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# Rajasthan Climate Change Project

## Cold Action Plan

(India's First Rural Climate Resilience Cold Action Plan)

(DMRD, RSPCB, Govt. of Rajasthan, UNICEF Rajasthan and IIPH-Gandhinagar Initiative)

प्रादेशी राजकीय उच्च माध्यमिक विद्यालय अखणाय जिला जलार  
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India's  
First Rural  
Cold Action  
Plan



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**Preface:**

The Cold Action Plan provides a framework for implementing and coordinating cold weather preparedness and response activities which focus on reducing the negative health impacts of cold weather conditions.

The Cold Action Plan focuses on various activities and strategies for preventing communities against harmful health impacts of cold weather in rural Rajasthan.

The Plan's main objectives are to:

- Alert those most vulnerable that cold weather conditions are either expected or currently exist;
- Enable those who are most vulnerable, to take appropriate precautions;
- Trigger response actions by agencies who are in a position to provide services or alter operations in such a way as to protect vulnerable people from cold weather.
- Further reduce pressure on the health system during winter through improved anticipatory actions with vulnerable people.

The Plan includes particular focus on preventing direct impacts of cold exposure on people living in rural areas, vulnerable demographics and also to those experiencing homelessness.



## Executive Summary:

The effect of Climate change is not only causing an increase in severity and frequency of cold waves but an overall impact on weather resulting in extreme weather events and disasters. Each year frequent cold waves followed by long cold spells have become more common.

This changing variability in the weather lead to dangerous, even deadly, health consequences such as cold stress due to cold exposure. India is also vulnerable to such impacts of climate change and the Cold wave casualties over the past decades have increased. There have been 10,289 deaths recorded from 2001 to 2015 in various parts of the country due to exposure to cold. Rajasthan having a semi-arid climate has a dual burden. It records high day and night time temperature during summers and very low (freezing) temperatures during the day and night in the winters. Places like Mount Abu and other places have also recorded sub-zero temperatures in the past.

In order to combat the ill effects of these cold waves a 'Cold Action Plan' (CAP) in rural set up of Rajasthan is necessary for preparing health systems, administration and community members more resilient against dangerous phases of cold waves. This would be the first ever Cold Action Plan (CAP) in India as well as at a rural and block setting which would create early warning systems and cold adaptation measures.

The plan creates immediate and longer-term actions to increase preparedness, information-sharing, and response coordination to reduce the health impacts of extreme cold on vulnerable populations. The main aim of the Cold Action Plan is to prevent harmful health impacts of cold weather in rural Rajasthan. The Cold Action Plan provides a framework for implementing and coordinating cold weather preparedness and response activities which focus on reducing the negative health impacts of cold weather conditions.

The Cold Action Plan aims to implement the following key strategies:

### a) *Create Prior initial Warning System*

The project aims to initially establish a prior weather warning system which helps in creating information to alert the community regarding sudden low and extreme cold temperatures.

b) ***Inter-agency coordination***

Creating formal communication channels between different implementing agencies such as governmental agencies, the Met Centre, health officials and hospitals, emergency responders, local community groups, and media outlets of forecasted extreme temperatures so as they can alert the community and increase preparedness, awareness and also assist community partners to develop healthy policies related to reducing exposure to extreme cold weather

c) ***Preparedness at primary and sub primary level of health system***

Implementing capacity building and training programmes for health care professionals at local level to identify and treat the cold related illnesses in an early attempt in order to reduce emergency admissions in the hospitals. Such trainings focus on primary medical officers and other paramedical staff such as FLW's, community health staff as well as school teachers so they can effectively prevent and manage cold-related cases so as to reduce mortality and morbidity.

d) ***Health system capacity building***

Guidelines and Treatment regimens for Cold related illnesses so as to recognize and respond to Cold-related illnesses, particularly during extreme cold events.

e) ***Public awareness and community outreach***

To increase public awareness and community outreach by dissemination of awareness messages in the community about how to prevent themselves from exposure to extreme temperatures by using IEC material, posters, banners etc. Do's and Don'ts protocols for people to follow.

f) ***Inclusion of NGO's and Civil Organisations***

Collaborations with non-governmental organizations and civil organizations to develop the 'Shelters for cold' at public places. In addition to this, few activities like building temporary make shift homeless shelters.

g) ***Feedback for reviewing and updating the plan (Plan assessment)***

The Cold Action Plan is a living document, maintained and updated every cold season, this document will be updated to reflect developments and enhancements over time. This will be done through surveillance, monitoring, evaluation and supportive supervision in routine manner to assess the impact of cold. Mapping exercise of high risk areas and identification of vulnerable population and health risks due to low temperatures, development of effective strategies, activities and output indicators as well as response planning addressing cold risks.

**Government Departments involved:**

Apart from the Disaster Management and Relief Department (DMRD) and Rajasthan State Pollution Control Board (RSPCB), Public Health Department, District and Block Administration, Public Health Engineering and Education Department, etc. are also involved in the activities to streamline the quick responses for prevention. Early alert system is established in coordination with all these departments.

ColdAction Plan includes the strategies for prevention of death from cold waves and enhancing adaptation. The plan also focuses on mapping of vulnerable population from the block and strategies to protect them. Cold action plan helps to train the health workers who work in the community very closely to people and can provide early diagnosis and treatment. Further, action plan focuses on communication and awareness strategy for public.

It is anticipated that Government of Rajasthan in collaboration with Disaster Risk Reduction Section of UNICEF, Rajasthan and Indian Institute of Public Health-Gandhinagar will develop and implement such action plans in other cities and rural areas of Rajasthan. Further, this action plan will act as a model or templet to other urban and rural areas in Rajasthan to adapt and develop specific measures of preventative action to reduce deaths as the weather becomes progressively cold and more extreme.



## **Background**

Each year, winter weather brings cold temperatures and cold and wet conditions to Rajasthan. An assessment on extreme weather events over India for the last 100 years has been carried out by De et al. (2005) gives the frequencies of the occurrence of cold waves and hot waves in Rajasthan for different time periods. After Jammu and Kashmir, Rajasthan is the second state where maximum number of cold waves have occurred (De et al., 2005). In the time frame of 1901-1999 there have been 195 cold waves recorded in Rajasthan as compared to 51 heatwaves in that 100-year span. This in-turn is of major concern as Rajasthan is the largest state of India, (10.4% of the country's total area). Nearly 76% of the state's population resides in rural regions.

Cold weather can adversely affect the health and wellbeing of many. The most affected are those who are experiencing homelessness, old people, children, infants and newborns who are vulnerable to direct health impacts of cold weather. Hypothermia that occurs when the body's core temperature drops below 35 °C and can progress to a life-threatening condition. In case of cold stress, when shivering stops, the person loses consciousness, or cardiac arrest occurs.

In severe cold cases, below sub-zero temperatures, untreated severe frostbite can lead to permanent nerve damage, blisters, and even to infection, dry gangrene and loss of limbs. Trench foot results from prolonged exposure to a damp or wet environment and can lead to numbness, leg cramps, swelling, tingling pain, blisters or ulcers, bleeding under the skin, and even gangrene.

Homeless people are at high risk for cold weather injuries because they are likely to spend long periods of time outside, resulting in increased exposure. Many chronic problems faced by people experiencing homelessness, including inadequate clothing, malnutrition, and underlying infection increase the risk of developing and dying from hypothermia or suffering from frostbite. However, emerging research suggests that the health impacts of cold weather are not limited to direct impacts of cold on homeless populations.

Studies in countries around the world including many northern countries find that the risk of premature death or hospitalization increases in the general population as temperatures get colder. Phases of especially cold weather that are unusual than normal conditions are also associated with increased rates of premature death and hospitalization. While the highest risks are associated with extremely cold days, Research shows that exposure to moderate cold can also result in important impacts on health of both the general population and people experiencing

homelessness. The research consistently shows that these effects occur several days and up to several weeks after exposure to cold weather. The temperature-related impacts persist even when the contribution of wintertime influenza to mortality and illness is considered. Most of these outcomes arise from heart problems, especially heart attacks. There is also some evidence that cold increases the risk of respiratory conditions including asthma and chronic obstructive pulmonary disease, as well as risk of stroke. The elderly and those with pre-existing health conditions, especially heart conditions, may be at particular risk from exposure to the cold. A World Health Organization report estimated that those over 75 years of age may have a winter excess mortality of about 30%. Some evidence suggests that socioeconomic factors such as deprivation also increase the risk of hospitalization or death due to cold. Other groups specifically at risk of developing cold related injuries include individuals that are outdoors for long periods of time including outdoor workers; people that have consumed alcohol and other drugs or medication; people wearing inadequate or wet clothing and both the very young and old.

#### **Criteria for Cold Wave**

World Meteorological Organization (WMO) defines cold wave as five or more consecutive days during which the daily minimum temperature is lower than the average min temperature by 5° C. The spells of cold weather are often seen to move from one region to another. This phenomenon is termed as 'Cold wave'.

*(As defined by Indian Meteorological Department)*

A rapid fall in temperature within 24 hours to a level requiring substantially increased protection to agriculture, industry, commerce, and social activities

a) When normal minimum temperature is equal to 10°C or more.

- Cold Wave Departure from normal is -5°C to -6°C.
- Severe Cold Wave Departure from normal is -7°C or less

b) When normal minimum temperature is less than 10°C

- Cold Wave Departure from normal is -4°C to -5°C.
- Severe Cold Wave Departure from normal is -6°C or less.



When “wind chill effective minimum temperature (WCT<sub>n</sub>) is 0°C or less, Cold Wave should be declared irrespective of normal minimum temperature of the station. However, this criterion is not applicable for those stations whose normal minimum temperature is below 0°C.

### **Rationale of Cold Action Plan:**

January is the coldest month, with minimum temperature ranging between 2°C in the north and 7.80 °C in the south-west (Rajasthan State Pollution Control Board). Sharp decrease in the night temperature is attributed to the presence of sandy soil at places like Sikar, Churu, Bikaner and Pilani. Also during the winters, the entire state is brought under a spell of series of cold-waves due to the western disturbances which bring along with them chilling winds for 2-5 days. During the winter and monsoon season the temperatures increase southwards and northwards respectively. From 2001-2015 in Rajasthan 352 cold and cold related deaths were found which could have been completely prevented. These numbers are most likely to be gross under reporting of the impact of cold wave conditions as they did not account for more recent evidence that the effects of cold weather on mortality and morbidity can occur days and even weeks after exposure. In this season, it is an utmost priority to prevent cold related illnesses in the vulnerable population especially, children, elderly as well as the slum and homeless population. In order to meet the need of the moment a plan has to be in place to help them for adaptation to the said temperature changes. As climate change and its broad issues are to be tackled, the exact course of action can only be done through coordinated action. Human induced climate change increases the probability of occurrence of cold events as well as susceptibility to such cold events. Clarity and sound understanding is needed about roles and responsibilities of various department involved in action, sharing of data, triggers of activation, mapping and analysis of extreme cold wave impact etc. In order to take appropriate action, the mortality data as well as weather data need to be gathered. Development of cold action plan is the step ahead to guide and help the officials to get clarity on their role for developing sound coordination.

In the context of this, ‘**Rajasthan Cold Action Plan**’ is an important step ahead to develop the cold action plan in rural set up of Rajasthan and will become cornerstone of environmental health in Rajasthan as well as India in order to mitigate the issues.



### **Implementation of Cold Action Plan:**

The purpose of cold action plan is to provide the framework for implementation, co-ordination, evaluation of extreme cold response activities in rural set up of Rajasthan for reducing the negative impact of cold waves.

The plan helps to identify the at-risk population, the cold spots (at risk places where extreme cold conditions may arise) and to take appropriate administrative as well as preventive action to deal with extreme cold events.

### **Key Components:**

ColdAction Plan is required in order to prevent and mobilize the individuals to help and protect themselves and their neighbors, friends, relatives etc. from extreme spells of cold wave.

There are few important components to implement ColdAction Plan at various levels

- To establish the early Warning system and inter-agency coordination to alert the community regarding sudden low extreme temperatures through radio, banners or other communication channels
- To implement capacity building or training programmes for health care professionals at local level to recognize and treat the cold related illnesses as early as possible in order to reduce emergency admissions in the hospitals. The training programmes are to be imparted on to medical officers, paramedical staff as well as school teachers.
- Identification of vulnerable population and cold health risks specific to each group.
- Mapping exercise of high risk areas.
- Development of effective strategies, activities and output indicators as well as response planning addressing cold risks.
- To increase public awareness and community outreach for dissemination of awareness messages to community how to protect themselves from extreme lower temperatures through IEC material. Do's and Don'ts protocols are being established. Treatment regimens for cold related illnesses are developed.
- To carry out case surveillance, monitoring, evaluation and supportive supervision in routine manner to assess the impact of cold. The updating of cold action plan is being done timely.

- To make collaborations with non-governmental organizations and civil societies to maximize and improvise the 'warm public places' such as public bus stands etc., building temporary shelters and other innovative measures to tackle cold waves.

### **Roles and Responsibilities of various departments:**

There needs to be clarity about the roles and responsibilities for actions for the management of cold wave in Rajasthan. The proper leadership is necessary for preparation and response to cold wave. The DMRD may act as control agency or nodal agency and other departments such as department of health and family welfare, department of education, district and block administration, public health engineering department can act as support agency for providing resources like human resources, essential services, IEC materials etc. In administrative context, Sub Divisional Officer (SDO) may execute the cold action plan related activities in a block. Block Development Officer (BDO) acts as a coordinator for disaster management and relief department as well as forest department. Block Chief Medical Officer (BCMO) is the nodal officer for health department actions at block level. Though he has all controlling powers for PHCs, sub centers etc., Chief Medical and Health Officer (CMHO) acts as supervisor for Community Health Centers (CHCs) and can lead activities at district level. From education department, Block Education officer (BEO) will be responsible for coordinating action regarding cold action plan in schools. Public health engineering department has executive engineer as well as junior engineer handles all the matters of water and sanitation as well as construction of shelters.

The steps include:

1. Explicit forecasting of extreme cold event along with frequency as well as intensity needs to be done by Indian Meteorology Department (IMD).
2. Recognizing the severity of cold waves in Rajasthan by collaborating various government agencies as well as civil societies.
3. Immediate notification to public and other stake holders is very crucial to ensure the status of cold action plan.
4. Mapping exercises of the concerned high risk and vulnerable areas is to be done.
5. Cold wave alerts with the help of various forms of media will be issued at grass root level.
6. Coordinated action efforts among government departments, health care professionals, emergency medical staffs, hospital staffs and community groups are required for successful implementation.

2017

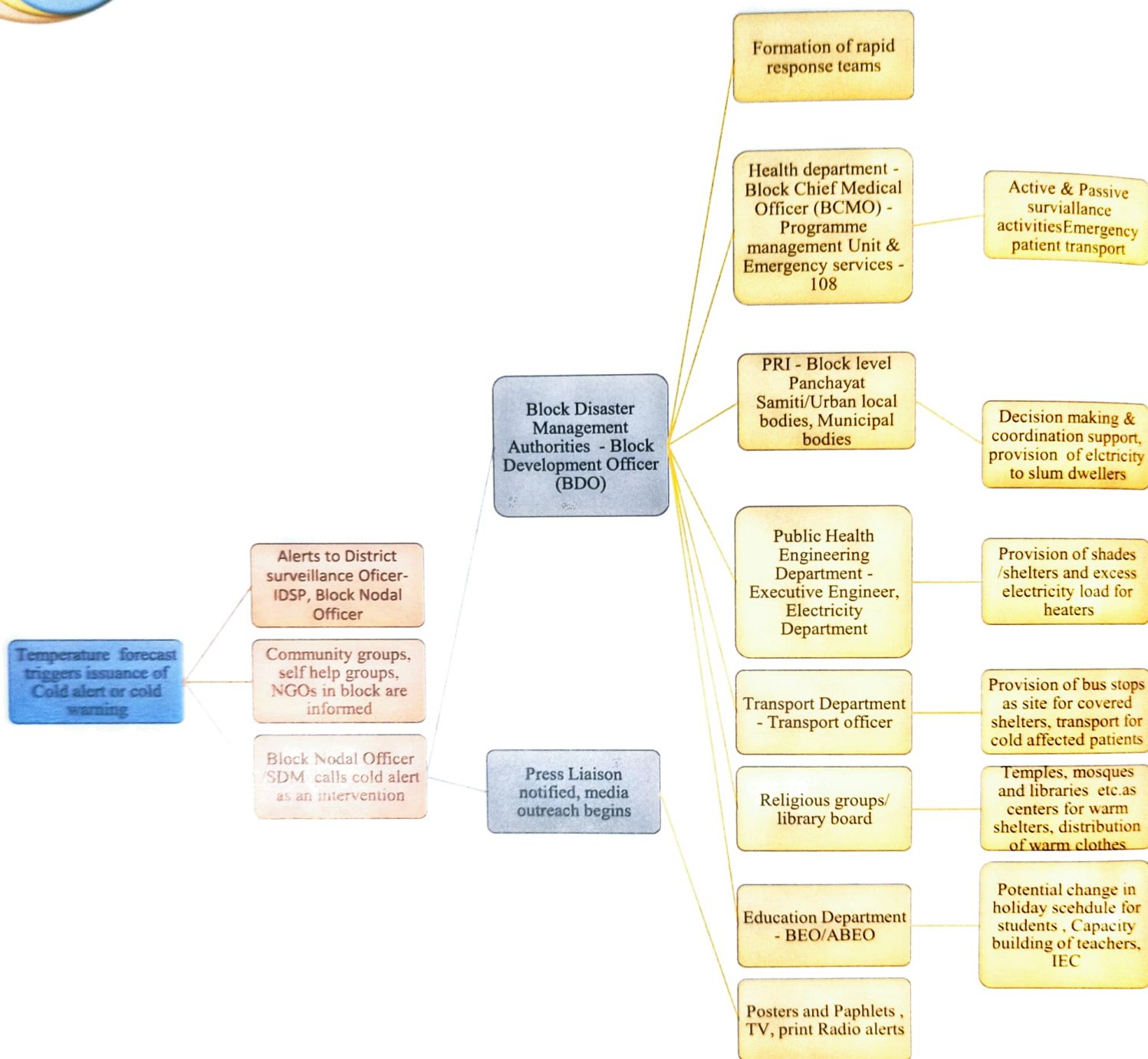


Figure 1. Block Disaster Management Plan of nodal officer with various department officials



## Cold Action Plan Objectives, Strategies and Activities:

### Objectives:

1. **Develop, implement, co-ordinate and evaluate** India's first Climate Resilience Cold Action Plan in rural and block level setting of Rajasthan
2. **Developing technical material** for health promotion and communication in local language, development of Climate Resilience Plans, capacity building of various stakeholders
3. **Capacity building of Various stakeholders** - district administration, District Health Department, Education department
4. **Assess Impact of climate change** the project aims to understand impact of climate change on health and climate sensitive diseases.

At Block level, there is a need to appoint 'Nodal officer' for monitoring and supervision of this Cold action plan related activities. The appointed nodal officer is responsible for coordination, communication and providing support to all concerned officials as per necessity. Block Nodal officer would be the one who would be doing preparations under Cold Action Plan 2017 (as given in Agency action checklists).

**(A). Strategies and Activities in Pre-Cold Season (Annually from September through November)**

**1. Block Nodal Officer/Sub Divisional Officer (SDO)**

**Strategy 1.1: To establish an early warning system and inter-agency coordination**

➤ **Activity: 1.1**

1.1.1. To identify key agency leaders and linking them (DC, BDO, BCMO, BEO, Executive Engineer, local NGOs leaders etc.)

1.1.2. Facilitate internal communication with community groups, local agencies working on environmental health, State and district officials, medical colleges, municipal bodies of towns and various public private partnerships (PPPs) in the district.

❖ **Output indicators 1.1**

1.1.1 Number of coordination meetings done

1.1.2 Number of inter-sectoral meetings and dialogues done.

1.1.3 Number of banners/posters/hoardings prepared in public spaces as a part of early warning.

**Strategy 1.2: To implement capacity building through training programmes for health care professionals**

➤ **Activity: 1.2**

1.2.1. To organize trainings for healthcare workers, teachers, community members and school children.

1.2.2. To conduct monitoring and supervision of processes or activities related to trainings.

**Output indicators 1.2**

1.2.1. Number of trainings organized for medical officers and healthcare workers in one year

1.2.2 Number of trainings conducted for teachers and school children.

1.2.3. Number of trainings conducted for community leaders and NGOs.

**Strategy 1.3: To make collaborations with non-governmental organizations (NGOs) and civil societies (CSOs)**

➤ **Activity 1.4**

1.4.1. To identify and list all NGOs as well as CSOs working in the block

1.4.2. To establish public private partnerships and collaboration with NGOs for community mobilization and better outreach implementation programmes.

1.4.3. To map the block and identify the high-risk areas in the block, vulnerable to cold waves for focused course of action with the help of CSOs and NGOs.

❖ **Output indicators 1.4**

1.4.1. Number of meetings made with NGOs as well as CSOs.

1.4.2. Number of NGOs or private stakeholders collaborated.

1.4.3. Number of people assessed for vulnerability.

**2. Media, Press and Communication Officer:**

**Strategy 2.1: To increase public awareness and community outreach for dissemination of awareness messages**

➤ **Activity: 2.1**

2.1.1. Printing of pamphlets and advertisements on cold stress prevention and tips for health protection during extreme cold events

2.2.2. Focus outreach efforts for identification of high risk villages.

2.2.3. Collect and distribute to health and education department information and cold wave communication materials developed by Government of Rajasthan, UNICEF and IIPH-Gandhinagar.

❖ **Output indicators 2.2**

2.2.1 Number of pamphlets and posters obtained.

**3. Block Chief Medical Officer (BCMO) / Chief Medical and Health Officer (CMHO) - Health Department:**

**Strategy 3.1: To establish the early warning system and inter-agency coordination**

➤ **Activity: 3.1**

3.1.1 Purchase and distribute drugs and other essential logistics in block as well as in all sub centers (outreach level), PHCs, CHCs and 108 ambulances.

3.1.2. Train staffs for cold focused examination procedures in Primary Health Centers (PHCs) and Community Health Centers (CHCs).

❖ **Output indicators 3.1**

3.1.1. Number of medicines and other logistics distributed in the block at PHC, CHC and SCs.

3.1.2 Number of discussions/dialogues held for adoption of cold focused examinations in PHC/CHC.



**Strategy 3.2: To implement capacity building or training programmes for health care professionals**

➤ **Activity: 3.2**

3.2.1 To intensify targeted training programmes, capacity building efforts especially for the medical officers and health workers-ANMs and ASHAs in cold affected areas.

3.2.2. To impart trainings to improvise the practice of documenting the cause of death on death certificates.

3.2.3. To incorporate 'IEC' as a component in training module while training health officials.

❖ **Output Indicators 3.2**

3.2.1. Number of trainings conducted for medical officers and health workers-ANMs and ASHAs in cold affected areas.

3.2.2. Number of IEC focused trainings conducted for medical officers and health workers.

**Strategy 3.3: To develop communication strategy and IEC training for public awareness and community outreach during cold season**

➤ **Activity 3.3**

3.3.1. Develop communication strategy for local rural health facilities and cold affected community groups with the help of medical, paramedical staff, field staff etc. based on the Framework for health professionals.

3.3.2. Develop behavioral change programmes such as drama, street play in the villages to give the friendly preventive and awareness message to the people.

❖ **Output indicators 3.3**

3.3.1 Number of IEC material developed

3.3.2 Number of staff trained for communication strategy

3.3.3. Number of Dramas or street plays developed for giving awareness messages regarding cold wave and illnesses as a part of climate change awareness.

**Strategy 3.4: To make collaborations with non-governmental organizations and civil societies and private practitioners, trust hospitals etc. for implementing various activities of Cold Action Plan**

➤ **Activity 3.4**

3.4.1. Identify and list various NGOs and CSOs running hospitals

3.4.2. Train staff working at NGOs and CSOs hospitals for cold focused examination procedures

**Output Indicators 3.4**

3.4.1. Number of NGOs and CSOs identified and listed.

3.4.2. Number of health staff trained for cold focused examination procedures at NGOs and CSOs hospitals.

**Strategy 3.5: To carry out monitoring and surveillance**

➤ **Activity 3.5**

3.5.1. Develop a 'Rapid Response Team'(RRTs) along with disaster management officials for carrying out monitoring and surveillance in high risk area.

3.5.2. To conduct supportive supervision of medical officers at PHCs/CHCs level routinely.

❖ **Output Indicators 3.5**

3.5.1. Number of RRTs formed.

3.5.2. Number of monitoring visits conducted in the cold focused villages.

3.5.3. Number of supportive supervision visits conducted.

**4. Block Education Officers (BEO), Community Groups and individuals:**

**Strategy 4.1: To implement capacity building or training programmes for teachers, education department officials and students**

➤ **Activity 4.1**

4.1.1. Under the leadership of Block Education Officer (BEO) or Additional Block Education Officer (ABEO), conduct child friendly educational trainings and distribute cold wave protection materials at local schools in rural areas.

4.1.2. Build capacity among teachers about protection from cold and equip them with the separate awareness module, material which they can disseminate in classrooms and they can make activities that can engage students regarding extreme cold effects on health.

4.1.3. Conduct training workshops and outreach sessions with community Self Help Groups (SHGs) and community mobilizers like AWW or Multipurpose Health Workers (MPHW).

❖ **Output indicators 4.1**

4.1.1 Number of child friendly education trainings conducted.

4.1.2 Number of teachers trained, education department officials and students for cold wave awareness.

4.1.3. Number of awareness modules distributed among schools.

4.1.4. Number of community mobilizers capacitated.

**5. Executive Engineer-Block, Public Health Engineering Department:****Strategy 5.1 To collaborate with non-governmental organizations and civil societies****➤ Activities 5.1**

5.1.1. Construction of shelters and warm public places in the identified cold affected areas.

5.1.2. Distribution of warm clothes.

**❖ Output Indicators 5.1**

5.1.1. Number of shelters/shades built in the block.

5.1.2. Number of 'Public Hot spaces' formed.

5.1.3. Number of people benefited from warm clothes distributed by NGOs.



**(B). Strategies and Activities during the cold wave season: (Annually from December through February)**

**1. Block Nodal Officer/ Sub Divisional Officer (SDO):**

**Strategy 1.1: To establish the early warning system and inter-agency coordination**

➤ **Activity 1.1**

1.1.1. Activate the cold alert and the local response block wide when extreme temperature is forecasted.

1.1.2. Monitor and increase the cold alert level when necessary to match the severity of the forecast and threshold established along with the Block Nodal Officer conveying the same in a special meeting assembling of key agency leaders.

1.1.3. Conduct frequent, possible daily, conference calls to discuss reports and breaking developments during cold alerts and ensure that communication channels remain operational.

1.1.4. Identify and set up public displays of temperature at places in the block with more population.

1.1.5. Continue passive and active surveillance of temperature data and forecasts along with monitoring of vital indicators.

1.1.6. Notify the steering committee and relevant agencies when cold alert is over.

❖ **Output Indicators 1.1**

1.1.1 Frequency of activated alerts.

1.1.2 Number of special meetings conducted at the time of extreme temperatures

1.1.3 Number of conference calls made during the summer.

1.1.4 Number of monitoring visits made to the various part of block.

**Strategy 1.2: To make collaborations with non-governmental organizations and civil societies**

➤ **Activity 1.2**

1.2.1. Development of hot centers in places such as temples, public buildings, schools, colleges etc. (heaters) during cold wave season. Provide access to electricity to vulnerable populations.

1.2.2. Provide temporary shelters for affected populations. Assure night shelters stay open all day for migratory populations during a cold alert. Expand access to shaded areas for outdoor workers, slum communities and other vulnerable populations.

❖ **Output Indicators 1.3**

1.3.1. Number of hot centers developed

1.3.2. Number of night shelters constructed.

1.3.3. Number of people used shelters/shades during cold events.

## **2. Media, Press and Communication Officer:**

**Strategy 2.1:**To increase public awareness and community outreach for dissemination of awareness messages

### **➤ Activity 2.1**

2.1.1. Initiate public awareness about the dangers of cold related illnesses involving the 'Block Nodal Officer' via press conference.

2.1.2. Circulate bulk warnings to the public via centralized email databases during cold alert.

2.1.3. Develop an SMS alert system to send direct messages to the community members, school headmasters, private practitioners and other important stakeholders

2.1.4. Use local radio to disseminate cold protection tips and low temperature warnings to the high-risk community in rural areas during cold wave period.

2.1.5. Explore other ways of communication such as social media e.g. WhatsApp mobile application/Instant messaging.

### **❖ Output Indicators 2.1**

2.1.1. Number of press conferences arranged for dissemination of awareness messages.

2.1.2. Frequency of bulk warnings sent via email

2.1.3. Number of SMS alerts sent during cold wave period

2.1.5. Number of people accessed through WhatsApp/Instant messaging.

## **3. Block Chief Medical Officer (BCMO) / Chief Medical and health officer (CMHO)-Health Department:**

**Strategy 3.1:** To strengthen the early warning system and inter-agency coordination to strengthen the health services.

### **➤ Activity 3.1.**

3.1.1. To ensure the preparation for cold wave related illnesses by Block Chief Medical Officer (BCMO) as well as Medical officers of PHCs and CHCs is being assured. Case audit conduction during cold season is being streamlined.

3.1.2. Ensure adequate Medical and drug supplies availability especially for cold focused areas.

3.1.3. Weekly reports of public health impact for SDO/Block Nodal Officer during cold wave alert.

3.1.4. Manage Human Resources and Infrastructure as per influx of patients during cold wave alert.

3.1.5. Focus more on high risk villages having vulnerable population in the relation of health service delivery, human resources and infrastructure.

3.1.6 Recruitment of new health workers as per feasibility and requirement.

#### ❖ Output Indicators 3.1

3.1.1 Number of drugs supplied during cold wave period

3.1.2 Number of reports submitted during cold wave period

3.1.3. Frequency of indents made during cold wave period

**Strategy: 3.2** To increase public awareness and community outreach for dissemination of awareness messages

#### ➤ Activity 3.2

3.2.1. Educate the patients and the general community about cold related illness post exposure, prevention tips and how to stay cool at health facilities (Sub-centers/PHCs/CHCs/UHCs).

#### ❖ Output Indicators 3.2

3.2.1. Frequency of the education meetings to the patients as well community during cold wave period.

3.2.2. Number of Rapid Response Teams formed in block during cold wave.

### **4. Block Education Officers (BEO/ABEO), Community Groups and individuals:**

**Strategy 4.1:** To increase student's awareness and community outreach for dissemination of awareness messages

#### ➤ Activity 4.1

4.1.1. Continued activity of awareness and knowledge dissemination in schools for students and teachers both.

4.1.2 Educate family members or neighbors as well as community members about Do and don't protocol for cold wave prevention.

#### ❖ Output Indicators 4.1

4.1.1. Number of awareness and knowledge dissemination activities conducted during cold wave period.

4.1.2. Number of families educated about cold related events and prevention strategies during cold wave period.

### **5. Executive Engineer-Block (Public Health Engineering department)**

**Strategy 5.1**Shelters and shades, water, electricity for the vulnerable population



➤ **Activity 5.1**

5.1.1. Keep checking that constructed shades/shelters are in place and are useful to the community. Repair if needed-on priority basis.

5.1.2. Provide electricity supply to vulnerable areas; even ensure that work places have adequate electricity provision.

❖ **Output Indicators**

5.1.1 Number of shelters formed

5.1.2. Number of places where electricity supplied during cold wave

**(C). Strategies and Activities in Post Cold Season (Annually in March through August)****1. Block Nodal Officer/SDO****Strategy 1.1: Evaluation meetings and performance assessment**➤ **Activity 1.1**

1.1.1. Organize an annual Cold Action Plan Evaluation meeting with key agency stake holders.

1.1.2. Evaluate the Cold action plan process based on performance and revise periodically.

1.1.3. Evaluate the impact and coverage of the cold action plan and revise accordingly.

1.1.4. Revised plan need to be highlighted on Government website

1.1.5. Discuss establishing warming center facilities in cold focused areas of the block.

**Output Indicators 1.1**

1.1.1 Number of evaluation meetings conducted after cold wave

1.1.2 Number of periodic meetings for cold action plan conducted

**2. Block Chief Medical Officer (BCMO) / Chief Medical and health officer (CMHO) – Health Department****Strategy 2.1. Surveillance, monitoring and evaluation, supportive supervision**➤ **Activity 2.1**

2.1.1. Perform an epidemiological case investigation of cold related morbidities and mortalities during the winter.

2.1.2. Collate the data from various sources, investigations regarding cold risk factors, illnesses and death based on daily average temperature. Measure the morbidity and mortality rates based on data before and after the plan implemented

2.1.3. Incorporate data findings in upcoming Cold Action Plans each year.

2.1.4. Continue supportive supervision to the medical officers in PHCs and CHCs and other health facilities.

❖ **Output Indicators 2.1**

2.1.1. Frequency of case investigations performed

2.1.2. Number of supportive supervision visits made in the block

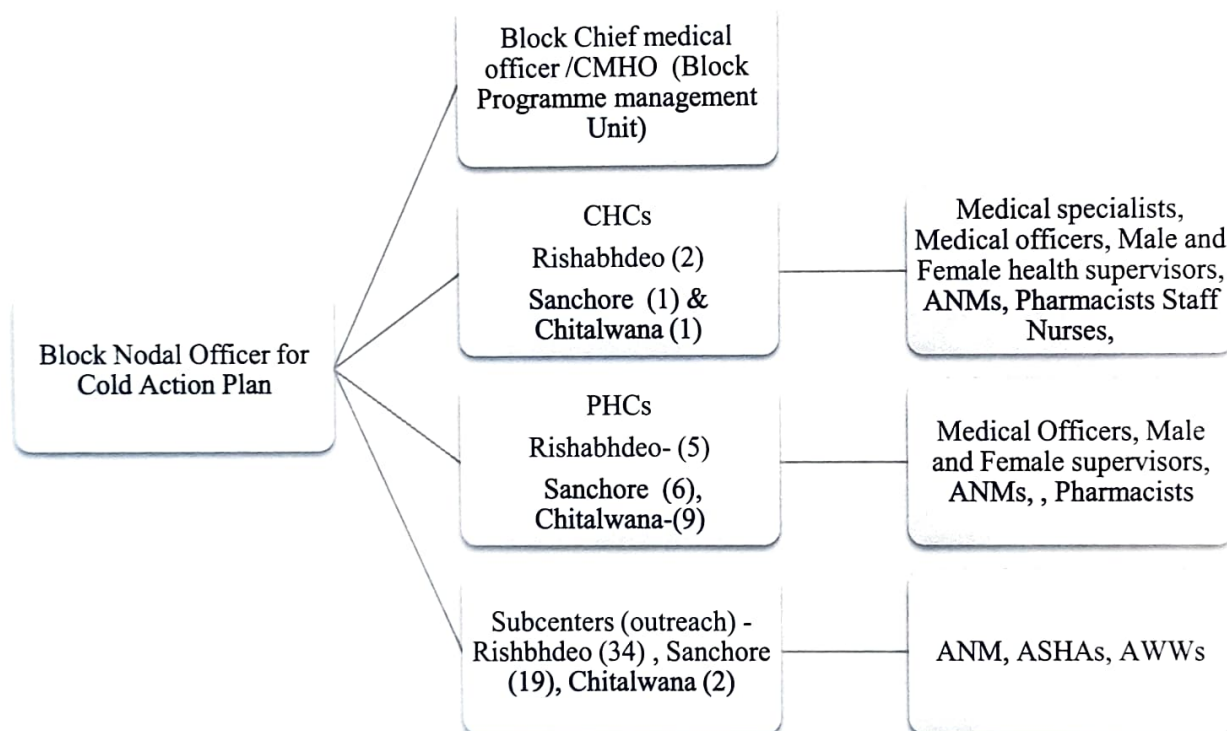
**Conclusion:**

As Rajasthan is one of the major states often getting affected by Cold Waves, there is an immediate need to develop and implement such plans in other areas of the state. In addition, nodal department -DMRD and RSPCB, other line department- Health, Education, PHED; development partner UNICEF; academic and technical partner-IIPH-Gandhinagar indicated strong commitment for effective implementation of first Cold Action Plan for rural settings.

### Framework for Block Programme Management Unit and Health workers:

For primary health care level and block level health facilities, there is a need to make a framework for proper implementation of the preparedness and the quick response for early diagnosis and treatment. The framework indicates the linkage of health care professionals with other departments involved. As Rapid Response teams consist of various government officials apart from medical officers, it is necessary to understand the framework.

**Figure 2 Framework for Block Programme Management unit and health workers**





## Symptoms and First Aid for various Cold Disorders:

| Cold Disorder      | Symptoms   | First Aid  |
|--------------------|--|--|
| Mild Hypothermia   | <ul style="list-style-type: none"> <li>• Shivering</li> <li>• Fatigue</li> <li>• Loss of coordination</li> <li>• Confusion and disorientation</li> <li>• <b>Infants:</b><br/>bright red<br/>cold skin<br/>very low energy</li> </ul> | <ul style="list-style-type: none"> <li>• Alert the supervisor and request medical assistance.</li> <li>• Move the victim into a warm room or shelter.</li> </ul>   |
| Severe Hypothermia | <ul style="list-style-type: none"> <li>• No shivering</li> <li>• Blue skin</li> <li>• Dilated pupils</li> <li>• Slowed pulse and breathing</li> <li>• Loss of consciousness</li> </ul>   | <ul style="list-style-type: none"> <li>• Remove if wet clothing.</li> <li>• Warm the center of their body first- chest, neck, head, and groin-using an electric blanket, if available; or use skin-to-skin contact under loose, dry layers of blankets, clothing, towels, or sheets.</li> <li>• Warm beverages may help increase the body temperature, but do not give alcoholic beverages.</li> <li>• <b>DO NOT GIVE FLUIDS ORALLY if the person is not conscious.</b></li> <li>• After their body temperature has increased, keeps the victim dry and wrapped in a warm blanket, including the head and neck.</li> <li>• If victim has no pulse, begin Cardiopulmonary resuscitation (CPR).</li> </ul> |

## Frostbite

- Reduced blood flow to hands and feet (fingers or toes can freeze)
- Numbness
- Tingling or stinging
- Aching
- Bluish or pail, waxy skin
- Get into a warm room as soon as possible.
- Unless absolutely necessary, do not walk on frostbitten feet or toes-this increases the damage.
- Immerse the affected area in warm-not hot-water (the temperature should be comfortable to the touch for unaffected parts of the body).
- Warm the affected area using body heat; for example, the heat of an armpit can be used to warm frostbitten fingers.
- Do not rub or massage the frostbitten area; doing so may cause more damage.
- Do not use a heating pad, heat lamp, or the heat of a stove, fireplace, or radiator for warming. Affected areas are numb and can be easily burned.

## Chilblains

- Redness
- Itching
- Possible blistering
- Inflammation
- Possible ulceration in severe cases
- Avoid scratching
- Slowly warm the skin
- Use corticosteroid creams to relieve itching and swelling
- Keep blisters and ulcers clean and covered

## Trench foot

- Reddening of the skin
- Numbness
- Leg cramps
- Swelling
- Remove shoes/boots and wet socks.
- Dry their feet.
- Avoid walking on feet, as this may cause tissue damage

- Tingling pain
- Blisters or ulcers
- Bleeding under the skin
- Gangrene (the foot may turn dark purple, blue, or gray)

### **Case definitions Cold related illnesses**

#### **Hypothermia**

When exposed to cold temperatures, your body begins to lose heat faster than it can be produced. Prolonged exposure to cold will eventually use up your body's stored energy. The result is hypothermia, or abnormally low body temperature. A body temperature that is too low affects the brain, making the victim unable to think clearly or move well. This makes hypothermia particularly dangerous because a person may not know it is happening and will not be able to do anything about it.

#### **Frostbite**

Frostbite is an injury to the body that is caused by freezing. Frostbite causes a loss of feeling and color in the affected areas. It most often affects the nose, ears, cheeks, chin, fingers, or toes. Frostbite can permanently damage body tissues, and severe cases can lead to amputation. In extremely cold temperatures, the risk of frostbite is increased in workers with reduced blood circulation and among workers who are not dressed properly.

#### **Chilblains**

Chilblains are caused by the repeated exposure of skin to temperatures just above freezing to as high as 60 degrees F. The cold exposure causes damage to the capillary beds (groups of small blood vessels) in the skin. This damage is permanent and the redness and itching will return with additional exposure. The redness and itching typically occurs on cheeks, ears, fingers, and toes.

#### **Trench Foot**

Trench foot, also known as immersion foot, is an injury of the feet resulting from prolonged exposure to wet and cold conditions. Trench foot can occur at temperatures as high as 60 degrees for 15 degrees Celsius if the feet are constantly wet. Injury occurs because wet feet lose heat 25-



times faster than dry feet. Therefore, to prevent heat loss, the body constricts blood vessels to shut down circulation in the feet. Skin tissue begins to die because of lack of oxygen and nutrients and due to the buildup of toxic products.

#### **Identification of cold illnesses and recordings of casualties:**

It is important to undertake an objective identification of cold related illnesses and systematically record casualties resulting from cold wave. State may form committees at the district level with members not below the rank of BCMO, Tahsildar, and Inspector of Police to enquire into the deaths due to cold stress/cold waves for correct reporting. In order to do so, the following four factors need to be taken into account:

- Recorded minimum temperature during the particular time period and place.
- Recording incidents, *panchnama* or others witnesses, evidence or verbal – autopsy.
- Postmortem/medical checkup report with causes.
- Local authority or Local body enquiry/verification report.

#### **Reasons for inadequate coping by community:**

- Not knowing the issue of cold alerts
- Lack of awareness of precautionary measures (Dos and Don'ts)
- Not knowing symptoms of cold related illness and immediate treatment
- Lack of proper connectivity to primary health centers/Community health centers
- Lack of access to urgent medical attention at local levels (in villages)
- No access to covered areas and warm places
- Non-availability of shelters and enclosed warm place
- Lack of knowledge of services available

### **Mitigation measures**

As Cold Wave/Frost is a localized phenomenon, the Rajasthan Government must draw up location specific mitigation plans involving respective DMRD and local authorities (Panchayats and ULBs).

### **Some of the mitigation measures to be followed are shown below:**

#### **Do's and Don'ts- Cold Wave**

- Stay indoors as much as possible
- Listen to local radio stations for weather updates
- Eat healthy food to supply heat to the body and drink non-alcoholic beverages such as tea, warm water or any other hot beverage to avoid dehydration.
- Check on any neighbors who live alone, especially the elderly.
- Wear several layers of lightweight and warm clothes as well as hats and mufflers help to prevent heat loss rather than one layer of heavy clothing. The outer garments should be tightly woven and water-repellent.
- Use only one room-an internal room or passage will be easier to heat. Regular hot drinks will maintain body heat to fight the cold
- Ensure emergency supplies are easily accessible-no power means-no electricity
- If electricity fails, freezers will preserve food for up to 48 hours if the door is kept shut
- Keep dry. Change wet clothing frequently to prevent loss of body heat.
- Maintain proper ventilation when using kerosene, heater or coal oven to avoid toxic fumes.
- In case of non-availability of heating arrangement, go to public places where heating arrangements are made by administration.
- Cover your head, as most body heat is lost through the top of the head and cover your mouth to protect your lungs.
- Avoid over work. Over exertion can cause heart attack.

- Watch for signs of frostbite: loss of feeling and white or pale appearance on fingers, toes, ear lobes and the tip of the nose.
- Watch for signs of hypothermia (subnormal body temperature): uncontrolled shivering, memory loss, disorientation, incoherence, slurred speech, drowsiness and apparent exhaustion. Immediately rush to the nearest hospital for medical treatment.
- Stock up on food, water, and other necessities before a cold wave.
- Stock suitable forage before cold waves for livestock
- Keep hospitals in a state of readiness for the admission of victims of frostbite and hypothermia



## **Brief Profile of Stakeholders**

### **Government of Rajasthan**

Rajasthan is one of the pioneer state in taking innovative thinking into practice through various initiatives for tackling Climate Change. The state governments have various departments including health department, Panchayati Raj Department, Forest Department, Public Health Engineering Department etc. like other states. The problem statement is different from other state making Rajasthan to focus on some complex problems such as Climate change and health. The government has supported many excellent programmes and schemes.

### **Rajasthan State Pollution Control Board (RSPCB)**

The Rajasthan state Pollution Control board was constituted under the section 4 of Water (Prevention and control of Pollution) Act, 1974, having objectives of prevention and control of water pollution and maintaining or restoring of wholesomeness of water. The prevention, control and abatement of Air pollution under the provisions of Air (Prevention and Control of Pollution) Act, 1981 made it have the objective of prevention of air pollution. Water (Prevention and control of Pollution) and CESS Act, 1977 has been enacted to make state board financially independent. Under this act State is made to collect CESS on the basis of water consumed by the industries. Later, State board is engaged in implementation of the rules made under the environment (Protection) Act, 1986. Water pollution control and Air Pollution Control Rules are developed by the board. Investors or industrialist need to take permission or clearance from this board to establish the company under all rules and regulations.

### **Disaster Management and Relief Department (DMRD), Government of Rajasthan**

Relief Department came into existence vide state ordinance to establish the office of the Relief Commissioner. Till 1964, Food and Relief department were jointly working. After that, they get separated. Disaster Management and Relief department is the permanent department of the state administration functioning under the commissioner and secretary, Disaster Management and Relief Department. Head office is in Jaipur having no other offices or branches. District Collectors and district level officers of the department act as the technical controlling, coordinating officers in the districts. 'Rajasthan Rahat Kosh' is developed to help the poor and vulnerable population affected by disasters.

## UNICEF, Rajasthan:

United Nations Children's Emergency Fund (UNICEF) is the international bilateral organization headquartered in 'New York' working in the state of Rajasthan providing the technical support to the Government of Rajasthan for various programmes, improving child survival, growth and development. It focuses on health, nutrition status of newborn, children, adolescents, women, water and sanitation issues, disaster risk reduction etc.

## IIPH Gandhinagar

Indian Institute of Public health, Gandhinagar has been established as India's first public health university under Gujarat State Act 2015 with the support of the 'Prime minister, Shri Narendra Modi'. The IIPHG is working in the area of Public Health, Health Policy, Environmental Health research and implementation. IIPHG implemented South Asia's first Heat Action Plan in Ahmedabad. On the basis of that, again IIPHG is designing block level heat as well as cold action plan for Rajasthan.

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