



Role of Village Health Volunteers in Avian Influenza Surveillance in Thailand



**World Health
Organization**

Regional Office for South-East Asia
New Delhi

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The Village Health Volunteers (VHVs) in Nakhornpathom province are thanked for sharing their valuable experiences and reflections on the programme. They contributed significantly in explaining the role of VHVs in health in general and in Avian Influenza surveillance in particular.

Grateful thanks are extended to the senior staff at the Ministry of Public Health for their commitment and support to this review, especially: Dr. Supachai Kunaratanapru, Director-General, Department of Health Services Support, and Dr. Supamit Chunsuttiwat, Senior Specialist in Preventive Medicine, DDC, and Dr Kumnuan Ungchusak, Director, Bureau of Epidemiology (BOE), Department of Disease Control (DDC).

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Foreword

The Alma Ata declaration on Health for All envisaged the key role of community health volunteers in promoting access to primary health care. Many countries have utilized the services of these volunteers in health promotion, maternal and child health, as well as in prevention and control of communicable diseases. In the recent past, the community health volunteers, designated as village health volunteers (VHV), have provided considerable support to the nationwide surveillance programme for avian influenza in Thailand.

Approximately 750 000 VHVs are currently providing support to national programmes in Thailand. Every village has at least one VHV. In recognition their presence all over the country, they have been involved since 2004 in the early warning system for avian influenza (AI) in both animals and humans, with substantial success.

This publication aims to document the success achieved through this innovative use of VHVs. The document describes the VHV system in Thailand in general and also provides an insight into the role of VHVs in early warning, surveillance and rapid response for avian/pandemic influenza.

This report would not have been possible without the active participation of many public health professionals from the Ministry of Public Health in Thailand who provided information and feedback. Special thanks are extended to staff at the Nakhonpathom Provincial Health Office, Nakhonpathom Hospital, Banglen Hospital and Banglen District Health Office who took time from their busy schedules to share their experiences and ideas. The Village Health Volunteers (VHVs) in Nakhonpathom province also shared their valuable experiences and reflections on the programme.

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The field work, analysis of data and documentation were undertaken by a group of experts from the Ministry of Public Health Thailand and WHO. We wish to express our gratitude to Dr Ajchara Vararuk, Dr Theerasak Chuxnum, Mrs Anchana Waqas, Mrs Darunee Phosri, and Dr Wanna Hanshaoworakul from the Department of Disease Control, Ministry of Public Health, Thailand, and also to Dr Asheena Khalakdina, Dr Young Ah Ku, Dr Maureen Birmingham, Dr Chadia Wannous and Dr Somchai Peerapakorn from WHO.

We hope this document is of interest and reference to other countries who may consider involving community/village health volunteers in initiatives aimed at combating the threat of emerging infectious diseases.

17 January 2007

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1 Introduction

Village Health Volunteers (VHVs) are defined as community members who work almost exclusively in community settings that traditionally lacked access to adequate care and thus serve as connectors between the community and the health care providers to promote health (Witmer et al, 1995). VHVs are also people who are willing to provide their services to others voluntarily as part of their sociocultural behaviour (Sein T, 2006). The Alma-Ata declaration in 1978 advocated the use of such community health volunteers as a realistic solution for attaining total population coverage with essential health care. Since then, governments in many developing countries have promoted and optimally used such volunteers as part of national development programmes (Sein T, 2006).

Apart from health promotion and education regarding maternal and child health, VHVs have been used successfully in many parts of the world in communicable diseases elimination and eradication campaigns such as for smallpox, poliomyelitis, measles, tetanus and leprosy (Sein T, 2006). Experience with community health volunteers in South-East Asia goes back to 1973 (see Annex 1). For example, the National Family Planning Board, the Ministry of Health and UNICEF in Indonesia initiated one of the pioneering community-based health programmes of the 1970s. Today, about 1 million VHVs (posyandu) sustain a nationwide network of village health posts in Indonesia. These are supervised by 20,000 health workers from 5,000 health centres.

In Lao, a comprehensive district-managed programme funded by Save the Children, Australia, in 1991 trained VHVs and Traditional Birth Attendants (TBAs) in an effort to strengthen maternal and child health activities. An evaluation of this project in 2004 concluded that the programme had achieved a five-fold reduction in maternal mortality compared to the national average. This was done without improved access to comprehensive emergency obstetric care but through increasing coverage of antenatal care, attended deliveries and improved basic emergency obstetric management (Perks et al, 2006).

In Thailand, the VHVs scheme has been in place for over 30 years and serves as the backbone of community-based public health in the country. Today, every village in Thailand has at least one VHV, a total of approximately 750,000 volunteers, each responsible for 5 to 15 households. Groups of VHVs function as a team at village level, often headed by a senior VHV.

Recently, the VHV programme has been acclaimed as a success story for community-based surveillance. Since 2004, VHVs have been involved in the early warning system for Avian Influenza (AI) and are playing a key role in the nationwide

surveillance for AI in both animals and humans. Thailand uses the concept of “X-rays” to assess the avian influenza situation in the country as a cross-section in time. These are conducted periodically with the assistance of over 750,000 VHVs to assess human and animal health in every single household across the country.

The purpose of this document is to describe the VHV system in Thailand in general and also to provide specificities on the system’s role in early warning, surveillance and rapid response for avian/pandemic influenza. A modest attempt to evaluate the added value of VHVs to AI surveillance and response has also been made using existing data. The document should be of interest to other countries who may be interested in involving community/village health volunteers in such initiatives.

2 Health care infrastructure in Thailand

Thailand’s health care system has recently undergone a health sector reform process under which much of the authority for health services has been devolved and decentralized to the province and district levels. The public health facilities in the country are distributed as follows¹: In Bangkok Metropolitan, there are five medical school hospitals, 29 general hospitals, 19 specialized hospitals/institutions, five 10-bed community hospitals (under the Bangkok Metropolitan Authority or BMA), and 61 public health centres (with 82 branches, in all BMA districts). At Region level, there are four medical school hospitals, 25 regional hospitals, and 40 specialized hospitals. At Provincial level, there are 70 general hospitals covering all provincial areas and 57 hospitals under various agencies of the Ministry of Defence. At District level, there are 725 community hospitals, covering 91.2% of all districts, two extended OPD or hospital outlets, and 214 municipal health centres. At Tambon (subdistrict) level there are 9,765 health centres, covering all Tambons; some Tambons have more than one health centre. At village level, there are 311 community health posts, 66,223 rural community primary health care centres, and 3,108 urban community primary health care centres.

3 Role of Village Health Volunteers

The VHV system was established within the Primary Health Care system in Thailand over 30 years ago, as part of community involvement and participation in the delivery of health care in the 1970s (WHO, 1989). It is based on the Thai cultural ideals of volunteerism and helping one another and thus is a true volunteer programme with almost no monetary benefits associated with it. VHVs were recruited by the health authorities based on their attributes as community leaders and their willingness to serve as VHVs (see below for details on selection and recruitment). The VHV programme has demonstrated its inherent sustainability by virtue of the fact that it has been functioning well for the past three decades.

Health officials at all levels indicate that the VHVs serve as the backbone of the health system and as the primary interface between the formal health system and the community. The system is comprehensive in that VHVs are in virtually every village of the country, with one VHV for every 5-15 families. They work with local health centres at sub-district levels and are supervised by the district health officer. Whenever the health system requires community involvement, especially with regard to prevention and health promotion activities, the VHV is designated to communicate the messages and mobilize the community to participate. VHVs have been involved in several health initiatives such as physical fitness, anti-smoking, prenatal care, immunization, and traffic safety campaigns (see Annex 4 for detailed VHV job description).

3.1 Resources and incentives

The VHV operating costs are mainly financed by the local government authorities at the provincial and district levels. This includes all VHV expenditures (per diem, transportation, training courses, and educational materials). Currently, each province provides 10,000 Baht per village (increased from 7500 Baht five years ago). In addition, each sub-district (Tambon) Administration Office has the liberty to invest more funds for VHV activities as necessary. The central MOPH departments and technical units (such as the DDC) may also provide additional supportive funds for management and supervision of specific activities and for specialized technical training (e.g. training for AI surveillance) where the VHVs receive specific training on AI and protective equipment, communication materials, and funds for transportation, provided by the DDC Bureau of Epidemiology. Some funds are also provided by the DLD for per diem during training and X-ray campaigns.

Because of the volunteer nature of the scheme, there is no monetary incentive provided to the VHVs, except for free health services for themselves and their immediate family members. More specifically, VHVs are exempt from the annual fee that is required for the universal coverage of health care or what is called the “30-baht healthcare scheme” (30 Baht is less than one US dollar). They also have full and free access to health services at the district hospital. Additional incentives depend on the specific district processes and resources available. These may include special quotas for VHV families to apply to government nursing colleges as well as grants for young VHVs to study and return as public health officers.

VHVs receive public recognition from both the community as well as the formal health sector. Some may also experience enhanced social standing, greater respect from their community and personal satisfaction. Some of them have also been elected to the local government. VHVs are treated as part of the formal health system, and the district health services use them in the out-patient department at health centres, when there is a surge of work or a personnel shortage.

Being part of an organized network is an additional incentive to serve as a VHV. There is a VHV society in each region and regular meetings are held to assist them in their work. There are at least two regular publications for VHVs produced by the MOPH. These include a handbook on AI, and a monthly newsletter and journal published every two months. Moreover, VHVs have access to a radio system at the sub-district level for two-way communication they receive technical inputs by radio and can report unusual health events such as suspected AI cases.

In sum, the costs to the health system for VHVs are therefore mainly in the form of regular meetings, technical materials and communications to support their specific activities.

3.2 Selection criteria and recruitment process

During the early years of the system, VHVs were selected by the primary health care centre officer using a “social matrix” method to identify potential VHVs through informal surveys. This method involved selecting individuals who were respected by the community and had the social skills necessary to engage community members, including good listening, communication and inter-personal skills as well as motivation to help others. The selected VHVs were usually village leaders or other respected villagers.

The selection process has since become more structured. To be eligible, the candidates should: 1) be able to read and write (have an adequate education level), 2) be self-reliant (have their own occupation), 3) live and work in the village (easy to access other village members and good understanding of community needs and factors that affect local attitudes and behaviors), 4) be trusted and respected by other villagers and 5) be willing to help other villagers.

The candidates who fulfill the above requirements are approved by a government official (Provincial Health Officer) after going through the following selection process: Public advertisement is posted by a primary health care centre for a specified period.

Completed application is received.

Official assignments are given by the district health officer (who also serves as the supervisor) after the basic training is completed.

An informal pre-selection process may also be followed in which potential VHVs are selected and encouraged to apply by their village leaders and the primary health care centre staff. This pre-selection helps ensure the acceptability of the VHV in the village once officially appointed by the provincial level.

More senior VHVs may also assist with the selection of new ones. VHVs often serve for life, once selected, and children of VHVs are encouraged to participate once their parents eventually retire.

The nationwide data on VHVs compiled through a recent survey conducted by the Ministry of Public Health on the roles of VHVs and Sub-district Health Networks in AI surveillance, from November 2004 to May 2005 show that most of the VHVs (66.8%) are women ranging in age range between 35 and 45 and most of them (61%) finished primary education (MoPH-Thailand, 2006). According to a health official in the Banglen district, 50-70% of VHVs are females and 70-80% VHVs are between 40-50 years.

3.3 Training

Once recruited, the VHV undergoes a seven-day basic health training course at a primary health centre. A more specialized, 15-day additional, on-the-job training is provided later at a district hospital. Through this process, the VHVs are integrated into the health system, which also helps establish close cooperation between the non-professional VHVs and professional health staff.

To sustain and upgrade the VHVs' knowledge, regular meetings are held at the district health office level. In Banglen district, VHV meetings are held monthly (on every 2nd Wednesday) between VHVs and district health officials. The monthly meeting provides an opportunity for refresher training, communication and networking among VHVs, health officials and health professionals.

The provincial level health authorities decide if and when to provide additional or more specialized or focused training. They also decide on the content, materials, timing and venue of the training, and may seek technical support from the central level. For AI surveillance, the Ministry of Public Health and Department of Livestock Development have jointly provided technical support for VHVs training. Generic training materials for VHV are usually developed at the central level. These are then adapted for use by provincial governments. Some provincial governments also produce their own training materials to address specific situations.

When funds are insufficient to cover training of all VHVs, VHV leaders from each village, are selected to attend additional training courses. In such instances, the trained VHVs impart the information and training they have received to other VHVs. For example, 180 VHVs out of 900 in Nakhon Pathom province were selected as Village Livestock Volunteers and trained in AI surveillance with support from DLD. But all VHVs are expected to help with AI surveillance in poultry as well as humans.

A Ministry of Public Health survey in 2005 indicated that 78.7% of the VHVs were trained in the area of poultry survey, 47.7% on specimen collection and 69% on patient transfer. The same survey indicated that after the training, most VHVs (85.7%) were active in educating villagers about avian flu, while only 45.9% were involved in specimen collection.

The general areas of work of VHVs are maternal and child health; health information dissemination; health promotion; health education for behaviour change and case of minor illnesses at the community level (see Annex 4 for job description). Lately, VHVs

have been involved in emergency response activities, particularly during the tsunami, providing quick and effective health services, including psychosocial support, relief and rehabilitation (Sein T. 2006).

3.4 Supervision of VHVs

As a result of the health system reform initiated in 2003, most health activities are now decentralized to the provincial governments. Consequently, provincial health offices are the highest level government offices responsible for VHVs.

VHVs' work under the direct supervision of a primary health care officer at the sub-district level. The district health officer serves as a second-level supervisor and may have close communication with a district health office, especially in emergency situations.

There is no formal evaluation or performance monitoring to assess the quality of VHVs' work. The VHV is nevertheless acknowledged for her/his work in various ways. The "best VHV of the year" is selected and announced annually at a national ceremony attended by all VHVs in the country on the 20th of March, which is designated as "Village Health Volunteer Day" to celebrate and recognize their work.

Each village has a "lead" VHV who organizes the other VHVs into a team, and, in effect also serves as an informal supervisor. They are usually the senior-most among VHVs in the village. The VHV leader also supervises other VHVs and briefs them on any training or communication received.

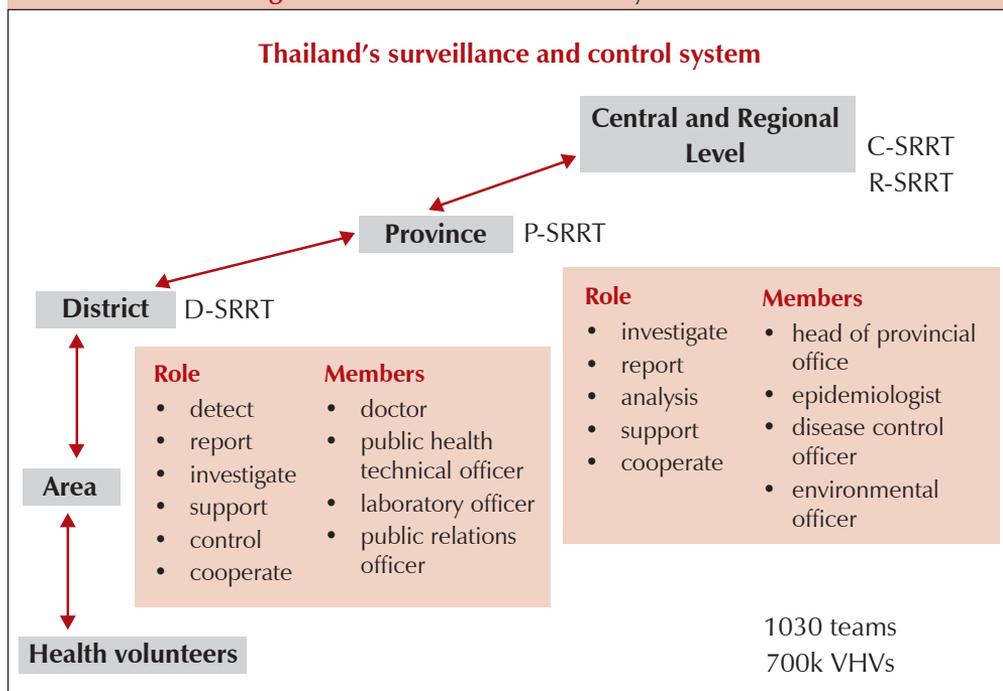
4 VHV involvement in AI

Thailand's surveillance system for AI

Thailand has a strong surveillance system in place for emerging infectious diseases including avian influenza, which was developed in response to their prior experience with SARS. New and improved features of this surveillance system include establishment of over 1000 Surveillance and Rapid Response Teams, laboratory networking (12 Regional plus one Central), case management and hospital infection control, and risk communications. A hospital-based surveillance system exists for pneumonia and influenza-like illness for suspected AI. The surveillance and reporting structure is given in Figure 1.

The village health volunteers are at the most peripheral level and are linked to the area (sub-district also known as Tambon) and district SRRT's via the health centres and District Health Officers to whom they report any unusual events. Reporting is by telephone and radio wireless system available at the health centres. At both the district and province level, one senior official, respectively the District Health Officer and the

Figure 1: Thailand’s surveillance system for AI



Chief Executive Officer, is “Mr Bird Flu” whose key role is to coordinate all the activities for AI detection and control at their respective level. In each of the 76 provinces, “Mr. Bird Flu” has been appointed to manage the local health service network against avian influenza; through extensive multi-sectoral coordination– public health, veterinary, local administration and volunteers; to ensure effective detection of infected poultry and of human cases, case management, and infection containment. At the district level, as soon as he/she is informed by the health centre staff of any unusual event reported by VHV, the District Health Officer will call upon the district and provincial SRRTs to respond. These SRRTs are designated to verify suspect cases and institute control measures for outbreaks. If unusual poultry deaths occur, the District Livestock Officer of the Department of Livestock Development (DLD) is informed by the VHV (see below for more details) in a similar manner. For poultry culling, specialized workers from the DLD are brought into the area to undertake interventions.

Since October 2004, AI surveillance has been included in the VHV’s routine work with additional technical details and support for specific tasks added in by the Bureau of Epidemiology, Department of Disease Control (DDC), Ministry of Public Health and the DLD. VHV serve as an early warning active surveillance mechanism for any unusual poultry illness or deaths and influenza-like illness in the community. In addition, they serve as risk communicators and health educators. Based on reports from VHV, a rapid verification and response is initiated by the SRRTs at district, provincial and central levels, as needed.

The effectiveness of and acceptance by the community of VHVs makes them ideal candidates for undertaking poultry surveillance for unusual events at the village level. One VHV per village has been selected to also serve as the Livestock Development Volunteer (LDV) with the primary role of reporting unusual events in animals to the DLD. They are therefore required to fill out an additional reporting form for the DLD. The VHV serving as the LDV is often the lead VHV in the village but the rest of his/her team also help in active surveillance of AI in animals although they are not officially required to do so.

“X-rays” campaigns for AI

Thailand uses the concept of “X-rays” to explain the periodic surveillance for any human or poultry illness or deaths conducted by all the VHVs across the country at a single point in time. The X-ray campaign is an integrated AI surveillance system through multidisciplinary integration of resources in terms of personnel, equipment and budget from several technical sectors involved. The (CEO) Governor is the commander of operations in each province with multi-sectoral and community participation. The rationale and purpose of introducing X-rays is to get a single, cross-sectional view across the entire country of the status of AI in poultry and among humans. The X-ray activity has been conducted approximately twice a year starting in October 2004. So far, four X-ray campaigns have been conducted, the last one being in February 2006. Over a period of a few weeks, the X-ray campaign is carried out when every household in every village is assessed by the VHV for poultry deaths/illness and human illness, and samples taken from any sick poultry. During this period, along with the active clinical surveillance which is carried out by the volunteers, DLD also conducts active laboratory surveillance (Table 1). Public health authorities have indicated that the activity sometimes takes several weeks to complete and thus is not as precisely time-coordinated throughout the entire country as they would like it to be.

Although their principal focus is the village household, there is some interaction with the small-scale commercial sector as well. However, the larger commercial farms are independent of the VHV system and report any unusual event directly through their own veterinary services and doctors directly to the DLD.

Role in AI animal surveillance

Health officials at all levels indicate that VHVs play a key role in educating and convincing farmers to report unusual illness in their animals. This has involved understanding and communicating the somewhat complex and dynamic issues associated with the government’s compensation scheme, following culling operations to stamp out HPAI. In the first wave of the HPAI outbreak, 140 Baht was given for every animal culled. In the second wave, farmers were compensated to the extent of 75% of the market value on the day of culling, as determined by the Ministry of Agriculture. In effect, two committees are established to determine compensation; one for pricing and one for

counting, although there are delays and bureaucratic processes in getting the reimbursement to the farmers. The owners of fighting cocks receive compensation equal to the market value of chickens despite the fact that their cocks may be worth more. A “passport” scheme introduced in mid-2005 for both fighting cocks and ducks allows the authorities to keep track and regulate their movement (see Annex 3 for photographs). Now, there are 3,000 fighting cocks with a “passport” out of an estimated 10,000 in Nakorn Pathom province. Government authorities at all levels feel that the VHVs have played an important and effective role in educating farmers regarding the importance of reporting sick and dying chickens.

Table 1: *First three X-ray surveys in Thailand: Numbers of sampled poultry*

Duration	Number of samples	Number of positive H5
1-31 October 2004	150,648	724 cases in 457 sub-districts, 184 districts, 44 provinces
1-28 February 2005	66,588	72 cases in 37 sub-districts, 22 districts, 10 provinces
1-31 July 2005	8,4954	20 cases in 17 sub-districts, 7 districts, 3 provinces

Role in Human Influenza Surveillance and Response

VHVs are mostly operational in rural areas where the social environment facilitates interaction and household visits. This is unlike the situation in most urban areas in Thailand. Their involvement is primarily information gathering and reporting unusual events as well as risk communication. For the latter, a variety of print materials are produced regularly for AI at central and provincial level (posters, leaflets, information booklets etc.) are distributed in the community by the VHVs.

During the four X-ray campaigns conducted so far, the role of VHVs in surveillance has been to check in each household:

- 1) Daily number of sick poultry
- 2) Daily number of dead poultry
- 3) Any illness among household members particularly those who have been in contact with poultry.

For the X-ray survey, the VHV reports to a primary health officer at the sub-district level and a designated livestock officer at the district level. They visit each household under their surveillance, and confer with village leaders to verify whether there have been any sick or dead poultry. At the same time, due to the increasing awareness regarding AI, villagers actively inform the responsible VHV when any sick or dead poultry are found.

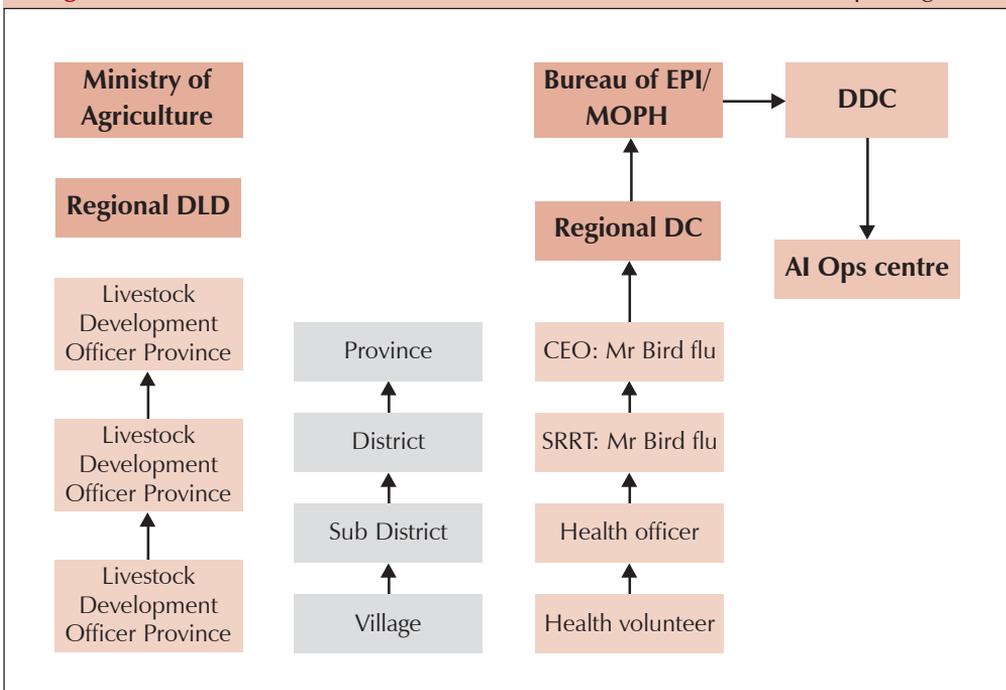
The role of VHVs in the response to AI operations is to assist the operation of SRRTs. While awaiting the arrival of the SRRTs, the main role of VHVs involves risk communication; i.e., to warn villagers not to touch the sick, dying or dead poultry; to promote hand-washing with soap whenever handling poultry products; and advise/refer them to a hospital if they feel unwell. Once SRRTs arrive, VHVs help to bury the dead poultry and to disinfect the affected areas under the supervision of SRRTs, with appropriate personal protective equipment. VHVs are not directly involved in taking any laboratory samples, nor are they responsible for transferring sick villagers to health facilities.

5 Reporting Structure

VHVs report at least twice per month any unusual health events to a primary health officer at the sub-district level, through paper-based forms. In case of an emergency such as a large number of sudden illness/death of poultry or any suspected human cases, the VHVs use phones or the wireless radio located in every health centre and at sub-district headquarters to report immediately to responsible officials.

During the X-ray surveys, a daily reporting system is in place. When there is an actual outbreak, the daily report system is enhanced to twice-a-day. Two different formats are used to report to the primary health officer and to the livestock officer at a district health office.

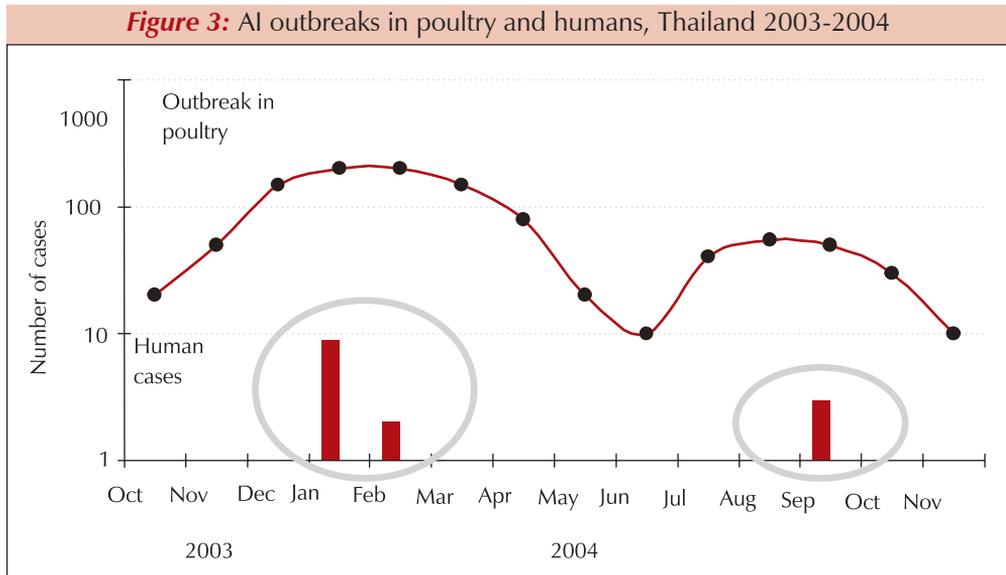
Figure 2: Surveillance flowchart for human and animal health sectors reporting AI



6 Potential impact of VHV-based surveillance

Although having community volunteers at the most peripheral level participating in surveillance and interfacing between relevant health and livestock authorities on unusual or abnormal events in both human and animal sectors is clearly useful, quantifying their impact in early warning and risk communication at the community level is also desirable.

The correlation, in terms of both timing and magnitude, between poultry and human outbreaks in 2003-2004 in Thailand is depicted in the following graph (Figure 3).



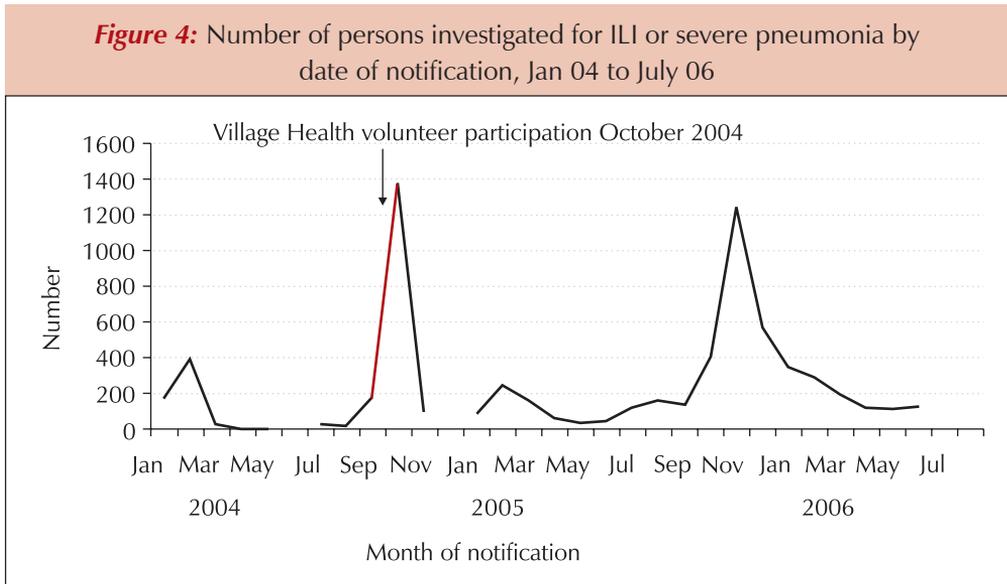
Some proposed ways of analyzing the effect of VHVs on AI surveillance are described in Annex 5, most of which would require establishing either a baseline or a control group.

An attempt was made to evaluate the impact of VHVs on AI surveillance using existing data through three measures: 1) Number of notifications of influenza-like illness (ILI) or severe pneumonia in humans to health authorities by month of notification over time (Figure 4). 2) Time from onset of ILI or severe pneumonia in humans to notification (Figure 5), and 3) Time from onset to admission to hospital (Figure 6).

However, it should be noted that it is difficult to single out the impact of VHVs on AI surveillance as many activities are taking place simultaneously. This includes media alerts and awareness raising, periodic x-ray campaigns, SRRT training and activities, and many other initiatives leading to enhanced surveillance in humans.

6.1 Number of influenza-like illness (ILI) or severe pneumonia notifications to health authorities by month of notification over time in Thailand

Figure 4 shows a sharp increase beginning in October 2004 in the number of notifications. Simultaneously, four events took place: 1) VHV training on AI, 2) an AI outbreak in poultry, 3) a media alert, and 4) the first x-ray campaign leading to enhanced surveillance in humans which, in turn, resulted in increased notifications.



6.2 Time from onset of influenza-like illness (ILI) or severe pneumonia in humans to notification.

Figure 5 shows that the participation of VHVs in AI surveillance reduced the median time between the date of onset of ILI or severe pneumonia and date of notification although data show some fluctuations in 2005. The mean difference in the duration between the onset and notification before and after the VHVs involvement in AI surveillance was about 2 days and this difference is significant (p -value=0.0000).

6.3 Time from onset of ILI or severe pneumonia to admission to hospital

Figure 6 shows that the participation of VHVs in AI surveillance has helped in reducing the median time between the date of onset of ILI or severe pneumonia and date of admission of cases to hospital. The pattern is also consistent over time although the mean difference in duration is only half to one day. This difference was significant (p value=0.008).

Figure 5: Median duration from date of onset of ILI or severe pneumonia to notification by month of notification, Jan 04 to July 06

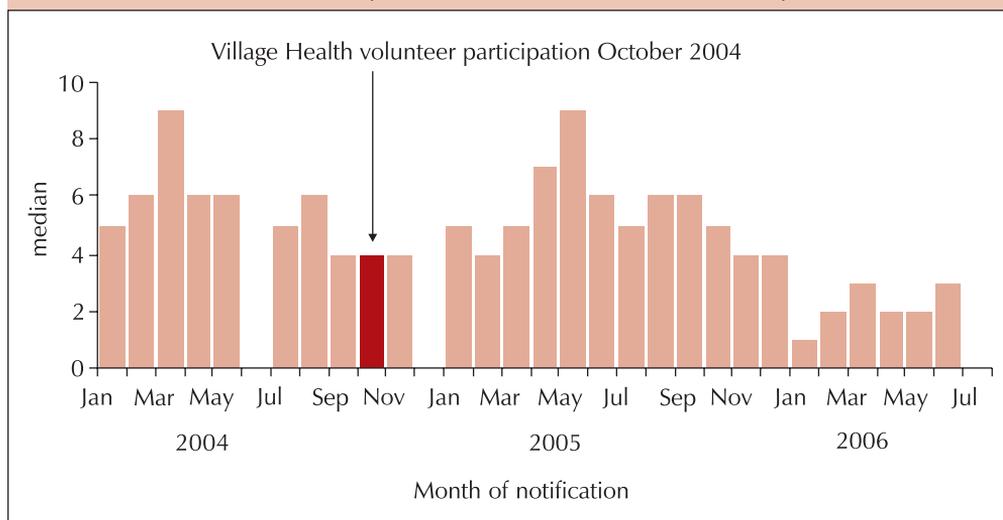
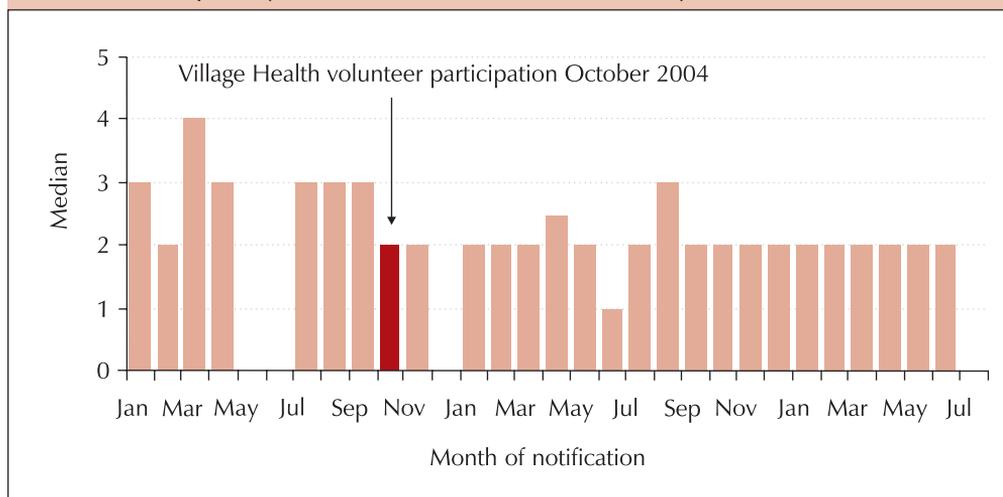


Figure 6: Median duration from date of onset of ILI or sever pneumonia to admission to hospital by month of notification, Jan 04 to July 06 in Thailand



7 Conclusions

The VHV scheme was established in Thailand even before the Alma-Ata declaration on Health for All was adopted – 1978. It has been in place since the 1970s. Factors that contribute to the sustainability of the VHV programme include: the perceived high value afforded to VHVs by the government as well as the community; community participation in the selection of VHVs and the government’s investment in VHVs.

Moreover, the VHV system empowers people at the sub-district level and the community to participate in public health matters that directly affect them.

Though VHVs receive little or no monetary remuneration, they receive in-kind incentives and acknowledgement as well as social standing. It appears that membership in a nationwide network, fulfillment of their aspirations to help others, and security gained for their family members in terms of receiving health care benefits and some advantages in educating their children are enough to sustain the system. Health officials indicated that many retired VHVs are replaced by their own offspring or relatives which helps in sustaining the programme.

There are many lessons which other countries in the Region could learn from the Thai VHV scheme for AI surveillance. There are two major factors contributing to success. First, as in any successful health programme, there is a high level of government commitment to and investment in the VHV system that includes continuous capacity-building, recognition, membership in a network, and two-way communication. Second, there is good collaboration between the Ministry of Public Health and the Ministry of Agriculture to coordinate surveillance activities in both humans and animals at all levels down to the village level. And, last but not the least, the concept of non-monetary social incentives that are rooted in the socio-cultural values inherent in the community.

However, the factors that would make such a system translatable to other settings are unclear. In Thailand, the system reportedly works best in rural areas compared to urban environments or settings with easy access to the secondary or tertiary services (Kauffman & Hicks Mayers, 1997). The economics (costs, benefits etc) and incentives of the VHV scheme are tied closely to the general culture, the established health infrastructure, as well as the population's level of financial security and independence. This also has implications for sustainability.

Evaluations of similar schemes in Pure (the UNI Trujillo Promotora Model) where Community Health Workers (CHWs) were involved in surveillance activities related to general family health show positive results. Remarkably, the local network of health services found a virtual absence of preventable maternal and child mortality in the last two years, while achieving significant relative decreases in infant pneumonia (from 4% of all respiratory diseases in 1995 to 0.3% in 2000) and diarrhoea (from 15% of all diarrhoea in 1995 to less than 3% in 2000) (Witmer et al, 1995).

In general, a few studies have evaluated the cost-effectiveness of CHWs. Available data show that the average cost of services provided by CHWs are significantly lower compared with the next highest level in the health delivery system (Perman et al 1987).

Therefore, in order to clarify the role of the specific elements enabling the VHV system in Thailand to succeed or not and how it could be replicated and adapted in other countries, more focused studies on specific topics may need to be undertaken. For instance, how is the VHV programme and socio-cultural issues associated with the

scheme accepted by the Community? Can this be translated into something similar in other countries, and what are the factors that would need to be considered? Adaptation of the scheme in other countries will also depend on each country's health needs, its socioeconomic, epidemiological and demographic profile and available public health services.

The VHVs' close relationship with the community make them a very important resource for communicating risks and for undertaking preventive measures against AI. This may need to be further explored so that their potential role in risk communication is fully exploited, particularly in the event of a pandemic. If required, specific training could be imparted to them to ensure that risk communication is conducted appropriately and in a standardized manner.

The involvement of VHVs in AI-related activities at the community level is a new role for them involving close interaction with the DLD. This represents an important functional inter-sectoral relationship between the Ministry of Health and the Ministry of Agriculture for surveillance and early warning regarding avian influenza in both animals and humans. It also raises the question whether this a sustainable methodology for surveillance of zoonotic infections and perhaps other emerging infectious diseases

The role of VHVs is clear in terms of surveillance and early warning about potential suspect cases of AI. However, their role in rapid containment and response situations may need to be further explored and conceptualized. They may be able to assist in putting in place containment measures, for example, identification of suspect cases for verification; prophylaxis of populations with antiviral drugs; instituting and enforcing quarantine; and perhaps collecting specimens.

In conclusion, WHO views community participation in health-related activities, including the mobilization of VHVs or any other types of community health volunteers as the cornerstone of the Primary Health Care (PHC) approach, which has been adopted in some way by most Member countries in the Region. The experience in Thailand provides an important example of a successful and sustainable system. The question remains, nevertheless, as to whether the full potential of community health volunteers has been tapped (WHO, 1993 & 1998).

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Community Health Volunteers (CHVs) in countries of the SEA Region, December 2005

Country	Category of CHV	Abbr.	Year initiated	Number trained	Per household	Duration	% of females
Bangladesh	Village Health Volunteer	VHV	1988	136 500	30 HH	4 days	85%
Bhutan	Village Health Volunteer	VHV	1979	1400	20-30 HH	12 days	10%
DPR Korea	Sanitation Monitor	SM	1955	—	20-30 HH	5 days	100%
India	Village Health Guide Anganwadi Worker	VHG	1977	416 724	100-200 HH	3 months	25%
			1975		200-400 HH	3 months	100%
Indonesia	Community Health Cadre (Posyandu)	—	1978	1.8 million	10-20 HH	3 days	100%
Maldives	Village Volunteer	—	2005	1000	50 HH	5 days	Majority
Myanmar	Community Health Worker	CHW	1976	42 700	200 HH	4 weeks, 6 months, 7 days	20%
	Auxiliary Midwife	AMW	1976	30 100	500 HH		100%
	Ten-Household Health Worker	THHW	1985	42 000	10 HH		90%
Nepal	Female Village Health Volunteer	FVHV	1988	48 300	50-100 HH	12 days	100%
Sri Lanka	Volunteer Health Worker	VHW	1975	46 000	20-50 HH	3-7days	68%
Thailand	Village Health Volunteer	VHV	1979	773 000	10-15 HH	15 days	80%
	Family Health Leaders	FHL	1996	1200 000	1 HH	1 day	
Timor-Leste	Community Health Cadre (Posyandu)	—	1978	10 000??	10-20 HH	3 days	100%

Source: Updated from latest Country Data [based on information] in WHO Documents -SEA/HSD/198 and Public Health in Action 4.

Annex 2

VHV review framework in Thailand

Village Health Volunteers as lay-reporters for AI in Thailand and “X-Ray” campaigns

Purpose of the visit:

- To garner knowledge about the specific schemes employed by Thailand with the emphasis on Village Health Volunteers (VHVs) so that they can be applied in other countries in the Region.
- To add to the evidence-base and document the added value of having the VHV scheme as part of AI surveillance
- To discuss with national authorities their experiences in the formulation, conduct and evaluation of the table-top scenario exercise in the context of pandemic preparedness and response for AI.

Objectives (VHV)

- (1) To discuss with the concerned national officials at the area, district, province and central levels, Thailand’s experience in deploying a large number of VHVs to assist in many health areas in general and to conduct “x-rays” in particular.
- (2) To discuss the role of the government and the role of the community in the VHV scheme.
- (3) To discuss the coordination mechanism between the Surveillance Rapid Response Teams (SRRTs) and the VHVs.
- (4) To visit villages to observe how the VHVs undertake active surveillance and lay reporting and what are the strengths and weaknesses of the system and how they could be enforced/improved.

Issues for discussion

- **Background**
 - What was the rationale and purpose of introducing X-rays? What gaps have been filled by this function?
 - How has the VHV scheme been established within the Primary Health Care system over 25 years?
 - In the past five years, what is the status of VHVs? How was their role in AI conceptualized and how was AI incorporated into their work?

- What is the acceptance of the VHV programme and the cultural issues associated with the scheme? Can this be translated into something similar in other countries? What factors would need to be considered?
 - How has animal health surveillance and related agencies been brought into the system? What is the relationship on the animal side, especially in the commercial sector at peripheral levels?
 - Is there a clear role for the community as a partner in the scheme – selection of VHVs, engagement of community responses/resources etc?
 - What were the obstacles in establishing the programme and what were the supportive aspects necessary to make it happen, e.g. political commitment at all levels?
- **Resources and incentives**
 - What resources are required to establish and to sustain the scheme for AI (other CDs)?
 - What budgetary inputs are provided by the government versus the community for training etc?
 - What are the monetary (i.e. per diem) and non-monetary incentives for VHVs?
 - What is the importance of the compensation scheme for AI in poultry in getting people in the community to come forward with their sick and dying chickens?
 - What is the cost of the scheme and has it been efficient? Are there indirect benefits besides the direct benefits for AI surveillance?
- **Selection criteria**
 - Are there specific selection criteria?
 - Who gives approval? Is the community involved in the selection process or not?
 - Profile: age, gender, education level, work status or occupation etc.
- **Training, supervision and coordination**
 - What is the training imparted to VHVs and is there any retraining or communication subsequently?
 - What are the roles and responsibilities of the different levels of government in the VHV scheme and for X-rays?
 - How are they assigned and coordinated by government agencies?
 - How is supervision carried out post-training?
 - What are the obstacles and challenges faced by VHVs?

- What is the coordination process at the central and provincial levels to ensure the X-ray campaigns occur and how do these fit in with other health campaigns?
- Is there an evaluation by the volunteers themselves; how satisfied are they with the programme?
- **Scope of work**
 - What is their day-to-day work and time commitment for X-rays and how long does this last?
 - What is the structure for reporting and for response?
 - Are they involved in health education and risk communication activities in the community?
 - What do they do in the interim between X-ray campaigns for AI?
 - Data collection and reporting formats and mechanisms are used
 - How long is their tenure as a VHV or is there a rotating system? What are the longer-term sustainability issues?
 - As first responders to an event, what is their role and what do they do until the “professionals” arrive?
 - How do the SRRTs and the VHVs work together? What is the nature of their interaction and roles?
- **Added value to epidemiology and surveillance for AI**
 - What are the benefits of participatory surveillance from the community and what is the quality of lay-reporting?
 - Has their role in rapid containment and response situations been conceptualized?
 - Is there a temporal association between the number of suspects identified and the X-ray period in the country?
 - How is this high number of suspects during the X-ray periods related to seasonal influenza and background surveillance for pneumonia and influenza-like-illness?
 - What is the correlation between animal and human cases and outbreaks in terms of geography and time and how are they linked to X-ray periods?
 - What is the role of VHVs in collecting specimens, if any?
 - What is the quantitative value added from VHVs and X-rays to detection of suspects and diagnosis of cases?
 - Is there a performance evaluation of the system to indicate improvements in surveillance and early warning, i.e. has there been a reduction in the time from onset to reporting of cases?
 - Is this a sustainable methodology for surveillance of not just AI but perhaps other (epidemic?) diseases?

Annex 3 Poultry passports

ID NUMBER : 4884 1033



ชื่อ Breed: 4884 1033
 วันที่เกิด Date/Month/Year of Birth: 1/8/11 ปี 8 เดือน 11 ปี
 สี Color: 4884 Marking: 36 กก
 ส่วนสูง Height: 48 ซม. น้ำหนัก On Weight: 3.5 กก
 เจ้าของ Owner: 4884 No: 117 2-3
 ตำบล Locality: 4884 District: 4884
 จังหวัด Province: 4884
 ออกให้ ณ วันที่ Date of Issue: 28 11 2554 Month: 28 Year: 2554

ผู้ตรวจ (นายชาติ บุญนิต) ผู้ตรวจ
 ผู้รับ (นายวิชาญ บุญนิต) ผู้รับ
 อำเภอ ปุณณิศา

ประวัติการ (History of)	รอบ 1 (Round 1)		รอบ 2 (Round 2)		ทดสอบโรค (Diagnostics)			
	พบ/ไม่พบ (Found/Not Found)	ผลตรวจ (Test Result)						
พบ/ไม่พบ (Found/Not Found)								
พบ/ไม่พบ (Found/Not Found)								
พบ/ไม่พบ (Found/Not Found)								
พบ/ไม่พบ (Found/Not Found)								
พบ/ไม่พบ (Found/Not Found)								
พบ/ไม่พบ (Found/Not Found)								

Annex 4

Job description of a Village Health Volunteer

- **Primary Health Care**
 - Demonstrate a good role model in self-care
 - Distribute documents and suggestions to the villagers
 - Disseminate health information through community radio
 - Provide a health information corner in the public health center

- **Communicable diseases prevention and control in the community**
 - Meet with public health workers on the surveillance system of communicable diseases in the community
 - Educate the villagers on self and family prevention of communicable diseases
 - Provide information on disease outbreak immediately
 - Test blood for malaria and test specimen for parasite when suspected
 - Provide basic health care
 - Transfer the patient to an appropriate health centre

- **Community sanitation, environment and water supply**
 - Survey and collect sanitation and environment data and send it to the district health worker
 - Transfer the knowledge on sanitation, water supply, waste management etc.
 - Raise awareness on environmental management
 - Improve public water supply
 - Cooperate with community leaders and organize health promoting activities

- **Immunization**
 - Survey and collect data on children aged 0-5 years and pregnant women
 - Inform the villagers on vaccine-preventable disease
 - Cooperate with public health workers in organizing vaccination points
 - Follow-up with the receivers

- **Nutrition**
 - Survey and collect data on children aged 0-5 years in the community

- Weigh children aged 0-5 years every three months
 - Compare the children's weight with standard and record
 - Inform the result to the parents with recommendations for improvement, if needed
 - Suggest appropriate nutrition
 - Measure nutrition intake of children every two-three months
 - Spray iodine in salt for the villagers
 - Promote selling of iodized salt in the community
 - Supply concentrate iodine water to the villagers
- **Basic health care**
 - Cooperate with health care workers in highlighting how VHVs can help them
 - Provide basic health care service as stated in the regulation
 - Educate individuals or a group of villagers on basics. Do not complicate health treatment
 - Cooperate with health care workers and transfer the patient into an appropriate centre
- **Maternal & child health and family planning**
 - Survey and collect data on children aged 0-5 years, pregnant women, and post pregnant women
 - Promote prenatal care
 - Recommend to mothers to breastfeed till the child is at least four months old
 - Suggest to the mother to bring her child for a medical check up at the health centre
 - Follow-up the pregnancy, and post-pregnancy and ensure that the infant gets a medical check-up
 - Support and promote the role model of motherhood
 - Provide knowledge on family planning
- **Medical supply**
 - Suggest use of medication and herbal medication
 - Suggest to plant herbs
 - Supply and sell basic-needs medication

- **Dental health care**
 - Promote the “My first toothbrush” campaign in children aged 1 ½ to 2 years
 - Survey and collect data on children aged 1 ½ - 2 years and send it to the health officer
 - Urge parents to take their children for dental care
 - Suggest to the villagers to avail the dental service when having a dental problem
 - Supply and sell toothbrush, toothpaste and medication
 - Provide knowledge on dental health care.

- **Mental health**
 - **For general villagers**
 - Provide knowledge on mental health to villagers
 - Make a list of those with a mental health problem
 - Visit the patients and their family
 - Cooperate with health workers in transferring the patient to an appropriate health centre
 - **For people aged 60 and above**
 - Survey and record the number of elderly persons
 - Support to establish a society for the elderly
 - Provide knowledge on physical and mental health of elderly persons
 - Cooperate with health care workers in providing annual physical check ups
 - Organize mental-health-promoting activities

- **AIDS prevention and control**
 - Provide knowledge on AIDS to villagers on prevention and control
 - Organize activities to promote National AIDS Day
 - Supply condoms for villagers
 - Provide knowledge on accidents, noncommunicable disease prevention and control
 - Provide knowledge to villagers on prevention and control of diseases

- **Basic health care service**
 - Survey villagers aged 40 and above for diabetes, high blood pressure and vision problems

- Send those with above problems and injured people to the appropriate health centre
- Mobilize villagers to improve the environment and to reduce accidents
- Follow-up with, and give suggestions to patients

- **Consumer protection**
 - Publicize on how to select good quality products
 - Demonstrate a good role model in buying product showing registration number and expiry date and in reading the medical labels
 - Cooperate with community leaders to ensure that only good quality products are sold.

- **Protecting the environment**
 - Provide knowledge on environmental health to the villagers
 - Cooperate with the village committee in monitoring the environment
 - Demonstrate a good role model in environment protection
 - Set up an environment protection club.

Annex 5

Quantifying the impact of VHVs on AI surveillance

- Is there a temporal association between the number of suspects (poultry and human) identified and the X-ray period in the country? This is a measure not of VHVs, but of the X-rays in which the VHVs have played an important role.
- Is there an increase in the number of suspects for investigation, i.e. how has case detection increased over time?
- If there is a higher number of suspect cases during the X-ray periods, how is it related to seasonal influenza and background hospital-based surveillance for pneumonia and influenza-like-illness? Again, this is a measure of the X-ray activity which is dependent on the VHVs.
- Is there a temporal association between utilizing VHVs in reporting suspect AI and the number of suspect AI cases reported?
- Is there an association between median duration (onset to notification) once VHVs were engaged; or can one show a difference in this median duration in provinces engaging VHVs for AI and ones that are not?
- Has response time by SRRTs been reduced because of the VHV reporting and if so, by how much? This response time is more a measure of the SRRTs in terms of “notification-response time”. The “onset-notification time” is where VHVs can have the most directly impact.
- What is the correlation between onset/detection of animal and human H5N1 cases and outbreaks in terms of geography and time?
- What is the value added by VHVs and X-rays to improving the time to detection of suspects and diagnosis of cases? Does early warning reduce the potential spread in the community? This is a complicated issue and will require some comparisons between provinces regarding the number of suspects and cases over time and determining whether the VHVs play a significant role in improving control measures.
- Is there a performance evaluation of the system to indicate improvements, for example, in the timeliness of the surveillance and early warning for AI, i.e. has there been a reduction in the time from onset to reporting of cases? Again, this would be part of the inter-province comparisons.
- Can one quantify the changes in people’s attitudes and behaviours related to AI since the VHVs were involved? A KAPB survey might address this issue.



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