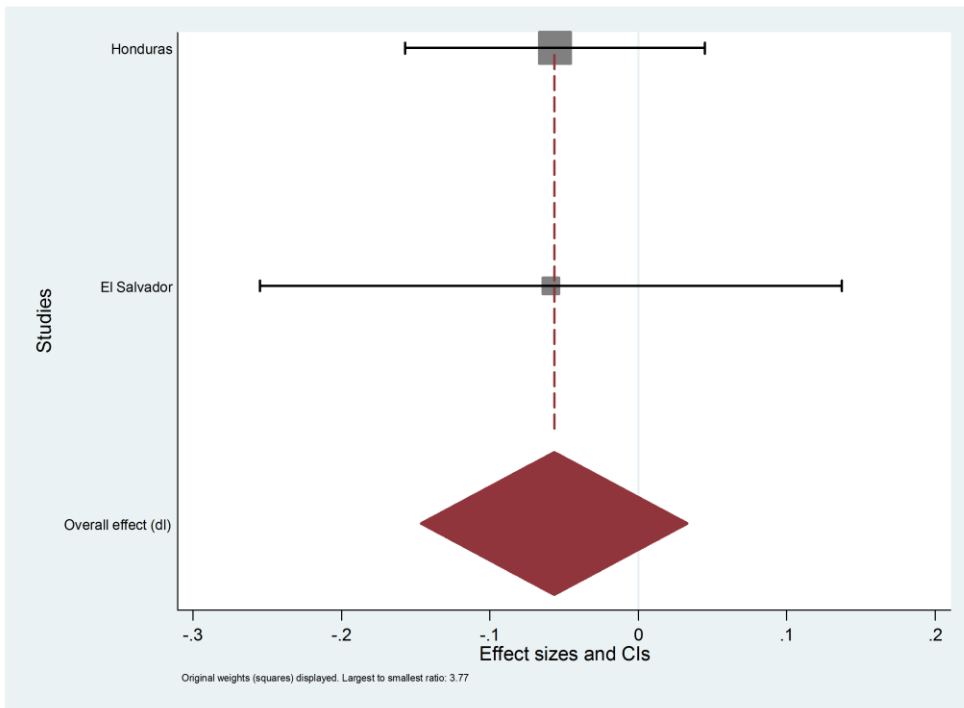
## Tetanus toxoid vaccination for mother



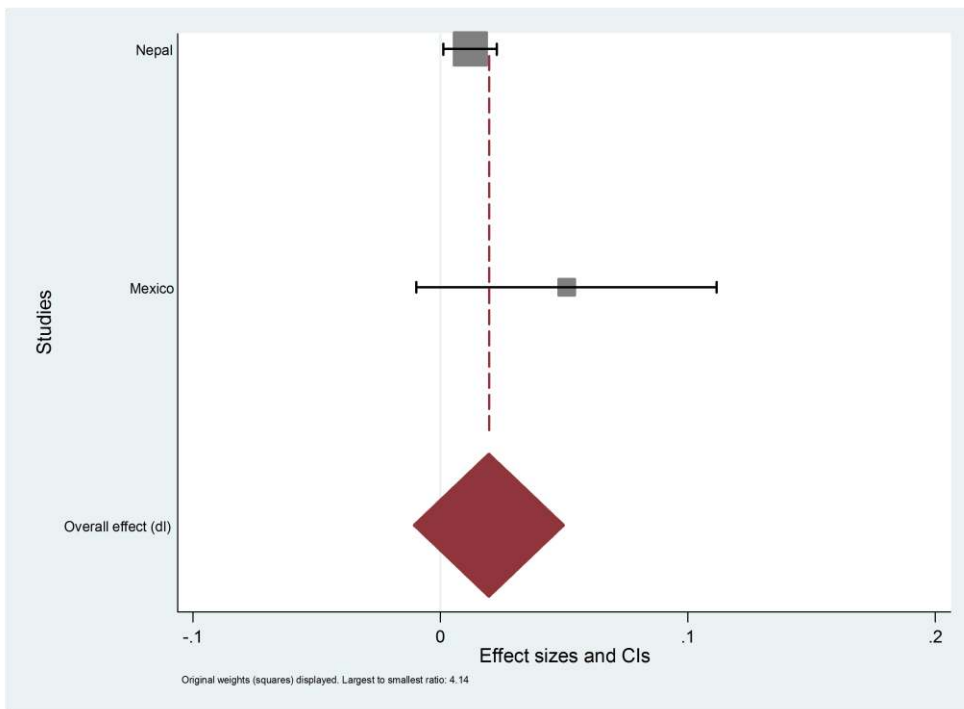
## Gave birth in hospital



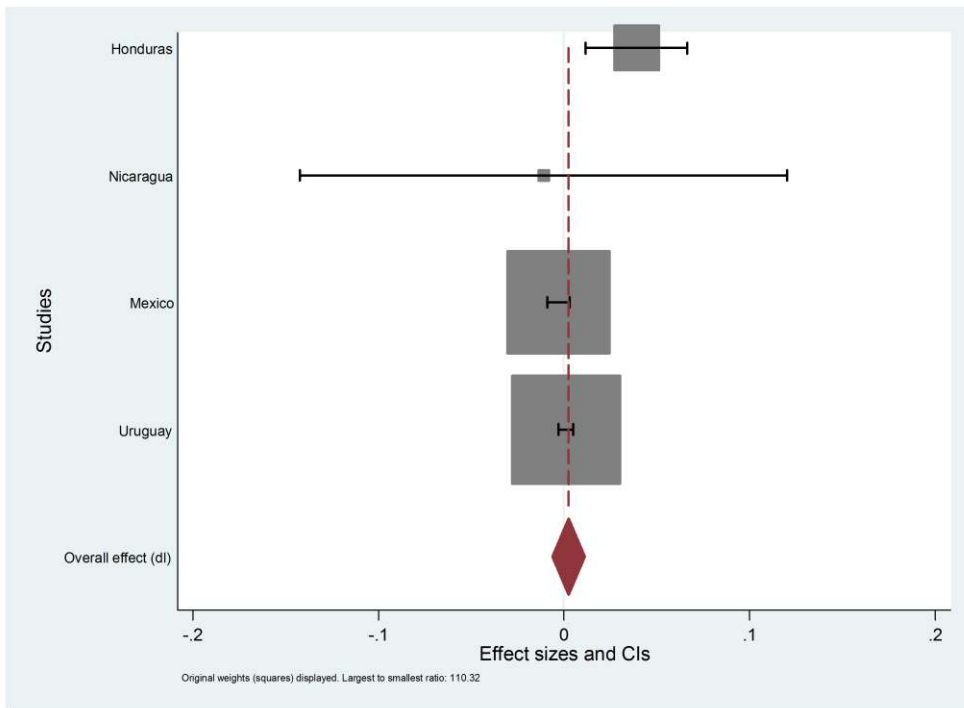
## Post-partum checkups



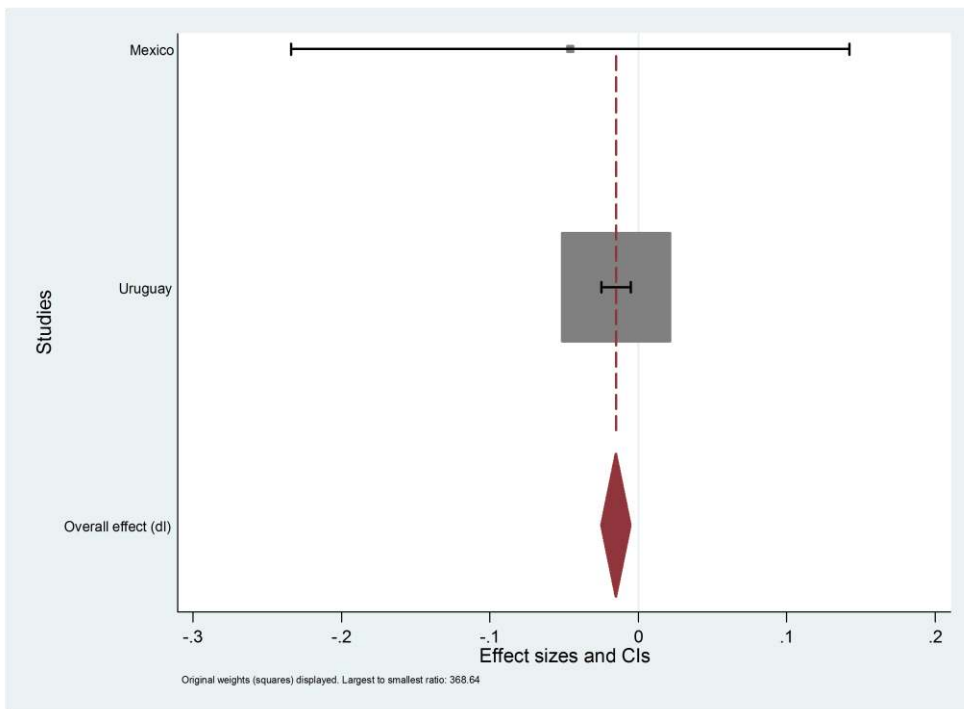
## Caesarean section



## Fertility



## Low birthweight



### Annex 3. Overall table of reviewed effects

<i>Study</i>	<i>Dependent Variable</i>	<i>ES</i>	<i>95% CI</i>
<b>de Brauw and Peterman (2011)</b> <b>(El Salvador)</b>	Adequate prenatal monitoring (5 or more visits)	-0.065	(-0.059, 0.065)
	Birth attended by skilled personnel	0.123	(0.129, -0.006)
	Gave birth in hospital	0.153	(0.147, 0.159)
	Mother went for postnatal checkup	-0.059	(-0.050, -0.068)
<b>Morris, Flores, Olinto and Medina (2004) (Honduras)</b>	Adequate prenatal monitoring (5 or more visits)	<b>0.187</b>	<b>(0.074, 0.30)</b>
	Adequate prenatal monitoring (5 or more visits)	0.184	(0.069, 0.299)
	Adequate prenatal monitoring (5 or more visits)	0.132	(-0.016, 0.28)
	10-day post-partum check-up	<b>-0.056</b>	<b>(-0.157, 0.045)</b>
	10-day post-partum check-up	-0.057	(-0.16, 0.045)
	10-day post-partum check-up	0.012	(-0.118, 0.143)
	Child taken to health center at least once in last 30 days	<b>0.202</b>	<b>(0.109, 0.296)</b>
	Child taken to health center at least once in last 30 days	0.149	(0.056, 0.243)
	Child taken to health center at least once in last 30 days	-0.018	(-0.134, 0.098)
	Tetanus toxoid for mother	<b>0.042</b>	<b>(-0.097, 0.182)</b>
	Tetanus toxoid for mother	0.081	(-0.061, 0.222)
	Tetanus toxoid for mother	0.064	(-0.116, 0.244)
	Weighed in last 30 days for mother	<b>0.211</b>	<b>(0.111, 0.311)</b>
	Weighed in last 30 days for mother	0.176	(0.075, 0.276)
Weighed in last 30 days for mother	0.08	(-0.044, 0.204)	
<b>Barber and Gertler (2009)</b> <b>(Mexico)</b>	Tetanus toxoid for mother	<b>0.368</b>	N/A
	Average physical examination visits	0.059	N/A
	Iron supplements	0.053	N/A
	Average increase in prevention and case management	0.043	N/A
	Prenatal procedures received	<b>0.122</b>	N/A
<b>Lim et al (2010) (India)</b>	Adequate prenatal monitoring (3 or more visits)	<b>0.109</b>	<b>(0.046, 0.172)</b>
	Birth attended by skilled personnel	<b>0.393</b>	<b>(0.337, 0.45)</b>
	In-facility births	<b>0.492</b>	<b>(0.432, 0.551)</b>
	Perinatal deaths (per 1000 pregnancies)	<b>-14.2</b>	<b>(-31, 2.7)</b>
	Neonatal deaths (per 1000 live births)	<b>-6.2</b>	<b>(-20.4, 8.1)</b>
	Maternal deaths (per 100000 live births)	<b>-100.5</b>	<b>(-582.2, 381.2)</b>
<b>Ozer et al (2011) (Mexico)</b>	Full depression scale (0-60)	-1.71	(-2.46, -0.96)
<b>Powell-Jackson et al (2011)</b> <b>(Nepal)</b>	Delivery at facility	0.04	0.05, 0.31
	Birth attended by skilled personnel	0.052	0.06, 0.28
<b>Powell-Jackson et al (2009)</b> <b>(Nepal)</b>	Birth attended by skilled personnel	<b>0.023</b>	<b>(-0.082, 0.129)</b>
	Number of antenatal care visits	<b>0.031</b>	(0.008, 0.054)
	Neonatal mortality	-0.0004	(0,0)
	Delivery at home	-0.042	(-0.329, 0.245)
	Delivery at government facility	<b>0.026</b>	<b>(0.168, -0.116)</b>
	Delivery at private facility	<b>0.002</b>	<b>(0.007, -0.003)</b>
	Delivery with a health worker	<b>0.044</b>	(0.342, -0.254)
Delivery by caesarean section	-0.001	(0, -0.002)	

<i>Study</i>	<i>Dependent Variable</i>	<i>ES</i>	<i>95% CI</i>
<b>Sosa-Rubi et al (2011) (Mexico)</b>	Antenatal visits	0.021	
<b>Baird et al (2011) (Malawi)</b>	Teenage pregnancy	0.029	0.027
	Teenage pregnancy	-0.067	0.024
<b>Stecklov et al (2007) (Latin America)</b>	Fertility; controlled for education, age, household, wealth (Honduras)	0.039	0.002
	Fertility; controlled for education, age, household, wealth (Nicaragua)	0.009	0.565
	Fertility; controlled for education, age, household, wealth (Mexico)	-0.003	0.852
<b>Urquieta et al (2009) (Mexico)</b>	Skilled attendance at delivery	0.028	0.027
<b>Alam et al (2010) (Pakistan)</b>	Probability of marriage	0.0082	0.008
	Age at marriage	1.46	0.621
	Probability of giving birth	-0.0808	0.172
	Number of children	-0.329	0.181
<b>Oportunidades, Official Evaluation</b>	Maternal anemia for women of childbearing age, urban	0.003	
	Maternal anemia for women of childbearing age, rural	-0.014	
<b>IDB; Gutierrez et al (2011) (Guatemala)</b>	Folic acid supplement	0.07	*
	Iron supplement	0.1	**
	Number of prenatal visits at health centers	0.11	**
	Skilled attendance at delivery	0.01	
Baird et al (2009) (Malawi)	Risky sexual activity	-0.159	
	Sexual activity (number of partners)	-0.036	
	Teenage pregnancy	-0.051	**
Barber (2009) (Mexico)	Cesarean section rate	0.0508	**



#### **Annex 4. Definition of terms**

**Low birth weight:** The papers cited here use the World Health Organization's definition of a newborn weighing less than 2,500 grams (5.5 pounds).

**Adequate antenatal monitoring:** Adequate antenatal monitoring is defined as 5 or more visits to a health facility for antenatal monitoring, except for the Indian study, which defines it as 3 or more visits to a health facility for antenatal monitoring.

**Births attended by skilled personnel:** Skilled attendance at birth is defined as attendance by a doctor, an obstetrician/gynecologist, a nurse or a midwife.

**Births in health facility:** Studies define "facility" differently; the El Salvador study includes births in a public or private facility and excludes births at health centers or mobile health clinics, the Indian study includes any kind of health facility.

**Post-partum visits:** A visit to a health facility within 10-14 days of giving birth.

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