

Taiwan's Community Epidemic Prevention Based on Health Building and Collaborative Network

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Abstract The outbreak of the novel coronavirus epidemic in early 2020 triggered off worldwide concerns for epidemic prevention as a coping strategy against public health crises. Facing the epidemic which has been characterized by wide spreading range and a long incubation period, communities have become the frontier in the war against it. At the same time, various problems have been exposed at the community level, including the lack of epidemic prevention planning, the high workload of community staff, and the insufficient public awareness on public health, etc. Focusing on the construction of Taiwan's community epidemic prevention system, this paper elaborates the significance and necessity of the community's participation in epidemic prevention based on a systematic literature review and policy study. It analyzes the restructuring and transition of a community epidemic prevention system and the primary strategies of community epidemic prevention planning, community health building, community health resources networking, community epidemic prevention practice, and the emergency planning in response to the novel coronavirus epidemic. It finally summarizes the methods of building a sustainable community epidemic prevention system.

Keywords community epidemic prevention; novel coronavirus epidemic; community building; healthy community; Taiwan

1. Introduction

The outbreak of the novel coronavirus epidemic in the early spring of 2020 has triggered off worldwide concerns for epidemic prevention, which is a coping strategy against a public health crisis. Facing an epidemic that is characterized by a wide spread range and a long incubation period, communities have become the frontier in the war against it. At the same time, various problems of epidemic prevention have been exposed at the community level, including the lack of community planning, the high workload of community staff, and the insufficient public awareness on public health, etc. (Liu, 2020). In contemporary time, the inducements of the epidemics have shifted from the issues of poverty and sanitation to more complicated and intricate social and ecological issues. The reality of globalization and high mobility make measures of medical treatment and quarantine control more difficult after the outbreak of epidemics. The over-run on medical and service resources under the strike of a sudden outbreak and a rapid spread of epidemics, a dilemma that Wuhan was once trapped in, further highlight the importance of comprehensive community epidemic prevention based on neighborhood collaboration networking. Only the full engagement of communities and the establishment of a community epidemic prevention and control network that joins both administrative and social strength can effectively prevent the occurrence and spread of epidemics (Lin, 1999; Chen and Li, 2003).

In Taiwan, a community usually refers to a group of people who live in a certain geographic area and share common relationships, service systems, and social interactions (Xu, 1992). In legal terms, a community refers to an area that is defined by a county or city's

administration department in charge of community development, where the organization of "community development association" can be established by law to facilitate community development. Being classified as "people's organization" that is different from the official organization composed of village (precinct) heads, the "community development association" follows the spirit of self-initiative and self-help and concern for the common needs of local residents. It assists the government in providing administration support and technical guidance to upgrade the life quality of a community's residents by effectively putting various resources onto comprehensive community building (Department of Health and Welfare,^① 2014). As the bottom-up community organizations receive more and more attention, the independent spirit of a citizen society becomes more and more matured. Being dynamic and flexible in terms of scope and scale, the boundary of a community is usually defined by the community consciousness formed through residents' participation and organization.

After being attacked in succession by some major epidemics including SARS and H1N1 influenza, Taiwan has put constant efforts in setting up a community epidemic prevention system which aims at a healthy and sustainable development through community building. Taiwan was appraised by the World Health Organization (WHO) for its success in preventing the epidemic of SARS, particularly in the fields of public education and cross-department response and coordination (Hong, 2004). During the outbreak of H1N1 influenza in 2009, the death rate in Taiwan caused by the influenza was only one third of the average of countries part of the Organisation for Economic Co-operation and Development (OECD) and one fifth of that of the US (Fu et al., 2011). All these facts show the remarkable

achievements of Taiwan in restructuring its community epidemic prevention system in recent years.

This paper reviews the construction, restructuring, and transition of Taiwan's community epidemic prevention system, elaborates the significance and necessity of community's participation in epidemic prevention, analyzes the primary action strategies of Taiwan's community epidemic prevention, and summarizes Taiwan's methods of building a sustainable community epidemic prevention system.

2. Background and evolution of community epidemic prevention system

In the earlier period of Japanese occupation during the late 19th century and the early 20th century, there was no special institution of epidemic prevention in Taiwan and the quarantine and epidemic prevention measures, including the emergency treatment of infectious diseases, the promulgation of vaccination provisions, the control of communicable diseases, and the promotion of health care, were enforced through compulsory public health policies via army and police forces (Fu et al., 2011). For a long time before SARS in 2003, it was the medical staff of clinics and the village officers of household administration in townships, towns, and cities who were responsible for the issues of health care and infectious disease management at the local level. They carried out door to door infectious disease surveys, hygiene education, vaccination of newborns, and parasite examination for pupils, etc., which was crucial for preventing and controlling infectious diseases when medical resources were in short supply.

It was not until the 1980s that the government upgraded clinics into community medical centers. As the epidemic prevention was quite successful in that period and chronic diseases gradually replaced infectious diseases to become the primary health issue for the public, the emphasis of Taiwan's medical care and public health system was toward after-disease treatment which was task-oriented following a top-down medical and health care system. This led to rigidity in the administration system, a shortage of human resources, and the backwardness of safeguard measures. These problems, together with others, such as the lack of emergency responding capacity of community staff, insufficient epidemic prevention awareness of the public, and poor communication among the administrative authorities of different departments and different levels, were all exposed during the outbreak of SARS in 2003. Consequently, the emergency medical system almost collapsed, there was a shortage of medical staff at the front line of epidemic prevention, and the related

resources were not effectively integrated. This awkward situation justified the urgency to rebuild the epidemic prevention system of Taiwan (Chen et al., 2003; Chen, 2002; Fu et al., 2011).

By reflecting on the problems exposed through the epidemic prevention during SARS, in particular those related to the commanding system, functional division, information coordination, and emergency manpower, the Taiwanese cities including Taipei set up a "three-level and three-protection" integrative epidemic prevention system focusing on strengthening procedure management and flow line control (Yan, 2003; Shi, 2004; National Health Research Institute, 2005a). The three-protection aspect of the system refers to the emergency response of communities, the primary treatment at elementary medical centers, and the comprehensive treatment in major medical centers, while the three-level aspect refers to the cross-departmental coordination system at the macro-level, the regional networked medical commanding system at the meso-level, and the prevention and aiding system at the community level (National Health Research Institute, 2005b).

However, many people are ignorant or biased about epidemic prevention. Some are reluctant to change their hygiene habits or to take medicines. During epidemics, people who shall be quarantined would often lie about their whereabouts or even escape from quarantine, and there are occurrences of irrational discrimination toward patients, quarantined people, medical staff and their families, all of which would lead to the expansion of the epidemic and a rise of social panic, making the work of epidemic prevention more difficult (Luo, 2006; Zhong et al., 2010; Chen et al., 2003). Therefore, the recognition, participation, and support of community members are indispensable for the success of effective epidemic prevention. It is necessary to stimulate communities to participate in epidemic prevention through community building and to build a localized community epidemic prevention network through the collaborations among the public and private sectors, social organizations, and communities, so as to share the risks caused by epidemics and to promote positive and healthy life ideals and activities.

In 2005, the Executive Yuan of Taiwan put forward the Taiwan Six-Star Healthy Community Project based on previous achievements in community building, according to which "community health building" was listed as a key task of "social welfare and medical care." Taking spontaneous participation in community-based healthy life building as the focus of a future community career, it highlighted the co-building of healthy communities through mutual assistance among communities and close collaboration with professional

medical and health care institutions (Executive Yuan, 2005).

In 2009, Typhoon Morakot and H1N1 influenza brought about an unprecedented compound disaster in Taiwan, evoking a broad awareness on the importance of disaster alleviation strategies. The public realized that epidemic prevention strategies should be shifted from containment control to disaster alleviation, as any failure in containment control would result in high-standard prevention and treatment which will consume too many social resources to maintain a long-term epidemic prevention (Bureau of Disease Control, Health Administration, Executive Yuan, 2011). As a result, an epidemic prevention work system composed of four stages was set up, i.e., disaster reduction, preparation, emergency response, and restoration, demonstrating the transition from passive containment after disasters to active prevention throughout the whole process. Another important change was the shift from the dominant role of governments to the active participation of communities and the public, motivating community members and the staff of the medical institutions from both public and private sectors to form an “iron triangle for epidemic prevention.” Furthermore, the Health Administration actively promoted the restructuring of the medical care and public health system, which focused on strengthening community’s capacity of motivation and people’s self-management of public health.

3. Primary strategies of community epidemic prevention

3.1 Localized community epidemic prevention planning

Since the start of the 21st century, communities have been considered at the center of independent epidemic prevention in Taiwan. The anti-SARS experience proved that highly infectious diseases often lead to different epidemic conditions at different stages or in different regions and the countermeasures of epidemic prevention should be in line with the concept of integrative prevention (Yan, 2003). On the one hand, the real-time epidemic conditions should be under control through a series of work, including preventative vaccination, international monitoring, border quarantines, disease cases reports, infection control, community tracing, household and work place quarantine, disease source and medium control, by monitoring the reports of designated medical institutions, and by monitoring a system of densely populated institutions, etc. On the other hand, the health care and medical treatment of public institutions should be integrated with the medical care of communities and other social resources to form a community health management system, so as to prevent infectious diseases from communities through independent community health management (Fu et al., 2011; Health

Administration, Executive Yuan, 2011).

In order to develop communities into a social force of epidemic prevention, the Executive Yuan and local governments have implemented a series of “localized” community epidemic prevention plans to strengthen the role and function of community public health institutions at the core of independent community epidemic prevention. They are expected to integrate with other community epidemic prevention resources to motivate the public to actively learn relevant knowledge and participate in relevant activities and to assist the government to implement community epidemic prevention strategies whenever epidemics appear (Bureau of Disease Control, Health Administration, Executive Yuan, 2008). The concept of “new cooperative governance” based on mutual communication has also been adopted to promote collaborations between communities and hospitals, so as to transfer the epidemic prevention knowledge and skills that are easy to understand, to learn, and to put into operation by community members to form a localized community epidemic prevention pattern (Zhong et al., 2010).

The *2008 Action Plan of Pandemic Influenza Prevention Strategy* introduced for the first time volunteers into the preparation work of epidemic prevention, which has brought communities with a new autonomous force to be engaged in self-caring and maintaining function, order, and security (Zhang et al., 2008). The *2011 Action Plan of Pandemic Influenza Prevention Strategy* proposed four objectives of continued monitoring, infection prevention, damage reduction, and restoration, the four strategies of epidemic monitor and assessment, infection blocking, influenza antivirals, and influenza vaccination, and the construction of five defending lines, i.e., overseas blocking, border control, community prevention, medical guarantee, and personal and family protection, as well as nine measures including border control, manpower motivation, and risk communication (see Figure 1). Regarding the construction of the defending line of community prevention, it highlighted that the recognition and cooperation of the public plays a vital role and the collaborations of communities with social groups and volunteers, apart from the public health interventions by antivirals and vaccines, should be strengthened to provide the public with correct information of prevention and protection and to promote the cooperative degree of the public in community epidemic prevention (Bureau of Disease Control, Health Administration, Executive Yuan, 2011).

3.2 Community health building

In 1999, the Health Administration of Taiwan’s Executive Yuan initiated the *Community Health Building Plan* to promote the

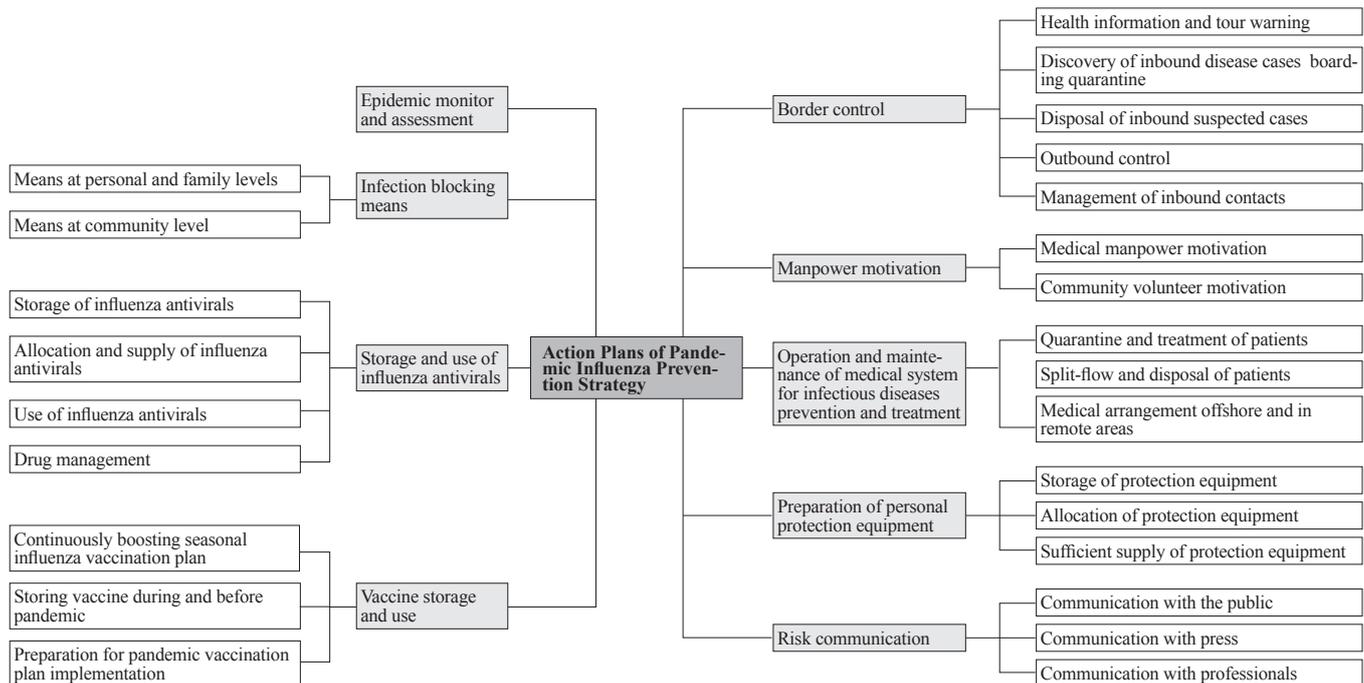


Figure 1 Primary strategies proposed by the Action Plans of Pandemic Influenza Prevention Strategy
 Source: Bureau of Disease Control, Health Administration, Executive Yuan, 2011.

participation of community members in community health building. It proposes to set up community health building centers in all counties and cities (townships, towns, districts) by integrating the resources offered by warm-hearted volunteers, social organizations, professional medical institutions, and governmental departments, which would be used to enhance the physical, psychological, and social health of community members to realize the goal of “healthy living and healthy life” (Xu, 2006). The Taiwan Six-Star Health Community Project proposed by the Executive Yuan in 2005 takes communities as the basic administration unit and advocates a community-based healthy life. It proposes to improve communities’ consciousness of active participation in public affairs and the capacity of problem solving, to foster talents of community building, and to create a social environment of “sustainable growing, achievements sharing, and responsibility sharing.” It aims at shaping healthy communities where people can live and work in peace and contentment through a full-range community renovation in terms of industrial development, social welfare and medical care, community security, humanistic education, environmental and ecological protection, and landscape. What’s more, the plan puts forward 20 stimulating strategies and integrates 62 administrative plans of 13 governmental departments, facilitating the efficient cooperation and joint action among different departments in line with a unified

goal (Executive Yuan, 2005) (see Table 1).

The community health building in Taiwan focuses on building up a fundamental health care network with diversified characteristics based on the existing health system and in combination with social resources. It intends to stimulate the force of self-determination, self-dependence, and self-help of the public, so that the health issues of communities can be explored, analyzed, and solved and healthy communities can be shaped through co-building (Zhao, 2006). By 2019, 126 community health building centers were built up in Taiwan which play a positive role in continuously boosting relevant health care activities in townships, towns, and districts by involving various institutions including clinics, hospitals, schools, and social organizations, etc., and various community members including medical professionals, educators, warm-hearted individuals, local leaders, and volunteers[®] (Xu, 2006) (see Figure 2). Through the whole process of plan formulation and implementation, particular attention is paid to local conditions, which can be seen from the assessment of community health, the identification of prior community issues, the formulation and implementation of community health intervention plan, and the entrenched community health building, all of which help promoting a community health culture recreation movement with a wider range, more diversified themes, and more thorough contents.

Table 1 Various plans proposed by related governmental departments within the framework of Taiwan Six-Star Health Community Project

Six fields	Strategies	Key plans	Relevant plans	Departments in charge	
Industrial development	1. Promote industrial transformation and upgrading	Supporting plan for local characteristics and small-size community enterprises		Department of Economic Affairs	
		Redevelopment plan of commercial streets		Department of Economic Affairs	
		Development plan of local food and special products		Council of Agriculture	
		Supporting plan for local industrial cultures		Council of Agriculture	
		Innovation and experiment plan of community building		Council of Cultural Affairs	
		Innovation and incubation plan for Hakka-featured industries		Hakka Affairs Council	
	2. Promote green production and green consumption			Development plan for industries with added value of featured culture	Hakka Affairs Council
				Supporting plan for organic agriculture development	Council of Agriculture
				Supporting plan for organic rice production and marketing	Council of Agriculture
				Green consumption plan	Environmental Protection Administration
				Green business promotion plan	Department of Economic Affairs
				Promotion of renewable energy	Department of Economic Affairs
	3. Promote industrial strategy alliance		Revitalization plan of small towns		Department of Economic Affairs
			Mechanism construction plan for sustainable industrial development		Department of Economic Affairs
				Development plan of leisure agriculture	Council of Agriculture
			Tourist multiplication plan – tourism package	Department of Transportation and Communications	
				Labor Council	
4. Promote localized employment		Development scheme of diversified employment			
		Employment plan for youth returning hometown (II)– first experience of college students at workplace in summer vacation		National Youth Commission	
			Employment plan for youth returning hometown (I) – encouraging the youth to locally start up business	National Youth Commission	
Social welfare and medical care	1. Develop community nursing service	Precautionary nursing – Development plan of community nursing and caring points		Department of the Interior	
			Community-based caring service plan	Department of the Interior	
		Community-based long-term nursing plan	Health Administration		
	2. Strengthen community child-care service	After-school caring service by primary schools		Department of Education	
			Community-based child-care service plan	Department of the Interior	
	3. Practice community health building	Community-based healthy life plan		Health Administration	
Exercising population multiplication plan			Sports Affairs Council		
Community security	1. Establish community security maintenance system	Action plan of all for security – Guideline on building safe communities		Department of the Interior	
			Good neighborhood plan in industrial areas	Department of Economic Affairs	
	2. Implement community disaster prevention system	Promotion of community disaster prevention		Department of the Interior	
			Training of social rescue team	Department of the Interior	
	Disaster prevention and emergency response in hillside areas	Council of Agriculture			

Six fields	Strategies	Key plans	Relevant plans	Departments in charge		
Humanistic education	3. Establish anti-domestic violence system	Supporting scheme for "zero violence community"		Department of the Interior		
	1. Foster the sense of community	Community plan of human resource development		Department of the Interior		
		Plan of community building talents cultivation		Council for Cultural Affairs		
		Community plan of deep cultivation of arts and literature		Council for Cultural Affairs		
	2. Strengthen the operation of community organization	Plan of Hakka culture environment construction		Hakka Affairs Council		
		Exhibition plan of achievements in new hometown		Council for Cultural Affairs		
		Plan of establishing administrative mechanism for community building		Council for Cultural Affairs		
	3. Practice community lifelong study	Plan of vitalizing rural community organization		Council of Agriculture		
		Community plan of establishing education and learning system		Department of Education		
			Plan of developing new migrants culture		Department of Education Department of Education	
	4. Promote community juvenile development	Plan of creating digital opportunities in remote rural areas		Department of Education		
			Community plan of promoting juvenile-oriented information and service network		National Youth Commission National Youth Commission	
		Community plan of promoting juvenile's participation in volunteer organization and related service training		National Youth Commission		
		Community plan of vitalizing juvenile organization		National Youth Commission		
Urban and rural landscape	1. Shape community landscape	Plan of shaping new rural landscape	Promoting community juvenile deliberation and democratic forum	National Youth Commission		
		Plan of shaping new fishing village landscape		Council of Agriculture		
		Plan of shaping urban community landscape		Council of Agriculture		
		Plan of ecologic community demonstration		Department of the Interior		
		Plan of developing and utilizing cultural asset and cultural environment		Department of the Interior Council for Cultural Affairs		
	2. Vitalize community facility and space	Plan of replenishing local cultural center		Council for Cultural Affairs		
		Plan of Hakka cultural facility construction (repair)		Hakka Affairs Council		
		Environmental and ecological protection	1. Promote the work of clean homeland	Plan of green community and clean homeland		Environmental Protection Administration
				Community plan of eliminating disease vectors sources and imported red fire ants		Environmental Protection Administration
			2. Strengthen ecological conservation	Community forestry plan		Council of Agriculture
Study on conceptual structure of community ecological education				Council of Agriculture		
3. Promote zero waste community	Community plan of promoting full categorization of garbage		Environmental Protection Administration			
4. Prevent and control community pollution	Community plan of fresh air		Environmental Protection Administration			
	Plan of volunteer inspectors for river pollution prevention and control		Environmental Protection Administration			
	Comprehensive ones	Sustained development plan of native tribes		Council of Indigenous Peoples		
Plan of promoting sustained campus			Department of Education			

Source: Executive Yuan (2005).

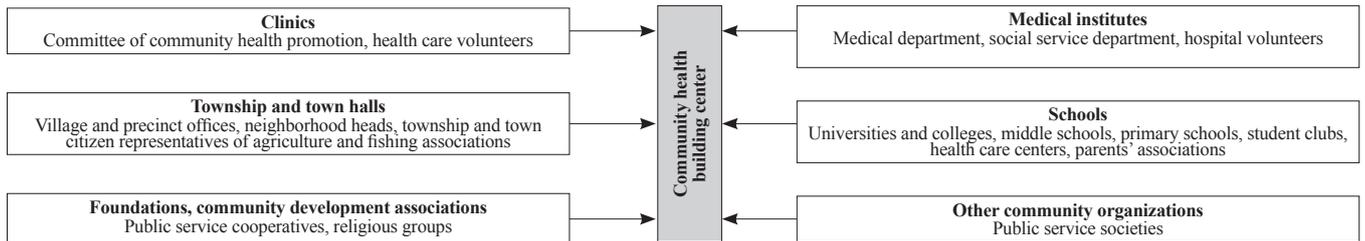


Figure 2 Organization of community health building center

Source: Based on the information from the website of Bureau of Health Promotion, Department of Health, Executive Yuan.

3.3 Community health resource networking

In order to fully explore, foster, and integrate the localized community anti-epidemic forces, such as through townships and town halls, clinics, medical institutions, pharmacies, community organizations, and volunteer service groups, etc., Taiwan has actively promoted the localized community health resource networking (see Figure 3) which emphasizes the co-management network relationship among public and private sectors, communities, and non-profit organizations to share the risks of epidemics. The community health resource networking strategies include establishing a regional consultation mechanism, conducting investigations on the demands and difficulties of community health building, organizing workshops, developing and designing teaching materials, demonstrating and supervising community epidemic prevention, and defining a community assessment index, etc., so as to transform health building from individual health to a type of community living, environmental health and from health education and supervision by authorities to capacity building through self-learning and organizational training (Hong, 2004; Zhong et al., 2010).

For example, in response to the SARS epidemic, over one hundred

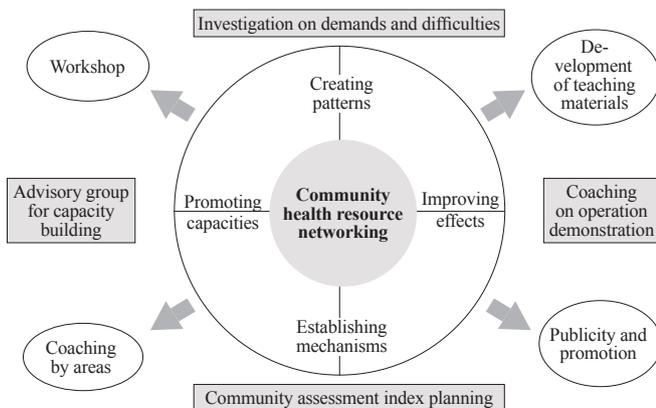


Figure 3 Strategy structure of community health resource networking

Source: Hong, 2004.

individuals, including community building workers, health and medical professionals, and social education workers, and more than 800 social groups jointly set up the Community Epidemic Prevention Action Alliance under the leadership of Community Building Society, which was engaged in collecting information, introducing experts, integrating forces to carry out diversified community epidemic prevention activities, such as temperature inspection, flyer distribution, environmental disinfection, protection material supply, home care, food delivery, infectious disease consultation, and mobility control at community entries (Zhang, 2008). Meanwhile, more than 9,000 clinics and over 6,000 community pharmacies hosted a community SARS consultation station and the doctor associations of counties and cities opened a special line to provide consultations on temperature inspection, fever, and SARS prevention. As a result, the governmental network of epidemic prevention care for special groups was well combined with the cultivation of independent healthy life management and personal health habits, laying down a sound foundation for building healthy communities (Hong, 2004).

3.4 Construction of community epidemic prevention networks

After SARS, all cities and counties in Taiwan have put great efforts into the construction of community epidemic prevention networks. For example, in Hualien City, strategies were taken to provide community volunteer service groups with training on epidemic prevention, to establish a community epidemic prevention consultation network, and to develop and promote community epidemic prevention education classes (Zhong et al., 2010). In Chiayi County, apart from the regular training of epidemic prevention for staff, attention was also paid to community members, such as ① special training on epidemic prevention to correct the residents' improper ideas; ② field exercises to promote volunteers' capacity of motivation and emergency responding; ③ promotion of epidemic prevention in communities to enhance residents' recognition and acceptance willingness; ④ specific health education schemes for different groups

and regular assessment and improvement (Fu et al., 2011).

3.5 Preparation and contingency plan and community motivation of epidemic prevention responding to novel coronavirus

After the novel coronavirus epidemic broke out, Taiwan's Central Epidemic Command Center (CECC) implemented a series of epidemic prevention plans and measures in view of actual conditions (see Figure 4). In February 2020, the Taiwan Centers for Disease Control (CDC) issued Preparation and Contingency Plan Responding to the Severe and Special Infectious Pneumonia Epidemic, initiating a "preparation" and "contingency" mechanism. Five "preparation" strategies will be applied when there is no continuous epidemic in communities, so as to prevent the invasion of the epidemic, these include constant epidemic monitoring and risk assessment, border quarantine, epidemic prevention material inventory, risk communication, and examination and diagnose. Nine "contingency" strategies will be implemented if the epidemic were to continuously expand, so as to effectively control the invasion and the spread of the epidemic, that is strengthening epidemic monitoring and risk assessment, upgrading border quarantine, completing the medical system, allocating/managing epidemic prevention materials, enhancing the capacity of examination and diagnose, continuous risk communication, community prevention and control, epidemiological investigation, and international cooperation, in order to effectively control the invasion and spread of the epidemic (Taiwan Centers for Disease Control, 2020a).

In order to avoid the concentration of suspected cases at large hospitals, which could possibly cause congestions at the emergency departments and infections within the hospitals, the CECC promoted the construction of a community screening network to increase the

medical capacity of epidemic prevention. The Notice on Referral of the COVID-19 Community Screening Network issued in April 2020 provides a list and map of community screening institutions, as well as the procedure of medical help and referral (Taiwan Centers for Disease Control, 2020b).

Considering that it is hard for the government to completely fulfill all the demands of the public that is under home quarantine, a big pressure of epidemic prevention rests at the community level. It is thus necessary to fully motivate and integrate the manpower of the whole society, in particular through the close connection between civil organizations and communities, the Bureau of Disease Control, Department of Health and Welfare released the *Guidelines for Man-Power in Community Epidemic Prevention Responding to Severe and Special Infectious Pneumonia*, aiming at integrating volunteer organizations into communities as independent forces. According to the Guidelines, the government, taking counties and cities as a unit, should appoint responsible institutions to take the tasks of manpower motivation, preparation, coordination, and action, with various volunteer service resources being integrated and reorganized into community epidemic prevention teams to be assigned with different tasks. Possible manpower includes village offices, clinics, long-term care institutions, nursing institutions, medical institutions, community pharmacies, social welfare institutions, community development associations, apartment building management committees, schools, religious groups, social organizations, community patrols, volunteer police and fireman, and environmental protection groups and volunteers, etc. The community epidemic prevention measures may include taking an inventory of the epidemic prevention capacity, the promotion of epidemic prevention information skills, the collection and communication of public opinions, psychological support and caring for residents, maintenance of daily life operation,

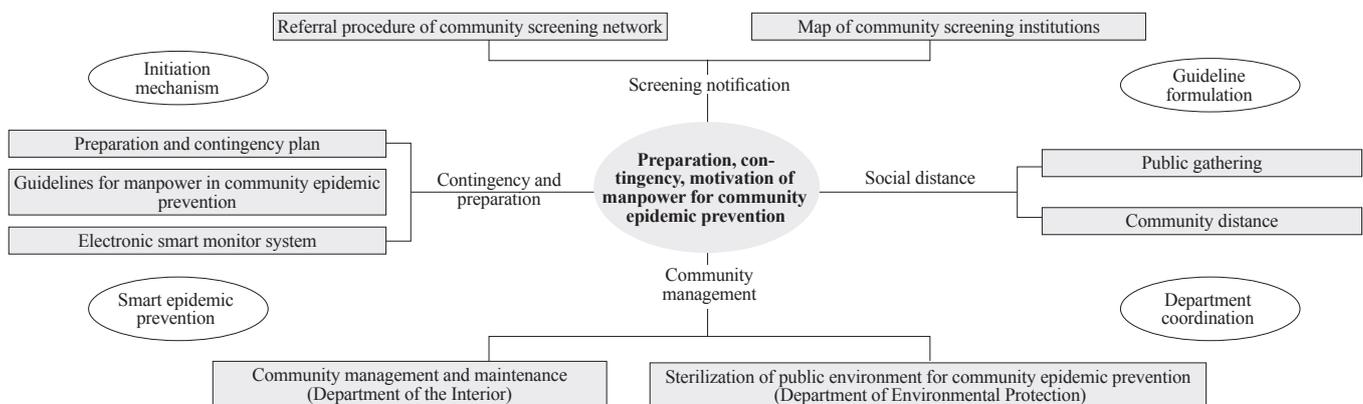


Figure 4 Strategies of community epidemic prevention in Taiwan

management and delivery of materials, maintenance of order and safety, publicity of epidemic prevention activities, assistance to epidemic prevention transportation arrangement, service and support to unprivileged groups, and capacity building of epidemic prevention teams, etc. The Guidelines also stresses the necessity of on-line education and training on epidemic prevention guaranteed supply of protection materials, and performance assessment and rewarding mechanism for community personnel (Taiwan Centers for Disease Control, 2020d).

In order to prevent infection risks coming from crowd gathering, spatial measures are also adopted. Besides planning quarantine and relocation space in communities and emergency transport routes to hospitals to effectively quarantine suspected cases under emergency, the CDC also released guidelines on public gathering, social distancing, and community management and maintenance, forbidding indoor public gatherings of over 100 people and outdoor gatherings of over 500 people. Inevitable public gatherings within required scales should be assessed on six index, i.e., the participants' information to be learnt in advance, the ventilation condition of the venues, the social distance between participants, the fixed or non-fixed position of participants during the gathering, the duration of the gathering, and the confirmation of hand hygiene and mask wearing during the gathering. Other measures are also promoted, such as advertising no talking in closed space like elevator, shutting down public areas like community multi-function rooms and indoor children playgrounds, strictly maintaining the social distance of 1.5 m indoor and 1 m outdoor, conducting access control at community entries, requiring visitors registration, and setting a centralized location for goods delivery, so as to avoid loopholes in epidemic prevention caused by frequent people flow (Taiwan Centers for Disease Control, 2020e; Department of the Interior, Executive Yuan, 2020).

4. Characteristics and conclusions

Along with the growing pressure of the epidemic prevention on cities, it appears more and more urgent to complete community resource networks and to implement comprehensive action strategies. In recent years, Taiwan has provided many useful thoughts and research on the combination of an epidemic prevention system with community building and the integration of epidemic prevention strategies with the goal of healthy and sustainable community development. Its methods and characteristics can be summarized as follows (see Figure 5).

(1) Systematically improve community epidemic prevention mechanisms

It has already been proven that, in the face of the uncertainty brought about by sudden epidemics, temporary passive and movement-style community epidemic prevention would be difficult to fully respond to the situation. Effective community epidemic prevention calls for long-term planning, a clarification in advance of the rights and responsibilities of all parties involved, and sound preparation of resources and capacities, all of which rely on the construction of an efficient community epidemic prevention system. After suffering the major epidemics of SARS and H1N1 influenza, Taiwan has been constantly promoting the construction of its epidemic prevention system. For instance, after SARS, the National Health Command Center (NHCC) was established to be responsible for responding to pandemics. The CECC was set up under the NHCC after the outbreak of the novel coronavirus epidemic, which is chaired by the department head of Health and Welfare to break down the departmental divisions for efficient motivation and coordinating among the departments of transportation, economy, education, and environment. As both coordinator and commander, the government can easily clarify the rights and responsibilities of different parties and coordinate social forces to strengthen the material supply, personnel dispatching, on-line services, and other guarantee systems of epidemic prevention. At the community level, a comprehensive community epidemic prevention management system is established, conducting monitor notification, soft- and hardware maintenance, health management of service personnel, manpower management, home quarantine management, and self-health management, which helps to build up a more solid defending line at the local level to achieve a high-efficient connection between the demand and the service of epidemic prevention. At the same time, a series of epidemic prevention guidelines have been drawn up and supplementary implementation methods have been improved for the efficient implementation of the epidemic prevention mechanism, such as the incentive mechanism for epidemic prevention, the guidance on community medical triage, and the refinement of the risk assessment indicators of social activities, etc.

(2) Strengthen the subjective role of community through community building

As the most important measures of epidemic prevention, the efficient implementation of both the disease prevention and control before the epidemic and the social distancing during the epidemic depends on the understanding and cooperation by its community members. One of the most prominent experiences in Taiwan regarding community epidemic prevention is the complete combination with community building. Community is thus not only a basic unit for administrative

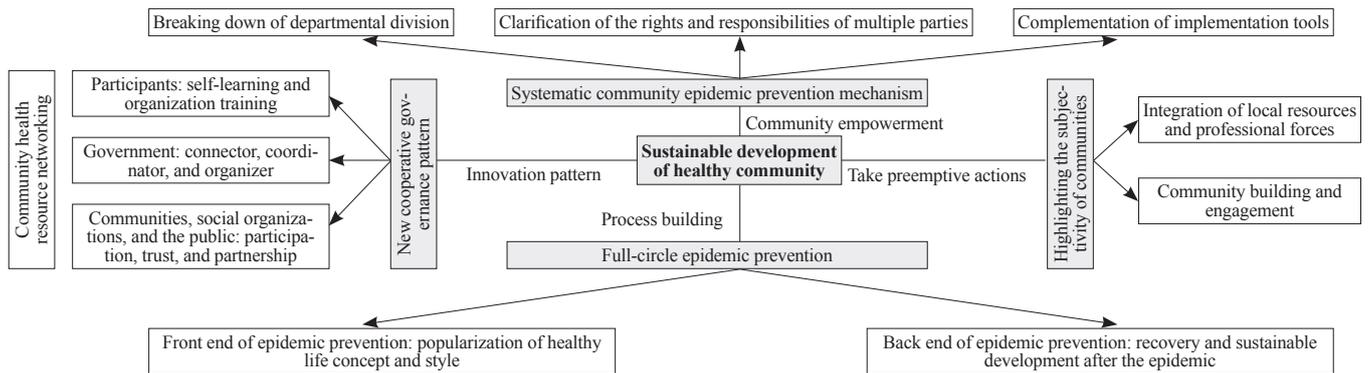


Figure 5 The pattern of community epidemic prevention of Taiwan

management and local services, but also a commonwealth unit that is capable of independent epidemic prevention to maintain healthy and resilient development. Participation and empowerment is a process of social action through which people feel in control of their life, promoting and strengthening capacity building and integrating necessary resources in order to meet their demands. They will then have a awareness of caring for their communities, being aware of their responsibilities and obligations for promoting the quality of the community (Gibson, 1991). Therefore, in epidemic prevention, it is necessary to highlight the subjective role of communities and stress the participation and empowerment of communities. In line with the ideas and methods of community building, local resources and professional forces should be integrated and the rights and responsibilities of all parties should be clarified, so as to strengthen the capacity of communities in independent epidemic prevention and control and to create a positive and healthy living environment.

(3) Pay attention to the whole process of community building and the full circle of epidemic prevention

Healthy community building emphasizes the process instead of merely the result. It means that residents should join to solve health-related issues with a positive attitude, capacity, and consensus, instead of only achieving a certain level of health. At present, disaster management is often divided into four stages, namely mitigation, preparation, responding, and recovery, all of which form a full cycle. The concept of full-cycle intervention is also applicable to epidemic prevention, with the emphasis being oriented to the two ends., that is the popularization of a healthy life concept and life style before an epidemic to reduce the risk of epidemic spread and enable rapid recovery and sustainable development after an epidemic.

(4) Promote the new cooperative governance model based on the integration of local resources

According to Beattie (1991) the impetus to health promotion can be classified into four types and seen through two perspectives of intervention form and intervention level. The four types are health persuasion, personal consultation, legislative and policy action, and organizational development, the latter of which is an important foundation for responding to drastic changes and an uncertain future. It justifies Taiwan's exploration of new cooperative governance in community epidemic prevention in recent years (Hong, 2004), with the mechanism being transferred from top-down enforcement to a collaboration and integration of social resources, the approach being reoriented from authoritative health education and supervision to self-learning and organizational capacity building, and the role of governmental departments being shifted from traditional urban service provider to being a connector, coordinator, and organizer whose relationship with communities, social organizations, and the public is a partnership based on participation, trust, and responsibility. For example, centering on community health building centers, community building centers, and community development association, the epidemic prevention network is integrated with related resources including clinics, hospitals, pharmacies, schools, community colleges, community groups, education institutions, volunteering services, volunteers, etc. to form a community health resource networking which is a community health support network with local features.

(5) Towards the sustainable development of healthy communities

The ultimate goal of community epidemic prevention is not the temporary eradication of epidemics, but rather a re-examination and re-construction of a sustainable environmental protection, life style, resource utilization, and community building towards the sustainable development of healthy communities. Community participation would trigger reflections on and pursuits for a healthy relationship between man and man and man and nature, as well as for a healthy

lifestyle and sustainable development status. It would also encourage people to actively participate in learning about potential risks, jointly study and formulate health development plans in accordance with community demands, form consensus and take actions on sustainable development, and pass on the concepts of health building. Meanwhile, health should be integrated into all policies, instead of being limited to administrative orders or tasks of certain departments, so that relevant plans and action strategies of various institutions and professions will be integrated to jointly promote the sustainable development of healthy communities. 

Notes:

① Taiwan adjusted the Health Administration to the Department of Health and Welfare in 2013.

② Data source: calling and consulting the Community Health Group, Healthy Promotion Administration, Department of Health and Welfare.

References:

Beattie A (1991). Knowledge and Control in Health Promotion: A Test Case for Social Policy and Social Theory. In Gabe J, Calnan M, and Bury M (Eds.), *The Sociology of the Health Service*, pp. 162 – 202.

Chen J, Jian Y, and Chen X (2003). An Assessment on Emergency Responding Capacity of Public Health System Based on SARS Epidemic: Review and Prospect. *Community Development Quarterly*, 104, pp. 12 – 16.

Chen Y and Li Y (2003). Advancing Community-Based SARS Prevention Network Work Mode. *Journal of Nursing*, 50 (3), pp. 23 – 28.

Executive Yuan (2005). Advancing Scheme for Six-Star Project of Healthy Community in Taiwan. *Community Development Quarterly*, 110, pp. 517 – 526.

Department of Health and Welfare (2014). *Community Development Work Outline*.

Department of the Interior (2020). Guidelines for Management and Maintenance of Community in Response to Severe and Special Infectious Pneumonia. <<https://www.cdc.gov.tw/File/Get/TYE5mt66NsjO1rMuy-A9D0Q,2020-04-14/2020-05-15>>.

Fu Y, Chen M, and Huang Z (2011). The Role and Function of Health Team in Containing Infection from the Perspective of Community. *Journal of Nursing*, 58 (4), pp. 21 – 27.

Hancock T (2000). Healthy Communities Must Also Be Sustainable Communities. *Public Health Reports*, 115 (2/3), pp. 151 – 156.

Hong D (2004). An Inspection on Action Capacity of Community From the Experience of Community Epidemic Prevention Against Severe Acute Respiratory Syndrome. *Community Development Quarterly*, 107, pp. 225 – 240.

Lin S (1999). *A Reflection on Classes Suspension in School due to Enterovirus Infection Incident*, 45, pp. 6 – 7.

Liu J (2020). Community Epidemic Prevention Planning and Governance System against COVID-19 Epidemic. *Planners*, 36 (6), pp. 86 – 89.

National Health Research Institutes (2005). *10 Years of Health Research Institutes Forum*. Taipei: National Health Research Institutes.

National Health Research Institutes (2005). *Summary Report on Command Structure and Response Strategies for Major Health Crisis Events*. Taipei: National Health Research Institutes.

Shi W (2004). *Key Record of Fighting Against SARS*. Taipei: Taiwan Centers for Disease Control. pp. 106 – 116.

Taiwan Centers for Disease Control (2008). *Work Plan of Manpower Integration for Community Epidemic Prevention*. Taipei: Taiwan Centers for Disease Control.

Taiwan Centers for Disease Control (2020). Responding Plan of Preparation for the Severe and Special Infectious Pneumonia Epidemic. <https://www.cdc.gov.tw/Category/MPage/I92jtlDmxZO_o0lFPzP9HQ,2020a-02-28/2020-04-12>.

Taiwan Centers for Disease Control (2020). Notice on Transfer Treatment of COVID-19 Community Examination Network. <https://www.cdc.gov.tw/Category/MPage/I92jtlDmxZO_o0lFPzP9HQ,2020b-04-05/2020-04-12>.

Taiwan Centers for Disease Control (2020). High-Tech Smart Epidemic Prevention, Precise and Efficient Quarantine Tracking. <<https://www.cdc.gov.tw/Bulletin/Detail/LxV1VKIb689M9Sb1q8XOcQ?typeid=9,2020c-03-18/2020-04-12>>.

Taiwan Centers for Disease Control (2020). Guidelines for Community Preparation for Severe and Special Infectious Pneumonia Workforce. <https://www.cdc.gov.tw/Category/MPage/I92jtlDmxZO_o0lFPzP9HQ,2020d-03-13/2020-04-12>.

Taiwan Centers for Disease Control (2020). COVID-19 Response Guidelines: Public Gatherings. <https://www.cdc.gov.tw/File/Get/jp6pAJa7lDRIB6AbRO_cg,2020e-03-04/2020-05-15>.

Yan M (2003). Study Report of “Influences of Design of Anti-Epidemic Movement Line Control Over Control of Infection Inside Hospital”, 92 Years of Science and Technology Research and Development Plan, Taiwan Centers for Disease Control (No. DOH92-DC-SA01). Taiwan Centers for Disease Control.

Yan M (2006). Anti-Epidemic Movement Line Management in Hospital in Response to Avian Influenza. *VGH Nursing*, 23, pp. 9 – 16

Yan M, Wang Y, and Song Y (2007). Preparation Strategy of Taipei Metropolis Responding to the Global Pandemic of New Influenza. *Epidemic Report*, 23 (1), pp. 17 – 28.

Xu S (2006). Building of Healthy City and Healthy Community. *China Local Autonomy*, 59 (8), pp. 11 – 30.

Xu Z (1992). *Community and Community Development*. Taipei: Cheng Chung Bookstore. pp. 23 – 28.

Zhang H (2007). *Analysis of the Effectiveness of the Implementation of Plans and Policy Proposals for Constructing Biological Protection and Protection Networks Against SARS and Other New Infectious Diseases*. Taipei: Research, Development and Evaluation Commission, Executive Yuan.

Zhang J, Zhou Y, Zhou S, et al. (2008). Comparison on Prevention and Containment Strategies for Influenza Pandemic During 2007 – 2008. *Epidemic Report*, 24, pp. 908 – 915.

Zhao K et al. (2006). *Community Health Building Manual*. Taipei: Health Administration, Executive Yuan.

Zhong H, Zhang S, Peng Y, et al. (2010). Experience in Establishing Community Epidemic Prevention Consultation Network. *Journal of Infection Control*, 20 (1), pp. 42 – 49.

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