



STOP MEASLES NOW

Increasing Measles Vaccine Coverage through Training of Health Workers

Kim Patrick Tejano, Luisa Dela Cruz

KEY FINDINGS



In the Philippines, measles is common among unvaccinated children. The primary cause is persistently low measles immunization coverage.



Both supply-side and demand-side issues are present and result in not reaching the goals for measles-containing vaccine coverage.



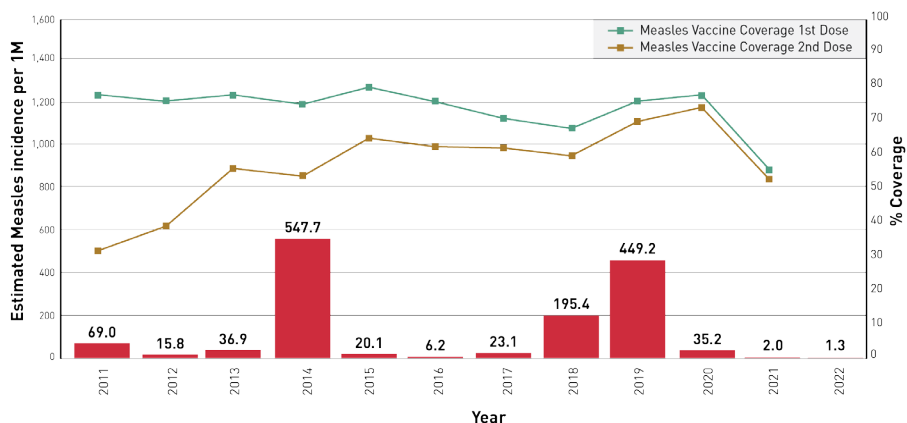
Healthcare worker training for vaccine advocacy communication would be a cost-effective option that can increase the measles vaccine coverage and reduce measles cases significantly.

This is complementary to interventions ensuring supply-side issues are addressed.

HIGH BURDEN OF MEASLES IN THE PHILIPPINES

Measles is the leading cause of death globally among vaccine-preventable diseases of children, due to its complications such as diarrhea, otitis media, pneumonia, and encephalitis, among others [1]. About 44% of 1.7 million vaccine-preventable deaths are attributed to measles among children worldwide annually, mostly in countries or regions where vaccine coverage is low [2].

Figure 1. Incidence of measles from 2011-2022



In the Philippines, measles outbreaks have been frequent, especially among children in the past two decades [3]. Incidence of measles ranges from 0.73 to 237.75 per 1,000,000 in the past decade in the Philippines (Figure 1). The higher incidence of measles cases follows fluctuations in immunization coverage of MCV1 and MCV2. For example, there were over 54,000, 22,000 and 49,000 confirmed measles cases in 2014, 2018 and 2019 respectively with high mortality rates, according to the Epidemiology Bureau of the Department of Health. In the rest of the years between 2010-2020, measles cases fluctuated between 1,738 cases per year (2012) to 5,593 cases per year (2013) [4]. The measles outbreaks in 2014, 2018 and 2019 can be attributed to a large decline in coverage in the previous years (i.e., 2013, 2017 and 2018). About 52% to 67% of measles cases were in children under 5 years of age annually. About 58% of confirmed measles cases were not vaccinated and 34% were of unknown vaccination status or dose in 2019 [5]. National coverage of measles-containing vaccines has never achieved its target to fully immunize at least 95% of children in the past decades, but has hovered around 70%. Almost 30% of children who received their first dose did not complete the required second dose [6].

The substandard MCV1 and MCV2 coverages in recent years could be explained by several factors, both in the supply-side and demand-side. Among the supply-side factors are vaccine stock outs at all levels, failed bidding for procurement of vaccines, lack of ancillaries and other logistics needs, and lack of supply and cold chain management [7]. Investment in service delivery such as conducting catch-up immunization activities and hiring of additional human resources for health and capacity building is also lacking [8]. A new division under the Disease Prevention and Control Bureau was created in 2021 to mainly focus on ensuring that the processes for the budget planning, procurement, and supply chain of vaccines, alongside the other commodities of various DOH programs,



Department of Health

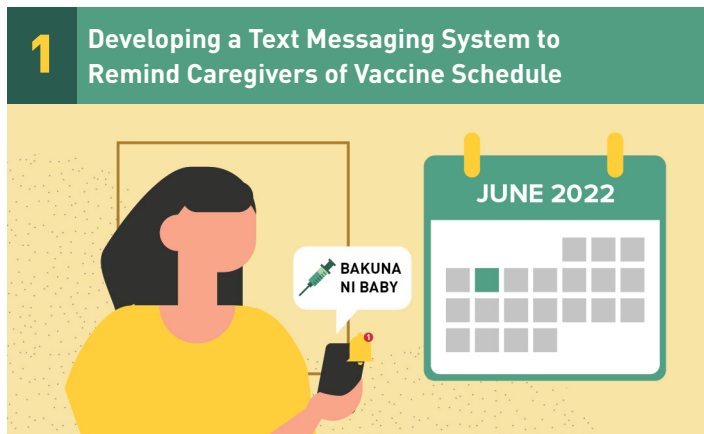


are streamlined. Moreover, the COVID-19 pandemic allowed LGUs to invest in cold chain equipment. On the demand generation-side, parents may also forget the vaccine schedule of their children due to schedule constraints [9]. In addition, healthcare workers may be unaccommodating or may be unable to provide adequate answers to concerns or clarifications of vaccine hesitant parents [9]. To mitigate this, the DOH has developed a Bakuna Champions (Vaccine Champions) Playbook for local government units to train healthcare workers in vaccine advocacy. Sixty-eight (68) Bakuna Champions were trained and graduated from pilot implementation in eight municipalities in March 2022.

WHAT CAN BE DONE?

To increase uptake of complete and timely doses of measles vaccines among infants, two options were considered: (1) text reminders to caregivers on the schedule of measles vaccination, and (2) training for vaccine advocacy communication among healthcare workers.

Currently, the only reminder for the caregivers on the schedule of measles vaccination is the vaccination card on which the healthcare provider is supposed to write the date of the next vaccination schedule. Furthermore, most of the capacity building activities on vaccination focus on administration of the vaccine and cold chain management.



- ✓ This option involves sending text messages to remind parents of their infant's vaccine schedule close to the date of vaccination. Similar interventions have shown to be effective in improving timely uptake of routine infant vaccinations (87.1% compared to 68.6% in [10]). Mother-child pairs from postpartum check-ups are the target population to enroll in the text messaging system. The Department of Science and Technology Region XI developed an application for sending text message reminders for the second dose of the COVID-19 vaccine (DOST XI S&T Information and Promotion, 2021), and this technology may be adapted for other routine immunizations in health centers, in addition to measles. Text reminders can also be used when vaccines have been restocked after a shortage [12], making it suitable to the Philippine setting where supply-side problems are common.
- ✓ The estimated cost of program implementation will be about Php 367,116,618.00. It can reduce measles incidence by 1,296 cases to 12,704 cases per year, depending on transmission patterns.
- ✓ The Incremental Cost Effectiveness Ratio (ICER) is Php 6,211.50 per measles case prevented.



- ✓ Healthcare workers play a critical role in the dissemination of information regarding vaccination. Hence, it is important to have an intervention that aims to improve providers' ability and confidence in communicating with caregivers, especially those who are vaccine-hesitant. Guidance for local governments on implementing training for healthcare workers has been developed and piloted. This policy option proposes that the national government invest in providing healthcare worker training, with local governments' buy-in through provision of training materials. Evidence from healthcare worker training interventions showed a 22% increase in vaccine coverage after effective communication of HCW for vaccine hesitancy [11].
- ✓ The estimated cost of program implementation for this policy option is approximately Php 448,624,224.00. It can reduce measles cases by approximately 1,060 to 23,921 cases per year, depending on transmission patterns.
- ✓ The Incremental Cost Effectiveness Ratio (ICER) is Php 3,838.00 per measles case prevented. In addition, there will be a net cost saving of Php 145,274,360.00 (i.e., cost of implementation of intervention is much lower than cost of illness of measles) with this policy option because of the significant reduction of measles cases.

Table 1. Health and Economic Impact Analysis Comparison table

	Status Quo	Policy Option 1: Text Messaging	Policy Option 2: Health Care Worker Training
Description of Policy Option	Distribution of vaccination card/baby book with vaccine schedule; training on vaccine administration and cold chain management	Text messaging system for mother-child pairs attending postpartum check-ups	Nationwide HCW training to improve ability and confidence in communicating with caregivers
Public Health Impact			
Infants who receive both doses of measles-containing vaccine on time (by 1 year old)	73%	80%	90%
Number of measles cases per year (estimated) (high incidence rate scenario)	54,898*	42,194*	30,976*
Number of measles cases per year (estimated) (low incidence rate scenario)	2,432**	1,136**	1,372**
Number of measles cases Per year (averted) (high incidence rate scenario)		12,704*	23,921*
Number of measles cases per year (averted) (low incidence rate)		1,296**	1,060**
Budgetary Impact (estimated cost, including direct and indirect, in Php for measles vaccine only)	306,292,852.50*	367,116,618.00*	448,624,224.00*
Economic Impact Incremental cost per case averted (Php)		6,211.50*	3,838.00*

*Cases (both laboratory confirmed and clinically suspected measles cases) and cases averted are estimated based on the high incidence rate of measles (237.75 per 1,000,000) based on current MCV1 & 2 coverage, especially in periods where there were measles outbreaks in the Philippines.

**Cases (both laboratory confirmed and clinically suspected measles cases) and cases averted are estimated based on low incidence rate of measles (8.78 per 1,000,000) based on current MCV1 & 2 coverage in the Philippines.

Table 2. Health and Economic Impact Analysis Comparison table

Feasibility	Policy Option 1: Text Messaging	Policy Option 2: Health Care Worker Training
Operational	Medium-high Needs include: program developer for creating the application, PCs for barangay health centers, text messaging fees, module for users of application	High Needs include: reproduction of playbooks (hard-copy and softcopy); trainers
Political	High support from telecom operators, medium-high support from policymakers	Medium-High support from local chief executives

RECOMMENDATIONS

- ✓ The Department of Health must train healthcare workers, especially those at the local level, who implement the measles vaccination. The training must aim to enhance the capability and confidence of healthcare workers in communicating with caregivers, especially those who are vaccine-hesitant.
- ✓ The National Immunization Program and Program Implementation and Outreach Division must coordinate regarding financial and operational requirements in the nationwide scale-up of the Bakuna Champions Playbook.
- ✓ The National Immunization Program must ensure that vaccine supply, cold-chain management, processes for vaccine procurement, and other ancillary requirements are addressed.

KEY REFERENCES

1. Kabra, S. K., & Lodha, R. (2013). Antibiotics for preventing complications in children with measles. Cochrane database of systematic reviews, (8).
2. Curtale, F., Perrelli, F., Mantovani, J., degli Atti, M. C., Filia, A., Nicoletti, L., ... & Di Lallo, D. (2010). Description of two measles outbreaks in the Lazio Region, Italy (2006-2007). Importance of pockets of low vaccine coverage in sustaining the infection. *BMC Infectious Diseases*, 10(1), 1-9.
3. FETP Outbreak Investigations, 2000-2020, Epidemiology Bureau, Department of Health, Republic of Philippines, 2021.
4. Public Health Surveillance Division, Epidemiology Bureau, Department of Health, Philippines, 2021
5. Annual Report Field Health Services Information System (2000-2020), Department of Health -Epidemiology Bureau, 2021.
6. National Demographic Health Survey 2017
7. Ulep, V. G., & Uy, J. (2021). An Assessment of the Expanded Program on Immunization (EPI) in the Philippines: Challenges and Ways Forward.
8. Takashima, Y., Schluter, W. W., Mariano, K. M. L., Diorditsa, S., de Quiroz Castro, M., Ou, A. C., ... & Goodson, J. L. (2015). Progress toward measles elimination—Philippines, 1998–2014. *MMWR. Morbidity and mortality weekly report*, 64(13), 357.
9. Landicho-Guevarra, J., Reñosa, M. D. C., Wachinger, J., Endoma, V., Aligato, M. F., Bravo, T. A., ... & McMahon, S. A. (2021). Scared, powerless, insulted and embarrassed: hesitancy towards vaccines among caregivers in Cavite Province, the Philippines. *BMJ global health*, 6(9), e006529.
10. Mekonnen, Z. A., Gelaye, K. A., Were, M., & Tilahun, B. (2021). Effect of Mobile Phone Text Message Reminders on the Completion and Timely Receipt of Routine Childhood Vaccinations: Superiority Randomized Controlled Trial in Northwest Ethiopia. *JMIR mHealth and uHealth*, 9(6), e27603.
11. Usman, H. R., Rahbar, M. H., Kristensen, S., Vermund, S. H., Kirby, R. S., Habib, F., & Chamot, E. (2011). Randomized controlled trial to improve childhood immunization adherence in rural Pakistan: redesigned immunization card and maternal education. *Tropical Medicine & International Health*, 16(3), 334-342.
12. Stockwell, M.S., Kharbanda, E.O., Martinez, R.A., Lara, M., Vawdrey, D., Natarajan, K., Rickert, V.I. (2012). Text4Health: Impact of Text Message Reminder-Recalls for Pediatric and Adolescent Immunizations. *American Journal of Public Health*, 102(2), e15-e21.

