



New Evidence on the Impact of Large-scale Conditional Cash Transfers on Child Vaccination Rates: The Case of a Clustered-Randomized Trial in Indonesia

DIAN KUSUMA^{a,b}, HASBULLAH THABRANY^b, BUDI HIDAYAT^b, MARGARET McCONNELL^a,
PETER BERMAN^a and JESSICA COHEN^{a,*}

^aHarvard T.H. Chan School of Public Health, Boston, USA

^bFaculty of Public Health Universitas Indonesia, Indonesia

Summary. — Despite recent progress, millions of children still die every year from vaccine-preventable diseases. One strategy is Conditional Cash Transfers (CCTs), which provide cash payments to poor households in exchange for compliance with health-related conditionalities including child vaccination. Using a randomized trial, we provide new evidence on the impact of large-scale CCTs on child vaccination rates in Indonesia by investigating the Program Keluarga Harapan (PKH) with a sample of over four thousand children under two years old. After two years of implementation from 2007 to 2009, difference-in-differences (DID) estimates show that PKH significantly increases child vaccination rates for all basic vaccine types by up to 30% compared to the control group means among children aged less than 12 months old but PKH shows modest effects among children aged 12–23 months old. There is also evidence that PKH is equity enhancing by increasing child vaccination rates for most vaccine types by up to 52% among children aged less than 12 months old living with less educated mothers (below six years). All this underscores the ability of cash transfers to reach poor children for whom health systems supply-side-oriented strategies have been less successful.

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Key words — Indonesia, Conditional Cash Transfers (CCT), household, child vaccination, clustered-randomized trials

1. INTRODUCTION

Despite recent progress, millions of children still die every year from vaccine-preventable diseases. The WHO (2016) estimated that 19.4 million children did not receive routine life-saving vaccinations in 2015. One explanation is a considerable inequality in child vaccination. Globally, countries in the African region have most unvaccinated children and very low national immunization coverage based on the WHO/UNICEF report. In Indonesia, the proportion of one-year olds completely immunized among the poorest quintile is only half that of the wealthiest—39% and 75% respectively (Utomo, Suahya, & Utami, 2011).

One strategy is Conditional Cash Transfers (CCTs), which provide cash payments to poor households in exchange for compliance with health-related conditionalities including child vaccination (Fiszbein, Schady, & Ferreira, 2009). There are several theoretical pathways from conditionality to improved vaccination. Based on the human capital theory, consumers will invest in health if the expected private benefit exceeds the cost (Grossman, 2000). In terms of vaccination, it is harder to estimate the benefit since it comes years in the future particularly while facing the cost such as geographical barriers (e.g., no health facilities nearby, vaccine stock-outs), financial barriers, and social barriers (e.g., belief that vaccines are harmful) (Adato, Roopnaraine, & Becker, 2011). The cash element of CCT can help with financial barriers and the conditionality element might be seen as a way to transfer health information on the benefit of vaccination and signal the importance of vaccination for both households and health workers. Implementation issues, however, might jeopardize this potential effectiveness, rendering the conditions meaningless (Kremer & Glennerster, 2012).

While there are several rigorous studies on the impact of CCTs on child vaccination rates, the literature is limited in two ways. First, evidence from randomized controlled trials (RCTs) is still inconclusive (Johri *et al.*, 2015; Owusu-Addo & Cross, 2014; Ranganathan & Lagarde, 2012). Evidence shows that CCTs have positive impact on the coverage of measles-containing vaccine (MCV) by 11 and 3 percentage points in Nicaragua (Red de Protección Social) and Mexico (PROGRESA). But evidence also shows that CCTs have no significant impact on the coverage of MCV and Bacille Calmette-Guérin (BCG) in Honduras (Programa de Asignación Familiar), Mexico, and Zimbabwe (Robertson *et al.*, 2013; Barham & Maluccio, 2009; Barham, 2005; Morris, Flores, Olinto, & Medina, 2004). Secondly, large-scale evidence on the impact of CCTs on child vaccination is limited to only PROGRESA with over five thousand children under the age of three years. Other studies in Nicaragua and Honduras used about a thousand children. While the evidence from small-scale evaluations seems to be promising, one of the main challenges is whether the findings would be replicable at scale. A large-scale evaluation helps establish whether the CCT impact on vaccination is possible when taking into account the complexity of implementation namely issues with

* The authors are especially grateful to Vivi Yulaswati (National Planning Agency), Harapan Lumban Gaol (Ministry of Social Affairs), Jay Rosengard (Harvard Kennedy School), and Ajay Mahal (Monash University) for their support and many helpful discussions. We also thank seminar participants at the Harvard T.H. Chan School of Public Health and Harvard Kennedy School for valuable suggestions. Research fellowship from the Harvard Kennedy School Indonesia Program is gratefully acknowledged. Final revision accepted: May 13, 2017.

cash distribution, monitoring conditionality, and supply-side improvements (Madon, Hofman, & Glass, 2007).¹

Taking advantage of a large clustered-randomized trial in Indonesia, we provide new evidence on the impact of large-scale household cash transfers (PKH) on child vaccination rates using a sample over four thousand children under two years old. Previous PKH study (Alatas *et al.*, 2011) evaluated complete vaccination among all children under three years old and showed that PKH did not increase complete vaccination overall. However, they showed significant effects by 3.3 percentage points among confirmed program beneficiaries (i.e., participant effect). Our study provides a more in-depth analysis by investigating the PKH effects on different types of vaccines. There are at least two reasons: each vaccine combats a different disease with its own prevalence and potential consequences; vaccines can differ in doses, age, modality, and availability (Barham & Maluccio, 2009).

2. BACKGROUND

(a) Vaccination programs in Indonesia

Indonesia has a decentralized health system with most responsibilities shared to district governments. In public sector, district hospitals provide secondary/tertiary care; district health offices provide public health services; and health centers (Puskesmas) and network provide primary care. Puskesmas network includes supporting Puskesmas (Pustu) and village midwife (Polindes). There are also integrated care posts (Posyandu) run by cadres with health services provided by Puskesmas doctors, nurses, and midwives. In private sector, there are doctor practices, midwife practices, and hospitals.

The country adopted basic child vaccination during the 1980s. The Ministry of Health (MOH) in Indonesia has two main vaccination strategies: (1) to provide vaccinations at public health facilities; and (2) to hold vaccination campaigns, which typically take vaccines to households. The first strategy relies on individuals bringing their children to facilities, which tends to result in incomplete coverage of the population. Health officials assert that barriers to this strategy include geography and social norms. The archipelagic nature of the country makes it challenging to implement monthly vaccination in areas where facilities are lacking or less supply-ready (MOH, 2010a). Also, negative perceptions of immunization still exist (Judarwanto, 2012).

Prior to the PKH program, officially reported vaccination rates in Indonesia were 84% for BCG, 82% for MCV, 72% for OPV3, and 74% for DPT3 in 2007. These rates are lower than those in neighboring countries such as Thailand and the Philippines where the rates for all those vaccines are at least 95% (WHO/UNICEF, 2012). Further, the MOH uses an indicator called Universal Coverage of Immunization (UCI) village. A village is considered universal if at least 80% of all children aged 12 months or younger in the village complete basic child vaccination. Data show a constant and flat trend in the proportion of UCI villages at 70%, 76%, 73%, and 71% during the period of 2004, 2005, 2006, 2007, respectively, prior to PKH (MOH, 2007a).

(b) Program Keluarga Harapan (PKH)

In 2007, the government launched a large-scale pilot of PKH, a CCT to household. The goals are to reduce poverty, maternal and child mortality, and to ensure universal coverage of basic education. PKH, a traditional CCT program to poor

Table 1. *Conditionality and target indicators for PKH*

Health indicators

1. Four prenatal care visits
2. Taking iron tablets during pregnancy
3. Delivery assisted by a trained professional
4. Two postnatal care visits
5. Complete childhood immunizations
6. Adequate monthly weight increases for infants
7. Monthly weighing for children under three and biannually for children under five
8. Vitamin A twice a year for children under five

Education indicators

9. Primary school enrollment of children 6-to-12 years old
10. Minimum attendance rate of 85% for primary school-aged children
11. Junior secondary school enrollment of children 13-to-15 years old
12. Minimum attendance rate of 85% for junior secondary school-aged children

Source: MOSA (2007).

households, was piloted in six provinces including West Java, East Java, North Sulawesi, Gorontalo, East Nusa Tenggara (ENT), and Jakarta. It was designed to achieve the target indicators or conditionality provided in Table 1. For child health, conditionality includes complete childhood immunizations, adequate weighting, and vitamin A (Sparrow, Moeis, Damayanti, & Herawati, 2008; Alatas *et al.*, 2011).

There are four features of PKH: (1) cash given to mothers quarterly; (2) conditionality and cash penalty; (3) field facilitators; and (4) improvements in supply-side readiness. First, the cash, collected by mothers through the nearest post office, ranged from \$60 to 220 per household per year depending on the number and aged of children. There are no rules on how to spend the cash. The cash is approximately 15–20% of the estimated consumption of poor households. The fixed amount is \$20 per year. If a mother is pregnant and/or has children aged 0–6 years, she will receive additional \$80 per year, regardless of the number of children. If a mother has a child at primary school, she will receive additional \$40 per year. If a mother has a child at secondary school, she will receive additional \$80 per year. The differences in cash amount for primary and secondary schools are due potentially to higher expenditures for the latter. Second, PKH was designed to enforce conditionality with a cash penalty for noncompliance: the first breach is a warning, the second reduces the cash by 10% in the next payment, and the third is expulsion. To comply with the conditionality, beneficiaries can choose various health facilities ranging from district hospitals, Puskesmas, Polindes, and Posyandu. Third, field facilitators are trained to advise beneficiaries to comply with conditionalities, to inform them of their rights and obligations, and to monitor eligibility. Fourth, PKH is implemented mostly in urban areas that are supply ready based on a statistical analysis of existing health and education facilities in the sub-districts. Readiness is a precondition to be part of the pilot. The threshold for readiness, however, was set lower for off-Java island areas to ensure more inclusion in the pilot. More details are provided elsewhere (Kusuma, Cohen, McConnell, & Berman, 2016; Alatas *et al.*, 2011; Sparrow *et al.*, 2008; Hicklin, 2008) and in Table A.1 of the Appendix.

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