

# Empowering women to obtain high quality care: evidence from an evaluation of Mexico's conditional cash transfer programme

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<b>Objectives</b>	To evaluate the impact of Mexico's conditional cash transfer programme on the quality of health care received by poor women. Quality is measured by maternal reports of prenatal care procedures received that correspond with clinical guidelines.
<b>Methods</b>	The data describe retrospective reports of care received from 892 women in poor rural communities in seven Mexican states. The women were participating in an effectiveness study and randomly assigned to incorporation into the programme in 1998 or 1999. Eligible women accepted cash transfers conditional on obtaining health care and nutritional supplements, and participated in health education sessions.
<b>Results</b>	<i>Oportunidades</i> beneficiaries received 12.2% more prenatal procedures compared with non-beneficiaries (adjusted mean 78.9, 95% Confidence Interval (CI): 77.5–80.3; $P < 0.001$ ).
<b>Conclusion</b>	The <i>Oportunidades</i> conditional cash transfer programme is associated with better quality of prenatal care for low-income, rural women in Mexico. This result is probably a manifestation of the programme's empowerment goal, by encouraging beneficiaries to be informed and active health consumers.
<b>Keywords</b>	Economics, quality, Mexico, prenatal care, evaluation

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## KEY MESSAGES

- A growing body of evidence points to the importance of health care quality as a policy priority in low- and middle-income developed settings.
- Most quality improvement interventions focus on in-service training and supply-side improvements. Few interventions consider the role of households, consumers or patients in improving the quality of care.
- Being a beneficiary of a large-scale conditional cash transfer programme is associated with the receipt of more prenatal care procedures among low-income, rural women in Mexico.
- Higher quality received among beneficiaries of the conditional cash transfer programme is probably attributable to the programme's effect in encouraging informed and active health consumers.

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## Background

Improving care quality has become an important policy priority in low- and middle-income nations. A growing body of evidence suggests that inadequate, inappropriate or harmful care is widespread (Chabilkuli *et al.* 2002; Chakraborty and Frick 2002; World Health Organization 2003; Obua *et al.* 2004; Zurovac *et al.* 2004; Tuan *et al.* 2005). Poor quality and unnecessary care have also contributed to increased morbidity and mortality among children and adults (Schofield and Ashworth 1997; Nolan *et al.* 2001; Barros *et al.* 2005). Most quality improvement initiatives in low-income settings focus on supply-side interventions, such as in-service training; supervision, audit and feedback; and upgrading equipment and supplies. Although widely assumed to be effective, evaluations of in-service training programmes have demonstrated mixed effects on health provider performance (Rowe *et al.* 2005). Supervision, audit and feedback have had moderate to large effects on health worker performance over the short-term, but the impact over the long-term is less clear (Siddiqi *et al.* 2005). While supplies and equipment could be a precondition for health care delivery, they do not ensure adherence to clinical guidelines or reduce practice variation.

Consumers and patients play a role in quality improvement initiatives. Evaluations of the Integrated Management of Childhood Illnesses (IMCI) programme demonstrated that supply-side strengthening has a limited effect on health where consumer demand for services is weak (Pariyo *et al.* 2005). Patient preferences that conflict with technical standards could also reduce the impact of interventions on quality and health outcomes (Berman 2000). US-based studies have shown that cash, vouchers or gifts are effective in encouraging patients to obtain health services or to continue treatment (Giuffrida and Torgerson 1997). In low- and middle-income settings, there is some evidence that financial incentives to individuals or households have improved health seeking behaviours (Ensor 2004). Conditional cash transfer programmes to poor households in Latin America have demonstrated increases in utilization and health status (LaGuarde *et al.* 2007). In addition, vouchers for reproductive health services have resulted in higher perceptions of quality and satisfaction among poor adolescents (Meuwissen 2006). It is assumed that financial incentives result in higher quality because people are encouraged to be more active consumers of health care. Although research has documented the impact of financial incentives for physicians on practice variation (Chaix-Couturier *et al.* 2000), there is little evidence about the relationships between household or individual financial incentives and the technical quality of care received.

This study examines the impact of a demand-side intervention to reduce poverty in Mexico. The intervention is embedded in a large-scale conditional cash transfer (CCT) programme that aimed, in part, to improve birth outcomes through better maternal nutrition and use of prenatal care. The programme (originally called *PROGRESA* and now called *Oportunidades*) uses money as an incentive for parents to invest in their children's health and education, thereby enabling their children to have the capability to escape poverty when they reach adulthood. To improve birth outcomes, *Oportunidades'* cash transfers to beneficiary households are conditioned, in part, on women completing a prescribed

prenatal care plan and attending an educational programme. A key component of the educational programme is empowering women to obtain quality care by providing them with information about care content, encouraging them to speak up for their rights with medical care providers, and giving the cash transfers directly to women.

Across diverse settings, CCTs have been successful in improving the use of health services as well as reducing child mortality, morbidity, anaemia and stunting (Bautista *et al.* 2004; Gertler 2004; Maluccio and Flores 2004; Morris *et al.* 2004; Rivera *et al.* 2004). However, none of these studies tries to sort out the specific pathways by which CCT programmes are effective. This study follows-on from previous research that demonstrated lower rates of infant mortality and better birth outcomes among beneficiaries (Barham 2005; Barber and Gertler 2008a). We hypothesize that one possible pathway for these health improvements is through higher quality care for beneficiaries. This study evaluates whether beneficiary women reported higher levels of health care procedures received that correspond with clinical guidelines.

## Methods

### The programme

In 1997, Mexico established *Oportunidades* (originally called *PROGRESA*), a poverty-reduction programme to break the intergenerational transmission of poverty by providing incentives for parents to invest in the human capital of children. Cash transfers from *Oportunidades* are conditional on family members obtaining health and education services. A unique feature of the programme was the deliberate decision to give the cash transfers directly to the mother or female head of household (Adato *et al.* 2000b). Programme beneficiaries were phased-in based on federal resource availability, which in turn allowed for an ethical evaluation of programme effectiveness. During its first 3 years, the programme succeeded in covering almost all eligible families living in rural areas. Coverage expanded from some 300 000 rural families in 1997 to approximately 2.6 million in 2000. Currently, the programme covers approximately 5 million low-income families (more than 20% of all families in Mexico) living in both urban and rural areas (Ministry of Social Development 2008). The programme has been described previously in detail; in this paper, we present the elements that are important to this study for eligibility and programme administration in rural areas.

The rural programme established eligibility in two stages: the programme first identified marginalized communities, and then identified low-income households within those communities (Skoufias *et al.* 1999). Once enrolled, households received benefits for a minimum of 3 years conditional on meeting programme requirements. To prevent migration into treatment communities, new households were unable to enrol until the next certification period. Participating households receive cash transfers for health and education. The monthly health stipend is conditional on each family member obtaining regular clinic consultations, and attending *pláticas* (health education talks) and monthly meetings for the principal beneficiary, usually the mother in the household. *Oportunidades* required that households prove compliance via certification at public clinics and

schools; about 1% of households were denied the cash transfer due to non-compliance (Adato *et al.* 2000a). The health transfer is fixed at approximately US\$15 per household per month (Ministry of Social Development 2003). The education transfer is based on school grade and sex. The maximum monthly benefit cap for health and education together equals approximately US\$90 and US\$160 for families with primary and high school children, respectively (Parker and Teruel 2005). Total transfers for health and education average 17 to 20% of pre-programme rural per capita household consumption (Gertler *et al.* 2004).

The *Oportunidades*' health requirements are extensive and vary primarily by age. Specifically for pregnant women, five prenatal visits are required, with an emphasis on monitoring the pregnancy's progression; and the prevention, detection and control of obstetric and perinatal risk factors. In addition to obtaining health care, nutritional supplements are required for pregnant and lactating women.

*Oportunidades* also mandates attendance at monthly educational and programmatic meetings. Participating adults are required to attend monthly *pláticas*, which emphasize prevention and reduction of health risks. Specific to this analysis, pregnant women are required to attend meetings about what to expect from prenatal care consultations, the clinical content of this care, maternal nutrition and other reproductive health information. Monthly meetings also take place between beneficiary women and *promotoras*, or elected beneficiary representatives, to ensure that the programme's objectives and requirements are understood. *Promotoras* receive training about how the programme operates, answer questions and complete monitoring forms. In health, they also carry out patient appointment reminders and act as a communication link between the health centres and the communities. A key objective of both the educational sessions and the meetings with the *promotoras* is encouraging beneficiary women to be proactive in obtaining their right to social services (Adato *et al.* 2000b).

### Design and data sources

The Government of Mexico commissioned an independent evaluation of the overall programme impact on education, health, nutrition and poverty. Planned as a randomized intervention, the study was conducted in seven central states (Guerrero, Hidalgo, Michoacán, Puebla, Querétaro, San Luis Potosí and Veracruz) representing the largest programme area. The evaluation was based on a sample of 506 communities in these seven states, which were among the first to receive programme benefits (Berhman and Todd 1999). The 506 treatment communities were randomly selected using probabilities proportionate to the size of communities, from 6400 communities scheduled for the second and third waves of incorporation into the programme. Of the 506 experimental communities, 306 were randomly assigned to the treatment group to be incorporated in the second wave and the remaining to the control group to be incorporated in the third wave. The eligible households in treatment communities were scheduled to receive benefits starting in April 1998, and control communities started to receive benefits in December of 1999.

A fertility survey was fielded in 2003 to evaluate the programme's impact on reproductive health outcomes, using a

sub-set of the original communities. The survey used a two-stage stratified sampling design. Communities were randomly selected based on a probability sample proportionate to the number of women of reproductive age. Within each community, a predetermined number of households was randomly selected based on the average number of women of reproductive age. All eligible women were interviewed in selected households. Written consent for participation was obtained from the mother or household head. The project was approved by the Human Subjects and Ethics Committee of the National Institute of Public Health, Mexico. Among women identified as respondents, 74% fully completed interviews. The most common reason cited for incompleteness was not at home (5.1%); 1.8% refused to be interviewed.

The sample in these analyses includes women who were eligible for *Oportunidades*, experienced a singleton live birth between 1997 and 2003, received prenatal care and reported about these procedures, and lived in the original treatment or control communities. In addition, we omitted women who were pregnant at the time of the survey because they did not receive a full course of care. The final sample size is 892 women (180 non-beneficiary and 712 beneficiary births).

### Measurement of variables

Quality is measured from maternal reports of prenatal procedures received that correspond with national guidelines (Ministry of Health 1993). Reports about health care procedures received have been used in previous studies to represent quality (Kogan *et al.* 1994; Barber *et al.* 2007). The survey collected data about 13 services conducted by health care providers as a part of routine prenatal care. These services can be divided into three domains: history-taking and diagnostics (took blood sample, took a urine sample, asked about bleeding, asked about discharge); physical examination (took blood pressure, weighed the mother, measured her uterine height, conducted a pelvic exam); and prevention and case management (administered tetanus toxoid, provided iron supplements, provided advice about family planning, provided advice about lactation, and recorded appointment information). Omitted are questions relating to the nutritional supplements, which are not universally indicated in the prenatal protocol. The responses were summed up, and the quality scores represent the proportion of the total.

Programme participation is measured using information from two sources: the fertility module detailing the date of birth, and administrative records about the date in which the first cash transfer was received. A beneficiary birth is defined as a birth that occurred after the household received their first cash transfer. Non-beneficiary births are births that occurred among eligible women but before they started to receive cash transfers. Because the actual date of incorporation into the programme was random, beneficiary status is not determined by household decision-making (Gertler *et al.* 2004). In addition, a previous study found no relationships between the programme and fertility decisions (Steklov *et al.* 2006).

From the fertility module, we also collected information about maternal characteristics and prior birth outcomes. Household and community socio-economic baseline characteristics are collected from the 1997 census, which provides data prior

to intervention. From census data, information included household education, age and demographics of household members, information about large assets, and community characteristics, including infrastructure and distance to capital.

### The analyses

The dependent variables are the summary quality scores and the scores for three separate domains of history-taking and diagnostics, physical examination, and prevention. Regressions are estimated using a set of covariates to reduce idiosyncratic variation and improve the power of the estimates. Specifically, all regressions include the following independent variables: maternal age, the number of prior pregnancies, and prior miscarriage or abortion, educational level and age of the head of household, maternal educational level, household size, the proportion of male and female family members aged 0 to 5 and 6 to 17 years, a household assets index (the proportion with ownership of land, home ownership, refrigerator, gas heater, television, internal water in household, and electricity in household), altitude, distance to the capital city and whether there was a health centre in the community. Variables were squared if the relationships were non-linear.

The adjusted means for the quality scores and each of the three domains are generated using community fixed-effects regressions. Multivariate regression models are used to predict the quality score while holding constant at their mean values

the individual, household and community characteristics. The main results report the adjusted mean procedures received. The models take into account intra-cluster correlation because the interventions were randomized at the community level. Statistical analyses were done using STATA (release Stata 9.2, Stata Corp, College Station, Texas). Statistical significance was declared at conventional levels.

### Results

Table 1 compares the maternal and infant characteristics, and baseline demographics and socio-economics between non-beneficiary and beneficiary births. The sampling strategy resulted in a well-balanced sample for analyses. One significant difference is noted. Non-beneficiaries had a higher number of prior pregnancies (5.3 compared with 4.7 among beneficiaries).

Table 2 reports the frequencies for each of the criterion used in the quality index. Beneficiaries reported higher percentages for all of the criteria. Those significantly different at the 5% level include a urine sample, blood pressure and information about the appointment recorded. The summary quality scores and those for each of the three domains (history taking, physical and prevention) are significantly different between the two groups. The summary quality score for beneficiaries (78.4%)

**Table 1** Descriptive statistics

Variables	Non-beneficiary (mean, standard deviation) <sup>a</sup>	Beneficiary (mean, standard deviation) <sup>a</sup>	Difference	P-value
<b>Baseline household socio-economics and demographics</b>				
Household assets index (0-1) <sup>b</sup>	0.42 (0.18)	0.40 (0.17)	-0.02	0.266
Indigenous-speaking household (%)	30.73	38.29	7.56	0.088
Educational level of household head (yrs)	3.63 (2.68)	3.53 (2.59)	-0.10	0.716
Age of household head (yrs)	41.31 (8.77)	40.07 (9.79)	-1.24	0.134
Maternal educational level (yrs)	4.01 (2.62)	3.95 (2.77)	-0.06	0.809
Household size	6.56 (2.26)	6.41 (2.35)	-0.15	0.495
Males, 0-5 years in household (%)	15.30	14.10	-1.20	0.237
Females, 0-5 years in household (%)	15.37	14.60	-0.77	0.522
Males, 6-17 years in household (%)	14.47	15.29	0.82	0.522
Females, 6-17 years in household (%)	15.83	13.95	-1.88	0.135
<b>Maternal and infant characteristics</b>				
Maternal age (yrs)	30.00 (6.37)	29.58 (6.70)	-0.42	0.437
Total prior pregnancies	5.27 (2.55)	4.73 (2.60)	-0.53	0.011
Prior miscarriage or abortion (%)	7.22	6.18	-1.04	0.600
<b>Baseline community characteristics</b>				
Distance to urban centre (km)	109.94 (43.78)	112.30 (43.28)	2.37	0.590
Health centre in community (%)	78.40	81.18	2.78	0.642
Female wages, formal employment (pesos per month)	141.27 (482.27)	155.90 (532.51)	14.63	0.666
Male wages, formal employment (pesos per month)	262.14 (1256.98)	258.21 (1118.93)	-3.94	0.939
<b>No. with data</b>	<b>180</b>	<b>712</b>		

Notes:

<sup>a</sup>Unless otherwise indicated.

<sup>b</sup>Includes land ownership, home ownership, internal water source, electricity, and ownership of a refrigerator, television and heater.

is significantly higher than that for non-beneficiaries (72.4%,  $P < 0.01$ ).

Figure 1 reports the adjusted mean quality scores overall and for each domain. For the adjusted quality scores overall, beneficiaries received 12.2% more procedures compared with non-beneficiaries ( $P < 0.01$ ). The results are consistent for each of the three domains. Beneficiaries received 20.1% more procedures for history-taking and diagnostics, 11.3% more for physical examination, and 8.8% more for prevention and case management (all  $P < 0.01$ ). It is notable that the quality scores for beneficiaries have much narrower confidence intervals compared with those for non-beneficiaries.

## Discussion, limitations and conclusions

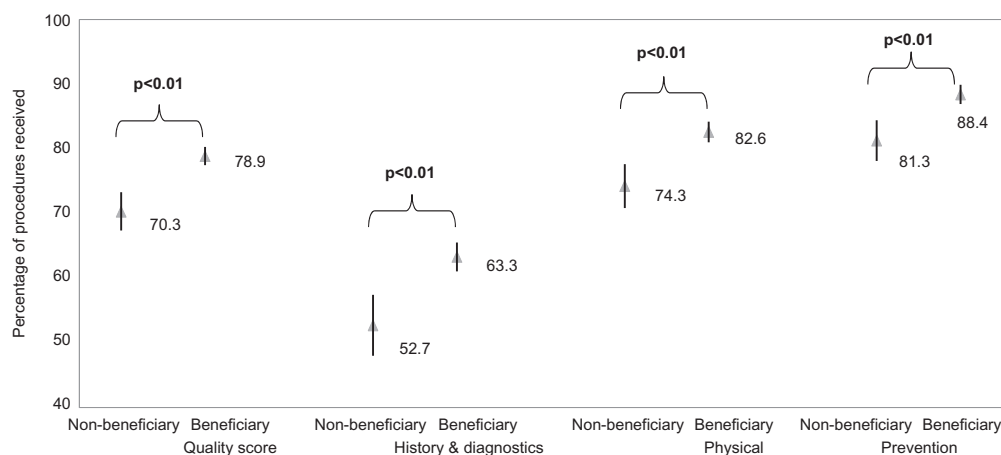
This study uses data from an evaluation of Mexico's conditional cash transfer programme to examine the programme's impact on quality of care. We find that beneficiaries received 12.2% additional prenatal procedures. There could be a number of different explanations for these findings. Beneficiaries could have received higher quality as a result of the programme's compliance requirements to obtain a certain number of visits or to obtain health care from the public sector. Alternatively, beneficiaries could have used the additional financial resources to purchase diagnostics; supply-side quality improvements could have occurred; or the programme could have increased the demand for quality care by beneficiaries. We examine each of these possible explanations in turn.

First, higher quality could have resulted from the programme's compliance requirements. As a programme conditionality, beneficiaries were required to obtain health care, and more prenatal visits could have resulted in more procedures received. However, our previous research found no significant differences between beneficiaries and non-beneficiaries for ever use of prenatal care, number of prenatal consultations, or the proportion of women obtaining the minimum number of visits set forth in the clinical guidelines (Barber and Gertler 2008a). This suggests that higher utilization could not explain the higher number of prenatal procedures received. Alternatively, higher quality could have resulted from the programme requirement to obtain services from the public sector. Our previous research found that quality in the Mexican public sector is significantly higher compared with private alternatives for the rural poor (Barber *et al.* 2007). Separately, we evaluated whether beneficiary women in this sample were more likely to use public services. We found, however, no significant differences in the use of public services between beneficiaries and non-beneficiaries. The programme compliance requirements to obtain more visits or care from the public sector, therefore, do not explain the higher quality received.

A second possible explanation is the financial resources to pay for more care. Although health care is free for the uninsured in Mexico, government facilities refer for diagnostics, which implies additional out-of-pocket costs. However, we find that beneficiaries received higher scores for all three quality domains. In addition to the programme's effect

**Table 2** Defining quality: the percentage of prenatal care procedures received by beneficiary status

	Non-beneficiary	Beneficiary	Average	Difference	P-value
<b>Panel A. Prenatal procedures and quality scores</b>					
<b>History-taking and diagnostics (mean)</b>	<b>54.72</b>	<b>62.82</b>	<b>61.18</b>	8.09	<b>&lt;0.01</b>
<b>Standard deviation (SD)</b>	<b>[32.98]</b>	<b>[32.10]</b>	<b>[32.42]</b>		
Asked about bleeding	71.11	75.84	74.89	4.73	0.21
Asked about discharge	71.67	77.11	76.01	5.44	0.16
Blood sample taken	41.11	49.02	47.42	7.91	0.10
Urine sample taken	35.00	49.30	46.41	14.30	<0.01
<b>Physical examination (mean)</b>	<b>76.25</b>	<b>82.13</b>	<b>80.94</b>	5.88	<b>&lt;0.01</b>
<b>Standard deviation (SD)</b>	<b>[28.00]</b>	<b>[21.69]</b>	<b>[23.20]</b>		
Blood pressure taken	85.00	94.10	92.26	9.10	<0.01
Weighed	92.22	95.08	94.51	2.86	0.15
Uterine height measured	82.78	88.34	87.22	5.56	0.06
Pelvic exam	45.00	50.98	49.78	5.98	0.16
<b>Prevention and case management</b>	<b>83.56</b>	<b>87.87</b>	<b>87.00</b>	4.31	<b>0.05</b>
<b>Standard deviation (SD)</b>	<b>[26.50]</b>	<b>[21.48]</b>	<b>[22.63]</b>		
Tetanus toxoid immunization	89.44	93.12	92.38	3.68	0.11
Iron supplements	80.56	85.81	84.75	5.25	0.11
Advised about lactation	90.00	91.01	90.81	1.01	0.67
Advised about family planning methods	85.56	88.34	87.78	2.78	0.31
Recorded appointments	72.22	81.04	79.26	8.82	0.01
<b>Summary quality scores</b>	<b>72.44</b>	<b>78.39</b>	<b>77.19</b>	5.96	<b>&lt;0.01</b>
<b>Standard deviation (SD)</b>	<b>[25.17]</b>	<b>[20.14]</b>	<b>[21.37]</b>		



**Figure 1** Adjusted mean quality received and 95% Confidence Intervals (C.I.) for non-beneficiary and beneficiary births

on history-taking and diagnostics, beneficiaries also received higher scores for the physical examination and for prevention—neither of which is related to patient out-of-pocket payments. This suggests that the ability to purchase more diagnostics could account for some of the difference, but does not fully explain the higher quality received by beneficiaries.

Third, increases in quality could have resulted from a supply-side response to the increase in service demand. There was some intention by the government to increase supplies and human resources in anticipation of higher utilization in programme areas (Adato *et al.* 2000a). However, to the authors' knowledge, no specific quality improvements were actually implemented. A survey of 317 clinics conducted 1 year after programme implementation reported shortages of medical and auxiliary personnel, equipment and drugs (Adato *et al.* 2000a). Separately, we investigated this possible explanation by generating a set of hypothetical beneficiaries. Hypothetical beneficiaries were women who lived in the treatment areas and gave birth after the start of the programme (April 1998), but were ineligible for the *Oportunidades* programme. Hypothetical non-beneficiaries were women who lived in the control areas and gave birth after November 2000, but were ineligible for *Oportunidades*. If supply-side improvements had occurred, the hypothetical beneficiaries would have also benefited. However, we found that hypothetical beneficiaries did not receive higher quality compared with hypothetical non-beneficiaries who delivered prior to programme initiation in the same communities (Barber and Gertler 2008b). This suggests that, consistent with anecdotal knowledge, supply-side changes in quality did not occur.

Eliminating these alternatives, we conclude that the increases in quality received among beneficiaries probably resulted from the programme's empowerment aim to increase women's capabilities in becoming informed and active health consumers. Such capabilities could have been strengthened through some combination of *pláticas* emphasizing the importance of health care, regular meetings that made explicit the health care requirements, social support, and financial resources.

This finding is consistent with qualitative research in which beneficiaries reported personal changes, including increased self-confidence, and freedom of movement and association (Adato *et al.* 2000a). Qualitative research reported that medical doctors providing care to beneficiaries describe positive attitudinal changes with regard to health care, prevention and self-care, and patient participation. One doctor commented that 'beneficiaries are the ones who request the most from us'; and a large proportion of health care providers reported that beneficiary patients are 'very demanding'. Together, this evidence suggests that *Oportunidades* empowered women to insist on better care by informing them of the content of care and by giving them skills to negotiate better quality from health care providers.

This study has several limitations. The measurement of quality is a contentious issue with little consensus on methods and analytical approaches. The quality scores are defined as the proportion of prenatal procedures received. The criteria were developed by the Mexican Population Council, who identified aspects of evidence-based care that were considered important in this setting, and correspond with the national clinical guidelines. Measurement error is reduced because maternal reports focus on receipt of concrete procedures rather than perceptions or satisfaction, which correlate poorly with objective quality measures (Speizer *et al.* 2000) and vary by prior health service use and expectations, socio-economic status, and coexisting medical conditions (Brook *et al.* 2000). Women may have given positive responses about services received if they perceived that future programme benefits were dependent on their responses. However, this would have applied to the study's non-beneficiary and beneficiary groups equally, because the sample was limited to women who received benefits during the life of the programme. To evaluate recall bias, we ran regressions predicting quality as explained by child year of birth for beneficiaries and non-beneficiaries. The year dummy variables were not significant predictors of quality; therefore, we do not find evidence that women with longer recall periods are systematically reporting any fewer procedures. The study is also limited to rural areas and initial years of programme

implementation. Anecdotal reports suggest that health service demand increased as the programme expanded, and this may have had a negative effect on quality (Nigenda and Gonzalez-Robledo 2005).

We do not examine in this study whether the differences in quality are clinically significant. However, there is good reason to believe that these procedures could have an impact on maternal and child health outcomes. Although anaemia, for example, results from different factors including nutritional deficiencies and infectious diseases, the provision of iron folate is considered beneficial. Iron supplements during pregnancy have been demonstrated effective in reducing maternal anaemia, and in increasing mean birth weight and reducing the incidence of low birth weight (Villar *et al.* 2003). In addition, wide variations in adherence to clinical guidelines and implementation of basic procedures have been documented for prenatal and curative care in Mexico (Bojalil *et al.* 1998; Barber 2006; Bautista-Arredondo *et al.* 2006). Programme beneficiaries are comprised of the poorest 20% of the population, characterized by high rates of modifiable risk factors that could plausibly be addressed by high quality health care. Moreover, two case-control studies in Mexico have reported relationships between adherence to prenatal and neonatal care guidelines and birth outcomes (Coria-Soto *et al.* 1996; Cruz-Anguiano *et al.* 2004). In future research, the relationships between the improvements in quality and better birth outcomes are investigated (Barber and Gertler 2008b).

In summary, a growing body of evidence suggests that inadequate health care quality is a major problem in low-income settings, and contributes to poor health outcomes. Interventions to address quality have focused primarily on in-service training; few programmes consider the role of households, consumers or patients in improving quality or performance. We conclude that the *Oportunidades* conditional cash transfer programme is associated with better quality of prenatal care for low-income, rural women in Mexico. This result is probably a manifestation of the programme's empowerment goal, by encouraging beneficiaries to be informed and active health care consumers. Our results contribute evidence about interventions that can improve quality, and draw attention to the role of households and consumers in promoting high quality care. These findings are also applicable to other large-scale incentive-based welfare programmes that employ conditional cash transfers and health utilization requirements.

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PJG and SLB jointly conceived the research topic, formulated the research design, analyzed the data, interpreted the results, and wrote the manuscript. Both authors have full access to all of the data in the study and take responsibility for the integrity

of the data and the accuracy of the data analysis, and decided to submit the manuscript for publication. Both authors declare that they have no competing or conflict of interest.

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