DEVELOPMENT OF A TRADITIONAL MEDICINE DISASTER KIT

Juan Alfonso Leonardia and Paul Andrew G Zambrano

Emergency and Humanitarian Action Unit, World Health Organization-Regional Office for the Western Pacific, Manila, Philippines

Abstract. Traditional medicine is still widely used in the Philippines and other countries in the Western Pacific Region, especially where modern healthcare is unavailable, inaccessible, or unaffordable. Having determined the demand for traditional medicine, it has been proposed that traditional treatments could very well complement first aid and essential medicines in an emergency health kit deployed for disasters. The WHO Traditional Medicine Disaster Kit was therefore developed to supplement the existing WHO and Department of Health (DOH) emergency health kits serving displaced populations in disasters. Interviews with local experts determined the contents of the kit based on disaster morbidity data and the assumed conditions for deployment. Estimation of quantity of contents was done using centralized data on disasters and local studies. The provisional kit included commercial preparations of several herbal medicines and Traditional Chinese Medicine supplies. Instructional materials consisting of locally-published manuals and newly-developed material were included. A two-week pilot-test was done in two typhoon resettlement areas to evaluate the kit's utility. It was found that most of the herbal medicines required repackaging while others required a decrease in quantity. The supplies included as well as the instructional manuals had positive feedback. For future releases of the kit, other recommendations are to translate critical areas of the manuals and to improve durability of the kit's packaging. For possible local and regional expansion of the project, an instructional manual for other established herbal medicines useful in disasters and local mapping of Traditional Medicine practitioners is recommended.

INTRODUCTION

Studies conducted in individual countries in the Asia and the Western Pacific region have shown that traditional medicine is still widely used, especially in disadvantaged and remote localities where modern healthcare is unavailable, inaccessible, or unaffordable. In fact, up to 80% of the population in low- and middle-income countries still relies on traditional medicine for primary healthcare, while a large portion of people in high-income countries are increasingly resorting to traditional and alternative medicine for common ailments.

The case is no different in the Philippines, where peripheral health workers are known to prescribe herbal remedies for common ailments. Traditional Philippine massage known as *hilot* is also commonly practiced, while several spiritually based remedies also exist. Traditional Chinese Medi-

Correspondence: Paul Andrew G Zambrano, Emergency and Humanitarian Action Unit, World Health Organization-Regional Office for the Western Pacific, Manila, Philippines.
Tel: +639192305865
E-mail: zambranop@wpro.who.int

cine (TCM) systems such as acupuncture, moxibustion, and cupping have also gained wide acceptance, not only in locales with prevailing Chinese communities, but in rural Filipino communities as well.

Having determined the demand for culturally-sensitive treatments in the form of traditional medicine, it has been proposed that traditional treatments could very well complement first aid and essential medicines in an emergency health kit deployed for disasters.

The WHO Traditional Medicine Disaster Kit was therefore developed to supplement the existing WHO and Department of Health (DOH) emergency health kits serving displaced populations in disasters. It is meant to augment and integrate with the existing primary health care services in evacuation centers and health stations, and contains drugs and equipment for the treatment of commonly encountered symptoms, conditions, and illnesses in disaster scenarios. At the same time, it should also be cost-effective to feasibly allow its replication in national and local government initiatives.

MATERIALS AND METHODS

The major phases in the development of this kit are the conceptualization of its contents and a pilot test in an actual disaster or post-disaster scenario.

The traditional medicine products and modalities that were included in the kit were selected based on clinical safety and efficacy, cost-effectiveness, and general acceptability and usefulness under certain assumptions regarding common disasters and emergencies throughout the Philippines. Having set the criteria for inclusion, the contents of the kit were accordingly based on reviews of related literature, centrally-based Philippine disaster reports, and interviews with local experts in disaster management, herbal medicine research, and traditional and alternative medicine.

The first step involved individual interviews with local experts in the field of disaster management, herbal medicine research, and traditional medicine, in order to determine the assumed conditions upon which the kit would be deployed and the contents of the kit according to these assumptions. The local pool of experts included Dr Arturo Pesigan, Emergency and Humanitarian Action Technical Officer, and Dr Choi Seung-Hoon, Traditional Medicine Regional Adviser, both from WHO Regional Office for the Western Pacific, Dr Gerardo Medina, Field Operations Officer of WHO-Philippines, Dr Jaime Galvez-Tan, former Director of the National Institutes of Health and author of several local publications on traditional medicine, Dr Nelia Cortes-Maramba, Dr Isidro Sia, and Dr Romeo Quijano from the National Integrated Research Program on Medicinal Plants (NIRPROMP), Dr Francis Vicente S Ras, Chief of the Education and Training Division of the Philippine Institute of Traditional and Alternative Health Care (PITAHC), Ma Teresa M Umipig, Medical Director of the Living Life Well Integrative Medical Clinic, and Dr Jaime Montoya, Executive Director of the Philippine Council for Health Research and Development. The resulting draft of kit contents was then deliberated over and finalized in two succeeding meetings where the experts were able to openly discuss and defend their reasons for recommending or excluding particular traditional medicine products and modalities for the provisional version of the kit for the pilot-testing phase.

The participants of the project collectively agreed on the following disaster scenario assumptions similar to those considered

in the creation of the DOH-HEMS Emergency Health Kit:

- The health services of the affected community have not been completely incapacitated and are still able to provide primary care services, but under a scenario of rapidly diminishing medical supplies and relative lack of manpower due to the increased demand for health services.
- The evacuation center(s) will have a station for primary health care services at the very least, manned by village health workers with limited training, and rural health midwives with sufficient training, knowledge, and skills to diagnose and manage common and uncomplicated community illnesses, including knowing when and where to refer cases beyond the scope of their training.
- There is at least one health worker assigned to the health station with basic knowledge and skills in identifying, collecting, and preparing crude drug extracts from common medicinal plants under the local traditional medicine system.
- The affected community and/or the disaster management team are knowledgeable of the presence or absence of a trained TCM practitioner who would be willing to render his/her services for the duration or part of the duration of the disaster.
- An estimate of the number of cases of common conditions and illnesses in evacuation camps can be made based on previously collected morbidity data during disasters.
- The age distribution in the evacuation camp population can be assumed to be similar to that of the general population during non-crisis situations.
- Displacement during disasters last for a week on the average based on experiences of disaster management agencies. The kit should contain supplies sufficient to serve the community for twice this duration while minimizing excess should the displacement be shorter than predicted.

In addition, the disaster kit should be water resistant, ergonomic, and light enough to be carried by one able-bodied person on foot for distances up to four kilometers or more. This will allow distribution of the kit to inaccessible areas. The kit is thus designed to serve an affected population of 1,000 for two weeks based on expert opinion considering weight and mobility versus the estimated average population of displaced persons in crises.

Estimation of the quantities of the contents of the kit were made by applying the Morbidity Method (WHO, 1991) on the Department of Health Field Health Services Information Sytstem (FHSIS) data and Department of Health – Health Emergency Management Staff (DOH-HEMS) disaster reports, given the aforementioned assumptions. For fungal infections which are not included under the FHSIS, data from a study conducted in the Dermatology Section of the Department of Health Research Institute of Tropical Medicine (RITM) (Handog and Dayrit, 2005) was used in estimation.

Two manuals specifically designed to guide traditional medicine practice in primary health care, entitled *Acupressure for Common Ailments and Manual for the Preparation of Herbal Medicines* which are being published and distributed by the PITAHC were included in the kit, upon the recommendation and approval of the local pool of experts.

Due to the lack of primary health care materials on the other Traditional Chinese Medicine modalities, an *Acupuncture, Moxibustion, and Cupping Refresher Manual* was developed specifically for health workers with previous training on TCM under the guidance of the local experts in traditional

medicine, and accordingly included in the kit.

The main reference providing the evidence for the clinical efficacy of recommended acupuncture treatments in the kit was *Acupuncture: Review and Analysis of Reports on Controlled Clinical Trials* (WHO, 2003), while the scientific evidence for the indications for herbal medicines included in the kit and the *Manual for the Preparation of Herbal Medicines* were supported by the *WHO Monographs on Selected Medicinal Plants* (WHO, 1999, 2003), *Scientific Validation of Medicinal Plants for Primary Health Care* (Cortes-Maramba, 1991), and various online journal articles (Nascimento *et al*, 2000; Phongpaichit *et al*, 2004; Sanches *et al*, 2005; Harinantenaina *et al*, 2006; Makinde *et al*, 2007).

A User's Guide was developed to provide general usage guidelines and quick reference for the indications, dosages, administration, and precautions of the herbal medications and TCM equipment and supplies included in the kit. This also includes contact information of national and regional Traditional Medicine centers, PITAHC, and centers to report possible adverse drug reactions and related toxicities.

Once the kit was assembled, the two-week pilot-testing phase began with deployment in two resettlement areas in the Bicol Region (Taysan and Anislag) occupied by families displaced by Typhoon Reming (Durian) of 2006. Orientation of the end-users (village health workers under the supervision of the rural health midwives) to the kit and the pilot test was conducted and evaluation forms were distributed with the other forms (Table 1). These forms were collected after the test period and analyzed to determine the overall utility of the kit and key areas for improvement. Verbal feedback was also obtained.

RESULTS

Kit design

The final deliberation of the provisional version of the Traditional Medicine Disaster Kit for pilot testing resulted in a single corrugated cardboard box capable of holding two separate units: the Basic Traditional Medicine Disaster Kit (TradMed Kit A, Table 1) and the Supplementary Traditional Medicine Disaster Kit (TradMed Kit B, Table 2), containing the following:

TradMed Kit A contains traditional medicine, equipment and supplies which have been generally agreed to find familiar use among most Philippine primary healthcare workers, while TradMed Kit B is meant to be deployed with the main box only if it has been predetermined that there are available trained TCM Practitioners working in the disaster area. This kit configuration was decided upon since including equipment for TCM in every kit deployed would more than double the cost of the kit, whereas TCM practitioners are not always available.

The *Manual for the Preparation of Herbal Medicines* containing illustrations and guides to identify and prepare medicinal plants was included in the kit in lieu of crude drugs as chopped dried leaves as these are generally expected to keep their potency for only 6 months, compounded by the possibility of bacterial decomposition and the proliferation of harmful aflatoxin-producing molds, unless costly and meticulous storage conditions are complied with or unless these drugs have been processed into stable dosage forms. This is the same rationale for including only herbal medicines with commercially-available preparations in the kit.

Cooking implements and monitoring and evaluation forms and supplies were included in the kit for the reason that the kit

Table 1
Contents of the Basic Traditional Medicine Disaster Kit (TradMed Kit A).

Contents	Quantity
WHO Basic Traditional Medicine Disaster Kit User's Guide	1
Manual for the Preparation of Herbal Medicines (PITAHC)	1
Acupressure for Common Ailments (PITAHC)	1
Appendix A – Directory and References	1
Appendix B – Monitoring and Evaluation Forms	20
Appendix C – Adverse Drug Reaction Reporting Forms	10
Akapulko (*Cassia alata* L.) soap	2
Bayabas (*Psidium guajava* L.) soap	20
Lagundi (*Vitex negundo* L.) 300 mg tablets	15 packs of 10
Lagundi (*Vitex negundo* L.) 300 mg/5 ml syrup bottles	14 bottles
Matches	1 box
Alcohol gel	2 cans
Stainless steel pot 6 quarts	1
Plastic measuring cup 250 ml	1
Stainless steel ladle	1
Stainless steel strainer	1
Stainless steel chopping knife	1
Sticker labels	1 pack
Pencils	3
Sharpener	1
Return envelope for Appendix B and C	1
Total weight	8 kg

Table 2
Contents of the Supplementary Traditional Medicine Disaster Kit (TradMed Kit B).

Contents	Quantity
WHO Supplementary Traditional Medicine Disaster Kit User's Guide	1
Acupuncture, Moxibustion, and Cupping Refresher Manual	1
Appendix A – Contact Numbers and References	1
Appendix B – Monitoring and Evaluation Forms	20
Acupuncture Meridian Map Set	1 set
Acupuncture needles	800
Suction Cupping Set	1 set
Moxa sticks	10
Curved forceps	1
Cotton balls	3 packs of 300
Ethyl alcohol 70% 500 ml	1
Matches	1 box
Candles	6
Total weight	3.5 kg

should be convenient enough to be used without taxing the already strained pool of supplies in disasters.

Pilot testing

It should be noted this time that due to the sudden lack of TCM practitioners in the pilot areas, only TradMed Kit A was deployed. Also, a temporary packaging composed of nylon, padded carrying bags were used in lieu of the original corrugated box design described above due to production issues.

The total population for both resettlement areas was 5,762 individuals. Almost 55% of all cases seen during the pilot test were in the 15-49 age group. This is followed by the 5-14 (19.7%), 0-4 (10.6%), 50-64 (10.2%), and the 65 years and older group (5%). Cough and colds represented the great majority (74%) of the 274 total reported morbidities during the pilot-testing period. Skin infections (13%), wounds (9%), and acute respiratory infections (ARIs) (1%) followed.

After the two-week period, only the *Vitex negundo* L. (Lagundi) syrup was not exhausted among all the herbal medicines - with a total consumption of 90% (of total ml). Herbal medicines such as the *Psydium guajava* (Bayabas) soap were depleted by the seventh day while the *Cassia alata* L. (Akapulko) soaps were depleted as early as the second day. No adverse drug reactions were reported during the duration of the pilot testing.

The most positive responses on evaluation were on items pertaining to the quality and condition of the herbal medicines and on the readability and user-friendliness of the *Manual for the Preparation of Herbal Medicines*. The instructional manuals which provided easy reference for dosing, indications, and administration also had positive feedback.

The supplies for preparation of crude drug extracts had good evaluations. The most common suggestion on supplies to be included in future releases was a thermometer as this would help document and diagnose cases of ARIs (cough and/or colds with fever).

Despite the temporary packaging, the participants of the pilot-test gave a good evaluation, citing ease of handling and transportation. Some health workers described how they were able to easily carry the bag individually or in tandem while walking on uneven terrain.

DISCUSSION

If only the results of this pilot-test are considered, then the number of *Psidium guajava L.* (Bayabas) soap should be doubled. This, however, would increase the overall weight of the kit by more than 2.5 kg (more than 25%) and would severely affect its ergonomics. Also, considering the number of wound cases seen, the current number of bars can be retained.

The number of *Cassia alata* L. (Akapulko) soap should also be increased without significantly affecting the overall weight.

If the actual amount of *Vitex negundo* L. (Lagundi) syrup consumed is computed based on the Morbidity Report and Patient Record forms, a different picture can be seen (Table 3).

This shows that only about half of the total volume of syrup was actually used - a more than 40% discrepancy between what was reported and the actual consumption. A possible reason for this is that the distribution of the syrup was done on a one-bottle-per-patient basis in one resettlement area as opposed to the practice of giving the patients just the indicated amount per day in the other. This is more consistent with the

Table 3
Reported *vs* actual usage of *Vitex negundo* L. (Lagundi) syrup over the pilot-testing period.

Resettlement area	Reported		Actual	
	ml	Bottles	ml	Bottles
Taysan	600	5	630	5.25
Anislag	1,680	14	600	5
Total	2,280 of 2,520 ml (90.5%) or 19 of 21 bottles		1,230 of 2,520 ml (48.8%) or 11 of 21 bottles used	

age distribution of patients seen where 77% of cases would require the tablet form instead of the syrup.

The positive feedback received show that the User's Guide and the Manual for the Preparation of Herbal Medicines remain indispensable instructional materials which greatly increase the utility of the Kit by the health workers in the field.

For the packaging, there is anecdotal evidence that the original box design, which is identical to that of the DOH-HEMS Kit which has already been deployed in the Bicol region previously, has design flaws affecting durability in rough conditions which result in tearing at the handles and very low resistance to moisture leading to softening of the box leading to spillage of contents.

A possible measure to bolster supply of the herbal soaps without significantly increasing weight is to include smaller sizes (in relation to the original 130 grams size) in future releases of the kit. This will be possible since PITAHC plans to produce herbal soaps in 65-gram and 25-gram sizes.

The amount of 300 mg/ml *Vitex negundo* L. (Lagundi) syrup should be decreased to a total of 600 ml. In order to minimize over-dispensing, ten 60 ml bottles of the syrup should be used per Kit instead of five 120 ml bottles. Individual measures taken by the health workers against over-dispensing are also strongly advised.

The readability of the User's Guide can still be improved by making translations in its most critical sections. A Filipino translation was developed for future releases of the kit.

The *Manual for the Preparation of Herbal Medicines* should be maintained as the main reference material. This manual is thin, light, and water-resistant. Thus, two more copies of the manual will be included in future releases to improve access for more health workers especially in disasters affecting larger populations.

The proposed contents of the revised TradMed Kit A based on the pilot-testing is found on Table 4.

The *Manual for the Preparation of Herbal Medicines* only contains the ten medicinal plants promoted by the DOH, the selection of which was not configured for crises situations and evacuation centers, such that only six of the ten medicinal plants in the manual are indicated for conditions and illnesses commonly encountered in evacuation centers. Interviews with experts and the review of related literature brought to light five indigenous medicinal plants listed under the *WHO Monographs on Selected Medicinal Plants* (WHO, 1999, 2002) that may also be of value

Table 4
Revised Contents of the WHO Basic Traditional Medicine Disaster Kit (TradMed Kit A).

Contents	Quantity
WHO Traditional Medicine Disaster Kit User's Guide	1
Manual sa Paghahanda ng Mga Halamang Gamot (PITAHC)	3
Acupressure for Common Ailments booklet (PITAHC)	1
Contact Numbers and References	1
Monitoring and Evaluation Forms	
• Patient Record Forms	50
• Disaster Kit Inventory Form	1
• Daily Morbidity Report	14
• Evaluation Form for Kit A	10
• Adverse Drug Reaction Reporting Forms	10
Akapulko (*Cassia alata* L.) soap (25 g/bar)	10
Bayabas (*Psidium guajava* L.) soap (65 g/bar)	40
Lagundi (*Vitex negundo* L.) 300 mg tablets	1,500 tablets
Lagundi (*Vitex negundo* L.) 300 mg/5 ml syrup, 60 ml per bottle	10 bottles
Matches	1 box
Alcohol gel	2 cans
Stainless steel pot	1
Plastic measuring cup (250 ml)	1
Stainless steel ladle	1
Stainless steel strainer	1
Stainless steel chopping knife	1
Sticker labels	1 pack
Pencils	3
Sharpener	1
Plastic Return Envelope for Monitoring and Evaluation, and Adverse Drug Reaction Forms	1

in disasters (Table 5).

The efficacy of these medicinal plants for the above indications has been validated by clinical studies and recommended dosage regimens have been established. The development of a handbook similar to the *Manual for the Preparation of Herbal Medicines* containing these plants and more would significantly add to the fund of useful information on herbal medicine contained in the disaster kit. The WHO endorsement of these medicinal plants would also allow the same handbook to be published for the possible future expansion of the project to the other countries of the Western Pacific and Southeast Asia Regions.

An alternative design for the kit container should be made, with the objective of improving durability and water-resistance. There is also the option of retaining the packaging used during the pilot-test as this was well-evaluated by the participants.

The Acupuncture, Moxibustion, and Cupping Refresher Manual in TradMed Kit B still needs to be validated and reviewed by TCM practitioners as to acceptability and suitability.

The main concern for the functionality

Table 5
Other medicinal plants with possible value in disaster health management (with indications).

Medicinal Plant	Indication
Aloe vera (L) Burm. f.	Burns
Andrographis paniculata (Burm. f.) Nees	Common cold, fever, and diarrhea
Centella asiatica (L.) Urban	Wounds, burns, and ulcerous skin ailments
Curcuma longa L.	Dyspepsia
Zingiber officinale Roscoe	Vomiting

of the supplementary traditional medicine disaster kit (TradMed Kit B) is the need to predetermine the availability of a TCM practitioner willing to work in the disaster area, without which, Tradmed Kit B may never realize its purpose. A mapping of health workers with previous training in traditional medical modalities, aiming to form a database of traditional medicine practitioners, will be invaluable in the future implementation and deployment of the kit to identify partners in future disaster relief efforts as well as areas of need in capacity building and advocacy efforts.

The proper implementation of the project would ideally require trainings on traditional and alternative medicine to familiarize health workers with its concept and role in disaster management, giving priority to disaster-prone areas. As suggested by Dr Choi Seung-Hoon, local training courses on TCM may be conducted to increase the pool of TCM practitioners able to make use of TradMed Kit B.

Finally, it has been suggested by Dr Isidro Sia that the Traditional Medicine Disaster kit should be unified with the Emergency Health Kits distributed by the WHO and the DOH. This recommendation can be looked into as the final phase of the project, for ideally there should be no dichotomy between conventional and traditional medicine to achieve the concept of true integrative medicine.

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