



COMMUNITY-BASED SURVEILLANCE

Indonesia Case Study

Community Epidemic & Pandemic Preparedness Programme
April 2021





The International Federation of Red Cross and Red Crescent Societies (IFRC) is the world's largest humanitarian network, with 192 National Red Cross and Red Crescent Societies and around 14 million volunteers. Our volunteers are present in communities before, during and after a crisis or disaster. We work in the most hard to reach and complex settings in the world, saving lives and promoting human dignity. We support communities to become stronger and more resilient places where people can live safe and healthy lives, and have opportunities to thrive.

COMMUNITY EPIDEMIC & PANDEMIC PREPAREDNESS PROGRAMME

The IFRC has long focused on helping communities prepare and respond to health emergencies through its 192 Red Cross and Red Crescent National Societies. Launched in 2017 with funding from the U.S. Agency for International Development, IFRC's Community Epidemic and Pandemic Preparedness Programme (CP3) scales up that effort. The program strengthens the ability of communities, National Societies and other partners in 8 target countries to prevent, detect and respond to disease threats and play a significant role in preparing for future risks.

Acknowledgments

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INTRODUCTION

Recent large-scale epidemics and pandemics (e.g. measles, COVID-19) have demonstrated that it takes an inclusive and collaborative effort engaging communities as full-fledged partners to effectively prevent, detect, and respond to significant infectious disease threats and minimize their effects. Epidemics begin and end in communities. Community members are usually the first to know when a suspicious or unusual health event has occurred in their community¹ – so enabling, empowering, and equipping communities to recognize and respond to public health threats in their midst not only makes sense but also forms an essential foundation for the concept of community-based surveillance (CBS). *'CBS is the systematic detection and reporting of events of public health significance within a community by community members.'*² CBS enables the forming of resilient networks, increased public awareness of diseases, and self-initiated reporting of disease events by the community to local health authorities.³ Importantly a sustainable CBS system should be for communities, by communities and should complement the existing health surveillance and response system.

The Red Cross Red Crescent membership has an innovative approach to community-based surveillance. It builds on its core community presence and strengths in community health, behaviour change and broad emergency preparedness as a critical foundation for building local capacities, ownership, and sustainability of community-based surveillance efforts.⁴



Figure 1: CBS as it builds upon the blocks of community health promotion and risk reduction, for both passive surveillance and capability to scale up to active surveillance in emergencies.

An integral part of this approach is a tailored CBS assessment to determine the need and feasibility for undertaking CBS.⁵ The International Federation of Red Cross and Red Crescent Societies (IFRC) has developed guidance and tools to help National Societies to:

- jointly conduct the assessment with relevant stakeholders
- analyse their own strengths, capacities, and needs to undertake CBS
- inform the decision-making process to complement the existing surveillance systems with CBS
- help shape national CBS protocols and priorities

1 Natoli, L. et al. Community Engagement to Advance the GHSA: It's About Time, Health Security Vol 18 No 4, 2020.

2 A definition for community-based surveillance and a way forward: results of the WHO global technical meeting, France, 26 to 28 June 2018. *Euro Surveill.* 2019 Jan 10; 24(2). <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6337056/>

3 Curry, D. et al. Reaching beyond the health post: Community-based surveillance for polio eradication, *Development in Practice*, 23:1, 69-78, 2013. DOI: [10.1080/09614524.2013.753410](https://doi.org/10.1080/09614524.2013.753410)

4 Community Based Surveillance: guiding principles. International Federation of Red Cross and Red Crescent Societies (2017). <https://media.ifrc.org/ifrc/document/community-based-surveillance-guiding-principles/>

5 Community-based surveillance Assessment tool. International Federation of Red Cross and Red Crescent Societies (2019). <https://media.ifrc.org/ifrc/document/ifrc-community-based-surveillance-assessment-tool/>

Piloting CBS in Indonesia



School children taught to make ovitraps. PMI / 2019

To operationalize this approach and strengthen community-level readiness, the IFRC has undertaken the *Community Epidemic and Pandemic Preparedness Programme (CP3)*. The programme promotes a whole of society, all-hazard approach to build epidemic and pandemic preparedness of which CBS can form one element. CP3 is part of a broader USAID-supported collaboration of One Health-focused partners to strengthen the Global Health Security Agenda (GHSA)⁶ and Joint External Evaluation (JEE)⁷ capacities in at-risk countries, including Indonesia. One Health is a multi-sectoral, inter-disciplinary, and collaborative approach that underscores the close link between the health of humans, animals, and their shared environment.⁸ Committed stakeholders such as Indonesia apply a One Health approach and the findings of their JEEs to help their country achieve the vision of the GHSA.

Since August 2018, IFRC has partnered with National Red Cross and Red Crescent Societies in eight countries through CP3 to strengthen National Societies, civil society, and community level preparedness capacities to more effectively respond to public health emergencies. CP3 uses an innovative approach that builds on the Red Cross Red Crescent's core community health promotion and risk reduction activities (before an epidemic is present) in which to embed CBS, rather than have it as stand-alone element. This approach builds greater buy-in and sustainability for improved community engagement in disease prevention, earlier alerting of local health authorities, and earlier action for the timely control of possible outbreaks.⁹ In Indonesia, CP3 activities have been in place since July 2018 and have garnered a number of insights. This case study provides an overview of these to share with partners and other National Societies who are considering undertaking CBS in their own communities.

6 The Global Health Security Agenda (GHSA) is a global effort to achieve greater security from health threats posed by infectious diseases. <https://ghsagenda.org/>

7 The joint external evaluation (JEE) is a voluntary, collaborative, multisectoral process to assess country capacities to prevent, detect and rapidly respond to public health risks by helping countries to identify and prioritise the most critical gaps within their human and animal health systems. <https://www.who.int/publications/i/item/9789241550222>

8 One Health was first formally articulated as a distinct approach in 2003/4 by the Wildlife Conservation Society. http://www.oneworldonehealth.org/sept2004/owoh_sept04.html

9 IFRC, Record, Report, React!, presentation by A. Byrne, GHS Conference, Sydney, 2019

CONTEXT

As a vast and highly-populated archipelago, Indonesia is prone to hazards such as floods, earthquakes and tsunamis. Indonesia is also at risk for epidemic and pandemic diseases due to its natural hazard profile, large population and density, high movement of people within the country for work and tourism, climate change, wildlife trading and consumption, limited healthcare capacities and coverage, and low level of health literacy in many communities, among other factors. These characteristics increase the risk of disease outbreaks in communities. For example, in 2019, Indonesia experienced a measles outbreak, reporting 1,822 confirmed cases.¹⁰ Many of the diseases are zoonotic, such as dengue, rabies, avian influenza and anthrax.

As of 9 April 2021, Indonesia is experiencing the epidemic burden of COVID-19 with over 1,552,800 confirmed cases, and over 42,200 confirmed deaths, and an estimated 5,000 new cases daily.¹¹

In response to these risks and realities, the Government of Indonesia (GOI) has developed several interventions in recent years such as the establishment of the Early Warning System (SKDR/EWARS)¹² in primary health centres across the country to help detect potential outbreaks in communities.¹³ A successfully-implemented EWARS system relies on community members proactively reporting their health status to local primary health facilities (HF).

However, community members are not always able, willing or experiencing sufficient symptoms to access a local clinic early, thus potentially delaying earliest outbreak detection. CBS provides a critical link between communities and health facilities, extending the reach of the national surveillance system for faster reporting, faster response and actions, and potentially fewer cases and fewer deaths.¹⁴ As part of its One Health approach, iSIKHNAS is Indonesia's integrated animal health information system.¹⁵ Both SKDR/EWARS and iSIKHNAS systems feed into SIZE – the National Information System for emerging infectious diseases (EID).¹⁶ SIZE is a risk mapping and early warning system that strives to integrate human, animal and wildlife health information systems. It is used as an alert system by central government for policy decisions.

CP3 Overview

In 2018 the Indonesian Red Cross Society (PMI), in partnership with IFRC, embarked on the CP3 initiative in order to:

- develop and pilot a model to extend the coverage of existing surveillance to community level including the most vulnerable populations
- strengthen community preparedness and resilience to respond to potential outbreaks by conducting early detection and taking early actions
- strengthen PMI capacities to respond to outbreaks and epidemics

CP3 has been an important opportunity for PMI to strengthen its already robust disaster risk reduction, preparedness and response programming by including the piloting of this public health emergency-focused programme. PMI has embraced the CP3 innovative approach by:

- collaborative assessment on the need and feasibility of CBS, particularly in the context of One Health and alignment with existing surveillance systems (e.g. SKDR/EWARS, iSIKHNAS, SIZE)
- health literacy promotion and activities (e.g. environmental clean-up of mosquito breeding sites, setting up of handwashing stations, disseminating health education materials in Bahasa Indonesia on locally-relevant priority diseases)
- strengthening community capacities and building trust (e.g. volunteer training, collaborating with local governance and health facility staff/structures)
- introducing CBS to detect and report on potential disease events or threats at community level

10 https://www.who.int/immunization/monitoring_surveillance/burden/vpd/surveillance_type/active/measles_monthlydata/en/

11 WHO Global Health Observatory, current COVID-19 situation, 9 April 2021 <https://www.who.int/countries/idn/>

12 SKDR or Sistem Kewaspadaan dini dan Respon is the more commonly used Bahasa acronym for EWARS

13 Hapsari, R.B. et al. Early warning alert and response system (EWARS) in Indonesia: Highlight from the first years of implementation, 2009-2011, WHO Indonesia Country Office, December 2017

14 Chau, P. D. Evaluation of Disease Surveillance to Detect Disease Outbreak in Cambodia. J. Natl. Inst. Public Health 56(4), 2007. <https://www.niph.go.jp/journal/data/56-4/200756040016.pdf>

15 http://wiki.isikhnas.com/images/9/9a/What_is_iSIKHNAS_v6_ENG.pdf

16 Paterson, B. CBS Surveillance Assessment Report: Indonesia, 13-26 January 2018. Prepared for IFRC CP3.

CP3 target districts in Indonesia



Many diseases are zoonotic, spreading from animal to person. PMI provides information, CBS and referrals in coordination with Ministry of Health and Agriculture to help stop diseases from spreading. PMI / 2019

To date, PMI has piloted CP3 in a total of eight villages and towns – two villages/towns in each of four target districts in four different provinces: Pandeglang district in Banten Province, Bogor City in West Java, Boyolali district in Central Java and Tabanan in Bali. The map below provides further details. Based on successful pilot outcomes to date, PMI plans to expand CP3 coverage to an additional 16 villages, adding four additional villages to each of the four current target districts. The selection of target districts was based on: geographical location, social structure, capacity of the National Society branch offices in each district and potential risk of outbreaks. While PMI had a working presence in these four districts prior to CP3, this is the first time that they are operating in these specific towns and villages.

The target districts represent different geographical conditions and social structures, spanning urban and rural contexts, to mimic the general situation in Indonesia. Pandeglang, located in western Java, is a lowland and uneven area, with some people living in extremely rural areas, and some living in urban areas. Bogor City represents the urban dynamic culture, with a large portion of its citizens travelling daily to work in the nearby city of Jakarta. Boyolali is a hilly district with a dense population, while Tabanan is located on the tourist island of Bali. Each target district has locality-specific human and animal health threats and health authorities have identified specific priority diseases for surveillance and reporting based on epidemiological history of infectious disease outbreaks, disease prevalence and potential for severe mortality or morbidity. COVID-19 disease was most recently added to the priority disease list for CBS alerting. **Table 1** provides details.

Map of Republic of Indonesia

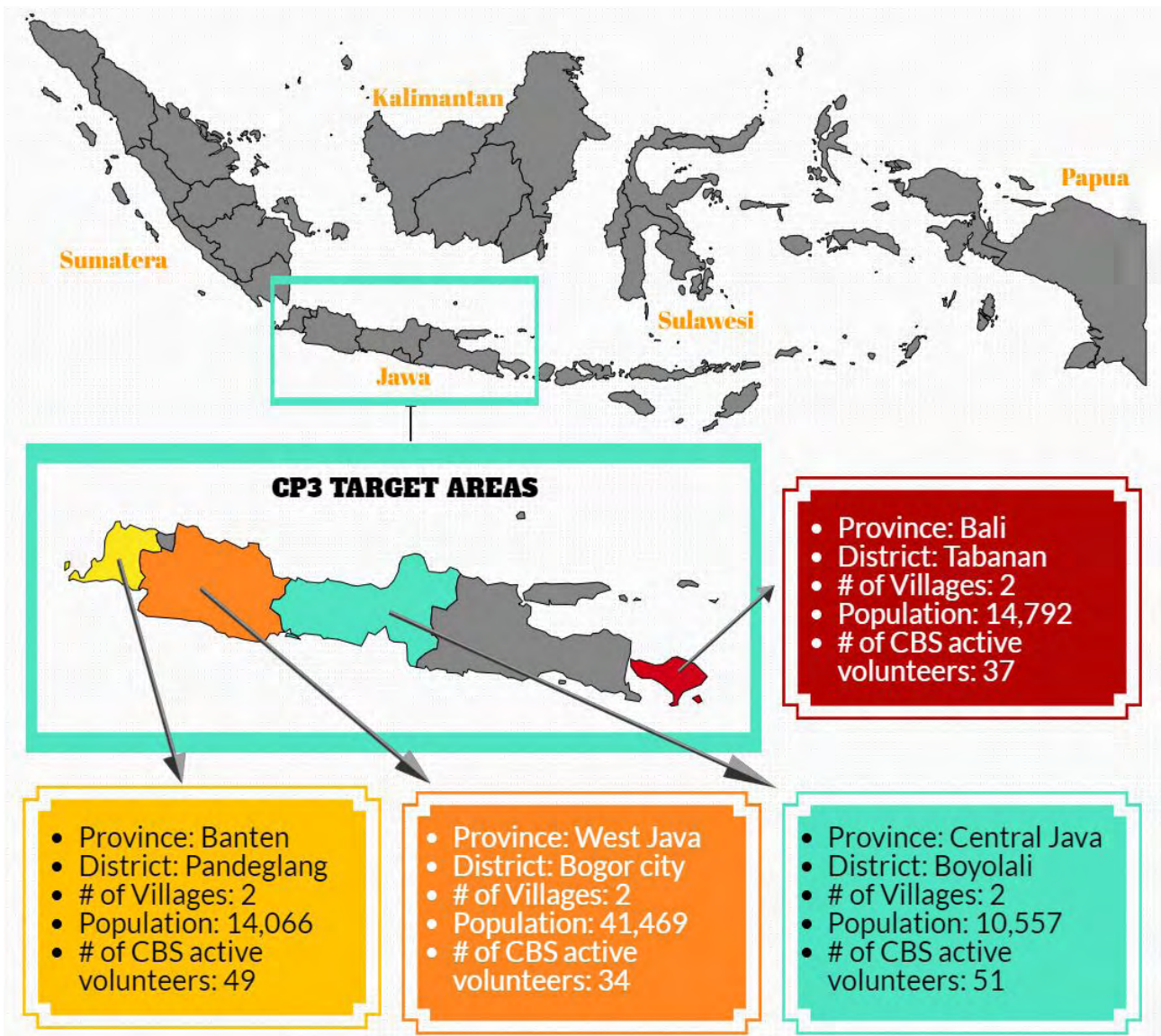


Table 1: Priority diseases selected for community-based surveillance in CP3 districts

| Pandeglang District (Banten) | Bogor City (West Java) | Boyolali District (Central Java) | Tabanan District (Bali) |
|--|---|---|--|
| <ul style="list-style-type: none"> Avian influenza COVID-19 Dengue Diphtheria Measles | <ul style="list-style-type: none"> Avian Influenza COVID-19 Dengue Rabies Tuberculosis | <ul style="list-style-type: none"> Avian Influenza Anthrax COVID-19 Dengue Leptospirosis Rabies | <ul style="list-style-type: none"> Avian Influenza COVID-19 Dengue Measles Rabies |

CBS implementation milestones

Once broad stakeholder agreement on the CP3 target districts was reached, PMI began CP3 implementation with a phased training approach to train trainers who then rolled out interactive and practical training sessions specifically designed for limited health literacy Red Cross volunteer participants in the target communities. Several critical milestones in the CP3 implementation process have been:



Obtaining partner buy-in

PMI is a well-known and trusted disaster risk reduction and response partner within various government sectors and civil society in Indonesia. PMI conducted its CBS assessment jointly with One Health, surveillance system and community stakeholders to build buy-in and local ownership from the start of the project. It was also critical for PMI to expand and strengthen its relationships with government stakeholders in health, veterinary services, wildlife services, etc. in order to establish credibility. Multiple surveillance systems are in use in Indonesia. Therefore, PMI ensured the CBS system was aligned with these while filling an unmet surveillance gap and adding value to the systems in use. The CBS conducted under CP3 integrates into the existing systems by providing CBS alerts to local health and veterinary authorities who then feed into SKDR/EWARS and iSIKHNAS. PMI's CBS assessment experience helped to inform the global IFRC CBS Assessment tool.



Conducting a phased training approach

Using the Red Cross Red Crescent's innovative model for CBS (**Figure 1**), PMI conducted a two-part phased training approach in order to build comprehensive health promotion skills and literacy among its volunteers and their communities, and to build trust and community buy-in to the CBS process.



Corrie Butler / IFRC

1

FIRST TRAINING PACKAGE

The first five-day training package was rolled out and completely cascaded to target community levels from July to November 2018. This first training package equips volunteers with skills in *Epidemic Control for Volunteers*¹⁷ (the ECV toolkit is available in Bahasa Indonesia) and *Community-Based Health and First Aid*, a highly-regarded flagship programme that IFRC and National Societies have implemented in over 125 countries worldwide.¹⁸

2

SECOND TRAINING PACKAGE

A similar process was followed with the roll-out of the second five-day training package from June to September 2019. The second training package built strategically on the first training package and focused on reinforcing skills and introducing new skills in CBS, health promotion, behaviour change communications, psychosocial first aid, hygiene and sanitation for disease control, data collection, reporting and monitoring and *Community Engagement and Accountability*. Trained volunteers began health promotion and CBS activities within one month of training completion in each target district.

¹⁷ <https://ifrcgo.org/ecv-toolkit/>

¹⁸ <https://ecbhfa.ifrc.org/>



Establishing the CP3 programme in communities

PMI used the six months in between the roll-out of its two training packages to strengthen relationships with local authorities and communities, build trust and improve health literacy in the community with volunteers conducting health education and promotion activities (e.g. school sessions, teacher training for disease awareness and prevention, environmental clean-ups, etc.). This staged approach contributed to a smoother establishment of CBS with greater uptake and better results as stakeholders were engaged and committed to the programme, and communities were already receiving the benefits and recognizing their Red Cross volunteers as valuable sources of health information. As a result, communities were more motivated to inform volunteers of serious illnesses and volunteers themselves were more adept at notifying local health authorities of CBS alerts. By this time, local authorities had also become invested partners in the CP3 programme and were ready to respond to incoming alerts.



Tailoring CBS to reflect district-specific priority diseases

Community Case Definitions for each priority disease were defined based on WHO and IFRC guidelines, refined to align with the government's Integrated Disease Surveillance and Response Network (IDSR) for priority diseases of international concern, and then localized through collaboration and workshops with national human health and veterinary health authorities in Indonesia. CBS emphasizes identifying and reporting on signs and symptoms of potential health risks rather than on diseases (which require case investigation and confirmation via testing or a trained health professional).

Example: Community Case Definition

Dengue: Fever with muscle and joint pain **AND** 2 or more of the following symptoms:

- Red dots, which if pressed does not disappear
- Heavy headache, especially on the back of the eye part
- The area around the white part of the eye is getting red
- Unusual bleeding on the eye, nose, gum, blood vomiting or blood urinating



Consistent implementation of epidemic control actions as part of CBS activities by volunteers and supervisors

When volunteers encounter information about a possible human or animal health risk/event in their community, they take early steps to:

- identify the person (or animal) showing signs and symptoms matching the community case definition
- identify a supporting family member to inform them about the potential disease/risk, and how to conduct practical prevention measures in the household, as well as explain next steps (such as referral to health facility or follow-up by health authorities)
- visit the person showing signs/symptoms accompanied by a family member (or visit the area accompanied by the owner/farmer for animal cases), only if safe to do so
- conduct proper data collection

- report the alert by CBS message (e.g. SMS, WhatsApp, phone call) to the supervisor if the alert meets the community case definition of a priority health risk for that district
- follow all relevant safety and prevention steps (e.g. wearing a mask when encountering someone with suspected tuberculosis or COVID-19)
- conduct follow-up actions for prevention and control of the spread, such as referring the sick to the local health facility, community health promotion, infection prevention tasks, etc.

The supervisor then takes action to confirm that the alert does meet the community case definition, report it in KoBo¹⁹, and then coordinates with a health worker for further action (or local veterinary worker for animal cases). The volunteer and/or supervisor will follow up with local health or animal workers on the investigation and suspected case outcome.

Example: Epidemic control action

For example to help curb the spread of dengue fever in Tabanan Regency in Bali, Red Cross volunteers engaged in CBS have supported the identification of a growing number of dengue cases in the area. Through engaging youth and neighbourhood groups, volunteers share information with the community about dengue symptoms, where to get help if they become sick with dengue, and practical actions such as how to keep home and community water sources free of mosquito larvae.



Engaging and motivating volunteers²⁰

CP3 staff have built on PMI's deep experience in engaging and retaining volunteers to develop a strong volunteer and community ownership and oversight of CP3 activities. To achieve this, Red Cross volunteers are selected from within their communities to represent local population diversity. Volunteers are recruited from existing structures such as community leaders, faith leaders, youth group, midwives, teachers, community officials, etc. They have the ability to communicate, empower the community, and are recognized as colleagues by local health authorities.

¹⁹ KoBoToolbox is an open-source set of field data collection tools for people working in humanitarian crises and in developing countries. <https://www.kobotoolbox.org/>

²⁰ Source for all textbox quotes throughout this case study is "CP3 at a Glance", Dec 2019. <https://youtu.be/xH5mlapnsGQ>

PMI uses a context specific ratio of supervisors to volunteers that takes into consideration realistic estimates of volunteer capacities and task load; resource availability; terrain, accessibility and travelling distances; population density and security issues.²¹ In the eight CP3 target villages with a total population of over 80,000 inhabitants, 359 volunteers were trained in community health and first aid. Of these volunteers, 234 received additional training in CBS and 171 of them remain active as of December 2020. Volunteers are supported by 16 supervisors and eight CBS coordinators. These coordinators are stationed in the PMI district offices, manage the programme at provincial and district levels, and oversee volunteer community health promotion and CBS activities. At PMI national level, there are two CP3 support staff who manage the programme and several activities at the national level including CBS data monitoring and analysis and ensuring early actions for alerts are conducted.



'I thank PMI, honestly, I get the knowledge, I can change my life by preventing risk, for example if there is an illness.'

Wahyudi, farmer and Red Cross volunteer

CP3 staff and supervisors engage and monitor volunteers' CBS implementation and other health promotion activities on a weekly basis through:

- volunteer weekly activity reports
- monthly field supervision
- peer-buddy mentoring
- troubleshooting challenges that volunteers may be experiencing
- on-the-job refresher training
- zero reporting
- database monitoring of "false" alerts
- response time tracking

The programme encourages volunteers to conduct monthly meetings to share experiences among themselves, either in person where and when possible or virtually via WhatsApp groups where the COVID-19 pandemic has limited in-person meetings. Red Cross volunteers are unpaid, which poses challenges for retention and motivation. This approach can, however, lead to a stronger sustainability model, ensuring the programme can continue after initial funding has ceased. To date, CP3 has retained 73.1 per cent (171/234) of volunteers whom they have trained in CBS. While no programme will ever retain 100 per cent of its trained volunteers over time, PMI has planned for 100 per cent CBS coverage in its target districts by training a sufficient number of volunteers in CBS. **Table 4** on key performance indicators provides further details.

CBS in action

Volunteers in Sobokerto village heard reports of a child experiencing fever, with joint pain and red spots. They investigated the reports and alerted their CP3 supervisor the same day through WhatsApp chat. The CP3 supervisor confirmed the alert through Kobo and informed the village midwife. Volunteers coordinated with the local village head and conducted household visits to look for additional signs and symptoms associated with dengue, provided health promotion information, and mobilized a community to clean mosquito breeding sites. In the end, the suspected case was confirmed as a positive case of dengue, the patient recovered, and no further cases were found.

²¹ Byrne, A. and Nichol, B. A Community-centred Approach to global health security: Implementation experience of community-based surveillance for epidemic preparedness. Global Security: Health, Science and Policy. September 2020. <https://www.tandfonline.com/doi/full/10.1080/23779497.2020.1819854?scroll=top&needAccess=true>



Ensuring data collection, zero reporting and monitoring

Once an alert is identified in the community, volunteers report it to a supervisor within 12 hours via SMS, phone call or WhatsApp. The receiving supervisor cross-checks the volunteer alert, reports true alerts meeting the community case definition to local health authorities, enters the report into a real-time database using the KoBo toolbox mobile app and triggers appropriate volunteer follow-up actions within 12 hours. An alert is considered as responded to when all required actions have been taken within 24 hours of its detection and the CBS alerts are integrated into the national diseases surveillance system as notifications.²² **Table 2** below provides further details.

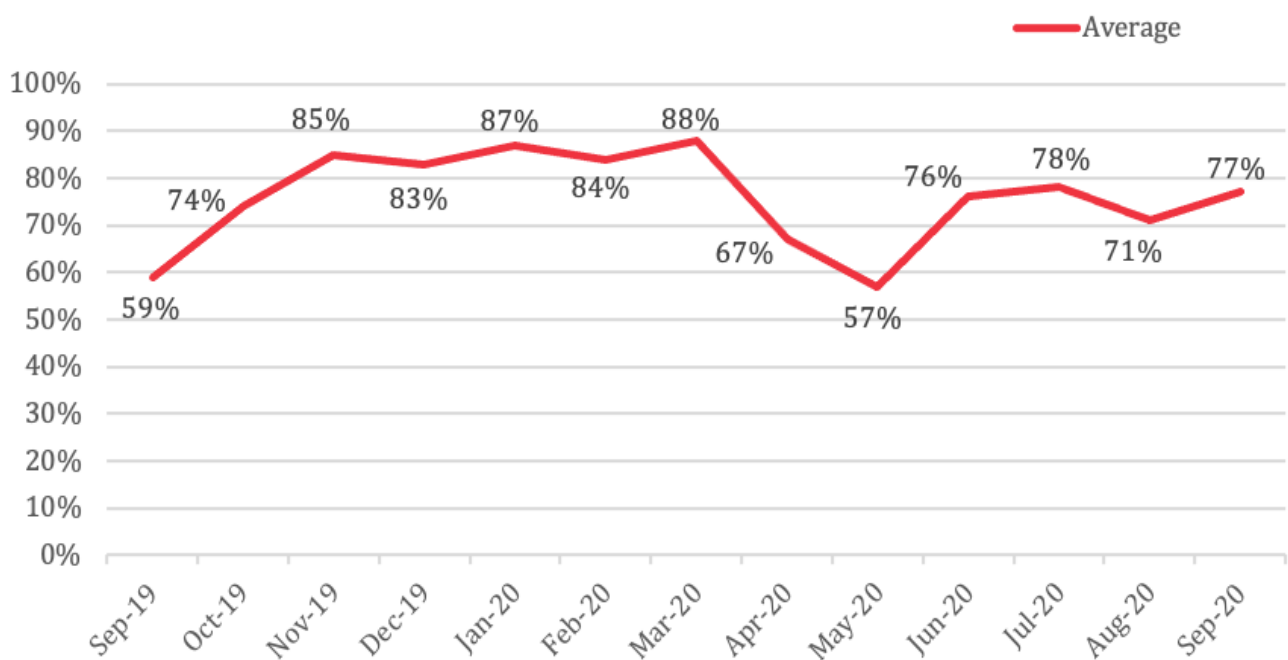
Table 2: Data collection and reporting

| WHAT | DESCRIPTION |
|-----------------|---|
| Format | <ul style="list-style-type: none"> Data are recorded by volunteers using a paper-based tool (volunteer activity book) and reported to the supervisor using SMS/telephone/WhatsApp. Data are then recorded by the supervisor using a paper-based Master logbook and reported in the CBS database system to the District and headquarters using KoBo Toolbox. Volunteers report routine 'zero reports' by SMS, and supervisors enter detail into KoBo to signify that they remain active and have not encountered any alerts for the week. |
| Data flow | <ul style="list-style-type: none"> Data are reported: <ol style="list-style-type: none"> from volunteers to the supervisor using SMS, by the supervisor to the national PMI office using KoBo toolbox, and the supervisor also reports the alert to the health or animal district offices via SMS/Phone/WhatsApp/direct visit. |
| Frequency | <ul style="list-style-type: none"> Data are recorded and reported immediately when a volunteer encounters an alert in the field. 'Zero' reports are submitted weekly on a schedule which aligns with set days for Government IDSR routine reporting from health facilities. Data are analyzed daily and weekly for prompt action on alerts, and summarized into reports monthly. |
| Data Protection | <ul style="list-style-type: none"> The volunteer CBS logbook records only the initials of the affected person, not the full name. The physical recording documents are placed in a locked safe in the PMI branch office. The volunteer CBS SMS is only three numbers – to signify the volunteer ID, village ID and the alert code. No identifying information is sent, but rather this connects to a secure volunteer database at PMI Offices. The electronic recording database can only be accessed by the CBS Coordinator at headquarters. If shared to an external party, the only information shared is general information about the alerts and the village name. |
| Response | <ul style="list-style-type: none"> When there is an alert reported by a volunteer, the supervisor will verify information from the volunteer by phone calls and record it through the KoBo toolbox. If the alert, the supervisor will report it to the CBS coordinator and the primary healthcare/primary vet care for investigation. Response is determined and led by the local officials. PMI volunteers take action through appropriate community health awareness activities such as wide-spread promotion of immunization, handwashing etc. |

22 Byrne, A. and Nichol, B. A Community-centred Approach to global health security: Implementation experience of community-based surveillance for epidemic preparedness. Global Security: Health, Science and Policy. September 2020. <https://www.tandfonline.com/doi/full/10.1080/23779497.2020.1819854?scroll=top&needAccess=true>

Weekly zero reporting is one indicator of volunteer vigilance in detecting and reporting potential health risks/events. Through weekly zero reporting volunteers signal that they are “active” but have not encountered any reportable alerts in their community. In Indonesia, weekly reporting levels have ranged from 51 per cent to 96 per cent zero reporting between September 2019 and September 2020. In the initial CBS start-up phase, it took some time for volunteers to fully execute their reporting role. With initial zero reporting levels at 51 per cent in September 2019, this quickly improved to 83 per cent zero reporting by December 2019. While an increase in weekly zero reporting improved monitoring, it also contributed to a server overload at the PMI offices. The server “crash” issue resulted in a temporary drop in data coming in through the system in late February 2020, but CP3 staff began to stagger reporting days and PMI changed its server by April 2020 to fully resolve the issue. Since the initial start-up phase and despite server challenges, Indonesia CP3 volunteers and supervisors have attained and maintained a high level of monitoring vigilance as evidenced by their high levels of zero reporting. **(Graph 1).**

Graph 1: Zero reporting trends for Indonesia CP3, September 2019 - September 2020



RESULTS

In the year since CBS has been implemented, CP3 volunteers have attained consistently high “true” alert levels, high zero reporting levels, and 100 per cent of CBS alerts have been responded to within 24 hours with appropriate actions (e.g. environmental clean-up, household visits, health promotion, immunization campaigns). **Table 3** highlights CBS results and **Table 4** highlights key performance levels reached thus far.

Table 3: Results in CP3 target areas, September 2019-September 2020

| CBS alerts for prioritized diseases health risks, & events | No. of ‘true’ alerts / No. of alerts reported by Volunteers ^a | % of CBS alerts responded to within 24 hours ^b | No. of escalated alerts confirmed by health authorities as positive cases |
|--|---|--|---|
| <p>Dengue</p> <p><i>(initially reported as ‘high fever with body pains’)</i></p> | <ul style="list-style-type: none"> 31/31 true alerts 96.9% accuracy | <ul style="list-style-type: none"> 100% of alerts referred to local health authorities within 24 hours Volunteers conducted household visits for health promotion, and cleaning of mosquito breeding sites | <ul style="list-style-type: none"> 28 out of 31 true alerts are cases confirmed positive 1 outcome unknown 2 alerts remain unconfirmed by health authorities |
| <p>Tuberculosis</p> <p><i>(initially reported as ‘persistent cough’)</i></p> | <ul style="list-style-type: none"> 4/4 true alerts 100% accuracy | <ul style="list-style-type: none"> 100% of alerts were referred to local health authorities within 24 hours Volunteers sensitized households to cough etiquette and ensured treatment commenced at local health facilities | <ul style="list-style-type: none"> 4 out of 4 TB-positive cases 1 case has recovered; 3 cases are being treated at a local health facility |
| <p>Leptospirosis</p> <p><i>(initially reported as ‘high fever with body pains’)</i></p> | <ul style="list-style-type: none"> 1/1 true alert 100% accuracy | <ul style="list-style-type: none"> 100% of alerts referred to the local health authorities within 24 hours | <ul style="list-style-type: none"> 1 out of 1 positive case |
| <p>COVID-19</p> <p><i>(initially reported as fever, sore throat and other COVID-19 symptoms)</i></p> | <ul style="list-style-type: none"> 12/13 true alerts 92.3% accuracy | <ul style="list-style-type: none"> 100% of alerts referred to the local health authorities within 24 hours | <ul style="list-style-type: none"> 9 out of 12 true alerts confirmed as positive cases ^c 3 alerts remain unconfirmed by health authorities |
| <p>Other reported alerts</p> <p><i>(4 of the 5 false alerts for other events occurred in first three months of CBS)</i></p> | <ul style="list-style-type: none"> > 0/1 alert of aggressive animal (potential animal rabies) > 0/3 alerts for unusual illness/death of people > 0/1 alert for measles 5 false alerts in total 0% accuracy | <ul style="list-style-type: none"> Not applicable | <ul style="list-style-type: none"> Not applicable |
| <p>All Alerts</p> | <ul style="list-style-type: none"> 48/55 true alerts 87.3% accuracy | <ul style="list-style-type: none"> 100% of alerts referred to the local health authorities within 24 hours | <ul style="list-style-type: none"> 42 out of 48 true alerts were confirmed as positive cases 1 is unknown 5 are unconfirmed |

a. Once an alert is identified in the community, volunteers report it to a supervisor within 12 hours.

b. The receiving supervisor cross-checks the volunteer alert, reports true alerts to local health authorities, enters the report into a real-time database and triggers appropriate volunteer follow-up actions within 12 hours. An alert is considered responded to when all required actions have been taken within 24 hours of an alert being detected.

c. One false alert was also escalated to a health facility for follow-up care and treatment.

Table 4: Key CP3 performance indicators for CBS

| Activity and performance indicators <i>(from September 2019 to September 2020)</i> | |
|---|---|
| Total number of trainers (ToT/ Master trainers) trained in CBS | 50 |
| Total number of volunteers trained in CBS who are currently active | 171 |
| Number of targeted population with active CBS volunteer coverage | 80,884 |
| Percentage of target communities with at least one active Red Cross volunteers trained in CBS | 100% |
| Percentage of active Red Cross volunteers regularly submitting health risk reports and/or activity reports <i>on time</i> as determined by the programme (typically weekly) | 78% |
| % of volunteers submitting weekly zero reporting | 51-96% |
| Percentage of reported alerts that have been followed up by Red Cross volunteers and supervisors within 24 hours (response time tracking) | 100% |
| Percentage of alerts that were true alerts (correctly matched the community case definition) <i>Note: Most errors occurred in the initial implementation phase</i> | 84.3% |
| Percentage of CBS alerts validated as 'true' alerts and later confirmed as positive | <ul style="list-style-type: none"> • 96.9% for Dengue • 77.8% for COVID-19 • 100% for TB • 100% for Leptospirosis • 0% for rabies, unusual events or measles |
| Percentage of communities in which appropriate follow-up action was taken following a true alert (e.g. household visits, targeted health promotion activities, etc.) | 100% |

LESSONS LEARNED



A number of important lessons learned have emerged as a result of IFRC and PMI's partnership to pilot CBS within the broader CP3 project including:

Embedding CBS in community health promotion programming leads to stronger community engagement in disease surveillance

PMI's use of CP3's innovative CBS model – an approach that builds on core community health promotion and risk reduction activities as a critical foundation in which to embed CBS, rather than have it as stand-alone element – has helped to build community trust, buy-in and ownership of CBS in CP3 target areas for improved community engagement in disease prevention, earlier alerting of local health authorities, and earlier action for the timely control of possible outbreaks. Examples of successful activities include:

- The inclusion of influential community members as Red Cross supervisors and volunteers increasing trust and community engagement
- Collaboration with local regional and village heads to gain community trust, and increase reporting to PMI volunteers
- Inviting the community to collectively map health risks in their village, which increased community engagement and interest in the program overall
- Engaging with communities about health risks and the importance of CBS during their regular meetings and community events including local government meetings, community health events, women's associations, and youth meetings, among others.

Added epidemic preparedness benefit to the National Society

PMI is a well-known and trusted disaster risk reduction and response partner within various GOI sectors and civil society in Indonesia. The introduction of CP3 and CBS has had the added benefit of strengthening PMI's public health emergency response capacities. PMI has started to use CP3 modalities for its broader COVID-19 response in non-CP3 target areas such as adapting the usual ECV toolkit with COVID-19 relevant tools (e.g. community case definitions, handwashing promotion) and conducting COVID-19 response webinars for all PMI district staff.

Enhanced community responsiveness to COVID-19

On 26 March 2020, a volunteer sent the first COVID-19 alert from a CP3 target area (Bogor City). Since that time, CP3 staff have noted a relatively faster adaptation and deeper engagement by CP3 volunteers and their target communities in COVID-19 response. For example, Red Cross volunteers trained in ECV and CBS are collaborating with local leadership to set up and regularly participate in COVID-19 task forces (e.g. Karangmojo) and conducting contact tracing. And some districts have prioritized CBS and pandemic response in their local budgets and action planning (e.g. Boyolali District). CP3 staff attribute this enhanced responsiveness to the increased community networking and cooperation building that took place under the CBS piloting before the pandemic struck.



'I am really happy, all of the residents are really happy with this post establishment. If there are any people coming from outside of Karangmojo, if there is anyone who has caught the disease, they know that they have to go to the village hall first for screening.'

Sukini, community member

Improved volunteer effectiveness and efficiency

The use of zero reporting through convenient and free to low-cost reporting formats (e.g. SMS, WhatsApp) has steadily improved over time (See **Graph 1**) – as has the number of false alerts (See **Tables 3 and 4**). While obtaining timely feedback on 100 per cent of cases continues to be a challenge as noted further below, the proportion of true alerts made by volunteers which are later diagnosed as positive cases has steadily increased across all reportable diseases. This demonstrates that lay volunteers, when properly trained and supported can implement effective CBS resulting in faster reporting and faster response, and potentially fewer cases and fewer deaths.

CP3 in action during the COVID-19 pandemic



In the CP3 target village of Karangmojo, villagers and their leadership prioritized investing in COVID-19 prevention and response as a result of CP3 activities. They set up a COVID-19 monitoring post where Red Cross volunteers help to screen and collect data from visitors and returning residents, also providing them with handwashing facilities and COVID-19 prevention information. These activities are funded through the village budget allocation (an allowance from the Government of Indonesia that villages can use for local population welfare priorities). By prioritizing pandemic prevention and mitigation in their budget, village leaders demonstrated a strong awareness of epidemic preparedness and response for their community – an awareness in which CP3 played a critical role.

CHALLENGES



The COVID-19 pandemic restricted movement and activity implementation

During the initial pandemic period, CBS and CP3 in-person activities were delayed and needed to be adjusted to physically distanced approaches. While this was a considerable challenge, the CP3 team was able to adapt to new approaches such as conducting health promotion via loudspeaker and radio programmes instead of going door-to-door. Additionally, the programme was able to conduct refresher trainings remotely.

Some volunteers are still not regularly submitting weekly zero reports

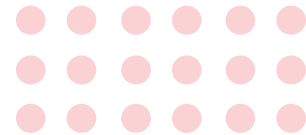
While the programme has achieved a high level of zero reporting, there is still room for improvement. Some possible reasons include lingering platform and server issues and geographically specific issues (e.g. lower zero reporting in Pandeglang). These warrant further investigation by the CP3 staff.

Volunteer motivation and retention is an evolving challenge

Some of the priority diseases that are being monitored do not commonly occur on a regular basis. This reality can make it challenging to keep volunteers motivated to consistently engage in passive CBS week after week over a long time period. To counter this, volunteers are involved in other community activities such as health promotion, cleaning of vector breeding sites, etc. CP3 supervisors also provide supportive supervision (e.g. in-person and WhatsApp virtual mentoring) to help keep volunteers engaged and motivated. PMI has retained a high proportion of its volunteers trained in CBS and continue to provide 100 per cent CBS coverage in the CP3 target communities.

Feedback from local health authorities/facilities to CP3 staff and volunteers is important for CBS to be efficient but needs to be handled with care

This remains a significant challenge area and is interconnected with the challenges highlighted above. (See **Table 3: CBS results**). Data protection and confidentiality are at the forefront of CBS, but also pose challenges for local health authorities to share timely feedback regarding true alerts that volunteers and supervisors have made. As a result, the CP3 team is advocating with national health information system officials for better data sharing and information system integration with PMI and CP3 to strengthen the feedback loop on CBS activities without compromising data protection and confidentiality.



CONCLUSION

Engaging and empowering communities to undertake community-based surveillance within a broader epidemic preparedness and capacity-strengthening programme has proven crucial for the successful implementation of CP3 in Indonesia. At this stage of implementation results demonstrate that lay community volunteers can effectively detect and act early to contain possible health risks and disease events, thus contributing to global health security at a community level by helping to minimize death and illness.

Engagement of stakeholders and the One Health Approach

The One Health approach used within the programme was new to PMI and CP3 target communities. To ensure integration within both human and animal surveillance systems and the engagement by appropriate stakeholders, PMI had to invest time for initial discussions. The early engagement of government stakeholders and mapping CBS into both human and animal surveillance systems created the necessary linkages across systems utilizing the unifying One Health approach, and ensured CBS alerts were able to feed into existing surveillance systems without duplication, creating the final link between the community and health surveillance system.

The same approach that PMI has initiated in developing CBS continues to be considered by multiple entities throughout Indonesia including the Ministry of Health (an original partner of PMI in establishing CBS), the Indonesia One Health University Network, and other local NGOs such as the Centre for Indonesia's Strategic Development Initiatives which provides community health services.



“For anthrax and leptospirosis, we collaborate with PMI on many community empowerment activities, how to educate the public about the threat of these diseases and how to prevent their occurrence.”

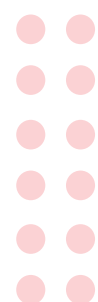
Dr. A. Rifdania, Head of Animal Health Division, Boyolali District

Sustainability

Efforts during project start-up, including recruitment of appropriate staff and volunteers, and coordination with the Government of Indonesia to ensure cohesion with existing surveillance systems, were initially time-consuming. However, the advantage of this process is that it enabled CBS to be sustainably embedded within PMI's community health programming and capacity development for preparedness. Since supervisors use free virtual formats which are widely available and acceptable such as WhatsApp for communicating, mentoring and reporting alerts, the investment in physical infrastructure remains relatively low. Seeing the value of CBS, PMI has already invested in the infrastructure for an improved server in 2020.

PMI has started to use CP3 modalities for its broader COVID-19 response programme in non-CP3 target areas, such as adapting the usual Epidemic Control for Volunteers toolkit with COVID-19 relevant tools (e.g. community case definitions, handwashing promotion, etc.) and conducting COVID-19 response webinars for all PMI district staff. PMI staff have also presented a CBS session in a training course with Cruz Vermelha de Timor Leste (East Timor Red Cross). It is anticipated that these actions will feed into and strengthen a broad community COVID-19 response programme for PMI. Moving forward, PMI has partnered with other National Societies such as the Australian Red Cross to expand the geographic and target population reach of CBS activities.

It has become clear that communities and other stakeholders in CP3 target areas see CBS as an important priority to support. When engaged and trained in epidemic and pandemic preparedness, Red Cross volunteers as community members are vital contributors and important change agents to sustainably detect, control, and contain disease spread, thus helping to save lives and strengthening resilience in their communities.





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Additional resources

- Abbey Byrne & Bronwyn Nichol (2020) A community-centred approach to global health security: implementation experience of community-based surveillance (CBS) for epidemic preparedness, *Global Security: Health, Science and Policy*, 5:1, 71-84, DOI: <https://doi.org/10.1080/23779497.2020.1819854>
- IFRC Community-based health and first aid materials: <https://ecbhfa.ifrc.org/>
- IFRC Community-based surveillance resources: <https://www.cbsrc.org/resources>
- IFRC Epidemic Control for Volunteers resources
 - Epidemic Control for Volunteers training manual: <https://media.ifrc.org/ifrc/document/ifrc-epidemic-control-for-volunteers-training-manual/>
 - Epidemic Control for Volunteers toolkit: <https://media.ifrc.org/ifrc/document/ifrc-epidemic-control-for-volunteers-toolkit/>; digital toolkit: <https://ifrcgo.org/ecv-toolkit/>
- IFRC Community Epidemic and Pandemic Preparedness Programme: <https://media.ifrc.org/ifrc/community-epidemic-pandemic-preparedness/>



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Indonesian Red Cross Society

W <https://pmi.or.id/>



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