

Review

Community-Level Practice Checklists for Health Protection During Cold Spells in China

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ABSTRACT

Communities play a crucial role in protecting the health of vulnerable populations such as the elderly, low-income groups, and high-risk individuals during cold spells. However, current strategies for responding to cold spells primarily consist of programmatic policies that lack practicality, specificity, and detailed implementation guidelines for community workers. Therefore, this study aims to identify and analyze the challenges faced by communities in responding to cold spells, review international experiences, and develop a set of practical checklists for community-level health protection. These checklists will assist community workers and volunteers in effectively preparing for, responding to, and recovering from cold spells.

DIFFICULTIES AND CHALLENGES IN COMMUNITY RESPONSE TO COLD SPELLS EMERGENCIES

A significant decrease in temperature can elicit a physiological stress response in the human body, which poses risks to vulnerable populations in communities. According to the Global Burden of Disease Study 2019, an estimated 580.8 [95% uncertainty intervals (UI): 485.7, 690.1] thousand deaths in China were attributed to cold temperatures (*1*). In response to this, the China Meteorological Administration issued a national emergency plan for meteorological disasters in 2010. The plan outlined the primary responsibilities of various departments during cold spells. The civil affairs departments were tasked with implementing cold relief measures, opening cold shelters, and implementing emergency cold protection measures, specifically targeting poor households and homeless individuals. Since the residents' committees (villagers' committees) have the responsibility for executing specific tasks at the grassroots level, community-level cooperation is often necessary for the successful completion of these tasks (*2–3*).

Chinese communities have taken steps to address the health risks associated with cold spells, such as having designated personnel responsible for weather forecasting and early warning dissemination, as well as maintaining lists of vulnerable individuals. However, there are still challenges in fully utilizing the community's potential in responding to cold spells. The lack of practice checklists for health protection at the community level and a lack of recognition and supportive regulations hinder communities' ability to cope with these emergencies. Additionally, some residents and villagers do not support or understand the work of community workers, and there is insufficient funding and timely replenishment of emergency supplies. Moreover, low salaries and limited career opportunities for community workers lead to talent shortages, high turnover rates, and a lack of manpower resources for cold spell emergencies. These factors negatively impact the motivation and proactive approach of community workers.

INTERNATIONAL EXPERIENCES IN COMMUNITY RESPONSE TO COLD SPELLS

In Europe and the United States of America (USA), there is significant attention given to the emergency response for cold spells (*4–6*). Organizations like the Red Cross and Red Crescent Societies, as well as various cities in the USA, Canada, and the United Kingdom (UK), have established community-level plans and guidelines for addressing cold spells (*7*). Currently, the primary focus of community-scale response in these regions is on assisting displaced individuals or those experiencing homelessness by providing warming shelters (*8*). Local official websites also disseminate information on the location and operating hours of these shelters, along with emergency contact numbers such as medical helplines. In the UK, the Health Security Agency not only concentrates on actions during cold spells, but also implements measures throughout the year to support vulnerable

individuals in England who sleep rough (9). The UK government provides strategies to prevent cold-related incidents, including the use of risk registers and identification of at-risk groups. They also prioritize improving access to quality healthcare and enhancing supervision of services and amenities in public warming shelters. During cold spells, the emphasis is on general guidance for staying warm, promoting flu vaccinations, and conducting screenings for diseases such as tuberculosis and blood-borne viruses in warming shelters. Health response teams should prioritize providing prompt medical assistance and helping individuals affected by carbon monoxide poisoning. To address the shortage of personnel, the public can register as volunteers for warming shelters through online platforms.

PREVENTIVE MEASURES AND PREPAREDNESS FOR COLD SPELLS

Increasing Awareness of Health Risks During Cold Spells

Communities can enhance public awareness of the health risks associated with cold spells by organizing informative activities and displaying educational boards. These initiatives are designed to educate residents about the heightened risks of respiratory, cardiovascular, and cerebrovascular diseases resulting from cold spells and abrupt temperature fluctuations.

Identification and Support for Vulnerable Individuals

Communities should regularly update their list of priority populations to include the elderly and individuals with cardiovascular, cerebrovascular, and respiratory conditions. These populations are particularly vulnerable to health risks during cold spells. It is recommended to proactively conduct follow-up visits with these individuals prior to the occurrence of cold spells in order to understand their needs and provide timely assistance. Additionally, communities should be attentive to the challenges faced by families who struggle to obtain cold relief supplies. Efforts should be made to purchase and distribute these items to support those in need.

Development of A Contingency Plan for Cold Spells

The cold spell contingency plan should include

various crucial components. These components comprise early warning communication channels, a comprehensive list of emergency teams with clearly defined roles and responsibilities, contact information of key units, the locations of emergency shelters, and the implementation of emergency measures. The emergency response team will consist of a meteorological disaster supervisor, community staff members, and volunteers. Communities should also actively establish suitable channels to distribute meteorological early warning information to different population groups in advance. Moreover, communities should organize and regularly update a directory of essential contacts, including community hospitals, fire departments, local rescue agencies, community police officers, property management teams, and key institutions such as schools and hospitals.

Inspection of Warming Shelters and Emergency Relief Supplies

Local authorities and communities have a responsibility to ensure the availability of safe public spaces for individuals seeking refuge from cold temperatures and to prevent cold-related illnesses. Prior to the onset of cold weather, it is crucial to perform comprehensive inspections and maintenance of warming shelters. Moreover, communities, property management centers, and emergency shelters should be adequately equipped with essential emergency relief supplies, such as snow removal tools, ice melters, anti-slip materials, straw mats, sandbags, industrial salt, shovels, tents, quilts, and blankets.

Safety Inspections and Anti-Freeze Measures in Public Areas

Communities and property management centers should conduct inspections and enhancements of anti-freezing measures for fire pipelines, public area pipelines, and water supply pipelines to ensure uninterrupted domestic water supply during cold weather conditions. In the event of heavy snowfall during these times, safety checks should be carried out in public places such as elderly care centers, cultural halls, activity rooms for the elderly, construction sites, farmers' markets, religious sites, gyms, and areas susceptible to geological disasters. These safety checks are essential in preventing accidents such as collapses due to the accumulation of snow.

Establishing A Supplies Delivery Network

Cold spells or blizzards can potentially result in road blockages, making it imperative to establish a pre-existing material delivery network. This network will ensure the prompt provision of essential daily necessities and emergency supplies, with special attention given to vulnerable populations.

COMMUNITY EMERGENCY RESPONSE DURING COLD SPELLS WARNINGS

Widespread Dissemination of Cold Spell Warnings

During cold spell warnings, it is essential for community workers to actively monitor weather changes and promptly communicate warning information through various channels. Effective strategies include updating public screens, displaying signs at entrances and exits of residential areas and prominent locations in buildings. In rural areas, village loudspeakers can be utilized to broadcast cold spell warnings. Additionally, online platforms such as WeChat groups, WeChat moments, official accounts, Weibo, and other social media platforms can be leveraged to effectively disseminate early warnings.

Opening Public Warming Shelters

Communities should establish warming shelters and designate specific public places, such as libraries, shopping malls, restaurants, and hotels, as “warming centers” to provide warmth and protection for individuals who are in need. It is important to direct community members to these locations, where they can seek refuge from the cold. Special attention should be given to prioritizing vulnerable groups within the community, such as homeless individuals, beggars, and those experiencing economic hardship.

Special Assistance for Vulnerable Groups

Communities should organize visits to specific households, such as “shidu” families (families who have lost their only child), elderly individuals living alone, families with serious illnesses, and residents in need (10). The purpose of these visits is to assess their living conditions, identify their needs and challenges, and provide necessary assistance and measures to prevent freezing. Moreover, they should be advised to take precautions against cold weather and limit unnecessary outdoor activities.

Evacuation of Affected Individuals

In the event of house collapses and road obstructions caused by cold spells and blizzards, it is recommended that communities promptly contact local rescue agencies for assistance. These agencies should be responsible for transferring affected individuals and those facing difficulties to emergency shelters. It is crucial to ensure a consistent supply of food and drinking water in the shelters, maintain order, and provide support to calm the affected individuals.

Ensuring Safety Measures in Place

Communities and property management centers should conduct regular inspections in order to identify and address potential hazards in their areas. This includes addressing issues such as heavy snow accumulation on roofs and icy roads. In areas with high risk, communities should utilize salt to melt snow and ice, along with laying down grass mats to prevent slips and falls. Additionally, warning signs should be strategically placed in areas with dangerous icy slopes to ensure residents are alerted to the potential dangers.

Timely Reporting of Disaster Situations

In the event of major disasters caused by cold spells and heavy snowfall, it is essential for communities to collect meteorological disaster information promptly, maintain comprehensive records, and report the situation to the local health department, meteorological authorities, and other relevant government agencies. Timely reporting ensures that all stakeholders are informed about the disaster’s extent and enables them to take appropriate actions to mitigate its impact on public health and safety.

DISASTER RECOVERY

Gathering Disaster Statistics

Following the occurrence of cold spells, it is crucial for communities to conduct a comprehensive disaster assessment to evaluate the extent of damage and identify the specific needs of residents. Thorough field investigations and documentation of findings can reveal any deficiencies in current prevention and response measures.

Focusing on the Needs of Vulnerable Populations After Disasters

Cold spells can have a significant and long-lasting

impact on the health of high-risk populations, with effects lasting up to 27 days (11). Therefore, it is imperative for communities to actively follow up and monitor the health status of vulnerable individuals, particularly those with cardiovascular, cerebrovascular, and respiratory diseases. This proactive approach is essential to safeguard their well-being and promptly address any potential health issues that may arise following a cold spell.

Resuming Normalcy in Residents' Lives after Disasters

Communities should mobilize personnel to remove snow and ice after cold spells, conduct safety inspections on water, electricity, gas, and traffic within the community, and expedite the restoration of normalcy in residents' lives.

Preventing Secondary Disasters from Occurring

There is a possibility of severe freezing or frost phenomena occurring after cold spells, which can pose risks to fisheries, transportation, forestry, and agriculture. Therefore, it is necessary to mobilize personnel to carry out targeted inspections in order to prevent the occurrence of secondary disasters.

MOBILIZE VOLUNTEERS TO PARTICIPATE IN COLD SPELLS EMERGENCY WORK

Communities can leverage volunteer teams to help alleviate the workload of community staff during cold weather emergencies. Volunteers play a crucial role by

offering personalized support to vulnerable populations, promoting awareness about the health risks associated with cold spells, sharing cold weather warnings, and inspecting potentially hazardous areas within the community. Furthermore, volunteer teams with expertise in public health response or affiliated with organizations like the Red Cross can be mobilized to assist in cold weather relief efforts. These teams can provide vital medical services including emergency vaccinations, treatment for carbon monoxide poisoning incidents, and medical support in cold shelters (12).

CONCLUSIONS

This study has presented community-level practice checklists for health protection during cold spells in China as shown in Table 1. However, it is important to consider that each community has its own unique climate, population vulnerability level, and economic situation. Therefore, there is no universal advice that can be universally applied to all communities. The checklists should be customized based on each community's specific service scope, available resources, and local context. In rural areas, the presence of a significant elderly population and the need to prioritize agricultural production present additional challenges in dealing with cold waves. Active cooperation between communities and agricultural departments is crucial for effectively managing the impacts of cold spells.

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TABLE 1. The community-level practice checklists for health protection during cold spells.

Disaster stage	Practice checklist
Preventive measures and preparedness	<ol style="list-style-type: none"> 1. Increasing awareness of health risks during cold spells. 2. Identification and support for vulnerable individuals. 3. Development of a contingency plan for cold spells. 4. Inspection of warming shelters and emergency relief supplies. 5. Safety inspections and anti-freeze measures in public areas. 6. Establishing a supplies delivery network.
Community emergency response	<ol style="list-style-type: none"> 1. Widespread dissemination of cold spell warnings. 2. Opening public warming shelters. 3. Special assistance for vulnerable groups. 4. Evacuation for affected individuals. 5. Ensuring safety measures in place. 6. Timely reporting of disaster situations.
Disaster recovery	<ol style="list-style-type: none"> 1. Gathering disaster statistics. 2. Focusing on the needs of vulnerable populations after disasters. 3. Resuming normalcy in residents' lives after disasters. 4. Preventing secondary disasters from occurring.

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