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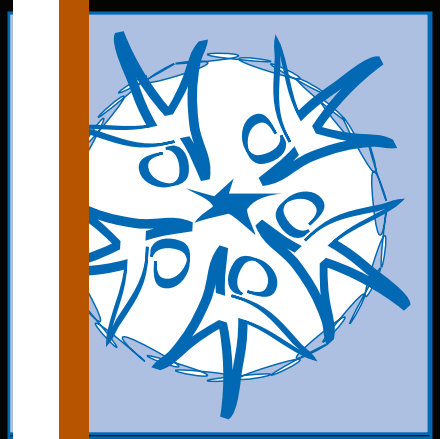

Can Conditional Cash Transfer Programs Play a Greater Role in Reducing Child Undernutrition?

Lucy Bassett

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Abstract

Conditional Cash Transfers programs (CCTs)—which grant cash to poor families provided they make specified investments in the human capital of their children—have been championed as an effective intervention for social protection. Some CCTs include requirements (called conditionalities) related to health and nutrition. Yet while there is evidence indicating that some CCTs have improved the nutritional status of beneficiary children, there has been little commentary on the potential for CCTs to make a greater contribution to improving nutritional status, nor on the programmatic and contextual issues affecting their ability to do so. This paper finds that where utilization of nutrition interventions is low, there is significant potential for CCTs to play a greater role in reducing undernutrition by encouraging groups at high risk of undernutrition to utilize effective nutrition services and by encouraging improved quality of these services. Several key design modifications—e.g. limiting CCT eligibility to the "window of opportunity" for nutrition impact, prioritizing nutrition-related conditionalities based on best practices in nutrition, increasing attention to supply-side investments for nutrition and health services, and improving coordination with other agencies and stakeholders—could allow CCTs to better contribute to eliminating child undernutrition in the developing world. At the same time, there is much to be learned about the effectiveness and cost-effectiveness of various design options, as well as their appropriateness in different country contexts.

Key words: conditional cash transfer, CCT, malnutrition, undernutrition, stunting, micronutrient deficiency, conditionality, program design, developing countries, nutrition intervention, nutrition policy.

JEL codes for "Can Conditional Cash Transfer Programs Play a Greater Role in Reducing Child Undernutrition?" by Lucy Bassett

I - Health, Education, and Welfare
I00 – General

I1 – Health
I10 - General
I18 - Government Policy; Regulation; Public Health

I3 - Welfare and Poverty
I30 - General
I31 - General Welfare
I38 - Government Policy; Provision and Effects of Welfare Programs

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1. Introduction

Undernutrition is a serious and pervasive problem, with long-term consequences for child development, and ultimately for adult productivity and national economic growth.[1] Despite the existence of practical and inexpensive nutrition interventions that have proven effective in diverse country contexts (Allen and Gillespie 2001; World Bank 2006a; Bhutta et al. 2008 and others), roughly 30 percent of children in the developing world remain malnourished, and progress in alleviating undernutrition, although impressive in some countries, continues to be slow overall (UNICEF 2006; World Bank 2006a). Indeed, only 24 percent of developing countries (34 of 143) are on track to meet the first Millennium Development Goal (MDG1) of halving the proportion of people suffering from hunger from 1990 to 2015[2] (World Bank 2006a). Additional advocacy and service delivery channels, as well as linkages between nutrition interventions and social protection initiatives may prove critical to achieving this goal. Cash transfer programs, both unconditional and conditional, have become increasingly popular and appear to be a promising vehicle for improving nutrition.

Conditional Cash Transfer programs (CCTs) provide cash payments to poor households that meet certain behavioral requirements, generally related to children's health care and education. The combination of cash and conditionality allows CCT programs to boost household consumption in the short-term while providing an incentive, and helping to offset the costs, for poor families to invest in long-term human capital development. By building healthier, stronger, and more productive future generations, CCTs aim to interrupt the intergenerational transfer of poverty. CCTs have become one of the most popular social protection programs in developing countries. They have been called an "innovative and increasingly popular channel for the delivery of social services" and one of the "best practices" in social protection in Latin America (Rawlings 2005a; Britto 2004).[3]

That CCTs promote synergies in human development through required use of education, health, and sometimes nutrition services gives them great potential to reduce both immediate and chronic poverty and, at the same time, to contribute significantly to improving nutritional outcomes. Still, despite some evidence of CCT impacts on nutritional status (reduced rates of child stunting and, in one case, anemia), some policy-makers believe that the full potential of CCTs to improve nutritional status has not been met (Grosh 2007). So far health and educational outcomes have received the lion's share of attention in CCT programs. To date, there has been little commentary on the potential

[1] Over-nutrition is also a growing problem among children and adults as developing countries become better off, adopt more sedentary lifestyles, and consume more processed and high-fat foods. While beyond this scope of this paper, it is conceivable that CCTs could also play a role in addressing over-nutrition, too.

[2] This target is assessed based on the prevalence of children under five who are underweight (UNICEF 2006).

[3] CCTs, however, are not without critics. For example, there is concern that conditions are dangerous policy tools and that they are paternalistic. The title of this paper: "Superfluous, Pernicious, Atrocious and Abominable? The Case Against Conditional Cash Transfers" is a case in point. Lomelí 2008 also outlines a series of critiques.

for CCTs to make a greater contribution to improving nutritional status, nor on the programmatic and contextual issues affecting their ability to do so.

Some CCTs include programmatic elements that address child nutrition in the form of conditionalities (also called co-responsibilities), which require beneficiaries to use services or participate in activities that contribute to improved health and nutritional status. For example, some CCTs attempt to change beneficiary health and nutrition behaviors via group nutrition education workshops and child growth monitoring and promotion (sometimes accompanied by standardized or individualized counseling) and some attempt to boost the micronutrient status of beneficiaries via micronutrient or nutritional supplementation (see Box 1.1).

Box 1.1. Nutrition Conditionalities Employed in CCTs

- Nutrition education workshops: Group learning sessions for beneficiaries (usually mothers) providing information about health, nutrition, and, sometimes, other themes (e.g. reproductive health, hygiene, community participation).

- Growth monitoring and promotion (GMP): Periodic weighing of young children to determine adequacy of child growth. Standardized counseling for all children or individualized counseling based on the results of child growth is sometimes provided to help mothers understand and improve their child's growth.

- Micronutrient supplementation: The provision of essential micronutrients (vitamins and minerals) lacking in the diet that can contribute to improved health outcomes and nutritional status. Micronutrient supplements are usually provided to young children and pregnant and lactating women.

- Nutritional supplementation: The provision of food to supply vitamins, minerals, protein, and energy that is missing or not consumed in sufficient quantity in the diet. These are also generally provided to young children and pregnant and lactating women. (To date, only Mexico provides this as part of a CCT.)

There is considerable evidence on the linkages between incentives and behavior change, both from CCTs and other incentive-based intervention programs (Medlin and de Walque 2008). However, much of this impact has been noted for "simple" behavioral responses or those involving a single finite action (such as participating in required health clinic visits) rather than "complex" behavioral change (Kane et al. 2004 cited in Medlin and de Walque 2008). This paper recognizes that many critical behavior changes that lead to sustainable improvements in nutritional status—such as exclusive breastfeeding, appropriate pregnancy rest, or hand-washing after defecation—are intimate, complex, and difficult to change, and therefore CCTs are not set up to address these behaviors directly. Indeed, it is impossible to provide monetary incentives contingent on such actions because it is impossible to monitor them.

Still, the paper contends that under the right conditions, CCTs may still be able to play a pivotal role in improving nutritional status by applying conditionalities to spur participation by groups at high risk of undernutrition in activities and services that contribute to better nutritional outcomes, and by improving the accessibility and quality

of these services where supply is low and/or quality is poor. The underlying assumption in this paper is that CCTs can complement, rather than replace, other nutrition interventions and should be considered one of a menu of options that can address undernutrition. When CCTs are used for nutrition objectives, they should be well coordinated with the existing priorities guiding a country's nutrition policy.

The paper attempts to answer the following questions:

1. How can CCTs be better designed, coordinated, and leveraged to increase their impact on child undernutrition (e.g. via fostering behaviors that contribute to improved nutritional status and/or enhancing the supply of nutrition-related services and activities)?
2. How can best practices from nutrition interventions be applied to ensure maximum CCT impact on child undernutrition?
3. What are the key issues affecting the potential for CCTs to become an effective tool in nutrition policy and programming?

The nutritional outcomes of interest in this paper are child stunting and anemia. Stunting is the best anthropometric measure of the cumulative effect of chronic nutritional deprivation, and therefore a good indicator of long-term wellbeing. Iron-deficiency anemia (IDA) is the most common nutrient deficiency worldwide and has important implications for cognitive development and work productivity.[4]

The paper is organized as follows: Section 2 defines undernutrition and discusses the magnitude of the problem, implications for long-term human capital development, and how and when to intervene. Section 3 describes CCT programs, including conceptual foundations for applying conditionalities, the position of CCTs in the current development paradigm, and reasons for their widespread popularity. Section 4 develops a rationale for using CCTs as one of a set of tools to improve nutritional status. Section 5 compares the design, implementation, and impacts of CCTs in five Latin American countries (Brazil, Colombia, Honduras, Nicaragua, and Mexico). Section 6 explores how best practices in nutrition could inform CCT design and Section 7 introduces redesigned and emerging CCTs focusing on nutrition. Section 8 examines some of the key issues surrounding the use of CCTs for nutrition policy, including program eligibility and benefit duration, the use of conditionalities, supply-side investments, the cost and cost-effectiveness of these efforts, and institutional roles and coordination. Section 9 concludes with recommendations and suggestions for further research.

2. Understanding Undernutrition

There are several manifestations of child undernutrition including stunting (low height for age), underweight (low weight for age), wasting (low weight for height), and

[4] According to the WHO 40 percent of the world's population suffers from IDA, with women and children experiencing the highest prevalence because iron requirements are higher for pregnant women, adolescent girls, and infants and young children (Allen and Gillespie 2001).

deficiencies in key vitamins and minerals (called micronutrients).[5] Stunting (also called chronic malnutrition), reflects the failure to reach linear skeletal growth potential and is considered the best indicator of the long-term, cumulative effects of undernutrition among young children. Wasting (thinness) reflects recent or current weight loss, often associated with disease and/or acute food shortage or emergency conditions, so is an indicator of transitory nutritional deprivation. Underweight captures the effects of both stunting and wasting, reflecting both chronic and transitory nutritional deprivation. This composite effect makes this indictor difficult to interpret (World Bank 2006a). Because weight-based measures are sensitive to recent illness and child feeding and caring practices, as well as seasonal variation, stunting is considered the most reliable indicator for identifying areas of highest need (WHO 1995 cited in Morris 2001). Because height and weight vary by age and sex, each measure of undernutrition is calculated in relation to international references for well-nourished children of the same age and sex.

Maternal nutritional status is critical to infant survival and child development. Short maternal stature (less than 145 cm) and low body-mass index (less than 18.5 kg/m^2) have adverse effects on pregnancy outcomes, which, in turn, affect child growth and development. While energy and nutrient needs increase during pregnancy and lactation, mothers in developing countries often consume *less* food during this period (sometimes due to concerns about labor complications resulting from a larger baby), which can lead to insufficient pregnancy weight gain and micronutrient deficiencies (Levinson and Bassett 2007).

Deficiencies in key vitamins and minerals—particularly, iron, iodine, and vitamin A, but also zinc, vitamins B6, B12, folate, calcium, and riboflavin—are associated with adverse health outcomes including heightened disease prevalence and severity, poor cognitive function, and increased risk of mortality. Iron deficiency is associated with poor pregnancy outcomes (e.g. low birthweight babies and increased risk of maternal mortality), impaired cognitive development, poor school performance, and reduced work productivity; severe iron-deficiency anemia increases the risk of mortality among women of childbearing age. Iodine deficiency disorders can cause irreversible mental retardation (cretinism), goiter, reproductive failure, and increased child mortality. Vitamin A deficiency compromises immunity and causes eye problems (including corneal scarring and blindness) and increased risk of childhood disease and death. Zinc deficiency hampers neurodevelopment as well as physical and reproductive growth (Levinson and Bassett 2007).

2.1 Scope of the Problem

A 2006 UNICEF report estimated that in developing countries approximately one-fourth of all children under five (or about 146 million children) are underweight and 30 percent are stunted. But the poorest countries, and the poorest within each country, suffer disproportionately. According to data from 11 Demographic and Health Surveys for countries with stunting rates above 20 percent, stunting is roughly twice as common among poor children compared to wealthier children. In the least developed countries, 36

[5] Stunting, underweight, and wasting are defined as height-for-age, weight-for-age, and weight-for-height, respectively, of two or more z-scores below the international reference.

percent of children under five are underweight and 42 percent stunted, compared to 27 percent underweight and 31 percent stunted in developing countries. Global estimates of wasting are estimated to be around 10 percent (or 55 million children), with rates on the order of 16 percent (or 19 million children) in South-central Asia. Africa is home to the most countries with high stunting prevalence, although Asia accounts for the greatest number of stunted children. India alone, with 51 percent (or 61 million) children under five stunted, accounts for 34 percent of the global total (UNICEF 2006; Black et al. 2008).[6]

Recent progress in reducing rates of child stunting and underweight has been uneven. The percentage of underweight children in China halved between 1990 and 2002 (from 19 to 8 percent), whereas in Africa the number of malnourished children has actually *increased* since 1990, with 13 countries experiencing deteriorating nutrition status, in part due to the mutually reinforcing relationship between HIV and undernutrition (UNICEF 2006; World Bank 2006a).

Despite some strides in eliminating micronutrient deficiencies since the mid-1980s, these, too, remain widespread. Today, two billion people suffer from clinical or sub-clinical effects of micronutrient deficiencies. More than one-third of the world's population suffers from iodine deficiency (35 percent) and one-fifth suffers from zinc deficiency. According to nationally representative surveys spanning 1993-2005, 42 percent of pregnant women and 47 percent of preschool children suffer from anemia, 60 percent of which is attributed to iron deficiency in non-malarial areas and 50 percent in malarial areas (Black et al. 2008). An estimated 25 percent of preschool-aged children and 18 percent of women are vitamin A-deficient (Borwankar et al. 2007). These figures are cause for concern because the effects of undernutrition can be devastating and irreversible and affect generations to come.

2.2 Long-Term Consequences of Undernutrition

There is extensive evidence of the long-term consequences of maternal and early childhood undernutrition. Within developing countries, child and maternal undernutrition is closely associated with greater risk of infant and child morbidity and mortality. Malnourished mothers experience higher rates of morbidity and mortality and face greater risks of poor pregnancy outcomes (Figueroa and Rodriguez-Garcia 2002). It is well documented that children born with low birthweight, due to maternal undernutrition, or who are nutritionally stunted in the first two years of life, face a higher risk of developing obesity (essentially being “programmed” to conserve fat and thus oxidizing fat poorly) and are more likely to suffer from chronic non-communicable diseases in adulthood (Forsdal 1977; Barker 1992 and 1994; Branca and Ferrari 2002).

[6] In most countries maternal undernutrition (defined as body-mass index (BMI) of less than 18.5) ranges from 10 to 19 percent, although in sub-Saharan Africa, south-central and southeastern Asia, and Yemen exhibit rates of more than 20 percent and India, Bangladesh, and Eritrea have rates of roughly 40 percent (Black et al. 2008).

A vicious negative feedback loop connects undernutrition and poor health outcomes. Undernutrition weakens the immune system, making children more susceptible to infection and disease (Mason et al. 2003; Behrman et al. 2004). Disease, in turn, is associated with a greater risk of undernutrition, leading to poor nutrient absorption, altered metabolism, and lack of appetite, which translates to a higher probability of inadequate nutritional intake. In a malnourished state, children suffer from impaired immunity, which then increases their likelihood of infection (Pelletier and Frongillo 2003).

Micronutrient deficiencies also contribute to poor health. Iodine deficiency disorders affect the metabolic and developmental systems in the body and can lead to irreversible mental retardation, reproductive failure, and increased child mortality (ICCIDD). Iron-deficiency anemia increases maternal and infant mortality, raises the likelihood of low birthweight, impairs cognitive development, and reduces work productivity (FANTA 2006). Weakening immune mechanisms, Vitamin A deficiency causes increased susceptibility to infection, especially respiratory infection, a range of eye problems (including blindness), and increased risk of childhood morbidity and mortality (West 2003). Zinc deficiency adversely affects physical growth and neurodevelopment and is associated with weak immune capacity; increased risk of diarrhea, pneumonia, and malaria; and increased severity of diarrhea (Bhatnagar and Natchu 2004; Sanghvi et al. 2007; Black et al. 2008).

Overall, undernutrition is a factor in more than fifty percent of all deaths among children under-five in developing countries (Pelletier and Frongillo 2003). And the vast majority (83 percent) of these deaths is associated with mild or moderate, rather than severe, undernutrition (Behrman 2000, 7).[7] Eliminating undernutrition can reduce the global burden of disease and increase child survival, while reducing health care costs at both the household and national level (Mason et al 2003).

Undernutrition is also associated with poor educational outcomes and reduced adult earnings. Numerous studies show that malnourished children tend to enter school later, repeat grades more often, and have higher dropout rates, resulting in fewer completed years of schooling compared to healthy children (Behrman et al. 2004; Grantham-McGregor et al. 2007; Pollitt et al. 1995; Martorell 1994; Alderman, Hoddinott and Kinsey 2003; Alderman et al. 2001; Alderman et al. 2003). Short height among adults (a result of childhood stunting), has been associated with reduced adult earnings in 55 countries (Grantham-McGregor et al. 2007). According to a study in Brazil, a one percent increase in adult height was found to result in a 2.4 percent increase in adult male earnings (Thomas and Strauss 1997 cited in Behrman 2000, 18). Eliminating anemia would contribute to a 5 to 17 percent increase in lifetime earnings, a finding that, even at the low end, represents a significant improvement for poor families (Horton and Ross 2003 cited in World Bank 2006a).

[7] A new estimate from the 2008 *Lancet* series on maternal and child undernutrition posits that nutrition-related factors are responsible for approximately 35 percent of child deaths and 11 percent of the global disease burden (Black et al. 2008). However, there is some disagreement with the methods used to determine this figure (Habicht 2008).

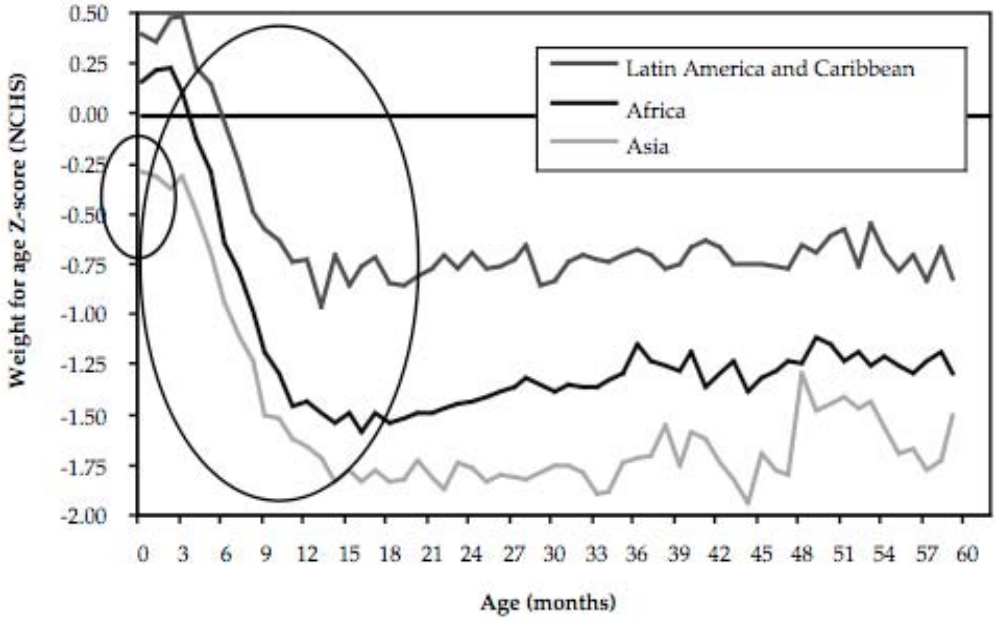
Unless efforts are made to interrupt these negative feedback loops, malnourished children will continue to grow up to be shorter, less healthy, less educated, and poorer than healthy children and will be more likely to have children who are malnourished themselves. This cycle perpetuates an intergenerational transfer of poor nutrition and health, low education, and poverty (World Bank 2006a). Fortunately, interventions to address undernutrition *can* interrupt this cycle. Indeed, according to a cross-country review of successful nutrition programs, these interventions reduced the prevalence of child malnutrition (defined as underweight) by one to two percentage points per year, a rate two to four times higher than the average trend calculated in the absence of such programs (World Bank 2006a).

2.3 Curbing Undernutrition

Determining how best to tackle undernutrition involves deciding what intervention mechanism(s) to employ and when to intervene. Nutritional consequences take their greatest toll from pregnancy through age two, the period during which children's growth rates and, therefore, nutritional requirements, are highest. During this time, children are dependent on others and unable to make their needs known, so are therefore more vulnerable to poor feeding and caring practices. Additionally, with weak immune systems and living in conditions of poor hygiene and sanitation, young children are highly susceptible to infection, which can exacerbate undernutrition. Because the damage to physical growth and cognitive development that accrues during pregnancy and these early years is largely irreversible, and because interventions after this critical period have little effect, early actions taken during the "window of opportunity" have the greatest potential for impact (World Bank 2006a).

Figure 2.2 below charts child nutritional status (underweight is illustrated, but the timing and pattern of decline is similar for stunting) against age (Shrimpton et al. 2001). The large oval demonstrates a precipitous drop between 3 and 18 months of age, after which weight (and also height) remains below the international reference for healthy children.

Figure 2.2: Window of Opportunity for Nutrition Interventions



Source: Shrimpton et al. 2001 as cited in World Bank 2006a.

There is considerable consensus about the optimum timing of nutrition interventions: most researchers agree that covering the period from pregnancy through the first two years of life is optimal, although some prefer to target child nutrition interventions even more narrowly (e.g. children aged 6-11 months, when nutritional decline is most severe) (Shrimpton et al. 2001; World Bank 2006a). Because maternal nutritional status plays an important role child growth and development, there is also a movement to emphasize interventions during pregnancy (called the "minus-nine" period of the "window of opportunity") (Shekar 2006).

As for which are the most effective interventions, there is also general agreement about what works, but some debate about how to prioritize these actions, for example, in terms of the balance between preventive or curative approaches.[8] One attempt at prioritization comes from the Basic Support for Institutionalizing Child Survival (BASICS II) project, under the U.S. Agency for International Development (USAID), which proposes six Essential Nutrition Actions (ENA) (listed in Box 2.2) (Archaya et al. 2004).[9]

[8] See Enserink 2008 for an example of the fierce debate about preventive vs. curative approaches.

[9] Other efforts to summarize the best interventions include "What Works? A Review of the Efficacy and Effectiveness of Nutrition Interventions" (Allen and Gillespie 2001) and "What Works? Interventions for maternal and child undernutrition and survival" (Bhutta et al. 2008).

Box 2.2 Essential Nutrition Actions

1. Exclusive breastfeeding for six months
2. Adequate complementary feeding from about 6–24 months with continued breastfeeding for at least two years
3. Appropriate nutritional care of sick and severely malnourished children
4. Adequate intake of vitamin A for women and children
5. Adequate intake of iron for women and children
6. Adequate intake of iodine by all members of the household

Source: Archaya et al. 2004

The recommendations described in comparative studies and reviews and in these six essential actions highlight two complementary types of interventions: those that seek to change beneficiary behaviors via communication and education, and those that provide material resources and services to improve nutrition. Behavior change communication (BCC) for nutrition is a form of strategic communication aimed at promoting specific changes in behaviors that lead to good nutrition and health outcomes (e.g. exclusive breastfeeding, appropriate complementary feeding, appropriate caring and hygiene practices, compliance with supplementation regimens, dietary diversity, and appropriate use of available services).[10] Material resources to improve nutrition can include micronutrient or nutritional supplements, oral rehydration therapy (ORT) for diarrhea treatment, or soap to improve hygiene. Services can include health check-ups, child growth monitoring and promotion sessions,[11] and prenatal care, among others. These types of interventions are complementary in that behavior change is often required to ensure the successful use of material resources and services (for example, if mothers learn how to prepare and administer micronutrient supplements properly, the impact of the supplement will be greater) and material resources and services are sometimes necessary and helpful to facilitate critical behavioral changes (especially those related to hygiene and illness treatment). Each of these interventions can be tailored to a broad range of contexts based on the type and severity of undernutrition and the institutional, human, physical, and financial resources available.

[10] BCC relies on community input throughout the program development and implementation process, from identifying problems and determining appropriate messages to designing and testing communication materials, to monitoring and adapting program strategies to better overcome obstacles to adoption of new practices (Flavin and Griffiths 1999). Successful nutrition BCC programs not only emphasize the benefits of specific new practices, but also help people overcome the practical, social, and cultural constraints that might limit the adoption of these practices among specific target groups (Allen and Gillespie 2001).

[11] Growth monitoring involves the regular weighing and charting of young children's growth in order to catch growth faltering (an early sign of undernutrition). Deviations from expected growth trends indicate the onset of undernutrition or ill health, which may otherwise remain invisible except in severe cases, and thereby spur parents to address the problem before it becomes serious (UNICEF 2007). Beyond monitoring children's growth, some programs provide counseling on ways to improve child growth and overall health. Growth monitoring, and increasingly, community-based growth promotion, is often used as a conditionality for CCTs.

Within these two approaches, recommended nutrition interventions include:

- Micronutrient interventions (fortification and supplementation)
- Breastfeeding promotion
- Strategies to improve complementary feeding (feeding during the transition from breastfeeding to the consumption of regular foods)
- Education and counseling on maternal, child, and family nutrition
- Reduction of the disease burden (e.g. via hygiene interventions and hand-washing promotion)
- Food supplements[12]

According to an estimate by Bhutta et al. (2008), taken together, universal coverage of all nutrition-related interventions could reduce stunting prevalence by up to 36 percent and reduce deaths by 25 percent among children under two (Bhutta et al. 2008).[13] (Section 7 revisits some of the best practices associated with these nutrition interventions.)

3. Conditional Cash Transfer Programs

Among efforts to reduce poverty and promote human capital investments more generally, momentum has been growing around the use of cash transfers, which can help overcome the resource constraints to behavioral change. In the past, expanding the supply—both availability and quality—of services by providing health clinics, schools, and other infrastructure, failed to sufficiently increase service utilization (Rawlings 2005a). This could be because even when service costs are kept low or free, supply-side interventions tend to be ineffective in changing patterns of use because resource constraints facing poor families preclude them from paying the private costs associated with using services (e.g. transportation and opportunity costs of time) (Maluccio and Flores 2005).

3.1 Unconditional vs. Conditional Cash Transfers

The idea of using cash transfers to boost demand for services is rooted in traditional economic theory: the assumption that individuals make rational decisions to maximize their own wellbeing taking into consideration benefits and costs associated with each decision. Decisions are made when perceived benefits outweigh perceived costs. When resource-constrained households receive cash, their cost-benefit considerations change, which, in turn, affects their decision-making calculus: for example, a cash transfer could

[12] One of the best known examples of successful nutritional supplementation for children is the Institute of Nutrition of Central America and Panama (INCAP) longitudinal study in which Guatemalan children in four villages were randomly assigned to one of two types of food supplements—a high-energy, high-protein supplement (called *atole*) and a low-energy, low-protein supplement (called *fresco*), both fortified with vitamins and minerals—and tracked through adulthood. Results of the study indicate that children exposed to *atole* during gestation and the first two years of life, compared to those exposed to *fresco*, grew to be taller and have more fat-free mass, greater work capacity, and enhanced intellectual potential as teenagers and young adults (Martorell 1995; Hass et al. 1995; Rivera et al. 1995).

[13] These estimates are based on models of the survival and linear growth status of the annual birth cohort of children from birth until 3 years of age in 36 countries with 90% of the global burden of stunted children (Bhutta et al. 2008).

reduce the opportunity cost of sending children to school, making the benefits of this decision outweigh the costs.

According to the book, *Conditional Cash Transfers for Attaching Present and Future Poverty*, unconditional cash transfers (UCTs)—cash payments with no strings attached—should be the "theoretical default position" for cash transfers, assuming that beneficiaries are informed and rational actors, governments are benevolent, and markets are well-functioning. In reality, however, these three assumptions often do not hold true. First, if individuals or households undervalue a good or service, do not realize its potent effect in the long run, or are not willing to take risks associated with using the good or service, a family's privately chosen level of investment in human capital may be too low, compared to what is optimal. For example, families may pull children out of school before they gain important skills that would help them earn higher wages in the future. Second, government policy decisions are often determined by voting, lobbying, and bargaining, and therefore may not be made for the good of the people, especially the poor. Indeed, malnutrition is often concentrated among low-income populations with little political power. And third, market failures (e.g. positive externalities associated with education, hygiene, and health) imply that even privately optimal investment in human capital at the household level may not lead to socially optimal levels of investment for the population at large (World Bank 2008a). For instance, households that adopt better hygiene practices become less likely to carry diseases, conferring benefits not only to those particular households, but also to other households in the community that have not adopted better practices. Attaching conditionalities to cash transfers can help overcome these three types of problems.

Conditional cash transfers (CCTs) address the problem of underinvestment in human capital not only by compensating individuals in the short-term for the real costs (e.g. transportation, lost time, and the lost labor contribution of children now in school) of investing in health, nutrition, and education, but also by adding requirements for households to use services that have long-term payoff in these areas (Medlin and de Walque 2008). The behavioral conditions of CCTs, in effect, transform cash transfers into human capital subsidies thereby stimulating the demand for services (Maluccio and Flores 2005). Another way to think about this is that conditions internalize positive externalities associated with improved education and health and "create incentives for individuals to adjust their behavior toward matching the social optimum" (deJanvry and Sadoulet 2004).

CCTs can be preferable to UCTs for political economy reasons as well. Because they include behavioral requirements for beneficiaries, CCTs tend to be acceptable to elites who see such programs as a way of helping the "deserving poor," who agree to take "co-responsibility" for improving their lives, rather than providing free hand-outs. Growing urban violence in Latin America, which is often associated with poverty and inequality, may be another reason these programs are widely supported there; keeping kids in school is thought to make them less likely to resort to crime (Britto 2005).

Still, there are some significant disadvantages to making cash transfers conditional. There is a risk that the neediest household may not be able to participate if compliance is too costly (e.g. transportation costs too high, schools and clinics too far away, or opportunities costs of labor too great). And, if the quality of services is poor or there is no access to higher-level services, households that comply with program conditionalities may end up being worse off. For example, a family might be better off keeping children at home and teaching them important agricultural or trade skills, rather sending them to poor quality schools in exchange for a small income boost in the short run (World Bank 2008a). Or a beneficiary who attends required health check-ups and learns she has a serious health condition requiring inaccessible higher-level care may be no better off having complied with conditionalities (Regalia 2006).

What's more, applying conditionalities can be a complex, cumbersome, and expensive process. According to a comparative analysis of cost structures across three CCTs—Mexico (*Progresa*), Honduras (PRAF II), and Nicaragua (RPS pilot)—verifying compliance ranged from 2 to 24 percent of total administrative costs (excluding transfers) (Caldés et al. 2006). Verifying compliance, especially in countries with weak administrative capacity and institutional structures, can be particularly costly and overburden limited resources (Handa and Davis 2006; Adato and Bassett 2008).

Altogether, to summarize the recommendations made in *Conditional Cash Transfers for Attaching Present and Future Poverty*, attaching conditions can be appropriate under the following circumstances: "if private investment in children's human capital is thought to be too low" and "if political economy reasons mean that there is little support for redistribution, unless it is seen to be conditioned on 'good behavior' by the 'deserving poor.'" But, there may be good arguments against conditioning if the same results can be achieved using other approaches, such as communications strategies or moral suasion (World Bank 2008a). (See further discussion of conditionalities with respect to nutrition in section 8.2.)

3.2 A Brief History of CCTs

The first CCTs originated in Mexico and Brazil in the late 1990s as 'home-grown' initiatives that pioneered the notion of a demand-side intervention that paired an income transfer with required behaviors for recipients. Both later grew into large national-scale programs known in Mexico as *Progresa* (renamed *Oportunidades* in 2001) and in Brazil as *Bolsa Escola* (which merged with other programs to become *Bolsa Familia* in 2003). Both *Progresa* and *Bolsa Escola* were initially designed and financed without the help of development banks and international funding was only introduced during subsequent expansion of both programs (Handa and Davis 2006; Britto 2004). Since then, there has been overwhelming support from the World Bank and the Inter-American Development Bank (IDB) for CCTs (Handa and Davis 2006).

These early programs have become the largest and best-known CCTs and now function as central elements of their countries' social protection and poverty reduction strategies. In 2007, *Oportunidades* reached close to 5 million Mexicans (about 25% of the population) and *Bolsa Familia*, reached 11.1 million Brazilian families, or more than 46

million people, representing about 25% of the population (Rawlings 2005b; Lindert et al. 2007) Worldwide, CCTs vary widely by scale of operation and role in the government's social protection strategy (Rawlings 2005b).

Because they require complementary supply-side inputs (usually schools and health centers), CCTs have mainly been implemented in middle-income countries with existing administrative capacity and available health and education services. However, interest in CCTs is growing throughout the developing world. After initial popularity across Latin America, CCTs have emerged in Africa, Asia, and the Middle East and have begun to take on new forms of conditionalities in response to the specific needs of poor people in each country.[14]

The evolution of CCTs occurred in several phases. The first generation of programs, which began in Latin America in the 1990s, typically included both education and health conditions. These programs have continued and are still the most common form of CCT. The second generation of CCTs, emerging in South and East Asia, has focused almost exclusively on increasing access to schooling for girls. These CCTs generally take the form of a scholarship programs contingent upon school attendance, but having no health conditionalities. Very recently, a third generation of CCTs has expanded to cover international emergency settings and domestic urban development programs (Kalanda and Magwire 2006. For example, in 2006 Mayor Bloomberg proposed a CCT as part of his new anti-poverty program for New York City (Dugger 2004). Other states (e.g. Alabama, Arkansas, Connecticut, Kentucky, Virginia, and the District of Columbia) are experimenting with CCTs for school outcomes (Haynes and Birnbaum 2008).

Currently at least thirty-three countries have in place some type of CCT (and sometimes more than one) and a handful of other countries have conducted feasibility studies (e.g. Haiti) or have a CCT in the planning stage (World Bank 2008a; Cohen et al. 2007). Because CCTs are replicating so quickly, it is difficult to maintain an up-to-date list of all programs. Table 3.2 presents a list of existing programs based on information available at the time this paper was written.

[14] Mexico provides larger transfers to girls in secondary school to encourage girls' participation. Nicaragua uses a "teacher bonus" to boost education supply and quality. Jamaica targets the elderly as well as children and mothers with different conditionalities for each. Some programs also exempt certain beneficiaries who cannot meet conditionalities due to illness or disability or lack of available services (Adato and Bassett 2008).

Table 3.2 CCT programs worldwide

Existing CCTs			Pilot CCTs
• Argentina • Bangladesh • Bolivia • Brazil • Cambodia • Chile • Colombia • Dominican Republic	• Ecuador • El Salvador • Honduras • Indonesia • Jamaica • Kenya* • Mexico • Nicaragua • Pakistan	• Panama • Paraguay • Peru • Philippines • Turkey • United States (NYC) • Yemen	• Burkina Faso* • Guatemala • India • Indonesia • Morocco* • Nigeria • Sierra Leone • Tanzania • Uganda*

* Programs testing a mix of conditional and unconditional transfers
Sources: Adato and Bassett 2008; American India Foundation 2008; Arulpragasam 2008; BBC News 2007; Kalanda and Magwire 2006; MGLSD 2007; Salazar, personal communication 2008; Soares 2008; World Bank 2008a.

3.3 The Popularity of CCTs

Since the 1990s when Brazil and Mexico launched the first CCTs, such programs have rapidly gained renown. Nancy Birdsall, President of the Center for Global Development, said of CCTs: "I think these programs are as close as you can come to a magic bullet in development" (Dugger 2004). Many governments and development practitioners have hailed CCTs as a cutting-edge development tool whose appeal rests, in large part, on the ability to alleviate poverty in the short run and to break the cycle of poverty through improvements in human capital in the long run.

CCTs fit nicely into the mainstream discourse on poverty reduction by addressing key themes such as targeting, participation, multisectoralism, and women's empowerment (Britto 2004). Evidence has shown that CCTs are generally well targeted to the poorest households (with CCT benefits to the poorest quintile 3 to 30 times as large as those to the richest quintile) (Schady 2006a). The participatory nature of CCTs varies from country to country, but many programs make use of a community committee, which collaborates with central and municipal planning groups.[15] Often there is also a community representative (usually a local female CCT recipient), who communicates with other beneficiary families about the arrival of transfers, explains and clarifies co-responsibilities (conditionalities), and encourages compliance. By participating in program activities and playing an active role as agents of their own development, it is hoped that beneficiaries will become empowered and continue to help their children and their families, even after program benefits end (Oportunidades 2003). Because they tackle several interrelated development problems in a single policy, capitalizing on the synergies among education, health, nutrition, and empowerment of women, CCTs are also lauded for having a multisectoral development approach.

Many CCTs have been designed with gender impacts in mind. Generally, women are designated as the direct recipients of cash, based on evidence that providing money to women leads to greater impacts on the wellbeing of children (Haddad et al. 1997 and

[15] Colombia and Brazil have the most decentralized CCT organizational structures.

Hoddinott and Haddad 1995, among others).[16] This design component may also contribute to empowering women by giving them increased access to resources and, in some cases, a greater role in household decision-making (Handa et al. 2001; Schady and Rosero 2007; Adato et al. 2000; Adato and Roopnarnaine 2004).[17]

Finally, the fact that CCTs have been carefully evaluated and have demonstrated success in achieving many of their objectives has been instrumental in sustaining support for existing CCTs as well as stimulating their replication elsewhere. Since their inception, CCT programs have been accompanied by systematic efforts to evaluate impacts on household behaviors (e.g. school enrollment and attendance, use of preventive healthcare services, and food consumption) and health and nutrition outcomes resulting from these behaviors (e.g. illness, stunting, and anemia prevalence) (Rawlings 2005a).

CCT impacts vary by the specifics of program design, such as targeting effectiveness, size of the transfer, quality of services (e.g. teachers and health staff), enforcement of program conditionalities, and offsetting adjustments (e.g. crowding out of labor and private transfers), as well as by the degree to which transfers are productively invested. Overall, the evidence indicates a clear trend in increased service utilization (i.e. school enrollment and healthcare use), but mixed impacts on final outcomes, such as test scores, illness prevalence, and nutritional status. Appendix 1 presents a table with evidence of the outcomes and impacts of CCTs in Brazil, Colombia, Honduras, Mexico, and Nicaragua and Appendix 2 provides information on each evaluation.

4. Rationale for a Closer Link between CCTs and Nutrition

There are two ways of thinking about why improving nutrition is a sensible and feasible objective for CCT programs. First, CCTs and nutrition interventions share common overarching development objectives: to reduce poverty and improve the welfare of the poorest, most marginalized members of society. The primary objectives of CCTs are to reduce consumption poverty and to generate long-term wellbeing through investments in child human capital; nutrition interventions also promote long-term wellbeing, particularly children's cognitive, physical, and economic potential, via improved growth and development. Improved nutritional status can strengthen the complementary interactions that CCTs promote among human capital investments in education and health.

Second, operationally, the very structure of CCT programs provides some natural entry points for improving nutrition. CCTs target poor children, who are often most at risk of experiencing undernutrition. The experience of poverty and malnutrition at this time in the lifecycle can have cumulative, long-term consequences. Also, young children benefit most from the holistic investments in human capital that CCTs provide (Farrington and

[16] Evaluations underway in Burkina Faso, Morocco, and Yemen will compare the impact of delivering cash to men/fathers versus women/mothers (World Bank 2008a).

[17] In Mexico, factors like the woman's level of education, work experience prior to marriage, and ability to speak Spanish were the most consistent determinants of intrahousehold decision-making patterns (Adato et al. 2000).

Slater 2006). Health and nutrition transfers generally focus on children under five, covering the time of life—the first two years—when nutritional deficits take their highest toll.

CCTs also transfer cash directly to mothers, who are most likely to use resources for increased expenditure on food and other basic household needs, leading to better nutrient consumption for their children. Studies have shown that a larger share of resources given to mothers is directed toward child health and nutrition, compared to resources given to fathers (Hoddinott 2008; Haddad and Hoddinott 1994; Hoddinott and Haddad 1995).

The cash transfer itself addresses one of the fundamental causes of undernutrition, the lack of household purchasing power. Increased income can contribute to improved nutritional status (e.g. through increased quantity and quality of food consumed); however, income gains alone are not sufficient to eliminate undernutrition without complementary interventions that address other important determinants (Alderman et al. 2005). Indeed, notable reductions in undernutrition are unlikely without addressing dietary quality and key behaviors such as young child feeding practices, pregnancy behaviors, and sanitation practices.

One concern among those working in the area of nutrition is the fact that demand for nutrition interventions is often low due to the limited physical visibility of many nutritional deficiencies (known as "hidden hunger"). Indeed, in some communities where the majority of children are short for their age, community members *expect* their children to be short and therefore do not recognize stunting as a problem (World Bank 2006b; Levinson and Bassett 2007). That CCTs incentivize participation in activities and services that promote good nutrition, and increase beneficiary contact with people providing messages about improved behaviors, could make them an effective vehicle for improving nutritional status.

Widespread support for CCTs, among countries and donors alike, is also an important factor when considering the promise of CCTs as a tool to reduce undernutrition. If designed and implemented appropriately—using the improvement of nutritional status as a specific objective, designing program components to affect this outcome directly, and placing these efforts in the context of a coordinated nutrition policy—CCTs could produce greater impacts on nutrition, as well as education and health outcomes.

5. Attention to Nutrition in Existing CCTs

So far, many CCTs include health conditionalities, usually requiring check-ups for young children and sometimes for pregnant and nursing women, but fewer programs include nutrition-specific conditionalities that address caring, feeding, and hygiene practices that influence child nutrition. Those CCTs that do employ nutrition-related conditionalities generally require participation in (a) education workshops that seek to increase maternal knowledge and improve practices related to proper child care and feeding practices, sanitation, and dietary diversity, and/or (b) growth monitoring for young children, which sometimes includes standardized or individualized counseling on ways to improve child

growth. Whereas the nutrition education approach seeks to improve nutritional status by teaching new practices at a group level, the growth monitoring and promotion approach focuses on catching bad practices at an individual level and addressing them directly with mothers. Some CCT programs also provide micronutrient or nutritional supplements for children and/or pregnant and lactating women. Table 5 compares the nutrition-related services and conditionalities in 20 CCTs for which information is currently available.

Table 5: Nutrition-related Service and Conditionalities in CCT Programs

Country	Program	Health Check-ups	Growth Monitoring*	Education Workshops	Micronutrient Supplementation
Argentina	Programa Familias	✓children & pregnant women			
Brazil	Bolsa Alimentação	✓ children 0-15 & pregnant women	✓	✓	
	Bolsa Familia	✓ children 0-6 & pregnant women	✓		
Chile	Subsidio Unitario Familiar	✓ children 0-6			
Colombia	Familias en Acción	✓ children 0-6	✓	✓encouraged, but not required	
Dominican Republic	Solidaridad	✓ children 0-5	✓		
Ecuador	Bono de Desarrollo Humano	✓ children 0-5	✓		
El Salvador	Red Solidaria	✓ children 0-5 & pregnant women	✓	✓	
Honduras	PRAF II	✓ children & pregnant women	✓		
Indonesia	Program Keluarga Harapan	✓ children 0-6 & pregnant women			
Jamaica	PATH	✓ children 0-6 & pregnant women			
Kenya	Cash Transfer for OVC	✓ children 0-5	✓		✓ (vitamin A)
Mexico	Oportunidades	✓ children & adults	✓	✓	✓ (iron & *papilla* nutritional supplement)
Nicaragua	Red de Protección Social	✓ children 0-5	✓	✓	✓ (iron)
Panama	Red de Oportunidades	✓ children 0-5			
Paraguay	Tekopora Program	✓ children 0-14 & pregnant women	✓		
Peru	Juntos	✓ children 0-5 & pregnant women	planned	✓ (hhs with children 6-36 mos)	
Philippines	Ahon Pamilyang Pilipino	✓children 0-5 & pregnant women			
Turkey	Social Risk Mitigation Project	✓ children 0-6 & pregnant women			
Uganda	Cash Transfer pilot	✓ infants			

* Indicates growth monitoring either with or without counseling.

Of the 20 CCTs listed above, all require health check-ups for children (and some for pregnant women) and nearly two-thirds require growth monitoring (whether with accompanying counseling or not). Six programs include group counseling on health and nutrition, although of these, Colombia's CCT does not require participation and El Salvador's does not monitor participation. Only three programs provide micronutrient supplements and only one provides a nutritional supplement.

The following subsections present a more detailed discussion of the design, implementation, and impacts of five CCT programs featuring nutrition-related conditionalities for which there are evaluation results. Most of these programs are dynamic, and whatever implementation (and sometimes even design) issues were relevant at the date for which evaluations were completed may not apply now. The goal of this discussion is not to portray the programs as they currently operate, but to illustrate the approaches they have taken and the results they have produced in order to highlight issues that existing programs could face going forward, or new programs could encounter as they roll out. Appendix 1 presents evaluations results for health and nutrition in table form.[18]

5.1 Brazil

Brazil's national health-related CCT, *Bolsa Alimentação*, launched in 2001 (and merged with three other programs to form *Bolsa Familia* in 2003), provided eligible households with a cash transfer equivalent to $6.25-18.70 per month, depending on the number of beneficiaries in the household (de la Brière and Rawlings 2006; Olinto et al. 2003). The following groups were eligible for the transfer: pregnant women, mothers with children 0-6 months for whom breastmilk was the child's principal source of food, and children from six months to seven years of age. (After age seven, children became eligible for Brazil's education CCT, *Bolsa Escola*.) *Bolsa Alimentação* beneficiaries were required to commit to program conditionalities via a "Charter of Responsibilities," which outlined the compulsory program activities: regular attendance at antenatal care and attendance at health and nutrition education sessions for mothers and attendance at facility-based child growth monitoring sessions and compliance with vaccination schedules for children aged six months to six years. In practice, because only children 0-6 months who were breastfed were eligible for program benefits, breastfeeding could be considered an implied program conditionality as well (Olinto et al. 2003).

According to a 2001-2002 evaluation looking at the impact of *Bolsa Alimentação* on food consumption, the program resulted in a 9 percent increase in household dietary diversity, which is estimated to be associated with a 6 percent increase in per capita caloric availability and a 12 percent increase in caloric availability from non-staple foods (especially fruits and vegetables) (Olinto et al. 2003).[19] Despite this positive impact on food consumption, a final impact evaluation by IFPRI found that the program had a

[18] See Adato and Bassett 2008 for CCT impacts on education outcomes and poverty.

[19] This is based on a calculation by Hoddinott and Yohannes, which assumes that a 1 percent increase in dietary diversity is associated with a 0.7 percent increase in per capita caloric availability (Olinto et al. 2003).

deleterious impact on child growth. Beneficiary children, who at baseline had been growing faster than control children—children who had been selected to receive program benefits, but subsequently excluded due to random and quasi-random administrative errors[20]—began to grow less rapidly upon receiving the transfer (IFPRI 2003b). According to analysis by Morris et al. (2004), beneficiary children under three experienced lower weight gain (from 31 ±7 grams/month, or 40 ±9 grams/month if the analysis excluded children receiving *Bolsa Escola*) compared to non-beneficiary children. Also, beneficiary children under-two demonstrated lower mean weight-for-age z-scores (by 0.25) and lower mean height-for-age z-scores (by 0.11) than their non-beneficiary counterparts, though this is not statistically significant (Morris et al. 2004).

The adverse impact may have resulted from beneficiary mothers assuming that they would become ineligible for the transfer if their children were healthy, as was the case in a previous nutrition program, *Incentivo para o Combate de Carencias Nutricionais*. If this were indeed true, mothers may have limited their children's food intakes, or health personnel may have adjusted weight data to prevent children from being dropped from the program (IFPRI 2003b; Morris et al. 2004). Neither of these hypotheses have been confirmed.

Since these negative findings, there appears to be an improvement in child growth as noted in both subsequent evaluations of *Bolsa Alimentação* and *Bolsa Familia* (Olinto undated; MSD 2005). *Bolsa Familia* provides a monthly transfer of $32 to all extremely poor households, regardless of household composition, and $66 to poor households with children up to 15 years of age and/or a pregnant woman. A growth monitoring conditionality is still in place. According to the 2005 *Chamada Nutricional* (Nutritional Call), an evaluation of *Bolsa Familia* in Brazil's semi-arid regions, participation in the program had a positive impact on child growth, at least for the youngest children. Stunting among beneficiary children 6-11 months was 3.3 percentage points (5.3 vs. 2 percent) lower than among non-beneficiary children. There was no significant impact on children 12-36 months (MSD 2005). This may be because some of these children did not begin to receive benefits during the earliest months of life—there is no information on of the timing of program enrollment for children in the study—or because growth monitoring at health center visits was irregular, despite the conditionality attached to growth monitoring (MSD 2005; Soares et al. 2007). More likely, however, the lack of impact on nutritional status among children 12-36 months was due to supply-side constraints. A lack of health services available to beneficiaries was estimated to be the most important limiting factor, and there is no evidence of reluctance among households to use health services.

[20] Some beneficiaries were lost when household identification information was accidentally separated into two files or when data-processing software rejected applications with names that had common, but non-standard characters, such as é, ç, or ô (Olinto et al. 2003); these were considered random errors. Some eligible individuals were not selected when personal information recorded on *Bolsa Alimentação* registration forms did not match information on the same family recorded for *Bolsa Escola*, another CCT. Because this situation was more likely to arise among families already registered in for *Bolsa Escola*, it is considered quasi-random (Morris et al. 2004).

One important caveat is worth mentioning about this evaluation: the sample was based on a self-selected group of 16,239 children under-five who attended the health center on Brazil's national Health and Nutrition Day—a day dedicated to evaluating various aspects of health and nutrition among children and mothers including, nutritional status, hemoglobin levels, breastfeeding status, compliance with prenatal care and child growth and development monitoring, recent illness, and participation in food support programs (MSD 2005). This sampling strategy likely caused selection bias because it only captured children who attended health centers and missed those who remained at home. Characteristics associated with the likelihood of attending the Health and Nutrition Day—such as parents' education level, income level, and motivation—would also affect nutritional outcomes among these omitted children.[21] Evaluators did not correct for the non-random selection or for the initial nutritional status of children in the study sample (Soares et al. 2007).

5.2 Colombia

Familias en Acción was introduced in 2001 to assist poor families with children in both rural and urban areas. The program provides a nutritional subsidy of approximately $15 per month to beneficiary families with children under the age of six. The conditionalities attached to this transfer include participation in growth and development check-ups by children under five and the maintenance of up-to-date vaccinations. Growth monitoring is based on a nationwide Growth and Development program in which children are weighed and measured during preventive healthcare visits and mothers are provided with advice about child nutrition.[22] Under *Familias en Acción*, children are expected to participate in Growth and Development until age seven, but the frequency of these visits varies by the child's age (Attanasio et al. 2005b). Mothers are also encouraged to attend courses on hygiene, diet and other topics related to health and nutrition, but this is not compulsory (Attanasio et al. 2005a).

A pre-post cluster matched evaluation of *Familias en Acción* in 2002-2003, using a quasi-experimental approach, indicates a number of positive impacts.[23] CCT participation increased overall household consumption, by 19.5 percent in rural areas and 9.3 percent in urban areas. Although the share of food within each household remained constant, most of the increase in consumption in both urban and rural areas was dedicated to higher quality foods such as protein-rich foods (meat and dairy) and micronutrient-rich foods

[21] Although the *Chamada Nutricional* assumes a 100% attendance rate among children under-five, an estimate by a regionally and nationally representative survey commissioned by the Ministry of Social Development in 2005 (the *Avalação de Impacto do Bolsa Familia*, AIBF), found that only 23 to 25 percent of children in its sample had vaccination cards (Soares et al. 2007).

[22] According to the impact evaluation by Attanasio and Gomez, during the child's most recent Growth and Development visit, only just over half of the mothers received nutritional counseling (Attanasio and Gomez 2004).

[23] Random assignment was not feasible for political reasons, but the authors explain that the evaluation controlled for pre-program differences in outcomes of interest using difference-in-differences methodology and propensity score matching techniques (Attanasio and Mesnard 2006a). Some concerns about the methodology include: the relatively small sample (roughly half the size considered ideal for the study) and the fact that there was incomplete baseline data for some of the intervention groups (IFS). Furthermore, cluster correlation was not accounted for and differences between baseline and control groups were not specified (Lagarde et al. 2007).

(fruits and vegetables). Meat and dairy consumption increased by19 percent, fats by 14-24 percent (in urban and rural, respectively) and grains by 9-17 percent (in urban and rural, respectively) (Attanasio and Gomez 2004; Attanasio and Mesnard 2006). Among children 24-60 months, consumption of both animal source foods and vegetables increased considerably, with vegetable consumption up 0.91 to 1.23 days per week and chicken consumption up by 0.25 to 0.38 days per week (Attanasio et al. 2005).

Participation in *Familias en Acción* also increased health care service utilization among beneficiaries. Attendance at growth and development check-ups by children below 24 months began at about 40 percent at baseline and increased by 23-30 percentage points among children benefiting from the CCT. For children 24-48 months of age, attendance increased by an estimated 33-50 percentage points from a starting rate of 67 percent (Attanasio and Gomez 2004; Attanasio et al. 2005).[24] Diarrhea incidence (an immediate cause of undernutrition) fell by 10.6 percent for children under 24 months and by 10.9 percent for children 24-48 months in rural areas. Beneficiary children under 24 months benefited from an increase of roughly .16 z-scores; for a child 12 months old, this is equivalent to an increase of .43 centimeters. Overall, the impact on anthropometry translates to a 6.9 percentage point decrease in the probability of being stunted (Attanasio et al. 2005b).

5.3 Honduras

The Family Allowance Program, *Programa de Asignación Familiar* (PRAF), began in 1990 to help poor families adjust to lost purchasing power resulting from macroeconomic adjustment. In 1998 the program was restructured and renamed PRAF/IDB – Phase II (or PRAF II) and the focus shifted to investment in human capital (IFPRI website). PRAF II (hereafter referred to as PRAF in this paper) consists of two types of CCT benefits. One benefit is a demand-side CCT for poor families, which provides a cash transfer three times a year to pregnant women and mothers with children under three (for a maximum of two transfers per household). Conditionalities for this transfer include five ante-natal care visits during pregnancy and a perinatal check-up within ten days of delivery for mothers and attendance at regular health check-ups and participation in monthly growth monitoring sessions for children under three (Glewwe and Olinto 2004; Flores et al. 2003). The growth monitoring process is based on the country's national community-based nutrition program, *Atención Integral a la Niñez Comunitaria* (AIN-C), and includes personalized counseling and instruction for mothers on feeding and hygiene practices (Marini et al. 2008).

The second type of benefit is a supply-side incentive provided to health centers and schools. In addition to the provision of the community-based growth monitoring and counseling intervention, AIN-C, a monetary transfer is provided to primary health care teams, made up of community members and local health care workers (nurses or doctors) conditional on the implementation of a quality improvement process at each health center. Called "Total Quality Management," this process requires that each team prepare a plan outlining specific tasks and a budget for equipment and medicine required for the

[24] The lower impact estimates in each range come from Attanasio et al. 2005 and the upper estimates come from (Attanasio and Gomez 2004).

health center. The cash incentive for health centers was determined based on the size of the target population and the number of health professionals employed, and averaged about $6,000 per health team per year. Supply enhancement for schools included a monetary transfer to Parent Teacher Associations, who faced similar requirements (e.g. plans for quality improvement and budget) to those of the health care teams (IFPRI 2003a; Flores et al. 2003; Glewwe and Olinto 2004).

The impact evaluation of PRAF, covering the period 2000-2002, considered both demand-side and supply-side benefits, as well as a combination of the two (demand-plus-supply), and compared each of these three groups to a control group receiving no benefits (all randomly assigned). Findings from the intermediate report[25] indicate that changes in health service utilization varied by intervention type, with the demand-side intervention producing the largest impacts. The demand-side intervention induced a 21 percentage point increase in the percentage of children under three visiting healthcare provision units, while the supply-side intervention had no impact, and the demand-plus-supply intervention caused a 15 percentage point increase. The same pattern characterized participation in child growth monitoring and prenatal visits. The demand-side intervention resulted in an increase in the percentage of pregnant women having attended five or more antenatal care sessions by 19.5 percentage points compared to 18 percentage points under the demand-plus-supply intervention, and 14 percentage points under the supply-side intervention. Attendance at growth monitoring by children under-three increased by 22 percentage points under the demand-side intervention versus 17 percentage points in the demand-plus-supply intervention. Attendance remained constant for beneficiaries receiving the supply-only intervention and fell among those in the control group (IFPRI 2003a). PRAF demonstrated no impact on food consumption or dietary diversity (IFPRI 2003a).

Despite increased attendance at healthcare services and growth monitoring, which included individualized counseling for mothers on topics such as infant feeding and hygiene practices, PRAF had no impact on the prevalence of child stunting or anemia for any group. Indeed, PRAF even failed to protect children from worsening nutritional status (marked by increased prevalence of underweight and wasting) resulting from the coffee crisis (Flores et al. 2003).

According to the intermediate report, PRAF's lack of impact on nutritional status and food consumption is likely due, in part, to the small size of the transfer, which, at roughly $4 per month, represents less than 3.6 percent of average beneficiary expenditure, and the infrequent (three times per year) distribution of the transfer (IFPRI 2003a). Perhaps most important, however, is the fact that despite explicit efforts to improve supply, the transfer of healthcare quality incentives was much lower than expected. Due to legal difficulties in providing monetary transfers to health centers, these were replaced with equipment and supply purchases. However, no health center received more than 57 percent of the value of their expected annual incentive and on average, supplies and equipment accounted for only 17 percent of the total value of the incentive. Furthermore, AIN-C, the

[25] A final evaluation report was never completed because the Honduran government suspended the evaluation partway through.

community-based growth promotion program, was implemented at only 11 to 22 percent of the intended level and training to ensure high-quality service provision was not completed. This is consistent with the small and statistically insignificant impacts among those beneficiaries who only received the supply-side benefit and the lack of any marginal impact of the supply-plus-demand transfer (IFPRI 2003a).

5.4 Nicaragua

Nicaragua's *Red de Protección Social* (RPS), modeled after *Progresa*, was launched in 2000 and suspended in 2007. When it was active RPS exhibited a wide set of program conditionalities that directly affected nutritional status. All households eligible for RPS received a *bono alimentario* or "food security transfer" valued at roughly $19 per month per household for a period of three years.[26] Program conditionalities included bimonthly participation in health/nutrition workshops for adults, reproductive health workshops for adolescents (about sexual health and prevention of STIs and HIV/AIDS), and preventive health appointments (including pre- and post-natal check-ups and vaccination) for mothers and young children. The food security transfer decreased gradually over the course of the three years that beneficiaries were in the program.[27] Health services—including vaccination, vitamin A and iron supplementation, anti-parasitics, contraception, and pre- and post-natal care—were available to beneficiaries for free for a five-year period (Maluccio and Flores 2005; Adato and Roopnaraine 2004).

The nutrition/health education workshops were offered semimonthly by personnel from the health system, with the support of a local volunteer beneficiary, called a *promotora*. *Promotoras* were elected by other beneficiaries to serve as their liaison with the program and trained in workshop topics as well as leadership and community development. Each session, with about 20 women, covered topics like hygiene, breastfeeding and other child caring and feeding practices, nutritional value of foods and proper storage and preparation, and reproductive health (Maluccio and Flores 2005).

The health conditionalities for children included attendance of children aged 0-5 at growth monitoring sessions based on a protocol adapted from Honduras' community-based nutrition program, AIN-C, and run by contracted health staff. According to Nicaragua's Ministry of Health protocol for growth monitoring and promotion, children under one had to attend monthly, children under five bimonthly, and children aged 0-9 must maintain up-to-date vaccination schedules (Maluccio and Flores 2005).

While RPS focused primarily on promoting demand for services, the program also addressed the supply and quality of these services to meet increased demand and, unlike Honduras, Nicaragua was able to successfully improve the supply of services. Early in the RPS planning process, the Ministry of Health was concerned that it did not have the infrastructural capacity to manage, finance, and expand its health services programming to rural areas. In response, RPS included funding to allow the Ministry of Health to train

[26] Eligible families with children 7-13 also received an education transfer. For more information, see Maluccio and Flores 2005.

[27] RPS's education transfer, on the other hand, remained constant over the three-year period (Adato and Roopnaraine 2004).

and pay private providers (often NGOs) who would manage rural health teams delivering the healthcare services required by the program (Maluccio and Flores 2005; Adato and Roopnaraine, 2004). RPS also addressed supply constraints within its education component by awarding each child a *bono a la oferta* or "teacher transfer," of $0.70-1.00, which each child gave directly to the teacher. Half of the bonus stayed with the teacher as an incentive for the additional reporting duties and larger class size associated with RPS; the other half was earmarked for school improvements (Maluccio and Flores, 2005).

A randomized impact evaluation comparing treatment and control communities at baseline (2000) and at two follow-up points (2001 and 2002), coupled with ethnographic research, provide insight into the operation and effectiveness of RPS. For example, ethnographic research indicated that mothers were not accustomed to learning in a workshop environment and did not learn well when they had to concentrate for long periods of time (workshops were found to last for about four hours). Furthermore, due to the large number of RPS mothers in each community and the limited number of facilitators, workshops were large (facilitator: participant ratios were between 2:35 and 2:50) and therefore provided little personal attention (Caldés and Maluccio 2005; Adato and Roopnaraine 2004). However, there is some evidence that information conveyed in the nutrition education workshops was shared among households. Indeed, more than half of RPS households said they shared something they learned with other households. Workshop facilitators confirmed this practice, although they claimed that it occurred less often. The evaluation team found that information sharing was more likely to occur among beneficiary households, although it did sometimes take place between beneficiary and non-beneficiary households (Adato and Roopnaraine 2004).

Although RPS specified that beneficiaries should use the food security transfer, in part, for the purchase of nutritious foods, this was not monitored. According to qualitative research, however, some of the community *promotoras* checked receipts, creating the impression that spending on food was a requirement. But this was not a practice that the program promoted or even approved of (Adato and Roopnaraine 2004).

Nicaragua's experience using a community-based growth monitoring (CBGP) conditionality raises some important concerns about linking these types of programs. Even though Nicaragua had an existing CBGP program, called PROCOSAN, RPS introduced its own CBGP activities. Where RPS overlapped with PROCOSAN, there was confusion, territoriality, and duplication of efforts. For example, some RPS personnel accepted children's weights taken by PROCOSAN, while others rejected these and reweighed children themselves. This denigration of PROCOSAN workers, who were volunteers, caused significant tension between RPS and PROCOSAN program staff (McGuire 2006).

The motivation for program staff to follow through with program activities also varied between the two programs. The fact that the CBGP services provided by RPS were often focused on meeting conditionalities (recording monthly weights) for the cash transfer more than fulfilling the wider set of CBGP goals (e.g. participation in counseling and community mobilization), meant that the counseling for behavior change element was

neglected. RPS staff did not do as much individual counseling as PROCOSAN volunteers, nor did they conduct as many home visits (McGuire 2006). These examples also suggest that emphasizing the essential counseling component of CBGP activities is of critical importance, particularly when monitoring conditionalities can take center stage.

According to the RPS evaluation, the combination of cash transfers and supply-side enhancements resulted in some notable impacts on food consumption, health, and nutrition. After two years in the program, the budget share allocated to food in RPS beneficiary households increased by 4.5 percentage points. This reflected a reduction in food expenditures among control households during the coffee crisis and economic downturn, rather an increase in the food share of beneficiaries, suggesting a protective effect of RPS during economic hardship (Maluccio and Flores 2005). By 2002, RPS beneficiaries consumed more food items than control households (16 and 12 food items, respectively, out of a list of 60, excluding tobacco and alcohol). RPS beneficiaries also ate more nutrient-dense foods (e.g. fruits, vegetables, and animal products), which were encouraged in the education sessions, and less of two staples (beans and grains) (Maluccio and Flores 2005).

Impacts on service utilization were also significant. There was an estimated 13-percentage point impact on the percentage of children who were seen and weighed by health care providers. (This impact reflected a 15.2 percentage point increase among control households and a 28.3 percentage point increase among beneficiary households.[28]) The impact on the percentage of children under three attending well-child health check-ups was of similar magnitude, at an estimated 16.3 percentage point increase for RPS households in 2001; this difference fell to 8.4 percentage points in 2002 when attendance among the control group increased by 10.5 percentage points and attendance among RPS beneficiaries fell slightly.[29] Impacts were higher for children aged 3-5 compared to children aged 0-3, which is not ideal in terms of nutritional impact, unless attendance was already much higher in the lower age group (Maluccio and Flores 2005).

Still, RPS's impact on nutritional status was quite impressive. The net effect of RPS was in increase in mean height-for-age z-scores of 0.17 and a 5.5 percentage point reduction in the prevalence of stunting among children under five. Among RPS beneficiaries, stunting fell from 39.8 to 36.5 percent, while in control areas stunting rates increased slightly from 39.5 to 41.7 percent (Maluccio and Flores 2005). This reduction among beneficiaries was more than one and a half times faster than the national rate of annual

[28] The increase in control group usage of health services could be a result of new healthcare services being established, a reduction in attendance at public clinics (as RPS beneficiaries moved to other clinics), which may have reduced waiting time and therefore made health centers more accessible to control households, or anticipation on the part of control households of receiving RPS benefits (Maluccio and Flores 2005).

[29] Poorer RPS households experienced greater changes in children's attendance in growth monitoring with a 29.9 percentage point increase among extremely poor households compared to a 23.5 percentage point increase among poor households. This may indicate that RPS caused the poorest households, which did not attend health centers prior to the transfer, to do so (Maluccio and Flores 2005).

improvement (based on the period 1998-2001). Notably, "very few programs in the world have shown such a decrease in stunting in such a short time" (Maluccio and Flores 2005). The positive impacts of RPS may have resulted from the relatively large transfer, representing 18 percent of average monthly household expenditure, as well as the range of nutrition-related conditionalities, albeit imperfectly implemented (Maluccio and Flores 2005).

It is striking that there was no program impact on anemia despite the fact that RPS provided an iron supplement. Qualitative research indicates that supplement delivery was sometimes inconsistent due to delivery problems and shortages—only one in five RPS children under-five had received the supplement in the previous four months—and supplements were not always consumed because of unpleasant taste and negative gastrological effects (Adato and Roopnaraine 2004).

5.5 Mexico

Progresa (now called *Oportunidades*) was started in 1997 and has become the model for numerous CCT programs. (This discussion will focus on *Progresa*, but also bring in design modifications and lessons learned from *Oportunidades*.) Having been designed based on an understanding of specific nutrition problems in the target population (child stunting and anemia) *Progresa-Oportunidades* has featured significant attention to nutrition and sound nutrition-related planning. By targeting pregnant and lactating women, children 6-23 months of age, and children 2-4 years old with low weight, the program focuses on high-risk groups during critical periods of growth and development (Neufeld 2006). The health and nutrition components include: a basic package of primary health care services, improved supply of health services, nutrition and health education sessions for families, and nutritional supplements for young children and pregnant and lactating women (Skoufias 2005).

Under *Progresa*, eligible families received a bimonthly health and nutrition transfer representing about 20 percent of average month household expenditures (Skoufias 2005). Women were required to attend five prenatal check-ups, as well as one check-up during the month following childbirth and one during lactation. In addition to pre- and post-natal care, these visits address basic household sanitation, family planning, prevention and treatment of common illnesses (e.g. diarrhea, respiratory diseases, tuberculosis, and high blood pressure), and first aid. Children were required to follow the prescribed preventive health protocol, which included vaccinations, antiparasitics, and supervision of child growth and nutrition.[30] Youth above 17 and adults in beneficiary households had to attend annual check-ups as well. To facilitate compliance with these visits, beneficiaries were provided with an appointment booklet listing the schedule of appointments for each household member (Skoufias 2005).

Like RPS, *Progresa* also used a *promotora,* a beneficiary elected by fellow beneficiaries, to serve as a program liaison. After her initial training, the *promotora* became responsible

[30] The regimen involved three check-ups for children 0-4 months, eight check-ups for children 4-24 months, three check-ups per year for children 2-4 years old, and two check-ups per year for children 5-16 years (Skoufias 2005).

for holding monthly beneficiary meetings and for providing information about transfers, beneficiary rights and responsibilities, and other program details. *Promotoras* also listened to questions and complaints from beneficiaries and communicated these to program offices (Adato et al. 2000).

In order to support the increased demand that the CCT would generate resources were dedicated to strengthening the supply of health services. In particular, resources were allocated to ensuring adequate supply of equipment, medicines, and materials (including educational materials), encouraging medical staff to remain present in rural areas on a long-term basis, and providing additional training to improve quality and capacity (Skoufias 2005).

Progresa also provided a nutritional supplement (called a *papilla*) to pregnant and lactating women, children between 4 and 24 months, and children between 2 and 5 years old with any signs of undernutrition. Two supplements—*Nutrisano* for children and *Nutrivida* for pregnant and lactating women—were designed specifically for *Progresa* and constituted 20 percent of daily caloric requirements and 100 percent of micronutrient requirements. The supplements were flavored (in banana, vanilla, chocolate, and natural flavors) and packaged (in small packages that only require water before consumption) in such a way as to ensure high levels of acceptability and intake. Mothers could pick up a one-month supply of the supplement for each targeted household member when they went to the health clinic for their own or their child's health check-up (Skoufias 2005).

Mothers were also required also attend health and nutrition lectures (called *pláticas*) (Skoufias 2005). The *pláticas*, conducted by physicians and nurses trained in health and nutrition topics, were targeted to mothers as primary caretakers of children, but were also open to other beneficiary family members and non-beneficiaries as well. Up to 25 themes were covered, including nutrition, hygiene, immunization, family planning, and the detection and prevention of chronic disease, but emphasis was placed on preventing health risks (e.g. via prenatal care, early detection of child undernutrition, immunization, and safe water treatment), recognizing signs and symptoms of common illnesses, and adopting appropriate caring behaviors (e.g. treatment of diarrhea with oral rehydration). The *pláticas* also reinforced appropriate use of the supplements as well as proper child feeding practices and optimal consumption during pregnancy (Behrman and Hoddinott 2005; Skoufias 2005). *Oportunidades* has continued the *pláticas*, supplements, and required health visits.

A randomized evaluation of *Progresa* from 1997 to 1999 comparing treatment and control groups before and after program implementation demonstrated positive results on service utilization and child health and nutrition. Health care utilization, measured as visits per day to clinics in *Progresa* areas compared to those in non- *Progresa* areas, increased significantly among beneficiaries by an average of 2.09 to 11.49 additional visits per day, depending on the regression specification used.[31] Even at the lower bound,

[31] The estimate of 2.09 additional visits comes from a regression using a dummy to indicate whether the facility was located in a *Progresa* service area; the estimate of 11.49 additional visits comes from a

this represents an increase in visits of approximately 18 percent to clinics in *Progresa* areas compared to control areas. This estimate refers to both beneficiaries and non-beneficiaries attending *Progresa* clinics. In order to estimate the impact on beneficiaries alone, Gertler and Boyce (2001) first calculated the impact attributing the full effect to *Progresa* beneficiaries (an increase of roughly 60 percent) and then adjusted this by the share of beneficiary families in *Progresa* service areas (about 20 percent). Their assessment suggests that visits among beneficiary families increased twice as much as visits by non-beneficiary families, though both groups showed an increase (Gertler 2000; Gertler and Boyce 2001).

Further impacts of *Progresa* on service utilization were noted among specific target groups. Growth monitoring visits increased by 30 to 60 percent among beneficiary children aged 0 to 2 and by 25 to 45 percent among children aged 3 to 5 (Gertler 2000).[32] The number of pregnant women having their first prenatal check-up during the second and third trimesters fell and visits during the first trimester of pregnancy increased by 8 percent (Skoufias 2005).

Participation in *Progresa* increased mean consumption by 14.5 percent and boosted the value of food consumption for the median beneficiary household by 10.6 percent. The greatest impacts occurred among the poorest beneficiaries.[33] Overall, this translates into a 7.8 percent higher mean caloric intake for beneficiary compared to control households. Beyond the increase in calories, *Progresa* increased dietary diversity, even after controlling for the income effect. By 1999, two years after the program began, beneficiaries consumed 16.7 percent more fruits and vegetables and 30 percent more animal products than control households. This suggests that the messages provided via the *pláticas* (e.g. on the importance a diverse diet), may have played a role in changing the eating habits of beneficiary households (Hoddinott et al. 2000).

The impact of *Progresa* on child nutritional status has also been positive according to several analyses. Berhman and Hoddinott (2005) estimated the effect of *Progresa* on child height and stunting prevalence, taking into account the non-random nature of access to nutritional supplements: of all children 4-24 months, the intended beneficiaries of the supplements, only 61 to 64 percent received the supplement, whereas approximately half of all children 24-48 months did. One possible explanation for this is that local program administrators, faced with shortages of supplements and malnutrition among children outside of the age group intended to receive the supplement, redirected supplements to slightly older children who demonstrated poor nutritional status (Behrman and Hoddinott 2005). This analysis found that *Progresa* brought about significant impacts among children 12-36 months of age who received the nutritional supplement: improvements in child height (a 1 to 4 percent increase) and mean z-scores (one-third of a standard

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regression that did not use the dummy variable and instead included the number of families in the service area receiving *Progresa* benefits (Gertler and Boyce 2001).

[32] The range of impacts reflects different regression models, one of which includes per capita income in an effort to separate the transfer income effect from the impact of the nutrition and preventive care (Gertler 2000).

[33] These are 1999 estimates, food consumption based on consumption per person per month (Hoddinott et al. 2000).

deviation) as well as a reduction in the probability of being stunting (by 18 percentage points[34]) (Gertler and Boyce 2001; Behrman and Hoddinott 2001; Hoddinott 2008). The estimated reduction in stunting prevalence among children under-three is 7.3 percentage points and among children five is 6 percentage points (Hoddinott 2008). According to Behrman and Hoddinott (2001), an average beneficiary child (again, 12-36 months of age and receiving the nutritional supplement) experienced a 1.2 percent increase in height, or grew about one additional centimeter per year. This increase in height is estimated to result in a 2.9 percent increase in lifetime earnings (Behrman and Hoddinott 2001).

These findings are consistent with some of the conclusions from studies by Gertler (2004) and Rivera et al. (2004) using data from the same time period. Gertler (2004), using a one-year follow-up like Behrman and Hoddinott, found that beneficiary children 12-36 months were 0.96 centimeters taller than control children, but found no statistically significant impact on the odds of a child being stunted (Gertler 2004). Because Gertler defined treatment as living in a locality covered by *Progresa* benefits, he included children in households not receiving *Progresa* benefits within the treatment group, suggesting that his estimates are conservative (Hoddinott 2008). Rivera et al. (2004), like Behrman and Hoddinott, defining treatment as living in a locality receiving *Progresa* benefits and in a *Progresa*-eligible household, found that after two years of exposure (compared to one year of exposure in the control group) children under six months of age from the poorest 50th percentile were 1.1 centimeters taller than control children. No significant differences were noted for children older than 6 months (Rivera et al. 2004).

Findings on anemia impacts have also been positive, but vary slightly according to the analysis. Using the same data but different sub-samples and statistical methods, Gertler (2004) found that a beneficiary child 12-48 months of age was 25.5 percent less likely to be anemic than a control child (Gertler 2004); Rivera (2004) identified that *Progresa* reduced anemia prevalence by 10.6 percentage points (44.3 vs. 54.9 percent). Children who had received *Progresa* benefits for one year (from age 0-12 months) also had a higher mean hemoglobin level (11.12 compared to 10.75 g/dL) than a control group of children who had not yet received benefits. Once the control group had been receiving benefits for one year (from age 12-23 months), this difference in hemoglobin levels and anemia rates became insignificant. Still, anemia rates remained high, at about 44 percent, among beneficiary children. The authors concluded that these high anemia rates were not a result of non-nutritional causes (such as parasitic infections like hookworm and malaria) because regional prevalence of these conditions is so low. Instead, they surmised that the persistence of anemia was due to the form of iron used in the supplement—reduced iron—which is poorly absorbed, (Rivera et al. 2004).

The *Progresa-Oportunidades* program offers an interesting story about the use of biochemical adjustments and behavior change communication to enhance the impact of the program's nutritional supplement. As of September 2005, the iron format in the supplement was improved to enhance bioavailability and more vitamin C was added to facilitate iron uptake (Neufeld 2006).

[34] Results re based on an intent-to-treat estimator with controls for child-level unobservables that account for (time-invariant) factors that are associated with attrition (Hoddinott 2008).

Although families retrieved and consumed the supplement, its potential impact was also attenuated by poor compliance. Mothers often mixed the powder with more water than recommended, creating a thin liquid, rather than a thick substance, and used up the monthly ration before the month's end. Formative research revealed that the reasons for this were threefold: mothers often gave the supplement more than once a day, substituted it for a meal, or shared a dose intended for a young child among the entire family (Bonvecchio et al. 2004). On average, a supplement intended for one child was often consumed by 2.5 family members, usually older children. Semi-structured interviews with mothers and program doctors revealed that intra-household sharing resulted from poor understanding among both beneficiaries and doctors of why the supplement was focused on the target age group (Neufeld 2006).

In order to overcome this obstacle, a behavior change communication campaign that focused on four simple messages was tested. The messages, which were based on an understanding of mothers' and health care providers' perspectives on the supplements, promoted: 1) preparing the supplement as recommended, 2) giving the preparation every day, 3) offering it between breakfast and dinner, and 4) providing it only the target children. These messages were conveyed using a range of communication tools including counseling by outreach workers, in-home demonstrations of proper preparation by community volunteers, posters, flyers, megaphone announcements in villages, and a video presented to mothers in their native language in health centers. According to a study by Bonvecchio et al. in Veracruz and Chiapas, this intervention brought about significant increases in the first three behaviors in all areas, with mean increases of 42.5 percent for preparing the supplement properly, 64.4 percent for daily provision, and 61.5 percent for serving it between breakfast and dinner. Provision of the supplement exclusively to targeted children improved in Veracruz, but not Chiapas, where mothers expressed resistance to the idea that they should limit the supplement to certain of their children. The authors suggest that this constraint be addressed in future communication campaigns (Bonvecchio and et al. 2007).

Under *Oportunidades*, the tasks of *promotoras* (now called *vocals*) have been further differentiated into four specializations: general program function, health, education, and nutrition. Each receives additional training in their respective topic area. The nutrition *vocal* is responsible for demonstrating proper preparation and consumption of the nutritional supplements, motivating beneficiaries to improve their diet and to prepare food hygienically, conducting home visits to follow up with households where children are suffering from undernutrition or health problems (Oportunidades 2007).

It is likely that some of Mexico's success derives from the wide program coverage (in October 2007, 98 percent of beneficiary households were receiving transfers), its large transfer size (representing one-fifth of per capita expenditures) and the fact that *Progresa-Oportunidades,* unlike any other CCT program, includes a nutritional supplement (World Bank 2008a).

5.6 Comparing CCT Impacts

The following figures summarize the impacts of the five CCTs on nutritional status, measured as mean height-for-age z-scores. Zero impacts are noted for Brazil in figures 5.6a and 5.6b since the small negative findings by Morris (2004) were not statistically significant. Figure 5.6b provides a different estimate for Mexico (children 0-5 years rather than 1-3 years noted in 5.6a) to provide a better comparison with the CCT impacts in Nicaragua and Honduras; unfortunately, estimates for children 0-5 are not available from Colombia and Brazil. Anemia results are not shown here because only one country, Mexico, demonstrated impacts.

Figure 5.6a: CCT Impacts on Mean Height-for-Age Z-score (multiple age ranges)

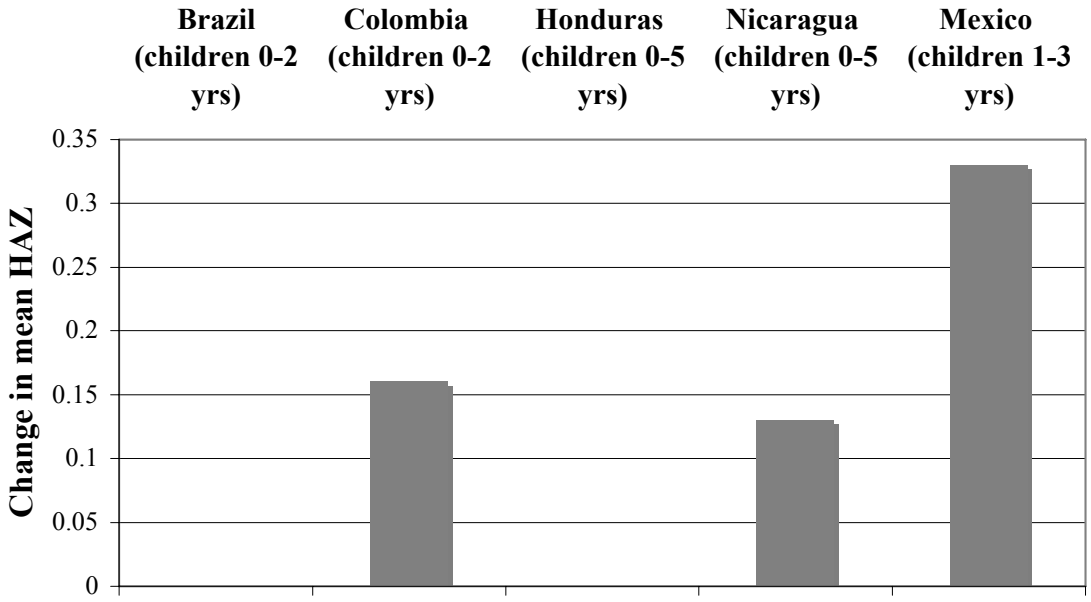
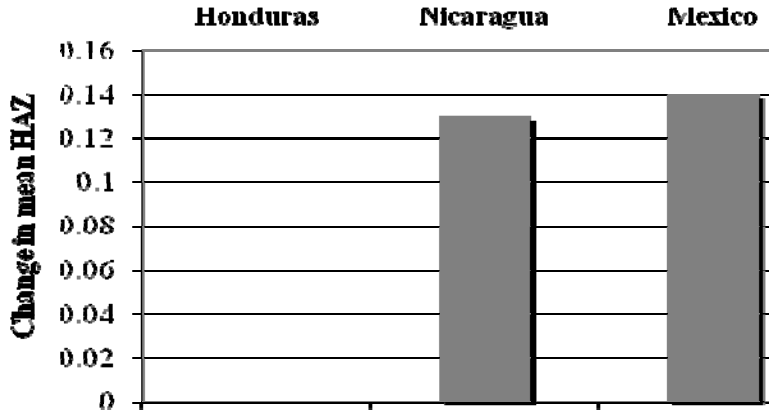


Figure 5.6b: CCT Impacts on Mean Height-for-Age Z-score (ages 0-5)



Because even the most rigorous CCT evaluations have studied the combined effects of all CCT components on desired outcomes (the "black box" approach), it is impossible to determine the degree to which individual design elements are responsible for CCT impacts, or the degree to which conditionality associated with each component has an effect. Therefore, improved nutritional status may be the result of higher-quality diets resulting from increased household income, enhanced knowledge among mothers attending nutrition education meetings, better micronutrient and caloric intake due to nutritional supplements, or a combination of all of these (Lagarde et al. 2007). While it would be invaluable to have data to disentangle these individual effects—requiring the comparison of multiple treatment arms (GMP, nutrition education, supplement, etc.) vs. a control—currently the only option to is to draw tentative lessons from the abovementioned program experiences.

Although the five CCTs vary in terms of program design, country context (including baseline malnutrition rates and therefore scope for improvement), implementation quality, and evaluation methodologies (including time between baseline and follow-up studies and research design), their experiences and impacts suggest several factors that appear to be important to the achievement of improved nutritional status. First, the size of the transfer matters. Honduras, with the smallest transfer size, had no impact on nutritional status, despite increases in service utilization, whereas Mexico, Nicaragua, and Colombia, whose transfers represented at least 20 percent of average beneficiary income, or five times that of Honduras, had much larger impacts. Second, as in any program, implementation affects impact. Even when nutrition-related program features are in place, if the frequency or quality of counseling is poor (e.g. Brazil), group sizes in education sessions are large (e.g. Nicaragua), or supplement distribution is less frequent than expected (e.g. Nicaragua, Mexico), impacts are likely to be reduced. Similarly, if services are inaccessible or supply-side enhancements are incomplete (e.g. Honduras, Brazil), CCT incentives cannot effectively translate into better child outcomes. Third, coordination between CCTs and service providers (e.g. ministries and NGOs) that supply the services underpinning nutrition-related conditionalities is essential (e.g. the role of NGOs in Nicaragua), but remains a significant challenge.

The CCTs in Nicaragua, Mexico, and Colombia—each with multiple nutrition-related conditionalities (including a micronutrient supplement in Nicaragua and a nutritional supplement in Mexico)—brought about the largest impacts on nutritional status, suggesting that a combination of nutrition-related conditionalities *may* contribute to greater nutritional impact. Unfortunately, it is not possible to determine the magnitude of impact of individual nutrition-related conditionalities on nutritional status given the data available.

How large are these effects in relation to those observed in other kinds of nutrition interventions? According to three studies reviewed in a recent *Lancet* article on the effectiveness of interventions for maternal and child nutrition and survival, nutrition education counseling about complementary feeding without accompanying food or cash was estimated to improve height-for-age z-scores (HAZ) by 0.25 in food-secure populations (Bhutta et al 2008). This impact is slightly greater than each of the CCT

impacts noted here, except Mexico's (0.33 z-scores for children age 1-3 years)—which is different from the other programs because it provides a food supplement. However, CCTs tend to target populations that are food-*insecure* and they *do* provide cash, so the comparison may not be appropriate. Another key issue affecting the comparability of impacts is the initial magnitude of HAZ scores prior to the intervention.

Madagascar's Seecaline program provides one of the few sources of evidence of the impact of a community-based growth promotion program implemented at scale.[35] A recent evaluation indicates that the program increased HAZ by 0.09 and reduced moderate stunting (HAZ $\leq$ -2 standard deviations) by 3 percentage points over the seven years between the baseline and follow-up surveys. Both of these impacts fall below the CCT impacts on HAZ and stunting prevalence noted in this paper, with the exception of Honduras' PRAF, which had no impact. While environmental and demographic conditions differ greatly between Madagascar and Latin America, interestingly, the initial prevalence of stunting was quite similar in Madagascar and Mexico (47.5 and 45.1 percent in 1997, respectively); baseline stunting prevalence in treatment communities in Honduras (52 percent among beneficiaries receiving the demand-side intervention) and Nicaragua (41.9 percent) were also within close range (Hoddinott 2008). In Madagascar, the relatively better-off and more educated households were better able to translate Seecaline's behavioral messages into gains in nutritional status, suggesting that monetary support, such as a cash transfer, could enhance the impact of programs like Seecaline (Galasso and Umapathi 2007; World Bank 2008a).

Most studies of micronutrient interventions highlight impacts on micronutrient status and other specific conditions, like anemia and goiter, rather than child growth. Zinc is one exception. A meta-analysis of randomized controlled trials looking at the effect of zinc supplementation on the growth of prepubertal children found an overall effect on HAZ of 0.35 (Brown et al. 2002). The effect was greater for children older than 6 months with low initial height-for-age z-scores. A more recent analysis of 40 studies limited to children under five found an overall effect of 0.07 z-scores (Horton et al. 2008). These mixed findings make it difficult to compare the impact on growth of zinc supplementation versus that of CCTs; however, it seems logical that a CCT including zinc supplementation would have a greater effect than either intervention alone.

In sum, CCT impacts on nutrition fall within the range of several other nutrition interventions. Still, given the fact that they include an income transfer, *and* require participation in specific activities, it is reasonable to think that CCTs that are designed to focus on nutrition and well implemented could have an even greater effect on undernutrition. Of course, a critical pending issue, which has so far been insufficiently explored, is that of cost-effectiveness. Even if CCTs can have a greater impact on child nutrition, they must be able to do so in a cost-effective manner.

[35] Seecaline provides nutrition and hygiene education sessions, cooking demonstrations, and counseling about complementary feeding (Galasso and Umapathi 2007).

6. Applying Best Practices in Nutrition to CCTs

Some valuable lessons about improving CCT impacts on nutrition emerge directly from CCT experience, but there is also much to be learned from best practices in nutrition interventions. These practices could be incorporated as conditionalities or considered more broadly as complementary interventions in areas covered by CCTs if conditionality is not deemed appropriate, necessary, or feasible (see section 8.2).

6.1 Growth Monitoring and Promotion

There has been some confusion about the basic objectives of monitoring and promoting child growth and the terminology used to describe it. Box 6.1 lists several definitions used in this paper. Growth monitoring (and promotion) can be conducted in a health facility (e.g. CCTs in Brazil and Colombia) or at the community level (e.g. CCTs in Nicaragua and Honduras).

Box 6.1 Definitions

- Growth monitoring (GM): periodic weighing[36] of a child and use of the child's growth trajectory compared to the WHO international growth standard to determine adequacy of growth.
- Growth monitoring and promotion (GMP): growth monitoring tied to pre-defined activities to promote child growth (e.g. counseling).
- Community-based growth promotion (CBGP): periodic child measurement used both to assess growth and as a decision-making tool to tailor recommendations to mothers about actions that could promote child growth (e.g. counseling on caring practices and home medical visits).

Source: Griffiths and Del Rosso 2007

It is widely recognized that growth monitoring alone does not change a child's growth and therefore tailored behavior change counseling is the cornerstone of an effective approach. Indeed, evidence from large programs in Bangladesh (BRAC and BINP) and India (ICDS) indicates that growth monitoring that is accompanied by *poor* nutrition counseling has little or no effect on nutritional status. However, according to a review of evidence in Jamaica, Nigeria, India,[37] Tanzania, Madagascar, and Senegal, children whose growth was monitored and whose caregiver received nutrition and health education experienced improved nutritional status and higher survival rates compared to children who did not receive these services. Tentative evidence from a large-scale program in Brazil confirms these results (Ashworth 2007). According to a recent evaluation of Madagascar's Seecaline (mentioned above), the intervention had a protective effect on beneficiaries, preventing increases in stunting despite a higher incidence of shocks and food insecurity among the beneficiary households compared to

[36] Even when stunting is a primary concern, generally weight gain, rather than height, is the preferred indicator because it is considered the most sensitive indicator of growth and can be more accurately measured at shorter intervals, thereby allowing for greater potential for intervention and prevention (Marini et al. 2008).

[37] TINP and small programs in Narangwal and Jamkhed.

control households. The evaluation, while not randomized, employed a rigorous quasi-experimental matching design (Galasso and Umapathi 2007).

This evidence suggests that CCTs that condition only on collecting child weights are unlikely to have a significant impact on child nutritional status and that instead CCT programs should only consider a growth monitoring conditionality if quality counseling tailored to the child's circumstances (e.g. adequacy of weight gain, [38] health status, food intake, and caring practices), sufficient training and supervision of staff and volunteers, and links to the health sector can be ensured. Quality assurance could be achieved through improved program monitoring to ensure that these essential program activities are taking place, or as mentioned above in the discussion of Nicaragua's CCT, via incentives to service providers that supply high-quality, well-tailored counseling and home visits.

Growth promotion should focus on children under two years of age, or as some experts suggest, on children under 12 months of age (but up to 18 months in cases of growth faltering) (Ashworth 2007). Because of growth patterns in young children, it is appropriate to monitor weight on a monthly basis for children under 12 months and on a semimonthly basis for children from 13-24 months (Marini et al. 2008). CCT conditionalities could reflect these best practices by limiting their coverage to children under two (so, for example, Colombia's CCT would apply the growth monitoring conditionality to children 0-2 rather than 0-7) and by requiring monthly attention until 12 months and semimonthly attention during the following year. This would require an effective communication mechanism to ensure that mothers understood the change in frequency for their child, but could ultimately reduce the transaction costs associated with this requirement since the overall number of growth monitoring and promotion visits would be reduced in the second year. Further testing of this approach should be conducted, particularly in a CCT context.

Many community-based growth promotion programs aggregate and visually present results of child growth at monthly community meetings to inform all community members about child growth trends and to involve everyone in the process of supporting healthy children (Griffiths et al. 1996; Marini et al. 2008). If participation rates in these community gatherings are low, attendance could be another option for conditionality.

6.2 Behavior Change Communication for Nutrition

Fundamental to nutrition behavioral change is the notion that small, but important changes in child caring and feeding practices and maternal nutrition—all of which require minimal food or resource investments—can have a significant impact on child nutrition and can do so in a reasonable time period. A study of BCC for child nutrition in Bihar, India found that improved hand-washing practices (e.g. after mother's defecation, after helping a child defecate, or before preparing food) were associated with improved nutritional status. Also in Bihar, teaching mothers to continue breastfeeding during

[38] Many programs utilize a decision-tree, or algorithm, to help the counselor determine which messages are appropriate for a specific situation. Counselors also often use a series of counseling cards with illustrations that facilitate the communication of new practices to parents (Marini et al. 2008).

diarrheal episodes—to counter the common practice of stopping breastfeeding, as many women do for fear of causing continued diarrhea—contributed to quicker recovery and lower incidence of severe illness (Levinson et al. 2007). Evidence from Indonesia, the Dominican Republic, and Brazil indicates that changes in complementary feeding practices can take place within a relatively short period of time, if proper support and reinforcement of messages is provided (Allen and Gillespie 2001; Flavin and Griffiths 1999).

Given the importance of carefully crafted messages and their regular reinforcement, it is worthwhile to consider ways to improve the focus of nutrition messages for appropriate audiences and to better target key messages. The target group for CCT group education and counseling has thus far been mothers with small children. Because mothers are usually the primary caretakers this is a natural choice. However, men can also play an important role in childrearing and if they are exposed to messages about their responsibility for women's and children's nutrition, they can both change their own behaviors and support the behavior change of their wives. The Joint Nutrition Programme in Iringa, Tanzania developed methods for increasing father's support for changing feeding practices (Engle et al. 2000). In West Africa, a BASICS program found that agricultural extension workers who were provided with nutrition education materials were successful in transmitting nutrition messages to men. Men who had been exposed to nutrition messages, either via extension agents, posters, or radio messages, were twice as likely to bring home the healthy foods that were promoted by the nutrition messages than men who were not exposed (Parlato and Seidel 1998). In practice, a CCT conditionality requiring that men participate in educational sessions could prove to be too time-consuming or socially undesirable for some families; however, this has not been tried in any CCT, so it is unclear what the true constraints would be in different contexts. A middle ground solution could be for the CCT to provide specific education workshops, designed exclusively for fathers and held less frequently. It may be beneficial to have a trained male doctor, nurse, or teacher, who is also a parent, facilitate workshops targeting fathers, so that he could share experiences and relate well to the audience.

Additionally, group education workshops could be segmented, with separate sessions for mothers of each child age group, so that messages would reach mothers at what is likely to be the most appropriate learning moment. Age-specific messages were tested in a study in Haiti comparing a preventive versus a recuperative nutrition intervention, both with food supplements and behavior change communication.[39] The preventive approach, with longer duration of BCC and age-specific messages, resulted in improved nutritional status and slightly better maternal knowledge of infant and child feeding and general health and nutrition practices, as well as greater likelihood of awareness, trial, and adoption of new practices (particularly diet diversity and consumption of animal source foods). However, because the food component made the greatest contribution to the

[39] The preventive approach targeted all children age 6-24 months with 18 months of food rations and a maximum of 18 monthly age-specific behavior change sessions, while the recuperative approach targeted children under five who were malnourished with 9 months of food rations and 9 monthly standard BCC sessions.

outcomes in this study, it would be useful to test the effectiveness of age-specific BCC messages separately to corroborate this finding (Menon and Ruel 2007).

In practice, more frequent and varied workshops would pose organizational challenges and greater personnel needs for CCTs. One response to this could be to call on CCT beneficiaries to support audience segmentation by having some or all beneficiaries, after going through the series of trainings with their own child, take a turn helping a trained facilitator or local volunteer (e.g. *promotora*) for one workshop. This beneficiary mother could provide examples of behaviors that were difficult to change and what she did to overcome, or try to overcome, these obstacles. In addition to motivating other mothers, this experience could help empower her and reinforce her newly gained knowledge and skills. This has not yet been tested in a CCT program and would require attention to women's time constraints.

To further reinforce messages, existing materials that have proven effective in nutrition programming could be used to support nutrition behavior change efforts within CCT programs. For example, Indonesia's Nutrition Communication and Behavior Change Project used an "action poster," similar to a wall calendar, for each of the principal target age groups. This innovation allowed for the presentation of tailored messages to individual mothers at key periods in their children's development (Manoff Group 2007). Something similar could be provided to CCT beneficiaries, perhaps delivered with cash or during healthcare visits, and used as the foundation of the nutrition counseling curriculum.

6.3 Micronutrient Interventions

Recommended micronutrient interventions for children include vitamin A supplementation (for women up to eight weeks postpartum and children 6-72 months);[40] universal provision of iodized salt; iron supplements in areas where malaria is not endemic;[41] and therapeutic zinc supplementation to treat diarrhea.[42]

Several CCTs have included iron supplementation for young children with mixed results on anemia. While problems with supplement delivery and compliance likely contributed to the low or negligible impacts, another possible explanation is that poor diet and deficiencies in other micronutrients, specifically vitamin B-12, limited the hematological response to iron supplementation. In a study of iron supplementation and anemia in Guatemala, Allen et al. (2000) found that children who consumed more animal products (characterized by absorbable iron, riboflavin, vitamin B-12, and vitamin A), had better

[40] Vitamin A supplementation for children 6-72 months is estimated to reduce under-three mortality by 23 percent. Neonatal vitamin A supplementation is also being used in some places, but positive effects on mortality have only been shown in Asia (Horton et al. 2008; Bhutta et al. 2008).

[41] Because iron can have adverse effects on malaria, untargeted supplementation is recommended only in areas where malaria is not endemic (Bhutta et al. 2008).

[42] For children 12-59 months, zinc supplementation has been shown to reduce diarrhea severity and duration as well as stunting and mortality (Bhutta et al. 2008; Allen and Gillespie 2001; Grantham-McGregor and Ani 2001). There have been some positive results associated with preventive zinc treatment (on growth, morbidity and mortality), but little evidence from programs operating at scale (Horton et al. 2008).

hemoglobin response than children who ate predominantly plant-based foods (in which phytates and fiber limit mineral bioavailability). Children with higher initial levels of vitamin B-12 were also more likely to experience increased hemoglobin associated with iron supplementation (Allen et al. 2000). This suggests that CCTs providing iron supplements should ensure that counseling on dietary intake, especially animal-source foods, and possibly additional vitamin supplements are also provided to beneficiaries, whether as part of program conditionalities (e.g. required attendance at individualized counseling) or by health center staff separately.

Because child nutritional status is directly affected by maternal nutrition, supplements for pregnant women can improve child outcomes as well. Receipt of maternal supplements could act as an additional conditionality for CCT beneficiaries in places where maternal micronutrient deficiency rates are high, dietary diversity is poor, and baseline supplementation rates are low. Supplementation of pregnant women with iron and folate has been shown to increase hemoglobin status and reduce the risk of anemia.[43] However, when diets are poor, multiple micronutrient deficiencies often occur simultaneously and deficiencies in micronutrients other than iron (such as B vitamins, iodine, vitamin D, and antioxidants) can cause poor pregnancy outcomes (Allen 2004). In the absence of sufficient improvements in dietary quality, supplementation with multiple micronutrients during pregnancy can be a promising option. A systematic review and meta-analysis by Bhutta et al. (2008) found that pregnancy supplementation with three or more micronutrients was associated with a 39 percent reduction in maternal anemia compared to either two or more micronutrients or a placebo (Bhutta et al. 2008). A caveat is important here: although supplementation with multiple micronutrients is theoretically preferable to iron-folate supplementation in areas with various micronutrient deficiencies, several studies have indicated that existing analyses have not established the added benefits of multiple micronutrient supplements compared to iron-folate supplementation. These studies also conclude that there is insufficient evidence to identify potential adverse effects of supplementation and to determine whether excess supplementation during pregnancy is harmful to the mother or the fetus (Allen 2004; Ramakrishnan et al. 2004; Haider and Bhutta 2006).

In cases of marked food insecurity, maternal supplements of balanced energy and protein (as in Mexico) may also be beneficial and could be provided via a CCT. According to a review of 13 studies, Bhutta et al. (2008) found that balanced supplements of energy and protein for pregnant women reduced the risk of intrauterine growth restriction (IUGR), which is a strong predictor of size later in life—most infants born with IUGR do not fully catch up to normal size during childhood—by 32 percent (Allen and Gillespie 2001; Bhutta et al. 2008). Note that these effects were dominated by a large study in the Gambia on pregnant women with low body-mass index (BMI) and receiving a supplement of 700kcal per day. These findings suggest that further experimentation with nutritional supplements in CCT programs for children and pregnant women with low BMI could be valuable.

[43] For example, a pooled analysis of 8 studies found that iron-folate supplementation during pregnancy increased hemoglobin levels at term by 12 g/L and reduced the risk of anemia at term by 73 percent (Bhutta et al. 2008).

Home fortification with dispersible micronutrient preparations, such as *Sprinkles*—which contain iron, zinc, iodine, folic acid, and vitamins C, D, and A—can improve micronutrient (especially iron) intake for young children, while also promoting complementary feeding. In these powdered supplements, the iron is encapsulated in a thin layer of lipids to prevent any distasteful interaction that would alter the flavor, color, or texture of the food to which powder is added. Efficacy and effectiveness studies provide evidence that the consumption of dispersible micronutrient preparations can improve iron status significantly, especially among young, anemic children (Zlotkin et al. 2004; Menon et al. 2007; Bhutta et al. 2008).[44]

The provision of dispersible micronutrient preparations is a promising strategy for several reasons. First, their acceptability has been quite high among mothers, children and communities. Second, they provide beneficiaries with the full daily micronutrient requirements. And third, because they are administered via complementary foods, targeting the supplement to children 6-24 months effectively promotes the appropriate introduction of complementary foods (Zlotkin 2004). *Sprinkles* are being used at scale in Bangladesh, Mexico, and Mongolia (Zlotkin et al. 2005). The positive impacts noted in several studies suggest that broader experimentation merits additional attention and resources.

In addition to experimenting with different types of micronutrients, CCTs could also apply promising approaches to overcoming supply-side concerns—e.g. logistics associated with delivery, quality control, storage, and the costs associated with these—and lack of beneficiary compliance. Ongoing community-based programs with active community workers have been successful in increasing rates of participation in supplementation programs considerably. In Bangladesh, when community nutrition promoters were trained and permitted to distribute iron-folate supplements to pregnant women themselves—earlier, pregnant women needed to travel to the nearest health clinic or await the uncertain arrival of a satellite clinic—the effect on iron-folate intake during pregnancy increased dramatically from 16.6 percent at baseline to 83.9 percent at end line six years later (Lutter 2007).

The provision of accompanying counseling and information (e.g. via radio, posters, etc.) clearly explaining the benefits and intake guidelines for each supplement could reduce problems of compliance, as seen in Mexico. Additionally, the CCT community volunteer could be trained in compliance issues (as are the *Oportunidades promotoras*) and could

[44] According to efficacy studies in eight countries, on average, the reduction in anemia ranges between 55 and 90 percent depending on the presence or absence of malaria (Zlotkin et al. 2004). The only effectiveness study in children 6-24 months in Haiti indicated an improvement in levels of hemoglobin and a reduction in anemia. Among children who received two months of the *Sprinkles* supplement along with a food ration (WSB), anemia prevalence (adjusted for baseline prevalence, age, and sex) fell by 39.4 percentage points (from 53.7 percent at baseline to 14.3 percent 7 months later) and recovery from anemia was twice as high as in the non-*Sprinkles* group. At the seven-month follow-up, children who had received *Sprinkles* had mean adjusted hemoglobin levels of 10.9 g/dL higher than baseline. Younger children and those who were anemic when they began to consume *Sprinkles* benefited more from the supplement (Menon et al. 2007).

act as another voice to motivate mothers to prepare and administer supplements appropriately and limit their provision to the specified beneficiary.

Beyond supplementation, another promising strategy to reduce anemia is delayed umbilical cord clamping. Recent studies have highlighted the importance of delayed umbilical cord clamping to increase infant iron status. If the doctor or midwife waits one to two minutes, instead of cutting the cord immediately after delivery, the infant's blood volume increases by roughly 50 percent. This increase provides 75 mg of iron, representing 33 percent increase in the infant's total body iron (Dewey 2006). According to three studies of delayed umbilical cord clamping, the risk of anemia was reduced by 80 percent 24 to 48 hours after birth (in one study) and by 47 percent at 2 to 3 months after birth (in two studies) (Bhutta et al. 2008). Agencies involved in CCT planning could coordinate with the Ministry of Health to ensure that delayed umbilical cord clamping is taught and practiced in clinics where CCTs are implemented so that beneficiaries would benefit from this practice. If necessary, a clinic incentive could be arranged to reward service providers that used delayed umbilical cord clamping in institutionalized births and this could be verified via spot checks and reports. (See section 8.3 below for more commentary on supply-side incentives).

7. New and Redesigned CCTs Focusing on Nutrition

There are several new CCT programs with significant attention to nutrition currently in the design or early implementation stages. The examples below highlight some exciting and innovative developments in CCT design and suggest the possibility of a closer marriage of CCTs and nutrition policy in the future.

7.1 Panama

Panama launched a new CCT program called the *Red de Oportunidades* in early 2006. To accompany the cash transfer and its conditionalities (in education, health, and legal identification of beneficiaries), the Government of Panama, with support from the World Bank, is implementing a component to strengthen and expand the basic package of health services called PAISS (*Paquete de Atención Integral de Servicios de Salud*) to meet the demand generated by the CCT. This effort involves the provision of funds and technical assistance to bolster PAISS with a community-based growth promotion and development intervention aimed at preventing chronic undernutrition (known as PAISS+N). The Department of Nutrition, the Ministry of Health, and local and international experts will standardize growth promotion protocols, and develop plans to ensure high quality counseling appropriate for indigenous communities,[45] and incorporate these efforts into PAISS services. PAISS+N will then be expanded to CCT areas, including some areas concurrently covered by PAISS without its nutrition elements. Training and software will be provided to central and regional Ministry of Health staff to build institutional capacity to plan, coordinate, and supervise activities associated with PAISS+N. A monitoring and

[45] Indigenous beneficiaries represent one-third of all *Red de Oportunidades* beneficiaries (World Bank 2007a).

evaluation system is also being planned to track the expansion of PAISS+N and measure the impact of the additional preventive nutrition interventions (World Bank 2007a).

7.2 Peru

Peru is making great strides to transform its CCT, *Juntos*, which previously demonstrated minimal success, into an integral part of its national nutrition strategy. In its initial form, *Juntos* provided a flat transfer worth $30 per month (representing roughly 25 percent of the consumption of beneficiary households) to families that met conditionalities in primary education and health. The arrangements for verifying compliance were problematic: beneficiaries had to personally collect certification from schools and health posts to prove their attendance, and this interfered with service provision and created an unnecessary emphasis on filling in forms, rather than using and providing services. Furthermore, although roughly thirty percent of the *Juntos* budget was allocated to the health and education sector as fungible resources to strengthen the supply of relevant services, little of this money was spent, and services did not appreciably improve (Tesluic and Walker 2007).

Thanks to strong political commitment to nutrition at the national level—President Garcia committed to reducing chronic undernutrition by five percentage points in five years, at the beginning of his term—the Peruvian government, with technical assistance from the World Bank, has been planning an important re-orientation of *Juntos* in order to maximize its impact on nutrition outcomes. In July 2007 the board of *Juntos* decided to refocus on improving nutritional outcomes. Soon after, this initiative was endorsed by the national nutrition strategy, *CRECER* (Tesluic and Walker 2007). Recommendations made by a World Bank team include: (1) adjusting the targeting algorithm that determines district eligibility to increase the weight given to chronic undernutrition at the community level—but not, as programs in the past have done, targeting individuals who are malnourished, which can create a perverse incentive; (2) eliminating conditionalities that seem extraneous or counterproductive and emphasizing essential conditionalities related to nutrition outcomes, based on agreement between the Ministry of Health and the government—these include growth monitoring and promotion (initially required every four months, but more frequently as capacity and demand increase[46]) and micronutrient supplementation; (3) utilizing a new supply-side financing mechanism that would establish priorities and criteria for spending funds dedicated to supply-enhancement and condition supply-side transfers on the provision of a minimal level of coverage; and (4) revising the compliance verification mechanism such that information systems used by *Juntos* and the Ministry of Health will be harmonized and institutional coordination and impact evaluation capacity will be strengthened (World Bank 2007b).

The impact of these reforms is expected to be considerable. Already 40 percent of the 500,000 children under-five who are chronically undernourished live in *Juntos* areas. In these areas, almost 36 percent of children under five suffer from chronic undernutrition, compared to only 13 percent in non-*Juntos* areas. Halving undernutrition in *Juntos* areas

[46] The World Bank recently produced a video that presents simple standards for children's growth during the first two years in an effort to inform parents about expected growth and motivate them to demand services that promote healthy growth (World Bank 2007b).

would reduce the national rate of undernutrition by 20 percent (Tesluic and Walker 2007).

7.3 Bolivia

Bolivia is in the process of designing a CCT to combat chronic child undernutrition, targeted to families with pregnant women and/or mothers of children younger than two. Communities with high rates of chronic undernutrition and poverty are being selected to receive cash transfers, a public information campaign (with information about program objectives and benefits), and supply-side improvements (e.g. strengthened Ministry of Health technical services and improved monitoring and accountability mechanisms). A pilot in 10 municipalities was planned for early 2008, followed by full expansion in 2009 (World Bank 2008b).

8. Key Issues Affecting CCT Impact on Child Undernutrition

8.1 Eligibility and Benefit Duration

As mentioned in the cases of Peru and Bolivia, introducing a nutrition focus to a CCT implies different approaches to determining program eligibility and defining the appropriate duration of CCT benefits. Because poverty is often highly correlated with undernutrition—the prevalence of undernutrition is often two or three times higher among the poorest income quintile than the highest quintile—and because CCTs have been found to be well targeted to the poor, malnourished individuals are also likely reached by CCTs (World Bank 2006a). As mentioned above, Peru's *Juntos* program is considering adjusting its targeting algorithm to more heavily weight chronic undernutrition at the community level. Although this may be relevant where high rates of undernutrition are concentrated in particular regions (e.g. Peru and Panama), it is not likely to be necessary in most cases.

Within the target area, defining eligibility more narrowly to cover the "window of opportunity" for nutrition interventions—pregnancy through the first two years of life—can enhance the ability of CCTs to prevent stunting. In Bolivia's CCT, which focuses specifically on nutrition, eligibility extends from pregnancy ("minus-nine") through age-two. A nutrition-focused CCT could, for example, employ a conditionality requiring attendance at growth promotion sessions on a monthly basis for children 0-12 months and once every two months for children 12-18 months, and then provide *Sprinkles* for children 6-24 months and other micronutrient supplements for pre-school children (i.e. iron-deficiency can affect learning, work performance, and productivity at all stages of life). CCTs that focus on nutrition as well as other types of human capital formation could employ conditionalities that address stunting until age two and continue micronutrient and health conditionalities through the preschool period to ensure that pre-school children receive necessary services (e.g. immunizations, de-worming, and oral rehydration therapy).

8.2 Conditionality

There has been considerable debate about the importance of conditionality to gains in health and nutritional status. While two studies have found positive impacts of conditionality on school enrollment (de Brauw and Hoddinott 2008 and Schady and Araujo 2006), there is as yet little evidence regarding the impact on nutrition and health outcomes. However, several examples suggest that conditionality may make a difference. According to an evaluation of Jamaica's CCT (PATH), 46 percent of the families reporting that their children's use of healthcare had increased since the program began attributed this change to the CCT (Levy and Ohls 2007). Also, experiences from contingency management[47] interventions, which seek to change complex, entrenched behaviors (usually related to substance abuse, smoking, and overeating) via positive reinforcement (often in the form of financial incentives or other rewards such as vouchers and prizes), have shown some positive results (Medlin and de Walque 2008).[48] Although these types of behavior change are quite different from those targeted by CCTs, the results suggest that conditionality can be useful in modifying behavioral patterns that are deep-rooted and difficult to change.

When considering if and how to attach nutrition-related conditionalities to a cash transfer program in an area where child undernutrition is a problem (and is not caused by lack of food alone), it may be helpful to use a simplified decision rule (illustrated in Box 8.2). This decision rule distinguishes among four scenarios: First, where nutrition programs exist and are well used (defined according to criteria of frequency and regularity) and effective, conditionality is unnecessary and an unconditional transfer (UCT) is a better option. Second, where nutrition programs exist, are of good quality, but are underutilized, nutrition-related conditionalities can be considered as a possible tool to spur participation. Third, where nutrition programs exist, are underutilized, and are of poor quality, a CCT coupled with supply-side improvements can be considered. And fourth, where no nutrition program exists, a nutrition-focused CCT is not appropriate unless high-quality and accessible services can be introduced *and* it is determined that these services would be underutilized without cash incentives and conditionalities. Decisions about conditionality should also take into account political economy issues—the willingness of elites to support transfer programs to the poor, costs associated with verifying compliance—particularly if there are multiple conditionalities, each with their own verification mechanism, and the degree of existing administrative capacity. Finally, the cost-effectiveness of different design options, addressed in more detail in section 8.4, should be considered.

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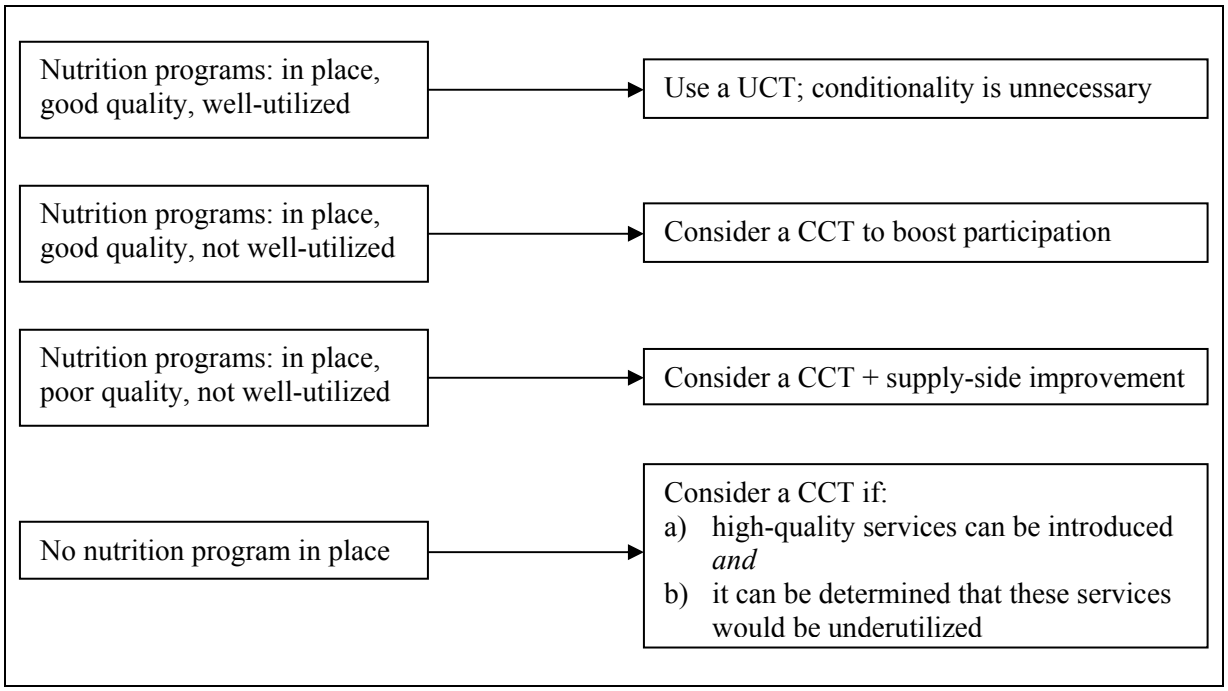
[47] Like CCTs, contingency management "relies on the mechanism of conditionality to elicit behaviors that are viewed to be in one's long-term interests (or, in those of society's) and to discourage those behaviors that may ultimately be detrimental to one's own health and well-being that may not be easily perceived or experienced in the short-term." Unlike traditional CCTs, contingency management focuses exclusively on complex, deeply ingrained behaviors that require more than just simple actions, such as attending school or health clinics (Medlin and de Walque 2008).

[48] Positive results have been noted for cocaine and alcohol abuse. One limitation to these findings is that many clinical trials of the contingency management approach have been conducted in developed countries, with small sample sizes, and have shown mixed results (Medlin and de Walque 2008).

Box 8.2: Decision Rule for Determining the Use of Nutrition-Related Conditionalities



In order to make appropriate decisions about the use of CCTs for nutrition objectives, an assessment of existing nutrition programs and their utilization should be undertaken to determine the quality of services and usage patterns by potential beneficiaries. Formative research, using focus group discussions and in-depth interviews with community members and service providers, can allow program planners to understand the preferences and perceptions of potential CCT beneficiaries as well as the constraints they face. Furthermore, by identifying specific obstacles to services use (e.g. cost, distance, quality, or other factors) this process can spur ideas for appropriate interventions to best overcome these constraints.

At this point it is also valuable to think about other approaches, besides conditionalities, that could achieve the same results. For example, moral suasion through a public education campaign conveying messages about how to spend cash transfers, or notional earmarking might be just as effective as a CCT in boosting the consumption of nutritious foods (World Bank 2008a). In cases where such alternatives seem unlikely to bring about desired outcomes, or have been proven not to do so, conditionality can be a feasible design option.

It is, of course, critical to select the "right" conditionalities. Factors like geography, the burden of disease, and the degree of existing infrastructure and social services can shape the menu of suitable nutrition-related conditionalities. For example, iron supplementation is most suitable in areas with high anemia prevalence (over 40 percent), high diarrhea prevalence (often sites with poor sanitation), and poor growing conditions (high altitude, poor soil, etc.) or poor market access, because it is likely that iron-rich foods will be less

available in such places (Allen and Gillespie 2001). CCTs in areas with these characteristics (but not endemic malaria) and insufficient iron supplementation coverage could consider employing a conditionality involving iron supplementation. Where hygiene and sanitation are major concerns, CCTs could prioritize conditionalities attached to counseling about hygiene practices and investments in sanitation infrastructure. And, in areas where complementary feeding practices are poor, an intervention that stresses counseling on feeding and its relationship to healthy growth, perhaps accompanied by dispersible micronutrient preparations, may be the most relevant nutrition conditionality. Costs may also be more easily justified in contexts where conditionalities meet visible needs (Medlin and de Walque 2008).

Decisions about appropriate conditionalities should also draw on evidence about which nutrition interventions have the strongest link to desired outcomes in the particular context. As mentioned in the discussion above about *Juntos* in Peru, conditionalities that are extraneous or counterproductive should be replaced with more appropriate conditionalities that will spur participation in activities that have the greatest likelihood of impact. New conditionalities could also be introduced, such as interventions to boost the nutritional status of pregnant women (e.g. pregnancy weight gain monitoring with accompanying counseling about dietary intake during pregnancy) and/or improved micronutrient supplements for pregnant and lactating women and children (e.g. multi-micronutrient supplements, dispersible micronutrient preparations, zinc, and B12). Because nutrition and health deficits among young children in developing countries are often accompanied by weak motor skills and poor cognitive and socio-emotional development, it may also be useful to institute a CCT conditionality that included counseling and services for early child development (ECD) (Schady 2006b).

There are different ways of applying conditionalities. The vast majority of CCTs focus on conditionalities at the individual or household level. However, the same approach could be applied at the community level with target rates of participation in specified activities (e.g. CBGP, immunizations, or institutionalized births) required in order for households to receive individual transfers. Alternatively, these accomplishments could trigger an additional incentive payment made to individuals or to the community. For example, communities (or individuals within communities) that maintained a given participation rate in CBGP, or achieved a specified reduction in stunting prevalence over the course of a year, could be eligible for a supplementary transfer on top of their monthly benefits. This approach could introduce a free-rider problem and would require mechanisms for internal and external assessment.

However, community-level conditionalities may be able to introduce a positive peer pressure effect and inspire collective responsibility for nutrition results within communities. A recent systematic review of randomized controlled trials of obesity reduction efforts using the contingency management approach found that incentives based on group performance had better results than those based on individual performance (Medlin and de Walque 2008). Currently community-level conditionalities are being implemented in the Indonesia pilot CCT and planned pilots in Tanzania and Sierra Leone also intend to try community-based conditionalities (Grosh, personal

communication 2008). If they replaced individual-level conditionalities or were applied to what were previously unconditional cash transfers, community-level conditionalities could also reduce the administrative demands of verifying individual-level compliance.

Finally, different methods of verifying compliance can be selected. Most commonly seen are "hard" conditionalities, which are both verified and enforced.[49] However, where administrative capacity is limited and funding is scarce, "soft" conditionalities, in which specific actions are recommended, but not enforced, may be more appropriate. Temporary soft conditionality is also an option while verification and enforcement systems are being put in place (Adato and Bassett 2008; World Bank 2008a).

8.3 Supply-side Investments

As is evident in the case of PRAF in Honduras and *Juntos* in Peru, the lack of meaningful investment in the supply of services, even when funding is allocated, can jeopardize CCT effectiveness. Despite some examples of successful supply enhancement efforts—Nicaragua's use of NGOs boosted supply effectively, and El Salvador's basic services branch of the *Red Solidaria* indicates commitment to boosting supply to meet increased demand, although results have yet to be confirmed—progress on this front is critical, especially as CCTs spread to new countries and regions with less developed service infrastructure.

One approach to improving services via a CCT is to establish clear priorities and criteria for how to spend allocated funds in consultation with relevant ministries (as in Peru), and to monitor spending carefully. Another approach is to offer an incentive to service providers for improved service provision. An incentive like Nicaragua's school supply bonus—a small payment to teachers who faced some additional reporting duties and were likely to have larger classes after the introduction of the CCT—could be employed to improve the supply and quality of nutrition services. For example, applying this concept to community-based growth promotion (CBGP), each participating CCT mother could be awarded a "CBGP bonus" which she would remit to CBGP staff at weighing sessions (with some specified frequency) as part of CCT compliance. Half of the bonus could act as an incentive for the CBGP volunteer, while the other half would go to upkeep of the weighing location or purchase of materials or services that would improve the quality of services. This model does have some risks. In places where only some community members are CCT beneficiaries (e.g. if targeting is based on means tests within communities), this kind of bonus could introduce perverse incentives for the CBGP volunteers who might focus more attention on mothers who are CCT beneficiaries because they bring incentive payment and less on mothers who are non-beneficiaries. Moreover, there would be additional costs associated with adding a separate payment, communicating its function, and monitoring its remittance and use.

Alternatively, a bonus could be provided to health centers that provided a minimal level of service coverage and quality, and/or those that incorporated important practices related

[49] Enforcement measures include reducing the transfer for the period of non-compliance and terminating payment in cases of repeated non-compliance. Some programs include outreach to families that do not comply to help them identify and overcome obstacles to participation (World Bank 2008a).

to nutritional outcomes (e.g. one-on-one counseling to pregnant women during prenatal check-ups or young child visits, or delayed umbilical cord clamping). This approach has been recommended in Peru, but no results are available yet.

8.4 Cost and Cost-effectiveness

The cost-effectiveness of using CCTs as a mechanism to increase participation in nutrition interventions is another important consideration. In general, the costs of nutrition interventions are quite low. For example, maternal iron supplements cost roughly three dollars per pregnancy plus cost of counseling, dispersible micronutrient supplements (e.g. *Sprinkles*) cost $0.88 per child per year, and zinc supplements cost $0.16 per child per year plus the cost of accompanying counseling (Levin et al 1994, as cited in Horton and Ross 2003; World Bank 2006a; The Micronutrient Initiative 2007 forthcoming). A general cost figure for a nutrition education program is about $2.50 per person per year,[50,51] and the estimated annual cost of community-based growth promotion ranges from $1.60 to $10 per child (World Bank 2006a).

Despite these relatively low delivery costs, the cost effectiveness of utilizing a CCT as a mechanism to boost the use of these services is uncertain. While there may be potential gains from economies of scale by piggybacking the promotion of nutrition services onto an existing CCT program (in terms of staff, outreach, training, and logistics) this depends on which entity bears the costs of the cash transfers and nutrition interventions and on whether there is overlap in the target groups and regions benefiting from each. Furthermore, closer linkages between CCTs and nutrition interventions would require additional financial, human, physical, and administrative resources, particularly in the initial stages of planning and coordination, causing the cost per beneficiary for CCTs (estimated at $70-77 annually) to increase (World Bank 2006a). Whether injecting resources into a nutrition-oriented CCT would be better spent directly on nutrition interventions or on a communication and advocacy campaign to increase awareness, and thereby boost demand, remains an open question.

8.5 Political Support

One of the fundamental issues affecting the decision to use CCTs and the role that CCTs could play in combating undernutrition is political support. The national perception of nutrition is likely to influence the potential for CCTs to be leveraged for nutrition outcomes. In Peru, where rates of chronic undernutrition are high and government support is relatively strong, re-focusing *Juntos* to be an essential component of the national nutrition strategy seemed a natural choice. However, even when political backing is currently strong, future support may not be assured, particularly after a change in leadership. This was the case in Nicaragua in 2007 when Daniel Ortega's new

[50] Providing multiple age-specific sessions, particularly if there were separate sessions for mothers and fathers, while likely increasing the benefit of this component, would also increase the cost as well as complicate the logistics of planning, publicizing, and monitoring such events.

[51] The cost of formative research (Trials of Improved Practices or TIPs) includes salaries and per diems, transportation, and research company contracts. Costs could be lowered if well-trained local NGO staff members carry out TIPs. This was found to be effective in Guatemala, where barely literate indigenous staff effectively conducted TIPs (Change Project 2007).

administration failed to renew the contracts of all staff associated with RPS and considered replacing the CCT with a radically different program—the provision of a cow for each poor family in Nicaragua (Flores, personal communication 2007).

In places where undernutrition rates do not cause national alarm or government recognition of the problem of undernutrition is minimal, introducing or modifying a CCT to focus on curbing undernutrition should be cautiously considered because the government may fail to allocate sufficient resources or ensure coordination between the CCT program and national health and nutrition policies. Where support for nutrition is flagging, donors and NGOs can conduct advocacy campaigns to highlight the importance of nutrition and share the experiences of other countries with similar circumstances that have made progress in reducing undernutrition, either using the mechanism of CCTs effectively as part of their nutrition strategy or by relying on another approach.

8.6 Institutional Roles and Coordination

When nutrition services are linked to a CCT, beyond getting the technical details of nutrition interventions correct, there are a number of critical institutional questions that arise. One key question—which affects CCTs whether they focus on nutrition or not—is, which entity is responsible for implementing individual program elements? Although institutional arrangements vary by country, typically implementation responsibilities are shared across different levels and departments of government (World Bank 2007c). At the national level, members of the CCT implementing agency, ministry representatives (from the Ministries of Education, Health, Finance, and others in charge of infrastructure, women's and children's welfare, information systems, etc.), Secretariats (e.g. of strategy and coordination), and technical and logistical representatives all play important roles. Some CCTs also have municipal and community committees with the participation of civil society representatives, school and health care service providers, and local volunteers. The involvement of so many parties can introduce territoriality, competition, and duplication of efforts.

One approach that some CCTs have taken to reduce the duplication of benefits to poor families is to require that beneficiaries stop receiving benefits from other social programs (as in Mexico and Nicaragua). An expected benefit of this approach, as specified by the *Progresa* program, is to absorb numerous poverty alleviation programs into a single program that represents an integrated approach to poverty alleviation (Skoufias 2005). While there are clear benefits to streamlining a country's social protection efforts and ensuring complementarity among programs, putting this degree of coordination into practice remains a challenge. Furthermore, there are concerns that focusing exclusively on CCT programs "constitute[s] a reduction in the commitment to social justice, one that focuses only on the most extreme cases of poverty" (Lomelí 2008).

There is also a risk that line ministries will perceive a CCT planning agency to be trespassing on their turf. For example, particularly if targeting approaches differ across programs, the Ministry of Health may have determined that clinics or services are needed in particular regions, while the CCT requires them in its own program areas. A particular problem for nutrition activities results from there being no "institutional home" for

nutrition. Therefore, ministries (e.g. health, social services, women and children, or others work on issues surrounding nutrition) may not place nutrition-related services among their top concerns.

As another example, the Ministry of Health may be unwilling to provide the necessary training and supervision of staff and volunteers that make possible CCT conditionalities for growth monitoring and promotion (whether community- or facility-based) or micronutrient supplementation because these compete with other ministry priorities. Two things may be helpful in this situation: first, a CCT planning and implementation structure that involves multiple ministries—including those that work in the area of nutrition—in strategic planning, and second, incentives to encourage adherence to CCT efforts. Ensuring a participatory role in CCT planning for ministry representatives in such activities as defining CCT conditionalities and minimum standards for health and nutrition services could clarify the interrelated goals of the CCT and ministry projects and facilitate coordination regarding the location, duration, and target groups for their various interventions. This process could also allow stakeholders to explore possible gains from economies of scale and shared resources like communication, training, infrastructure, and logistics. Accompanying coordination efforts with carrots (e.g. funding for ministry projects that play a key role in CCT implementation, monetary incentives for service quality, or public recognition) or sticks (e.g. greater public accountability, transparency, and results monitoring) could further incentivize collaboration and high-quality program implementation.

9. Conclusions

The evidence presented in this paper illustrates that the combination of cash and conditionalities has allowed some CCTs to appreciably reduce child stunting. However, impacts on stunting have not been consistent across programs and reductions in anemia have been rare. Several design and implementation modifications could likely increase these impacts and allow CCTs to play a more important role in national nutrition policies. CCTs are by no means the best tool for solving child undernutrition in all cases, but there seems to be real promise for CCTs to promote participation in proven nutrition interventions where demand is low and possibly to enhance the supply and quality of these interventions where services are poor. The effectiveness and cost-effectiveness of different design options as well as their appropriateness in different contexts, of course, must be carefully evaluated.

The following list outlines some general implications of the discussion above. Many of these ideas are still new and untested. Much creative experimentation and careful research is needed to find the best ways to coordinate effective nutrition strategies that capitalize on the strengths of CCTs to break the cycle of poverty and child undernutrition.

9.1 Facilitating CCT Impacts on Undernutrition

In countries concerned with child undernutrition that are considering a cash transfer program to affect nutrition outcomes, the decision rule mentioned above can help determine whether it is appropriate to consider nutrition-related conditionalities. Where

nutrition programs exist and are well-used and effective, conditionality is unnecessary and an unconditional cash transfer (UCT) is the best option; where nutrition programs exist, are of good quality, but are underutilized, nutrition-related conditionalities should be considered to spur participation; where nutrition programs exist, are underutilized and are of poor quality, a CCT coupled with supply-side improvements should be considered; and where no nutrition program exists, a CCT is not appropriate unless high-quality services can be introduced and it is determined that these services would be underutilized. Questions of political economy, administrative capacity, and cost-effectiveness should also be considered.

If conditionality is deemed an option, the following actions could help facilitate increased impact on maternal and child undernutrition for CCTs, whether existing or in the planning stage, that state the improvement of nutritional status as a specific objective:

- Undertake formative research to identify reasons for low levels of service utilization or participation. Use this information to craft appropriate conditionalities.

- Assess the effectiveness of any existing conditionalities, eliminate those that are found to be extraneous or counterproductive—those with minimal or deleterious impacts on nutritional outcomes—and replace these with conditionalities that are more likely to reduce undernutrition (i.e. conditionalities based on the six Essential Nutrition Actions and employing best practices from nutrition interventions).

- Ensure that CCT benefits and nutrition-related conditionalities cover the full period of greatest nutritional need, from pregnancy through the first two years of life. If it is feasible and there is sufficient need, continue benefits and conditionalities (particularly related to micronutrient supplementation and health) through the pre-school years.

- Test new types of conditionalities and new ways of applying them. Experiment with conditionalities applied to participation in early childhood development services and the use of new micronutrient supplements (e.g. dispersible micronutrient preparations accompanied by messages about complementary feeding; zinc supplements; and B12 supplements where iron supplements have not been effective) and nutritional supplements where protein and energy intake is still insufficient. Test appropriate ways to transmit messages about child caring and feeding to fathers and other caretakers. Evaluate community-level conditionalities to determine whether incentives for reaching specified participation targets (e.g. participation in community-based growth promotion, immunizations, or institutionalized births) and/or impact targets (e.g. reduced stunting rates) can be effective. Find out if free-riders are a serious problem or if there is a positive peer pressure effect associated with collective responsibility for nutrition results.

- Accompany CCT implementation with supply-side enhancements in areas where services and/or infrastructure are insufficient to support the increased demand associated with a CCT or where quality is poor. Test the use of conditionalities and/or incentives for service providers as a means of ensuring high-quality services (e.g. weight monitoring, counseling, and delivery of key micronutrients) and incentivizing the introduction of less familiar practices (e.g. delayed umbilical cord clamping). Postpone CCT introduction until services and infrastructure are available or until simultaneous efforts are undertaken to roll out the CCT and strengthen the supply and quality of services.

- Involve ministries (e.g. health, social services, women and children, etc.), the agency responsible for the CCT, donors, and other stakeholders engaged in nutrition policy and programming in decisions about nutrition-related conditionalities and supply-side enhancements. Plan for a coordinated implementation effort with guaranteed incentives for each player involved in service delivery and oversight.

- Include nutrition indicators within the list of primary outcome indicators for the CCT (e.g. anthropometry, hemoglobin levels, and other biomarkers). Collect data on these indicators as part of regular program monitoring and impact evaluation. Ensure that evaluation methods are rigorous, prioritizing randomized controlled trials, where possible. This will help build the evidence base of CCT impacts on undernutrition.

9.2 Recommended Research

Additional research could provide empirical evidence to interested countries and agencies to help them make rational choices about CCT design appropriate for specific contexts. Several types of research are important to inform decisions about using CCTs as instruments for nutrition policy. Formative research, conducted during the initial stages of design, could identify beneficiary and service provider perspectives and clarify obstacles they face and potential sources of motivation. This information could guide choices made about CCT design.

Once a CCT is functioning, operational research can help identify how different program components are actually being delivered, whether best practices are being adhered to, and where bottlenecks arise. This research could lend insight into which CCT design elements are working well, which are most encumbered by obstacles, and which constraints might be amenable to change. It could also explore whether the introduction of new conditionalities and supply-side investments overwhelms CCT program operation and whether offering improved services and incentives burdens institutional capacity and organization.

Cost-effectiveness studies could identify those nutrition interventions that CCTs can most cheaply and effectively utilize as conditionalities and illuminate some of the trade-offs associated with applying conditionalities versus using mass communication approaches to achieve nutrition-related behavioral change. These studies could also shed light on the

comparative advantage of using CCTs to address undernutrition compared to other possible areas of focus, such as ECD, risk mitigation, human capital development and/or productive activities for adults, or a combination of these.

Additional impact evaluations using both quantitative and qualitative methods are needed. Qualitative research could investigate the usefulness and complementarity among nutrition inputs from the perspective of beneficiaries, communities, and service providers. Of particular interest would be information on perceptions of the accessibility of services, quality of counseling, and any behavior change that may be facilitated by CCTs focused on nutrition. Randomized studies aimed at disentangling the independent impacts of different types of conditionalities and their various combinations; the effectiveness of individual versus community level conditionalities, and the benefits conferred by supply-side enhancements on nutritional outcomes would be invaluable.

Empirical work on in various country contexts is critical since CCTs are spreading widely and rapidly. Comparative studies drawing lessons from experiences in areas characterized by diverse nutrition problems and policies, varying levels of government capacity and commitment, and different types and quantities of existing resources and infrastructure would also prove immensely useful.

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Appendix 1: Summary of CCT Impacts on Health and Nutrition

Program Details		Impacts				
Program Name	**Monthly Transfer**	**Food Consumption**	**Service Utilization**	**Health Outcomes**	**Child Growth (Stunting rate, HAZ, height)**	**Anemia**
Brazil: *Bolsa Alimentação*[52]	$6.25-18.70/ beneficiary (8% of household expenditure)	• 6% increase in caloric availability • 9% increase in dietary diversity	N/A	N/A	0.11reduction in height-for-age z-score (children 0-7 years) (but not statistically significant)	N/A
Colombia: *Familias en Acción*[53]	$15/household (24% of household expenditure)[54]	• 15% increase in total consumption • No change in food share consumed, but dietary quality improved	• 23 % point increase in preventive health visits • 21 % point increase in growth monitoring (children 0-24 mos); 48% point increase (children 24-48 mos)	11 % point lower diarrhea incidence (children 24-46 mos, rural areas)	• 6.9 % point reduction in probability of stunting (children 0-24 mos) • +0.16 height-for-age z-score (children 0-24 mos) • Not statistically significant for children older than 24 mos	N/A
Honduras: *PRAF II*[55]	$4/household (4% of household expenditure)	• No impact on total calorie availability or dietary diversity • Dietary composition improved (higher consumption of fruits, vegetables, and animal source foods)	• 15-21 % point increase in use of health services by children • 18-20 % point increase in women with ≥ 5 antenatal care visits • 17-22 % point increase in children weighed	No impact	No impact	No impact

[52] Brazil information from: Olinto et al. 2003 and Olinto et al. 2003
[53] Attanasio and Mesnard 2006; Attanasio et al. 2005; Attanasio and Gomez 2004; Attanasio et al. 2005b.
[54] Calculated from Attanasio and Mesnard 2006.
[55] Honduras information from IFPRI 2003a

Program Details		Impacts				
Program Name	**Monthly Transfer**	**Food Consumption**	**Service Utilization**	**Health Outcomes**	**Child Growth (Stunting rate, HAZ, height)**	**Anemia**
Mexico: *Progresa*[56]	$13/household [57] (20% of household expenditure)	• 14.5% increase in mean per capita consumption • 10.6% increase in mean per capita food consumption (especially fruits, vegetables, & animal products)	• 8% increase in first trimester prenatal visits • 30-60% increase in growth monitoring visits (children 0-2 yrs)	• 12% lower incidence of illness (children 0-5 yrs) • 19% decrease in # of days lost to adult illness	• 6 % point reduction in stunting prevalence (children 0-5 yrs) • 10 % pt reduction in probability of being stunted (children 12-36 mos) • Increase of ~1 cm/year (children 12-36 mos and 0-6 mos in poorest 50th percentile)[58] • +0.33 height-for-age z-score (children 12-36 mos) • +0.14 height-for-age z-score (children 0-5 yrs)[59]	• 25.5 % reduction in risk of anemia (children 12-48 mos) • 10.6 % pt reduction in anemia prevalence (children 12-24 mos)
Nicaragua: *RPS*[60]	$18/household (18% of household expenditure)	• 4 % point increase in food share of household budget) • Increased dietary diversity: # of food items & nutritional value	• 13 % point increase in children (0-3 yrs) taken to health-care provider & weighed • 16 % point increase in children (0-3 yrs) taken to well-child health visit	N/A	• 5.5 % point reduction in stunting prevalence after 2 years (children 0-5 yrs) • +0.13 height-for-age z-score after 2 years (children 0-5 yrs)	No impact

N/A: No information available

[56] Hoddinott, Skoufias, and Washburn 2000; Gertler 2000; Hoddinott 2008; Behrman and Hoddinott 2001; Gertler 2004; Rivera et al. 2004.
[57] Handa and Davis 2006
[58] Several studies looking at impacts on anthropomentry found similar results: +.96 cm after one year of exposure among children 12-36 months, significant at the 1% level (Gertler 2004); +1.016 cm after one year of exposure ("treatment on the treated") among children 12-36 months, significant at the 5% level – the "intent to treat" impact was not statistically significant (Behrman and Hoddinott 2005); +1.1 cm after two years of exposure (compared to one year of exposure in the control group) among children under six months from the poorest 50th percentile, significant at the 5% level (Rivera et al. 2004).
[59] This is a new estimate by Hoddinott (2008) to facilitate comparability across evaluations.
[60] Nicaragua information from: Maluccio and Flores 2005

Appendix 2: CCT Evaluations and Analyses Reviewed[61]

Country/Program	Time period	Study sample size	Methods	Reference	Comments
Brazil: *Bolsa Alimentação*	April 2002 (retrospective data from 6 months previous)	2493 beneficiaries 506 excluded (but eligible) beneficiaries	Ex-post quasi-randomized controlled trial[62]	Morris et al. 2004	Compared program beneficiaries with similar individuals who were eligible, but accidentally excluded from the program using matching methods; small sample size and limited to small region (4 municipalities in northeast); no baseline data (except weight noted some health cards), but this was compensated by a complex calculation of initial values – possibly biased[63]
	2005	16,239 children	Cross-sectional study	MSD 2005; Soares et al. 2007	Selection bias likely due to the use of a self-selected sample of children (within randomly selected municipalities)
Colombia: *Familias en Acción*	2002-2003	10,742 households (64,500 individuals)	Cluster matched study	Attanasio and Gomez 2004; Attanasio et al. 2005a, 2005b; Attanasio and Mesnard 2006	Relatively small sample; incomplete baseline data for some of intervention groups; cluster correlation not accounted for.
Honduras: *PRAF II*	2000-2002	5,683 households (26,866 individuals)	Randomized controlled trial	IFPRI 2003a	Data reflects intermediate report because the Honduran government cancelled the final evaluation partway through; potential declaration bias in mothers' reports on children's health outcomes.
Mexico: *Progresa*	Aug/Sept 1998 – Oct-Dec 1999	24,000 households	Randomized controlled trial	Skoufias 2005	Possibility of spillover or anticipation effects (probably negligible); leakage problems for nutritional supplement; non-random assignment

[61] Information for this table comes from each evaluation and Lagarde et al. 2007.

[62] The study is considered quasi-randomized because one of the administrative errors that led to some eligible individuals not being selected occurred when personal information recorded on *Bolsa Alimentação* registration forms did not match information on the same family recorded for *Bolsa Escola*, another CCT. Because this situation was more likely to arise among families already registered in for *Bolsa Escola*, it is not considered random, but rather quasi-random (Morris et al. 2004).

[63] Methods explained in IFPRI, undated.

Country/Program	Time period	Study sample size	Methods	Reference	Comments
					at family level (beneficiaries generally poorer)
	Aug/Sept 1998 – Oct-Dec 1999	4000 children	Randomized controlled trial	Behrman and Hoddinott 2001, 2005	Treatment defined as child residing in *Progresa*-eligible household in a village receiving *Progresa* benefits. Estimates capture 1 year of program exposure. Estimation method: child-level fixed effects.
	1998-2000	Height sample: 155 children 12-36 months (1049 treatment; 503 controls) Anemia sample: 2012 children 12-48 months (1404 treatment; 608 controls)	Randomized controlled trial	Gertler 2004	Treatment defined as a child living in a *Progresa* village, so the treatment group includes children living in households that were not receiving *Progresa* benefits. Estimates capture 1 year of program exposure. Estimation method: random effects at the locality level.
	1998-2000	650 children <12 months from low-income households (<50th income percentile)	Randomized controlled trial	Rivera et al. 2004	Treatment defined as child residing in *Progresa*-eligible household in a village receiving *Progresa* benefits and SES below median. Estimates capture 2 years of program impact, but control localities began receiving *Progresa* benefits in late 1999, biasing the estimates of impact downward.[64] Estimation method: random intercept.
Nicaragua: *RPS*	2000-2002	1,581 households (baseline) 1,453 households (2001) 1,397 households (2002)	Cluster randomized controlled trial	Maluccio and Flores 2005	Possibility of spillover or anticipation effects (probably negligible); 12% attrition bias in panel, but analysis adjusted for this and checked for robustness of results.

[64] Hoddinott 2008.

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Conditional Cash Transfers programs (CCTs)—which grant cash to poor families provided they make specified investments in the human capital of their children—have been championed as an effective intervention for social protection. Some CCTs include requirements (called conditionalities) related to health and nutrition. Yet while there is evidence indicating that some CCTs have improved the nutritional status of beneficiary children, there has been little commentary on the potential for CCTs to make a greater contribution to improving nutritional status, nor on the programmatic and contextual issues affecting their ability to do so. This paper finds that where utilization of nutrition interventions is low, there is significant potential for CCTs to play a greater role in reducing undernutrition by encouraging groups at high risk of undernutrition to utilize effective nutrition services and by encouraging improved quality of these services. Several key design modifications—e.g. limiting CCT eligibility to the "window of opportunity" for nutrition impact, prioritizing nutrition-related conditionalities based on best practices in nutrition, increasing attention to supply-side investments for nutrition and health services, and improving coordination with other agencies and stakeholders—could allow CCTs to better contribute to eliminating child undernutrition in the developing world. At the same time, there is much to be learned about the effectiveness and cost-effectiveness of various design options, as well as their appropriateness in different country contexts.

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