

Climate Resilience Toolkit **for Health Centers in the Philippines**

Flood and **Typhoon**







Republic of the Philippines
DEPARTMENT OF HEALTH
Office of the Secretary



Greetings to our Health Resilience Champions!

On behalf of the Department of Health (DOH), I extend my warmest congratulations to AmeriCares Philippines on the launch of the *Climate Resilience Toolkit for Health Centers in the Philippines*.

This initiative comes at a critical time. As one of the countries most vulnerable to the impacts of climate change, the Philippines faces growing challenges from extreme heat, floods, and typhoons. These hazards not only threaten lives and livelihoods, but they also place immense pressure on our health systems and the people who uphold them, our frontline health workers.

Aligned with Agenda #4 of the DOH's 8-Point Action Agenda, "*Handa sa Krisis*", this toolkit strengthens our efforts to build climate-resilient and sustainable healthcare facilities. Developed through the strong collaboration between the DOH and AmeriCares, with support from Johnson & Johnson and global experts, the toolkit offers practical, evidence-based tools for health centers in high-risk and underserved areas to assess vulnerabilities, respond to threats, and sustain services.

But beyond infrastructure and protocols, this toolkit affirms our shared belief: climate resilience begins with people. It begins with empowering our doctors, nurses, barangay health workers, and administrators with the skills and tools to act decisively when lives are on the line. This is a step toward a more prepared, more compassionate, and more equitable health system.

The toolkit aligns with the Philippine Roadmap on Health and Climate Change and supports our international commitments under the United Nations Framework Convention on Climate Change and the Paris Agreement. It helps us build climate *SMARTER* health systems – sustainable, multisectoral, adaptive, resilient, transformative, equitable, and responsive.

To our partners at AmeriCares Philippines and to everyone who contributed their time, expertise, and heart to this effort, *maraming salamat!* Your work reflects what is best about public health: collaboration, compassion, and commitment to the greater good. Together, we can build climate-resilient and low-carbon sustainable health systems as part of our universal health care, *dahil sa Bagong Pilipinas, Bawat Buhay Mahalaga!*

TEODORO J. HERBOSA, MD
Secretary of Health

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How to Use This Toolkit

The Climate Resilience Toolkit for Health Centers in the Philippines includes a wide variety of resources for three climate-related hazards. There is more material here than anyone has time to read in one sitting. The following suggestions may help you make the best use of these resources. These suggestions are based on feedback, focus groups, and interviews with frontline clinic staff that implemented earlier versions of these toolkit materials.

In addition, this toolkit was developed through extensive collaboration with the Technical Advisory Committee and Working Groups, ensuring that its content is tailored to the unique needs and priorities of health centers in the Philippines. Their cross-sectoral expertise has been integral in contextualizing the material to align with the country's climate resilience strategies.

Designate a Preparedness Lead

Designate one person at your facility as a Preparedness Lead. This person can:

- Take the time to review these documents in detail.
- Review and identify materials that will be most useful to all parts of the institution.
- Assign a staff member to monitor local weather threats such as typhoons, floods, and hot weather.
- Ensure the staff is signed up for alerts from PAGASA, NDRRMC, and other relevant local agencies.

See the **resilience team document** on page 41 for more details.

Identify Your Clinical Engagement Strategy

Set up a meeting with members of your health care team to determine how you would like to use the clinical and Information, Education, and Communication (IEC) materials at your facility. Primary Care Facilities that participated in the development of these resources use them in several different ways, including the following:

- Educate clinicians on the specific impacts of climate hazards prevalent in the Philippines,

such as typhoons and flooding, and how to counsel patients accordingly.

- Make sure posters and flyers are easily accessible, visible, and available in local languages along with other counseling materials used in the health facility.
- Include patient flyers in their home instructions and prescriptions after consultation.
- Provide posters and place them in prominent locations such as waiting rooms.
- Conduct education sessions tailored to the local context for staff, and patients focusing on common climate hazards in the Philippines.
- Assign a specific member of the health care team to ask patients about relevant hazards and provide educational materials. This could include roles such as nurses, doctors, social workers, pharmacists, community health workers, and others.

Tailor These Resources to the Needs of Your Institution

In some cases, it may be desirable to modify toolkit resources to include contact information for local authorities, such as barangay officials and local disaster risk reduction and management offices. Include details on local policies and practices relevant to climate resilience. Examples of this could include:

- Providing information on local resources like evacuation centers and community health services.
- Providing information about specific policies and practices at your institution.
- You are welcome to include this reference material or link them to your internal institutional reference documents or database.

Alternatively, you may find it helpful to make a separate flyer with a list of local resources and phone numbers to accompany the materials from this toolkit.

Preparedness is not just about physical readiness but also about mental well-being. Practicing simple steps—like staying informed, having a plan, supporting one another, and knowing healthy coping techniques—helps reduce stress and builds emotional resilience in the face of floods and typhoons.

Share Your Experience and Ideas

Many of the clinics that helped develop these materials encourage the sharing of successful strategies and experiences dealing with climate hazards specific to the Philippines, such as typhoon preparedness and response. Do annual reviews and periodic reassessments of the resources after a specific climate related event or risk of climate hazards has decreased.

If you have insights or experiences to share, please contact our team at resilience@americares.org. In some cases, your contributions may be shared with other health centers, with credit to you and your institution if desired. Examples of what you might share include:

- A description of how you have been using a specific resource in the toolkit.

- An anecdote about a climate hazard that you have dealt with successfully.
- Best practices, lessons learned, innovations and other initiatives that your institutions are undertaking or implemented successfully.

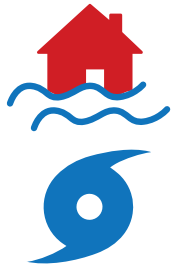
Conduct Periodic Reassessments

It is beneficial to periodically review and update your climate resilience activities. Consider doing this:

- Annually review your plans, after the risk of climate hazards has decreased.
- After specific climate-related events, such as a typhoon or flood, debrief and identify specific learnings from the experience.

NOTES:

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.



Guidance for Health Care Providers on Understanding and Managing Typhoon and Flood Impacts on Health

Typhoons and floods are major hazards in the Philippines. These events can damage health care facilities and can lead to injuries, drownings, infectious disease outbreaks, and interruptions in medical care. Impacts can be severe and long-lasting, as seen in the aftermath of Typhoons Yolanda/Haiyan, Ondoy, and Sendong; even regional flooding can have devastating local impacts.

It is essential for health care providers to prioritize their own safety and their families during flooding and typhoons. Ensuring personal and family preparedness allows them to remain focused and effectively deliver critical services to their communities. If their families are at risk or unprotected, health care providers may face significant challenges, which could hinder their ability to care for others. By taking necessary precautions, such as having an emergency plan, securing their homes, and preparing emergency kits or Go Bags, health care providers can safeguard their well-being and be better equipped to serve those in need during emergencies.

Discussing emotional well-being and coping strategies with patients can help them manage stress and anxiety before, during, and after a typhoon or flood. Encourage simple steps such as staying connected with loved ones, identifying sources of support, and using relaxation techniques like deep breathing to reduce distress.

Prevention of Typhoon and Flood Related Health Harms

(See page 15)

- Consider counseling patients on steps they can take to prevent health harms related to typhoons and flooding; provide anticipatory guidance on potential health problems they may experience and steps they should take to address them.
- Some populations are at particularly high risk of typhoon and flood-related health harms, including children, pregnant women, older persons, people living with chronic diseases or disabilities, and people in low-income or marginalized communities.
- Counseling topics include awareness of when and where dangerous flooding or high winds may occur, preparations for evacuation such as making a Go Bag and knowing where to go and how to get there, and considerations for patients with chronic medical conditions.
- Creating a typhoon and flood action plan can help patients know what to do before, during, and after a typhoon or flood.
- Creating an emergency Go Bag can help patients ensure they have essential items including medicines and documents.

- Utilizing materials provided in the patient and community section of the toolkit can support patients in preparing for typhoons and floods.

Diagnostic and Treatment Considerations for Flood-related Health Conditions

(See page 11)

- Health impacts in the immediate aftermath of typhoons and floods include drownings, electrocutions, lacerations, falls, blunt trauma including motor vehicle accidents, and acute stress reactions. Clinical diagnosis with imaging and laboratory adjuncts and treatment in accordance with typical practice guidelines is appropriate.
- In the first 1 to 2 weeks after a typhoon or flood, infectious diseases including pneumonia, viral respiratory infections, cellulitis, and acute gastroenteritis are a substantial concern. Clinical diagnosis may be sufficient in many cases; X-ray imaging and laboratory testing in accordance with local guidelines can facilitate the diagnosis of some conditions. Treatment with antimicrobials should be based on local guidelines and antibiotic resistance data.
- Longer-term impacts include vector-borne diseases, skin infections from atypical organisms such as mycobacteria, molds, and fungi, respiratory irritation due to mold infestation of previously flooded structures, Hepatitis A and E outbreaks, and long-term mental health impacts including anxiety, depression, and PTSD. Consider testing for malaria, dengue, hepatitis, and other infectious diseases when appropriate; consider screening for mental health impacts in affected populations. Infectious disease treatment should be based on local guidelines and antibiotic resistance data. Mental health treatment options include office-based care, engagement with post-disaster psychosocial support services, and/or referral for specialized psychiatric care. Principles of trauma-informed care can facilitate clinical care and therapeutic relationships with impacted people.
- Chronic disease exacerbations and interruptions in chronic disease care are also a concern. Maintaining continuity of care, providing medication refills, and recognizing and treating chronic disease exacerbations are important activities after typhoons and floods.

Typhoons and Flooding are Getting More Dangerous in the Philippines

(See page 9)

- Climate change, also known as global warming, is leading to heavier rainfall, higher risks of inland flooding, and more powerful typhoons. It is also leading to sea level rise, increasing the risk of coastal storm surge flooding.
- Studies conducted in the Philippines and elsewhere show that typhoons and flooding are associated with injuries, drownings, infectious disease outbreaks, mental health problems, disruptions in medical care, and other problems.
- To better prepare for these growing dangers, you and your patients can access information on predicted typhoon and tropical cyclone impacts, rainfall, and flood risk from PAGASA.
- There is also a need for proactive measures, such as climate change adaptation and building community resilience, to mitigate these disasters. Key actions include disaster preparedness through hazard mapping and resilient infrastructure, as well as integrated health care approaches that emphasize mental health readiness and public health awareness initiatives.
- As typhoons and flooding intensify due to climate change, prioritizing these measures is essential to safeguard public health and well-being.
- Increasing the likelihood of concurrent or cascading hazards such as heat waves following typhoons can result in increased morbidity and mortality due to critical infrastructure damage, such as electricity, transportation, and health care access.

Objective

This document is intended to provide health professionals with an overview of the relationship between typhoons, flooding, and health in the Philippines, and to provide a set of practical actions and information that can support good clinical practice and preventive medicine in the context of increasing hazard exposure resulting from global climate change.

Contents

This document is divided into sections on the following topics:

1. Typhoon and Flood Related Health Hazards in the Philippines (*page 9*)
2. Factors Affecting Flood Risk in the Philippines (*page 10*)
3. Factors Affecting Typhoon Risk in the Philippines (*page 11*)
4. Prevention of Typhoon- and Flood-related Health Harms (*page 15*)
5. Recognition and Management of Typhoon- and Flood-related Health Conditions (*page 11*)
6. Populations at Risk (*page 18*)
7. Relevant Clinical References and Guidelines on Specific Typhoon- and Flood-related Health Conditions (*page 43*)
8. Anticipatory Guidance Script for Counseling Patients on Preventing Health Harms from Typhoons and Floods (*page 44*)

This document covers both typhoons and floods, as flooding is a major source of health problems during and after typhoons, and typhoons are a major source of flooding risk. Typhoons are also known as tropical cyclones; the word “typhoon” is used in this document. Tropical storms and depressions and related low-pressure areas (LPAs) have less powerful winds than typhoons, but can still lead to extremely high rainfall and flash flooding. Tropical depressions and tropical storms, which are less powerful cyclonic storms that can intensify into typhoons, are also referred to as “typhoons” in this document for simplicity. Throughout the document, symbols are used to indicate sections that apply to flooding and/or typhoons:

PAGASA FLOOD AND TYPHOON ICONS





Health Harms Related to Typhoons, Floods, and Extreme Rainfall in the Philippines

For Providers

Typhoons, tropical storms and depressions, and floods can lead to a wide range of adverse health outcomes related to drowning, injury, infectious disease outbreaks, mold infestations in buildings, mobilization of toxic substances, social disruption, population displacement, food and water contamination, physical and emotional trauma, and interruptions in access to medical care (Dresser et al, 2022).











Drowning due to flooding is a significant source of mortality in the Philippines (Martinez et al, 2016), and most direct flood-related mortality is from drowning, accounting for up to 75% of immediate mortality (Cao et al, 2023). Injuries also make up a substantial proportion of the immediate care needs of impacted populations, particularly following typhoons (Read et al, 2016; Salazar et al, 2017; van Berlaer et al, 2019; Shilkofski et al, 2017; Kim et al, 2016; Chang et al, 2016). Even after the floodwaters are gone, people can

experience injuries during cleanup and reconstruction (Lowe et al, 2013).

However, the overall medical illness burden may be much greater than the injury burden (Cuesta et al, 2020). Infectious diseases such as leptospirosis (Easton, 1999; Matsushita et al, 2018; Nazir et al, 2024), chikungunya (Cueva et al, 2018), and schistosomiasis (Guo et al, 2021) are a major concern after floods and typhoons, as are diarrheal diseases (Chua & Salazar, 2021). If people live in buildings that were recently flooded, they may also be exposed to mold, which can cause breathing problems and allergies. Toxic exposures are also a concern; there is some evidence that lead contamination of floodwaters in parts of the Philippines may pose a health hazard (Ostrea et al, 2015). Interruption in access to medical care, ranging from TB control programs to obstetrical care to management of chronic diseases is a substantial problem (van Loenhout et al, 2018; Martinez et al, 2015; Lew et al, 2015). Mental health impacts are substantial in both impacted populations and responders (Chan et al, 2016; Labarda et al, 2020).

Table 1: Empirically observed health impacts of typhoons and floods in the Philippines.

HAZARD	HEALTH IMPACT	REFERENCES
	Increased mortality	Hu et al, 2018; Huang et al, 2024
	Wounds and other trauma	Read et al, 2016; Salazar et al, 2017; van Berlaer et al, 2019; Shilkofski et al, 2017; Kim et al, 2016; Chang et al, 2016
	Ocular injuries	Osaadon et al, 2018
	Drowning	Martinez et al, 2016; Ching et al, 2015
	Toxic exposures	Ostrea et al, 2015
	Leptospirosis	Sumalapao et al, 2019; Mendoza et al, 2013; Mc-Curry, 2009
	Schistosomiasis	Belizario et al, 2021
	Helminth infections	Belizario et al, 2021
	Diarrhea and gastroenteritis	Salazar et al, 2017; Chang et al, 2016; Ventura et al, 2015
	Respiratory tract infections	Salazar et al, 2017; van Berlaer et al, 2019; Shilkofski et al, 2017; Chang et al, 2016; Cuesta et al, 2020
	Skin infections	Salazar et al, 2017; van Berlaer et al, 2019; Chang et al, 2016

HAZARD	HEALTH IMPACT	REFERENCES
	Fever	Salazar et al, 2017; Shilkofski et al, 2017
	Disruption of WASH programs, access, and infrastructure	Belizario et al, 2021; Magtibay et al, 2015; Ramos et al, 2015
	Potential for disruption of infectious disease control programs	Lew et al, 2015; Chernoff et al, 2021
	Acute stress disorders and psychological distress	Lavenda et al, 2017; Chan et al, 2016; Labarda et al, 2020; Weintraub et al, 2016
	PTSD, Anxiety, and Depression	Labarda et al, 2020; Chan et al, 2016; Sylwanowicz et al, 2018
	Need for management of chronic conditions, e.g. hypertension, asthma, diabetes	Mobula et al, 2016; Salazar et al, 2017; Martinez et al, 2015; Savage et al, 2015
	Lack of access to obstetrical care	van Loenhout et al, 2018; Sato et al, 2016
	Increased out-of-pocket costs for health care	Espallardo et al, 2015
	Increased demand for rehabilitation services	Benigno et al, 2015
	Food insecurity and malnutrition	Clark, 2012; Belizario et al, 2021



Factors Affecting Flood Risk in the Philippines For Providers

Floods can also cause long-term harm through impacts on livelihoods, crop production, food security, access to medical care, and mental health (Clark 2012).

Flooding can result from prolonged or intense rainfall, local topography, failures of infrastructure such as dams, and the design of the built environment, particularly in cities where paved surfaces may increase flood risk.

The Philippines is among the most flood-affected countries on the planet (Hu et al, 2018), and is expected to experience worsening risks from flooding as a result of climate change (Cruz et al, 2017). Climate change is leading to warmer temperatures in the atmosphere, which allows the atmosphere to hold more moisture which can then fall as rain. Warmer temperatures can also increase evaporation from the ocean. These factors can combine to produce extremely powerful rainfall and resulting freshwater flooding (US EPA, 2024).

In a [2015 report](#), the WHO and UNFCCC modeled flood risk as one of the key health hazards that is expected to worsen as a result of climate change. Under a high emissions future scenario, the Philippines could see an additional nine (9) or more days of heavy rainfall and potential flooding every year (WHO, 2015).

Increasing urbanization means that larger numbers of people are now living in areas where paved surfaces and concrete dominate the landscape. These “impermeable surfaces” do not absorb water when it falls as rain, and instead lead to immediate runoff. This can lead to flash flooding in urban areas.

Settlement of low-lying areas, including the floodplains of rivers, puts large numbers of people and their homes and possessions at risk from flooding. As the population in low-lying areas increases, more and more people are expected to be exposed to flooding risks.



Factors Affecting Typhoon Risk in the Philippines For Providers

The Philippines is one of the countries most frequently impacted by typhoons, particularly in the northern and eastern regions (Holden & Marshal, 2018). Its geographical location, combined with an increasing population in coastal and flood-prone areas, heightens vulnerability to these events. Climate change has further exacerbated these risks by influencing typhoon behavior and intensifying storm impacts, including higher wind speeds, heavier rainfall, and more frequent storm surges.

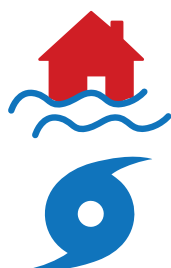
Typhoons, also known as tropical cyclones in scientific literature, have threatened the Philippines since record-keeping began. Disaster preparedness efforts in the country have reduced mortality rates during typhoons, showing the Philippines' extensive experience in managing these hazards (Huang et al, 2024). However, several features of typhoons, such as their intensity, track, rainfall, and intensification rate, appear to be connected to climate change and may contribute to increased risk.

Global analyses of tropical cyclones in recent decades suggest these storms are increasingly moving poleward, becoming more powerful, undergoing rapid intensification (gaining size and strength quickly),

slowing in movement (resulting in prolonged impacts), and producing heavier rainfall (IPCC AR6, 2021). In the Northern Western Pacific, storm tracks are migrating poleward, which may explain the lack of a clear trend toward increasing storm intensity in this region compared to other ocean basins (Kossin et al., 2019). While evidence does not currently indicate a change in the total number of cyclones, the Philippines is expected to face increasingly hazardous typhoons characterized by heavy rain, high winds, storm surges, rapid intensification, and slower movement in the future (Holden & Marshal, 2018; IPCC AR6 2021).

Sea level rise driven by climate change increases the risk of coastal flooding, particularly during typhoons (IPCC AR6, 2021). This is particularly dangerous during typhoons, when powerful winds can lead to storm surges, causing major destruction in coastal areas. As sea levels continue to rise and typhoons grow stronger, storm surges may threaten new locations and populations previously unexposed to such hazards.

The settlement of coastal areas increases the number of people exposed to hazards such as storm surge flooding and high winds. The Philippines ranks among the top ten countries globally in terms of the number of people living in low-elevation zones by the mid-21st century (Neumann et al., 2015). This trend indicates that the country will likely continue to have large populations residing in high-risk areas for the foreseeable future.



Recognition and Management of Typhoon and Flood Related Health Conditions For Providers

Typhoons and flooding are associated with a wide range of acute and subacute illnesses and injuries. The following section provides an overview of anticipated clinical presentations during the immediate, early, and late stages of a typhoon and/or flooding disaster and general information about diagnostic and management considerations. **This resource is not intended to**

replace the good clinical judgment of health professionals nor is it intended to supersede policies or treatment guidelines related to specific diseases or conditions. Further reading including clinical practice guidelines and other reference materials related to specific conditions mentioned in this section are provided in the Appendix.



Immediate Health Impacts

The immediate health impacts of typhoons and flooding are related to the direct effects of floodwaters, high winds, and related traumatic injuries. Cases may include drownings, near drownings, blunt trauma from the effects of floodwaters, collapsed buildings, blown debris, motor vehicle accidents, falls, lacerations and puncture wounds, electrocutions related to damaged infrastructure, and acute stress reactions. Recognition and diagnosis of these conditions are typically based on history and clinical examination, with adjunct testing including chest X-rays for drowning/near drowning cases and standard diagnostics for traumatic injuries in accordance with current trauma guidelines. While most management decisions can be taken following standard guidelines for these conditions, special clinical considerations in the setting of typhoons and flooding include the following:

- Consider antibiotic prophylaxis for wounds or lacerations that come into contact with floodwater,

which is often contaminated with a wide variety of infectious agents. Injuries that come into contact with floodwater carry a high risk of subsequent wound infection.

- While overall evidence for antibiotic prophylaxis in drowning or near drowning events involving respiratory aspiration of water is mixed, consider antibiotic prophylaxis for near drownings in the context of flooding, given the high rates of microbial contamination in floodwaters.
- Consider Tetanus immunization for individuals with wounds and lacerations when appropriate.
- Consider referrals to post-disaster mental health resources and counseling services for patients experiencing acute stress reactions or other mental health impacts when appropriate.



Early Health Impacts (1 to 2 Weeks After Typhoon or Flood)

In the first 1 to 2 weeks after a typhoon or flood, infectious diseases including pneumonia, viral respiratory infections, cellulitis, and gastroenteritis are a substantial concern. Clinical diagnosis may be sufficient in many cases; X-ray imaging and laboratory testing in accordance with local guidelines can facilitate the diagnosis of some conditions. Treatment with antimicrobials should be based on local guidelines and antibiotic resistance data. While most management decisions can be taken in accordance with standard guidelines for these conditions, special clinical considerations in the setting of flooding include the following:

- Infectious etiologies of pneumonia in the post-flood setting include fungal pneumonia, aspiration pneumonia, atypical pneumonia, and polymicrobial infections. Consider expanded antibiotic coverage and in some cases initiation of antifungal therapy and/or referral to higher levels of care for severe cases.
- Many patients will experience viral respiratory infections such as COVID-19 and influenza in the post-flood setting, particularly in the context of evacuations, mass care, and congregate sheltering. Consider mask use, hand hygiene, and other steps to prevent further transmission of viral infections. Testing people for infection may help identify cases and help people and emergency teams take steps to prevent further transmission of these infections.
- Gastroenteritis is a substantial concern in populations affected by extreme rainfall and/or flooding. A wide variety of infectious agents have been documented; see table. Consider early antimicrobial therapy in accordance with local guidelines for the suspected infectious agent, and encourage WASH activities to prevent onward transmission. Ensure adequate hydration, including access to and use of Oral Rehydration Solution. Assess patients for clinically significant dehydration. Patients who are unable to drink oral fluids may require intravenous fluid administration and/or hospitalization.
- Many patients will experience skin and soft tissue infections, including cellulitis. Risk is high in patients who had direct contact with floodwaters. Consider early initiation of antibiotics in accordance with local guidelines for the treatment of cellulitis. Maintain a high index of suspicion for necrotizing skin and soft tissue infections, which require early initiation of broad-spectrum antibiotics and emergent surgical debridement.
- Leptospirosis infections are a common problem after flooding events and typhoons in the Philippines. Research in the Philippines has shown that leptospirosis can survive in salty or brackish conditions, so clinicians should maintain an index of suspicion for leptospirosis in settings affected by coastal flooding in addition to settings affected

by river flooding. In rural areas where screening and diagnostic services may be limited, clinicians must be able to recognize clinical manifestations and identify patients requiring hospital admission for timely referral to facilities with the necessary services. It is essential to screen for and treat

leptospirosis following established guidelines (see Appendix) and ensure the availability of post-exposure prophylaxis. Additionally, a proper referral system should be in place to manage cases efficiently and prevent complications.

Table 2: Pathogens associated with waterborne infections during and after floods.

PATHOGEN(S)	IMPACT OF FLOODING	EXPOSURE MECHANISM
Cryptosporidium, G. lamblia	Increased discharge from water treatment plants, industry, and animal-feeding operations due to flooding and infrastructure damage	Increased because of higher pathogen burden in water sources
V. cholerae, hepatitis A virus, and other fecal pathogens	Compromised WASH infrastructure (e.g., wells and potable water sources) due to damage from flooding and extreme events	Increased because of higher pathogen burden in water sources
Leptospira, staphylococcus, hepatitis A virus, rotavirus	Increased pathogen mobilization and transport due to stormwater runoff and sewage overflow	Increased because of more frequent exposure to contaminated surface water (e.g., floodwater) and soil (e.g., mud)
Escherichia coli O157:H7 and other fecal pathogens from animal and human sources	Increased runoff from nonpoint sources (e.g., livestock manure, wildlife, or septic system); groundwater contamination with fecal pathogens during heavy precipitation in regions with insufficient water treatment; overwhelmed water treatment, resulting in contamination of water sources and river and lake sediments	Increased because of higher pathogen concentrations in surface water



Delayed and Long-term Health Impacts

The health impacts of flooding and typhoons can extend for months or years following a disaster. Impacts may result from altered infectious disease dynamics and exposures, toxic exposures, mental health impacts, disruptions in access to health care, and disruptions in livelihoods, housing, and other social determinants of health.

Infections: During the weeks and months following a flood or typhoon, debris can provide a breeding ground for mosquitoes and other disease vectors and a suitable habitat for mold and fungi, while WASH infrastructure may be insufficient, and many individuals will reside in congregate living situations, either temporarily or permanently.

- Maintain a high index of suspicion for vector-borne illnesses such as malaria and dengue, and proceed with diagnostics and treatment in accordance with guidelines from public health authorities and relevant medical bodies.
- Consider atypical organisms such as mycobacteria, mold, and fungi when evaluating patients with skin infections.
- Consider Hepatitis A and Hepatitis E in patients with relevant symptoms who have potential

exposures related to impaired WASH facilities and/or contaminated water.

- Consider tuberculosis in patients with relevant symptoms who have had to reside in congregate living situations following a flood or typhoon.
- Consider schistosomiasis in patients with exposure to potentially contaminated water.
- Consider respiratory irritation or allergies due to mold growing in recently flooded structures in patients presenting with new respiratory or allergic symptoms.

Toxic Exposures: Toxic exposures may occur during and after floods. People who run generators indoors can die from carbon monoxide poisoning. In addition, floodwaters can mobilize heavy metals and/or toxic chemicals into the drinking water supply, flooded agricultural land, or other locations. Health risks depend on which toxins are released and the extent of exposure to them. After flooding, monitoring may be done to assess air and water quality but is not always adequate to address all relevant hazardous exposures.

- Counsel patients not to run generators or poorly ventilated cooking stoves indoors, as this can lead to carbon monoxide poisoning.

- Counsel patients to discard food that has come into contact with flood waters.
- Counsel patients to drink water from safe sources that are unlikely to be contaminated by chemicals or heavy metals.

See Table 3 for a description of potential toxic exposure pathways and risks.

Mental Health: Floods and typhoons are associated with substantial mental health impacts. Studies in the Philippines have reported anxiety, depression, and PTSD following major storms; these results are similar to findings from research in other settings around the world.

- Consider screening impacted individuals for disaster-related mental health conditions through clinical interviews and/or validated screening tools (see Appendix). Additionally, expand screening efforts to include adjustment difficulties, substance use behaviors, and stress responses.
- Consider culturally responsive interventions within the community (i.e. faith-based support, community health circles, traditional healing methods, etc.) which may place crucial in recovery.
- When feasible, consider providing connections to psychosocial support for at-risk individuals (people with chronic diseases, older persons, people with disability, low-income and marginalized communities, etc.).
- Consider recognizing the impact on children and adolescents, who may exhibit regressive behaviors, difficulty sleeping, etc. and provide structured routines, emotional validation, and safe spaces for expression can help support their well-being during and after disasters.
- Interpersonal violence and intimate partner violence have been identified as post-disaster risks in the Philippines, particularly for women.

Consider screening and referral as appropriate. In addition, consider promoting protective community mechanisms such as safe shelters, peer networks, and emergency response protocols to reduce risk.

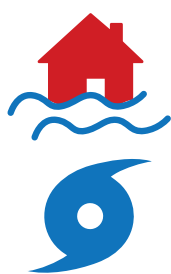
- Refer to your established referral pathway to local mental health services and community-based networks to ensure that patients receive appropriate specialized or non-specialized psychiatric care.

Access to Health Care: Disruptions of access to health care are frequent following floods and typhoons. Displacement of populations, destruction of medical facilities, interruption of medical supply chains, impacts on health care workers, and financial constraints can all contribute to reduced access to health care. Loss of access to care can contribute to adverse health outcomes for patients with pre-existing medical conditions or chronic health needs and can result in underdiagnosis and undertreatment of disaster-related health.

- Consider the need for continuity of access to chronic medications when caring for displaced persons, and consider temporary substitutions if supply chains are disrupted.
- Encourage patients to keep a written list of their medications in case they need to access care in a new setting.
- Coordinate with the Provincial Health Office, Provincial Department of Health Office, or the Department of Health Regional Office to pre-stock essential medicines and supplies to prevent shortages during emergencies.
- Assess health care infrastructure in low-resource settings to identify gaps in care delivery and establish care navigation and coordination during disasters.
- Build linkages with nearby provinces or regions to ensure timely support and resource-sharing when local capacities are overwhelmed.

Table 3: Toxic exposure pathways and risks following typhoons and flooding.

TOXIC EXPOSURE	EXPOSURE PATHWAY	ADVICE FOR PATIENTS
Carbon Monoxide	Running generators indoors	Don't use generators indoors
Lead and other heavy metals	Mobilization into floodwaters	Drink and bathe in water from uncontaminated sources
Industrial chemicals	Mobilization into floodwaters	Avoid contact with floodwaters
Gasoline ingestion or fumes	Siphoning gasoline or storing gasoline indoors	Do not siphon gasoline; do not store fuel indoors

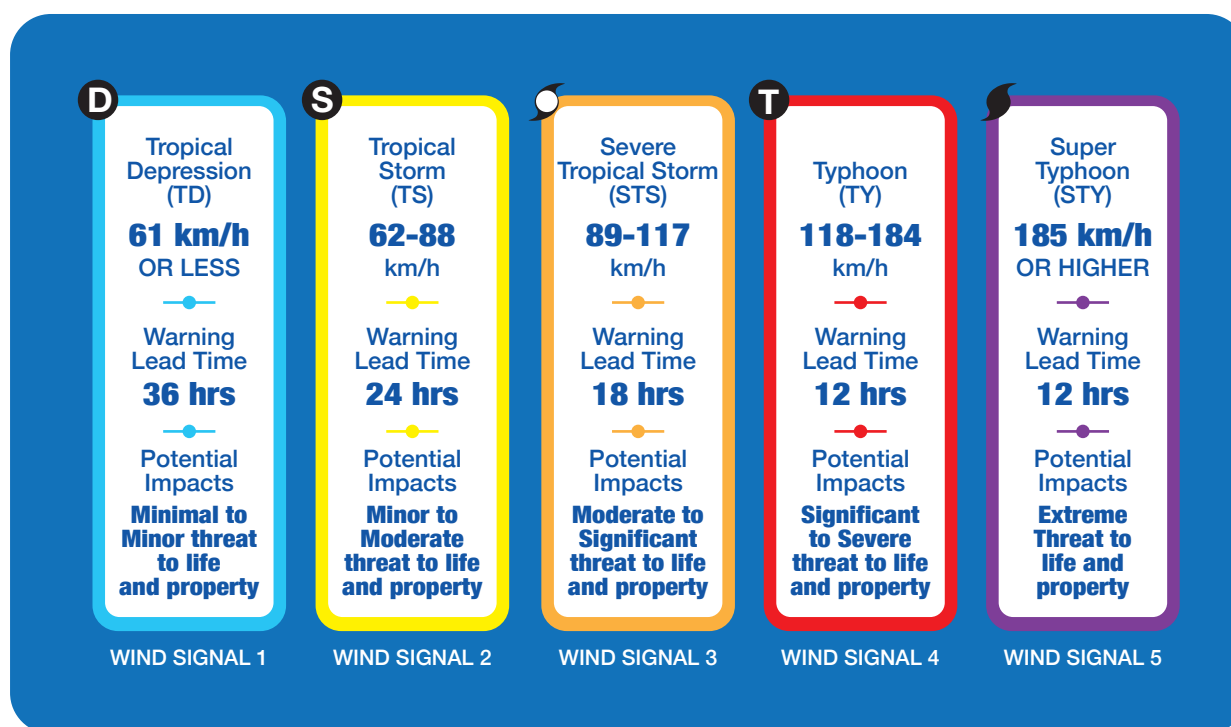


Prevention of Health Harms from Floods and Typhoons For Providers

Anticipatory guidance (guidance given in advance of a forecasted event), and other actions not only reduces health impacts but also helps patients feel more in control, lowering anxiety and distress by providing clear steps to follow before, during, and after an emergency. An **anticipatory guidance script is provided in the Appendix**, which includes questions

to ask your patients related to the following key topics. **Information, Education, and Communication (IEC) materials for patients** on preventing health harms from flooding and typhoons are available as part of this toolkit. These can be used to help your patients/clients make typhoon and flood action plans, so that they know what to do before, during, and after these events.






Figure 1: Tropical Cyclone Wind Signal from [PAGASA](#).



Make sure patients know where to get information about typhoon and flood warnings and forecasts for heavy rainfall. PAGASA, local media, and local authorities are useful sources of information about imminent typhoons and flood risk. PAGASA provides

tropical cyclone advisories, bulletins, and alerts, along with a Basin Hydrological Forecast that includes details on Flood Watches and Flood Advisories. These updates can be accessed through this link <https://www.pagasa.dost.gov.ph/flood#flood-information>

Figure 2: Flood Warning Icons from [PAGASA](#).

ICON	DESCRIPTION	FORECAST	ACTION / RESPONSE
	Flood Monitoring <i>Telemetered:</i> Slow rise in water level but still below alarm level <i>Non-Telemetered:</i> Monitor for possible flooding area	<i>Telemetered:</i> Flood is possible <i>Non-Telemetered:</i> Light to Moderate Rainfall	<i>Telemetered:</i> Flood is possible <i>Non-Telemetered:</i> Light to Moderate Rainfall
	Flood Alert <i>Telemetered:</i> Water level is continuously rising but still below critical level <i>Non-Telemetered:</i> Alert for possible flash floods and landslides	<i>Telemetered:</i> Flood is threatening <i>Non-Telemetered:</i> Moderate to Heavy Rainfall	<i>Telemetered:</i> <i>Non-Telemetered:</i> Advised to be alert for possible flood, flash flood and landslides
	Flood Warning <i>Telemetered:</i> Water level is above critical level <i>Non-Telemetered:</i> Flood is occurring immediate action is recommended	<i>Telemetered:</i> Flood is occurring <i>Non-Telemetered:</i> Heavy to Intense Rainfall	<i>Telemetered:</i> <i>Non-Telemetered:</i> Advised to take appropriate action
	Severe Flood Warning <i>Telemetered:</i> Water level is continuously rising above critical level <i>Non-Telemetered:</i> Flood is persisting force evacuation is recommended	<i>Telemetered:</i> Flood is persisting <i>Non-Telemetered:</i> Intense to Torrential Rainfall	<i>Telemetered:</i> <i>Non-Telemetered:</i> Advised to force evacuation
	Final <i>Telemetered:</i> Slow recession of water level <i>Non-Telemetered:</i> Light rains	Flood is no longer possible	

Make sure people understand the risks where they live and work. It is important to understand that flooding risks are typically present during typhoons, and that in addition, typhoons bring additional risks related to high winds, coastal storm surges, flash floods, and landslides, especially for those living in river valleys, on hillsides, or the mountains.

Flood risk depends on many factors including rainfall, geography, volume of recent rainfall, the built environment, and proximity to rivers (and their levels). If available, maps of flood risk can help patients and their caregivers assess whether they live in a location at risk from flooding. Individuals can check the flood risk for their home's location on this website at <https://noah.up.edu.ph/know-your-hazards/flood>. This site will give people the likelihood that flooding will occur at their address. Historical experience may underestimate the risk of the increasingly powerful rainstorms that are now occurring as a result of climate change.

Typhoons cause flooding and also bring risks related to high winds and coastal storm surges. It is important for people living in coastal areas to understand the risks related to storm surge, which is one of the most deadly hazards associated with these storms. The risks from storm surges and the exposure to storm surges are increasing as a result of both sea level rise and trends toward more powerful typhoons, meaning that people who were previously safe may now be at risk. High winds during typhoons can pose a severe hazard as well, particularly to people living in informal or poorly constructed housing; it is important for people to know where to go to take shelter from high winds and blown debris before a typhoon arrives.

Make sure patients understand how typhoons and flooding can affect their health. Health risks from flooding include immediate risks such as drowning and injuries, as well as post-event risks including soft tissue infections, respiratory infections, disruptions in medical care, and mental health impacts. See the following section "Recognition and Management of Typhoon and Flood Related Health Conditions" for additional information on the specific health impacts of typhoons and flooding. IEC materials are available to help educate patients on these health risks.

Advise patients against walking, swimming, or driving through flood waters. Driving or walking through floodwater has been shown to contribute to a large proportion of flood-related drownings and infections.

Make sure patients understand the importance of obeying directions from local authorities if instructed to evacuate. Evacuation may be the best choice when flooding is expected near a patient's home. Patients can be encouraged to pay attention to local authorities and media outlets for evacuation orders (i.e., through newscasts, reputable social media accounts, or automated alerts on a smartphone).

Make sure patients have a plan for when, how, and where to evacuate. In many cases, local authorities will provide information on available evacuation areas. Older persons, people with disabilities, and other people who may have difficulty with transportation should take extra care to make plans in advance for how they will get to safety.

Responsiveness to evacuation alerts has been found to vary by age, gender, and other factors. Studies in other parts of the world have shown that men and full-time residents may be more likely to want to stay and protect their property, whereas children, older persons, pregnant women, individuals with health concerns, or part-time residents are more likely to evacuate early.

Make sure patients know what to bring when they evacuate. Making a Go Bag is a helpful way to ensure

that nothing important gets forgotten and that patients can leave quickly. In addition to the standard items in an evacuation kit, patients should be encouraged to bring a list of their medications, a supply of their medications, and if possible, any essential medical devices they need to maintain their health. **Handouts and checklists on what to pack in a Go Bag are available.** You can provide prescriptions for additional refills of medications so that patients have some to store in their Go Bag.

Figure 3: Go Bag



After a typhoon or flood, if patients have evacuated, they should only return home when authorities say it is safe. There can be substantial dangers associated with return.

- Tell patients to avoid exposure to floodwaters, which can lead to drownings, injury, and infectious diseases.
- Tell patients to boil water or otherwise secure safe drinking water, and to follow standard [WASH guidelines](#). Boiling water will kill bacteria that could lead to infectious diseases.
- There can be toxic exposures when cleaning up after a flood or typhoon disaster, including heavy metals, industrial chemicals, and mold. Alternative sources of safe drinking water will be needed in case of chemical contamination. Boiling water will not be sufficient.
- Patients with respiratory conditions like asthma or other immunosuppressive conditions should be particularly careful with toxins, mold, and infectious exposures during cleanup.

- Debris can be dangerous and lead to traumatic injuries including cuts and punctures, which can lead to tetanus. Tell patients to avoid entering unstable or damaged buildings. Provide tetanus immunizations if patients are not up to date.
- Counsel patients on not using electrical equipment in water as it could lead to electrocution.

It is essential to have an available and accessible list of hotline numbers of the local government units, appropriate agencies, and referral hospitals or institutions offering specialized care to ensure timely coordination during evacuation efforts. These numbers enable health care providers to collaborate effectively with authorities in assisting individuals and communities at risk of flooding and typhoons. Having direct access to these contacts helps streamline emergency responses, prioritize the safety of vulnerable populations, and address urgent medical needs during disasters.

IEC materials for patients summarizing these recommendations are available as part of this toolkit.

Advise patients and caregivers that mental health impacts are common following disasters such as typhoons and floods. Encourage them to seek professional attention if they develop symptoms of anxiety, depression, post-traumatic stress, substance use, or other [mental health concerns](#). To support this, capacity building for health care workers is essential, including training in disaster risk communication and mental health and psychosocial support. Regular disaster preparedness training should also be introduced, emphasizing collective and individual counseling through community-based sessions.

Advise patients with chronic diseases to make sure they bring their medications with them if they have to evacuate, and consider providing them with information (if available) on a backup location in which they can obtain appropriate treatment or medication refills if their usual Health Center, clinic, hospital, or pharmacy is damaged by a typhoon or flood. Interruptions in access to medical care and treatments are a substantial cause of health harms in the aftermath of disasters such as floods; it is important for patients to reestablish care as soon as possible following such events.

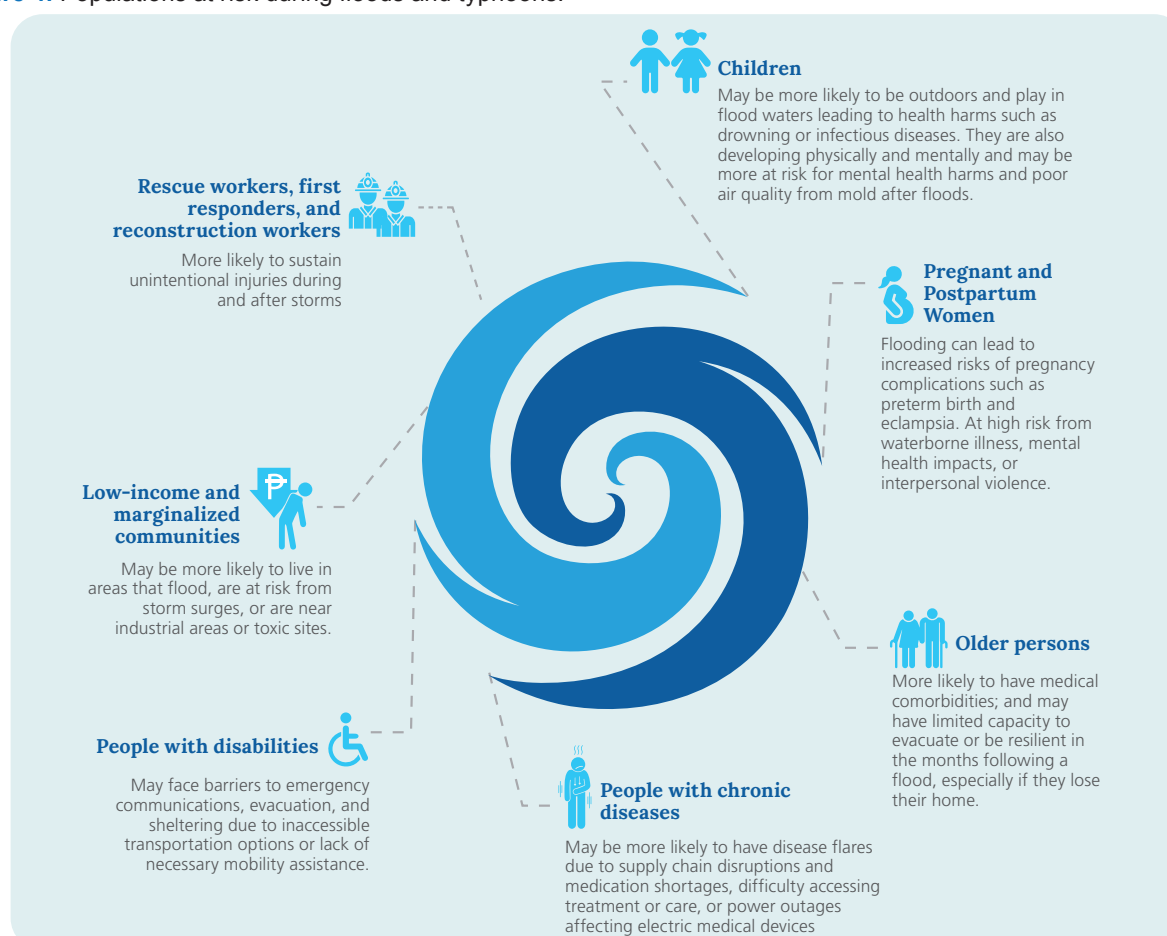


Populations at Elevated Risk During Typhoons and Floods For Providers

Some populations are at elevated risk of health problems after floods and typhoons. Patients with pre-existing medical issues, particularly those on chronic medications or other treatments, are at risk of health impacts from interruptions in their care. Children, pregnant and postpartum women, and older persons are at higher risk

of health harms due to both physiology and socially mediated risks and dependencies. Rescue workers and reconstruction workers are at risk of injuries during rescue and clean-up operations. Risks specific to each population are described in Figure 5.

Figure 4: Populations at risk during floods and typhoons.





Helping Patients Establish a Flood Action Plan

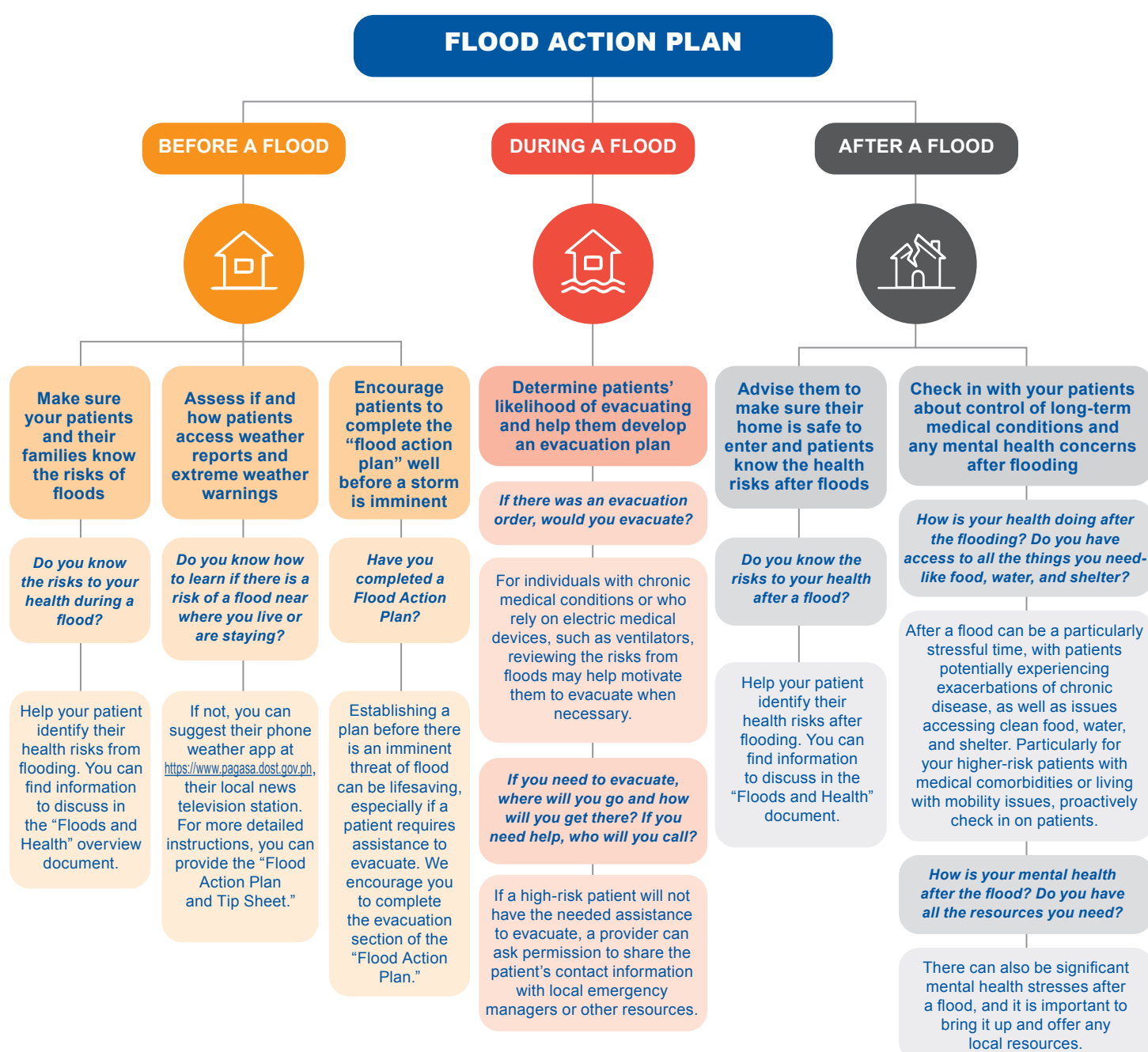
For Providers

Purpose

Flooding is increasing in frequency and severity with the changing climate leading to health harms including drowning, infectious disease outbreaks, mold infestations in buildings, mobilization of toxic substances, social upheaval, displacement, and physical and emotional trauma.

Below is anticipatory guidance to help you prepare for the completion of the “Flood Action Plan and Tip Sheet” included in this toolkit with your patients, guiding what to do Before, During, and After a Flood.

Figure 5: Flood Action Plan

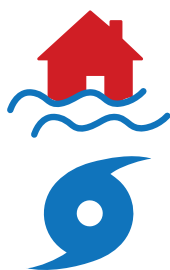


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Stay Safe During Floods and Typhoons



Flood and Typhoon Action Plan and Tip Sheet For Patients

Purpose

Use this plan to stay safe in the event of a typhoon and flooding in your area. Share this plan with everyone in your home and with friends and family members. Review this information every year so that everyone is ready to act when a flood occurs.

Floods are Dangerous to Your Health

Typhoons and flooding pose significant risk to health and wellbeing. Typhoons and flooding can occur simultaneously, while flooding may occur due to a variety of sources, such as heavy precipitation, infrastructure failure, or earthquake-related tsunamis. Floodwaters can pose an immediate risk of drowning or injury, however, there may be additional risks in the days and weeks after a flood. Medical care might be disrupted, critical supplies scarce, and a lack of clean water. Typhoon winds can damage structures and cause injuries. Flood waters can harbor disease or obscure dangerous objects. Mold in homes can be toxic and lead to breathing problems. Additionally, many people experience stress and anxiety during this difficult time, which can create or worsen mental health conditions. The physical, emotional, and financial effects of flooding often impact entire families, making it essential to maintain mutual care and seek

help when needed. Recognizing the family-oriented nature of Filipino communities, it is vital to address these interconnected challenges to support collective recovery and well-being.

Before a Flood

1. Know When Flooding May Occur

Monitor weather updates and flood warnings issued by the Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAGASA) through their website at <https://www.pagasa.dost.gov.ph/>, mobile applications, or local new platforms, such as radio, television, or social media. Sharing updates with family and neighbors helps everyone stay prepared and strengthens community resilience.

Pay close attention to rainfall warnings issued by the National Disaster Risk Reduction and Management Council (NDRRMC), particularly orange and red rainfall advisories sent via SMS.

RAINFALL WARNING ICONS

ICON	DESCRIPTION	FORECAST
	Advisory Community AWARENESS	Flooding is POSSIBLE in low-lying areas and near river channels.
	Alert Community PREPAREDNESS	Flooding is THREATENING in low-lying areas and near river channels.
	Emergency Community RESPONSE	SEVERE Flooding is EXPECTED. Take necessary precautionary measures.

Adapted from guidance from [PAGASA](https://www.pagasa.dost.gov.ph/)

Check official advisories and announcements from your city or municipality through their social media channels, or community announcements to stay informed about localized updates and instructions.

You can check the flood risk for your home's location on this website at <https://noah.up.edu.ph/know-your-hazards/flood>. This site will tell you the likelihood that flooding will occur at your address.

2. Enable Emergency Alert and Stay Connected

PAGASA does not currently require or offer registration for emergency alerts. These alerts are automatically broadcast to mobile devices through the Emergency Cell Broadcast System. This system ensures that everyone in an affected area receives timely alerts without the need to sign up.

To receive emergency alerts:

1. Enable Emergency Alerts on Your Device:
 - For Android: **Go to Settings > Safety and Emergency or Wireless Emergency Alerts** and turn on notifications.
 - For iOS: Go to **Settings > Notifications**, then enable **Emergency Alert** at the bottom.
2. Stay Connected:
 - Ensure your mobile device has an active signal and is compatible with the cell broadcast system.
 - Check PAGASA's social media pages and website for additional updates.

- Staying informed reduces fear and anxiety, and helps you prepare with confidence. Share updates with loved ones and your neighbors – staying connected provides support and strengthens community resilience.

3. Know Your Evacuation Route and How You Will Evacuate (Car, Transit, Etc.)

Coordinate with your Local Government Unit (LGU) or Barangay to identify designated evacuation areas and the official routes to follow in the event of an evacuation order. If you own a vehicle, ensure that the fuel tank is fully stocked in preparation for potential evacuation. If possible, have a backup route in mind in case a route is blocked by debris or floodwater.

4. Have a “Go Bag” Ready

This is a list of things to have ready in case of evacuating from flooding. Keep everything together, ideally in a single bag, so you can easily grab it to go. You should prepare a Go Bag if you need to shelter in place with supplies for a week. See “Making Your Own Family Go Bag” for more information.

Pack a waterproof bag that anyone in the family can easily carry. Ensure it is always complete with essential items like, food and medicines, toiletries, important documents, and emergency tools, and place it in a location where it can be easily accessed during an emergency. Adding small comfort items, like a family photo or a child's toy can help reduce stress during evacuation.

FOOD AND MEDICINES

- Drinking water and food that does not spoil easily
- First aid kit and medicines: Alcohol, band-aids, antiseptics, bandage, tweezers, and the list of medicines taken every day with dosage

IMPORTANT DOCUMENTS

- Passports, birth and marriage certificates, property and insurance documents, medical records, family photo, etc.
- Government-issued IDs or IDs with blood type and emergency contact details
- Enough money for basic needs, ATM card, or Passbook



TOILETRIES

- Clothes, antibacterial soap, toothbrush and toothpaste
- COVID-19 safety kit (face masks, alcohol or hand sanitizer)
- Mosquito repellent, Menstrual pads, diapers, wet wipes

EMERGENCY TOOLS

- Blanket, raincoat, paracord
- Radio, flashlight (solar or battery operated) with back-up batteries, fully-charged power bank, whistle
- Pen and notebook, list of emergency contact numbers including barangay and LGU

5. Be Prepared and Alert Even Before the Typhoon or Flooding

- Check for damage to the ceiling, doors, and windows, and arrange for immediate repairs. Boarding up windows is strongly recommended for safety. Secure the roof and any loose objects that could be blown away, and trim tree branches that may fall.
- Ensure your **Go Bag** is complete, and your mobile phone and power bank are fully charged. Store important documents in airtight containers or waterproof bags.
- Monitor tropical cyclone advisories and evacuate immediately if advised by the NDRRMC, LGU, or Barangay. If your area is prone to flooding, elevate valuables to prevent water damage. Identify a household emergency contact and discuss evacuation plans in advance.
- Explain emergency plans to children and older persons, emphasizing the importance of staying informed and prepared.
- The best time to evacuate is before the typhoon makes landfall to avoid blocked roads due to strong winds, flooding, or debris. If leaving, secure your home by turning off electricity, gas, and water supply, and locking doors before departure.

6. Plan for Power Outages

- Back up **medical equipment that needs electricity or batteries**. If you can't purchase

backup power, identify a location that has backup power, and arrange ahead of time to charge medical equipment at the location.

- Have a backup cooler with ice for **medications that require refrigeration** and a thermometer to check the temperature inside the cooler.
- If you get water from a **well with an electric pump**, have a backup plan to have enough water to drink if the power goes out. You may consider using water purifying tablets as an alternative solution, or water filter straw, if available.
- See more information on the "General Power Outage Guidance Sheet" on page 45.

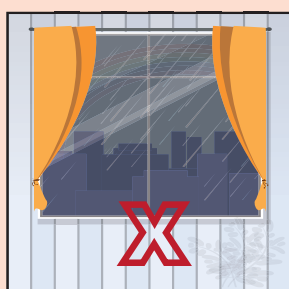
7. Join Your Local Emergency Response Team to Build Community Resilience

Consider joining your local emergency response team as a volunteer or participating in community drills and simulations to help prepare for future emergencies. These activities build confidence, reduce panic, and strengthen community resilience, ensuring a more coordinated and effective response when disasters occur.



During a Typhoon

Stay away from windows as blowing debris can shatter glass.



Have a plan for how you will get to higher ground if floodwaters rise. This could be a second story, or onto your roof.



Go to higher ground.

If you must go in floodwaters, use a long, sturdy stick or pole to test the ground ahead of you for holes, drop-offs, or obstacles. Avoid fast moving waters.



If possible, put on a life jacket or hold onto something buoyant. Try to get to dry land or on top of a sturdy structure as soon as possible.

During a Flood and Typhoon

Pay attention to local media outlets for evacuation orders from local government authorities.



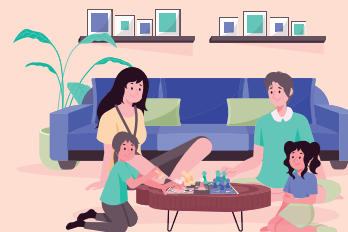
Know how to get out of your house – where the exits are and what windows can be opened.

Evacuate when it is recommended, and remain calm. If no evacuation order is in place, stay indoors in a safe location.



Keep your Go Bag with you and ensure your family knows what to do if the situation worsens.

Reassure and explain to the children that there is nothing to fear because the family is prepared.



Try to provide activities, games, or tasks for children to distract from fearful thoughts.

Check in with children and encourage them to express their thoughts and feelings through talking, drawing, or playing. It's normal for them to feel scared or confused. Providing comfort, reassurance, and a predictable routine can help them feel safe. If they show changes in behavior like difficulty sleeping, irritability, or

clinginess, respond with patience and support. Answer any questions they have where you can provide clarity. Offering comfort and reassurance helps them cope with the experience while encouraging play and positive interactions helps children recover emotionally post-disaster.

My emergency contact person is:

Their phone number is:

Identify both a preferred and backup evacuation location that has power if you need it. If possible, these two locations should be in different directions from your home.

My evacuation locations are:

1.

2.

If I need to evacuate, the vehicle/transport I will use is:

Never drive, walk, or take transport into standing water.

If I need help evacuating, I can call:

Name

Phone

1.

1.

2.

2.

If I do not have backup power and rely on electronic medical equipment, I can go to charge/run equipment when the power goes out at:

Dangers of Walking Through Floodwaters



Following a 17% rise in leptospirosis cases nationwide in August 2024, as reported by the Department of Health, the Metropolitan Manila Development Authority (MMDA) introduced Regulation No. 24-003 (Series of 2024). This regulation bans Metro Manila residents from playing, gallivanting, and/or swimming for fun in floodwaters to prevent a further spike in leptospirosis cases and fatalities in the Philippines.

Floodwaters may look passable, but they hide dangerous risks like strong currents, deep holes, sharp objects, and harmful bacteria. Walking, swimming, or driving through floodwaters can result in serious injury, illness, or even loss of life. The best way to protect yourself and your family is to avoid floodwaters entirely. If avoidance is not possible, wear rain boots for protection. If you feel anxious, take slow, deep breaths to stay calm and think clearly.

Stay in a safe, dry place and wait for help. If you must evacuate, use designated evacuation routes or call for assistance. Your safety is more important than reaching your destination quickly.

Photo/Americares

After a Flood

1. Know Your Health Risks During and After Floods and How to Minimize Them

Flood cleanup is hard work. Pace yourself, take breaks, and drink plenty of water to reduce the likelihood of injury.

Avoid indoor fumes. Never burn fuels, run a generator, or operate a vehicle in a closed space. This can lead to deadly carbon monoxide poisoning.

Dust and debris can create unhealthy air. Check air quality and wear a mask to protect your lungs.

Have a backup plan if you need electricity for medical devices, medicine, or heating/cooling.

Flooding can cause mold growth, which can affect breathing and cause headaches. Wear a face mask when cleaning up.

Beware of falling hazards. Damaged buildings, trees, and poles can be dangerous. Do not enter damaged buildings until they have been declared safe.

Stay away from damaged power lines or water near them. Avoid using electrical appliances when they're wet.

Turn around, don't drown. Standing water is dangerous. It can hide holes, downed power lines, and sharp objects. Never walk or drive through it.

Floodwater can make you sick. It often carries sewage, germs, and toxic chemicals. Mosquitoes that spread disease breed in it.

Protect yourself from contaminated water. After a typhoon, follow local authority guidance on whether to use bottled or boiled water. Boiling may not remove chemical contaminants.

*To manage mold in your home, see [cdc.gov/mold/pdfs/You Can Control Mold.pdf](https://www.cdc.gov/mold/pdfs/You%20Can%20Control%20Mold.pdf) or [epa.gov/mold/brief-guide-mold-moisture-and-your-home](https://www.epa.gov/mold/brief-guide-mold-moisture-and-your-home).

Visit [DOH](#), [PAGASA](#), [NDRRMC](#), and LGU to learn more about risks to your health from floods and typhoons.

After flooding can be a stressful time for your health. Speak with your health care team about taking care of your long-term medical conditions and any mental health concerns after flooding.

Make sure it is safe before re-entering your home.

2. Make Sure Everyone is Safe

- Listen to the news and make sure it is safe to go outside.
- If you have evacuated, make sure the area is safe before returning home.
- Check on your children to provide emotional support and understand how they're coping.
- Inspect or have the power lines professionally checked to ensure they are safe to use.

After a Flood and Typhoon

Typhoons and floods can affect your physical and mental health. It's normal to experience stress, anxiety, or difficulty sleeping after a flood and typhoon. Take care of yourself by resting, staying hydrated, and seeking medical care when needed. Reach out to family, friends, or community support groups to talk about your experience. If distress persists, consult a health professional or use simple coping strategies like deep breathing and staying connected with others.



Floodwater may contain harmful bacteria, chemicals, and sewage. Avoid contact whenever possible, if contact is unavoidable, wear properly fitting rain boots for protection.



Wash your hands with clean water and soap, especially before eating and after coming into contact with floodwater or contaminated surfaces. If clean water is not available, use alcohol or hand sanitizer.



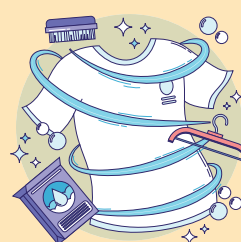
Drink only boiled water, or bottled water if there has been a chemical contamination. Follow local authority guidance on when it's safe to drink the water.



Consume only safe, sealed, and non-perishable foods. Discard any food that has come into contact with floodwater.



When toilets are not functional, adopt the "Poo Bag Approach." This method involves using sturdy, sealable bags to safely collect and store human waste away from water sources, preventing contamination and maintaining hygiene until proper disposal is possible.



Wash clothes, towels, and bedding using hot water and soap, or discard items that have been soaked with floodwater.



Regularly bathe with clean water to prevent infections and skin rashes.

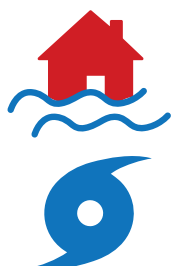


Clean and disinfect surfaces that have come into contact with floodwater using a bleach solution to prevent the spread of disease.

NOTES:

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Helping Other People Stay Safe Before, During, and After Floods and Typhoons



Flood and Typhoon Health Guide For Communities

Purpose

Floods and typhoons are among the most devastating disasters, often leaving communities with severe damage, loss, and disruption. Preparedness is essential not only to protect lives but also to reduce the long-term impacts of these events. Remember, taking care of yourself is a priority — your well-being is vital so that you can help or support your family and help others in need.

In times of crisis, working together as a community creates a greater impact than acting alone. By joining forces, sharing resources, and offering support, communities can save more lives, recover faster, and become stronger in the face of hardship.

Floods and Typhoons Can Harm People Around You

You can help them stay safe.

- Some people, including older persons, persons with disabilities, children, and those who are pregnant, or have medical conditions such as heart disease or mental health conditions are more vulnerable.
- It is essential to inform others, especially the vulnerable people, about upcoming floods and typhoons, assist them in preparing and help them stay safe during these disasters. Providing clear, calm and reassuring information can reduce panic and help people feel more in control.
- Floods and typhoons are dangerous and can disrupt access to clean water, medical services, and safe housing. These disasters can result in injuries, infections, interruptions in medical care, and other life-threatening conditions.
- Supporting people during and after floods and typhoons can help prevent physical and mental health problems, injuries and death. The steps you take to help others can have a very positive impact on their lives. Providing emotional support such as offering reassurance, checking in on neighbors, can also help reduce distress and promote recovery. The steps you take to help others not only ensure safety but also strengthen community resilience and mental wellbeing.

Key Safety Tips for Floods and Typhoons

Before a Flood and Typhoon

- Take part in emergency preparedness activities, such as emergency simulation exercises organized by your barangay or municipality/city to prepare for disasters.
- Help people be aware of dangerous weather forecasts. PAGASA provides forecasts for dangerous typhoons and heavy rainfall that can lead to flooding. You can check these on their website: <https://www.pagasa.dost.gov.ph/>, monitor local radio, and other communications. If a dangerous event is predicted, share this information with members of your community, such as posting information in gathering locations or sharing via social media, to make sure that everyone is aware and prepared.
- Help in disseminating Information, Education, and Communication (IEC) materials on what to do, before, during, and after floods and typhoons to the community especially to people living in high-risk areas. In addition, share information on accessible evacuation routes advised by your barangay or LGU.

- Recognize which family, friends, or neighbors may need help when evacuating. This may be mobility issues, having medical equipment, or other special needs.
- Prepare a Go Bag and assist others in doing the same. By preparing a Go Bag in advance, you'll be ready to evacuate when a disaster strikes. Helping others prepare their own Go Bags ensures they

are also ready for evacuation. These bags should include essential items to keep you safe and healthy, such as medications, important documents, and other necessities. For more details on what to include, please refer to the diagram. If you know individuals or families who are unable to afford a Go Bag, kindly contact your barangay officials or local government unit for assistance.

FOOD AND MEDICINES

- Drinking water and food that does not spoil easily
- First aid kit and medicines: Alcohol, band-aids, antiseptics, bandage, tweezers, and the list of medicines taken every day with dosage

IMPORTANT DOCUMENTS

- Passports, birth and marriage certificates, property and insurance documents, medical records, family photo, etc.
- Government-issued IDs or IDs with blood type and emergency contact details
- Enough money for basic needs, ATM card, or Passportbook



TOILETRIES

- Clothes, antibacterial soap, toothbrush and toothpaste
- COVID-19 safety kit (face masks, alcohol or hand sanitizer)
- Mosquito repellent, Menstrual pads, diapers, wet wipes

EMERGENCY TOOLS

- Blanket, raincoat, paracord
- Radio, flashlight (solar or battery operated) with back-up batteries, fully-charged power bank, whistle
- Pen and notebook, list of emergency contact numbers including barangay and LGU

During a Flood and Typhoon

- Assist people who may have difficulty evacuating. Some people, including older persons, persons with disabilities, and families may have difficulty leaving their homes and reaching safety. You can save lives and improve health outcomes by helping people evacuate from their homes and reach safe locations.
- If people refuse to evacuate despite advice from local authorities, you can use the below statement as an example to encourage them:

"Your safety and the well-being of your family are most important. Staying behind in dangerous conditions puts not only yourself at risk but also those you love. Evacuating ensures that you can be there for your family—healthy and unharmed—when they need you most. The earlier you leave, the safer it will be for everyone, and you'll have peace of mind knowing you're protecting your family's future. Material things can be replaced, but lives cannot. Please prioritize your family's safety and evacuate now."

- It may also be helpful to talk with them about why they are not evacuating. Some people may have problems related to transportation, finances, places to stay, security, and responsibilities for other people or animals. If you can help them with these issues, they may be able to evacuate.
- Recognize when to assist others in accessing medical care. Floods and typhoons can cause injuries, infections, mental health issues, and disruptions to regular medical services. Ensure that people receive medical attention and necessary medications if they develop concerning symptoms, their condition worsens or does not improve, or if they are at risk of running out of essential medicines. Consider sharing a list of emergency hotline numbers as to where to contact in case of immediate medical needs.
- In evacuation centers, advocate for the establishment of accessible features to local authorities and other organizations, such as a format everyone can understand, gender-specific toilets, and infrastructure designed for persons with disabilities.

- If possible, provide emotional support and reassurance to those experiencing fear, distress, or uncertainty. Typhoons and floods can be overwhelming, and some people may feel paralyzed by fear or anxiety. Offering a calm presence, listening to their concerns, and validating their emotions can help them feel safer and more supported during evacuation.
- Stay informed of the availability of safe drinking and wash stations. Share this information with those most in need.
- Encourage people in the community to promote or organize community pantries or mobile kitchens in case local food supplies become limited.
- Foster a sense of community connection during recovery. Organizing shared meals, checking in on neighbors, and creating safe spaces for people to talk about their experiences can help reduce stress, rebuild trust, and promote collective healing after a typhoon and flood.

After a Flood and Typhoon

- Support the barangay, the LGU, or the Municipal/ City Social Welfare and Development in developing community meal distribution plans, especially for vulnerable groups.



Helping People With Specific Health and Safety Needs For Communities

It is important to check on individuals in the categories listed below before, during, and after a flood or typhoon to ensure their safety and strengthen community resilience. These groups may be at a higher risk of drowning and may face challenges in evacuating. Providing them with timely information and assisting them in reaching safe locations, such as higher ground,

a family member's home, or an evacuation center, can significantly impact their well-being. Additionally, those who rely on medications, medical equipment, or assistive devices like wheelchairs may need extra support to gather and evacuate with these essential items, or to get replacements after a flood or typhoon.



Older Persons:

Older persons may have difficulty evacuating. Helping older persons reach a safe location, such as a higher ground, a family member's home, or an evacuation center, can make a big difference. Be sure to check if they need assistive devices or if they have brought medications with them.



People Living With Disabilities:

People living with disabilities may have difficulty evacuating. Helping them reach a safe location, such as a higher ground, a family member's home, or an evacuation center, can make a big difference. Be sure to bring any assistive devices such as wheelchairs and any medications they need with them if at all possible.



Children:

Children are at high risk during floods and typhoons. They are also at high risk of drowning, so helping them access elevated structures and appropriate evacuation centers or shelters is very important. Help them stay with their families and access food and clean water, as these are also important for their well-being during and after these disasters.



Women:

Women, including pregnant women, are at risk of gender-based violence during and after disasters such as floods and typhoons. Providing or helping women reach safe spaces and helping them access safe toilet facilities are important. They may also be at high risk of drowning, so helping them access elevated structures and appropriate evacuation centers or shelters is very important.



People Living With Mental Health Conditions:

Floods and typhoons can worsen existing mental health conditions and create new psychological distress. Be sure to help individuals with mental health conditions by checking in on them, offering reassurance, and encouraging them to stay connected with family, friends, or community groups. Some people may struggle with disrupted routines, difficulty coping, or feelings of isolation—providing a calm presence, listening without judgment, and ensuring access to safe spaces can make a difference. Additionally, help individuals store their medications properly to prevent water damage, assist in refilling prescriptions if access to healthcare is disrupted, and share information on available mental health support services that are available.



People Living With Chronic Medical Conditions:

People living with chronic medical conditions – such as heart disease, previous history of stroke or coronary artery disease, lung disease, kidney disease, diabetes, high blood pressure, and other conditions – need to be able to access their medications during and after floods

and typhoons. They may also need additional medical attention. You can help people living with chronic medical conditions have their medicines with them when they evacuate, or at least a list of their medicines. You can also help them refill medicines or get medical attention if they have a health problem.

Preparing Health Centers for Flood and Typhoon Events



Flood and Typhoon Readiness Actions For Administrators

Purpose

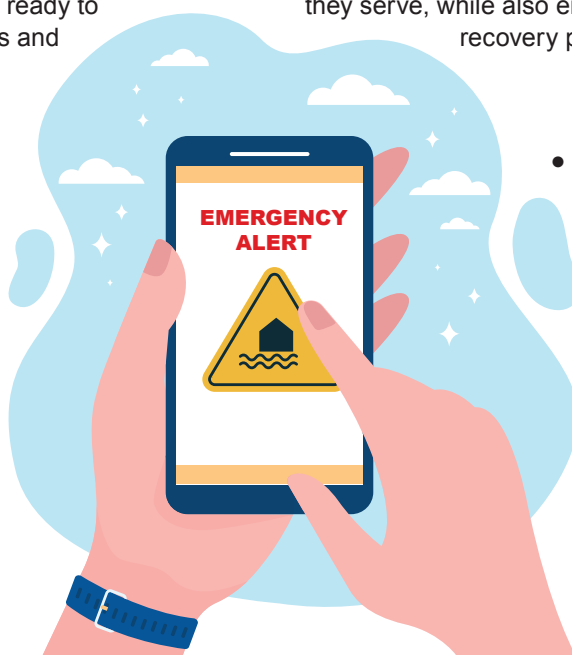
Floods and typhoons can pose significant risks to the safety, health, and well-being of patients, staff, and the community served by health care facilities. As climate change continues to increase the frequency and intensity of extreme precipitation events, it is essential for clinics to have a comprehensive plan in place to prepare for, respond to, and recover from flood events.

This Flood and Typhoon Readiness Actions document provides a step-by-step guide for facility administrators and/or the designated Preparedness Lead to ensure their clinics or health centers are ready to protect the health of their patients and staff during periods of flooding.

The plan is divided into three sections: advisory/watch, during the event, and recovery. These sections integrate both typhoon and flooding responses since these hazards often occur together and require similar preparedness actions. The actions and checklist items cover critical areas such as facility preparation, communication plans, patient and staff safety, and post-event recovery. By following the guidance outlined in this document, health care facilities can minimize the negative impacts of natural disasters on their operations and the health of the communities they serve, while also ensuring a swift and effective recovery process.

Tropical Cyclone / Flooding is Likely (Several Days Out – Active Advisory or Watch)

- Monitor PAGASA and emergency alerts for real-time updates. Review and activate facility emergency plans, ensuring all staff are informed of their roles and responsibilities.



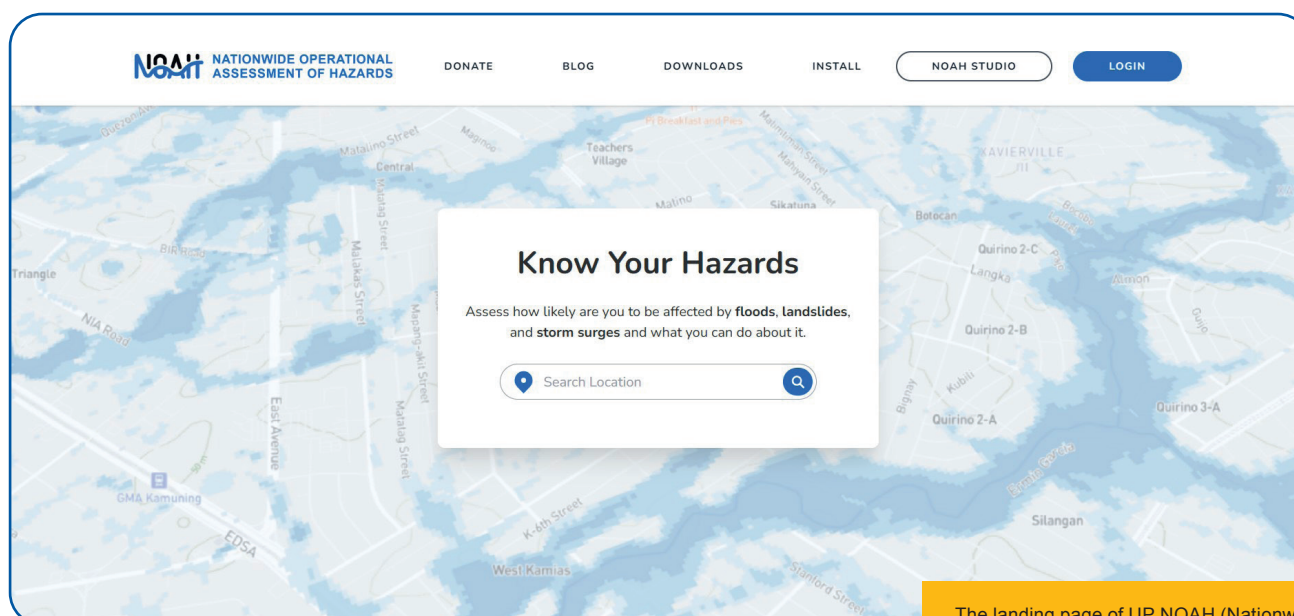
- If the facility is at risk of flooding or damage from winds, or it will be dangerous for patients to get to your facility, consider canceling/postponing non-urgent patient appointments and sending staff home early.
- Be ready to close the facility and evacuate staff immediately if necessary. Identify safe evacuation routes that avoid flooded

areas and are free from dangerous debris by coordinating with local emergency responders.

- Essential equipment, supplies, documents, and medications should be stored on a higher ground or in waterproof containers – away from windows and flood-prone areas.
- Clear exterior drains and gutters, lock and seal low-lying windows, tie down any outside furniture or decorations that may blow away, and have a water pump available if the facility is prone to basement or ground-level flooding.
- If a rainfall warning is issued, use sandbags and water barriers to prevent water from entering the facility, following guidance from local emergency management.
- Ensure emergency supplies, such as sandbags, water pumps, soap, and first aid kits, are readily available.
- Keep staff informed about the situation and reinforce safety measures, including avoiding floodwaters and seeking shelter during strong winds.
- Communicate with patients about potential service disruptions, provide safety guidance, and reschedule canceled appointments.
- Coordinate with local emergency management officials, public health officials, health care facilities, and service providers to share resources and information.
- Contact the local **Disaster Risk Reduction (DRR) Office** to arrange safe evacuation of patients and staff if needed.

Typhoon / Flood Warning or Facility Flooding

- Ensure the safety of all patients and staff and evacuate the facility if necessary. If your facility is likely to flood, seek a higher ground before flooding occurs, however, if possible, you are trapped, retreat to a higher-level of the facility or onto the roof.
- If possible, monitor the water levels and the condition of the facility's infrastructure, such as electrical systems and water supply.
- Maintain communication with staff, patients, and local emergency response organizations or agencies.
- If the facility is closed, consider transferring the main phone line to an on-call medical provider to answer patient questions.



The landing page of UP NOAH (Nationwide Operational Assessment of Hazards). This website allows users to check how an area is susceptible to weather-related extreme events, such as floods, landslides, storm surges, etc.

After the Typhoon or Flood

- After the typhoon or flood, please refer to the “Facility Repair and Re-Entry” on page 46 for guidance.
- After the risk of hazards has decreased, review and update your plans through a formal debrief and after-action review process.

NOTES:

[illegible]

Resilient Healthcare Facility



Flood Communications Templates

For Administrators

Purpose

Effective communication is crucial for health centers and clinics to ensure the safety and well-being of their patients and staff during floods. This document

provides guidance and sample messages that can be used to disseminate important information and alerts before, during, and after floods.

When Flooding is Anticipated (Flood Advisory or Watch)

Recorded Phone Message or Email – Preparedness and Staying Informed

💬

Messages

3 mins ago

A [typhoon / tropical storm / tropical depression] is expected in [impacted region]. You can read more about this alert on the PAGASA website (<https://www.pagasa.dost.gov.ph/#>), or can learn more from local authorities and media. You can look up risk for flooding at your home's location at noah.up.edu.ph. This NOAH site provides flood maps for your address. NDRRMC, CDRRMC/MDRRMC and the Weather Bureau (PAGASA) are more likely to provide accurate up-to-date information regarding evacuation statuses, protective action recommendations, and broad public guidance for facilities and individuals.

💬

Messages

3 mins ago

You can check for Weather Advisory issued by PAGASA on Rainfall Alert using your phone, computer, or local news station. You can get more information on the website <https://www.pagasa.dost.gov.ph/>.

In case you need to evacuate, keep a kit of emergency supplies ready so you can easily grab and go.

[Name of RHU] will remain [open/closed]. If open, specify hours and services provided.

!

🔔

New Messages

To: jdelacruz@yahoo.com

cc | bcc

Subject: **WEATHER ADVISORY**

It is important to know the difference between a flood warning and a flood watch.

Flood warning is issued when flooding is happening or will happen soon. Some roads will be flooded.

Flood watch is issued when flooding is possible. Stay tuned to radio/TV/news media and be ready to seek higher ground.

Send

Draft

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A

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★

🗑️

Floods, typhoons, and tropical storms create conditions where injuries are more common. Know the risks to your health from floods and how to minimize them:



Turn around when there is water on the road – As little as 15 cm of water can cause you to lose control of your vehicle.



Power outages – If you use electric medical devices, you will need to have a backup power plan in case you lose power. Refer to “Health Center Power Outage Preparedness and Response” on page 48.



Infections – Standing water contains bacteria and viruses that can cause disease. It can also serve as a breeding ground for disease-transmitting mosquitoes.



Poor water quality – After severe storms, water may not be safe to drink, especially water from private wells. Listen for boil water advisories. Throw away any food and bottled water that may have contracted floodwater.



Mold – Molds can grow after flooding, which can then cause coughs, congestion, and headaches as well as asthma flares.



Electrocution – Strong winds can knock down or damage power lines. DO NOT touch any downed power lines or wade into standing water that power lines may have fallen into because this can electrocute you.



Turn off the power to your appliances at the circuit breaker or fuse box if your home has flooded because wet appliances may also pose an electrocution risk.

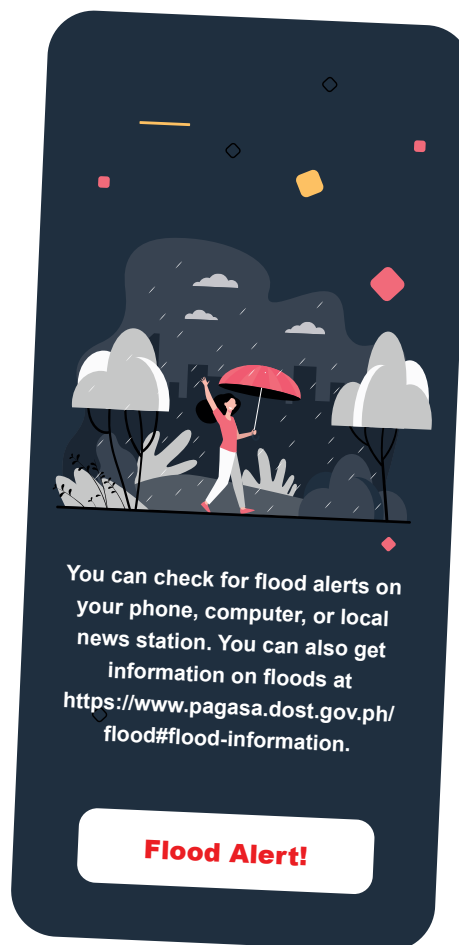
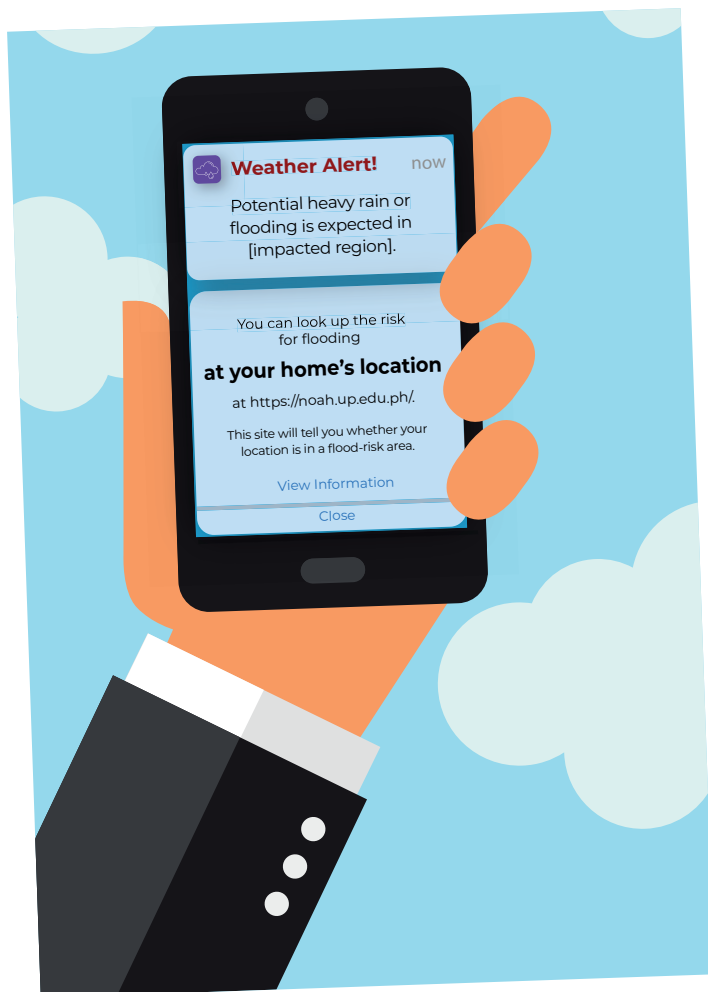


Falling trees, utility poles, and buildings – They can become unstable and fall on people and property.

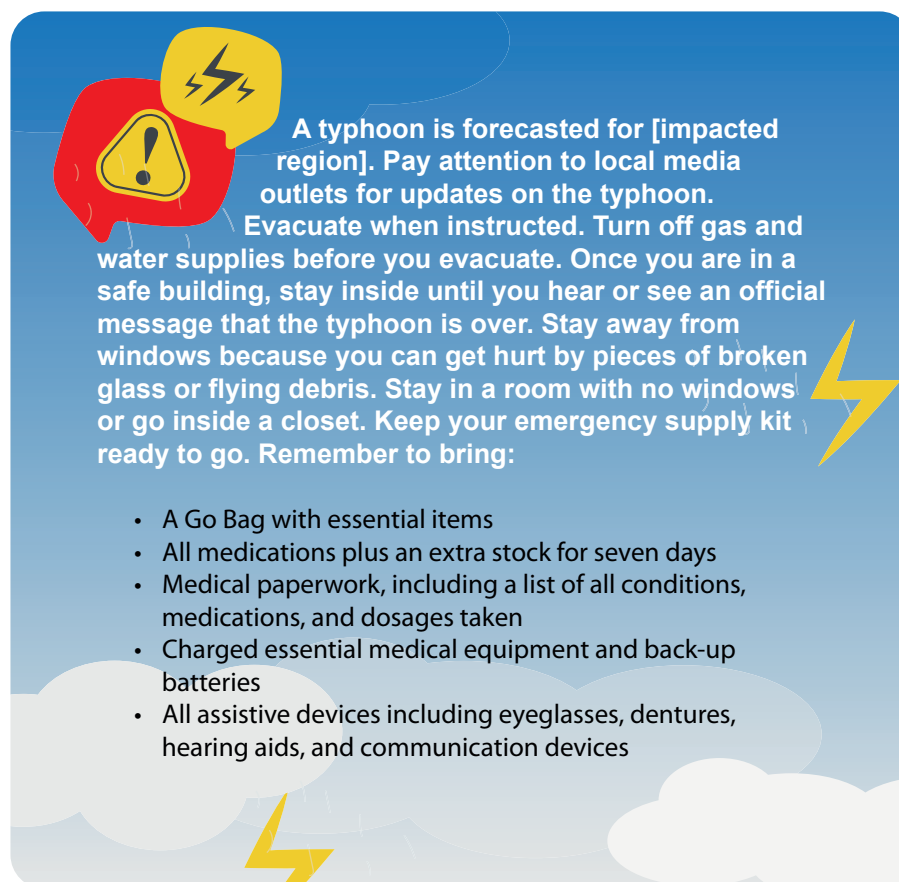


Carbon monoxide exposure – If you lose power, do not cook by burning fuels such as wood or propane indoors. Additionally, never use generators indoors or near open windows. These can lead to carbon monoxide poisoning.

Social Media Post or Text Messages – Preparedness (1-5 Days in Advance)



Social Media Post or Text Messages – Prepare for Evacuation

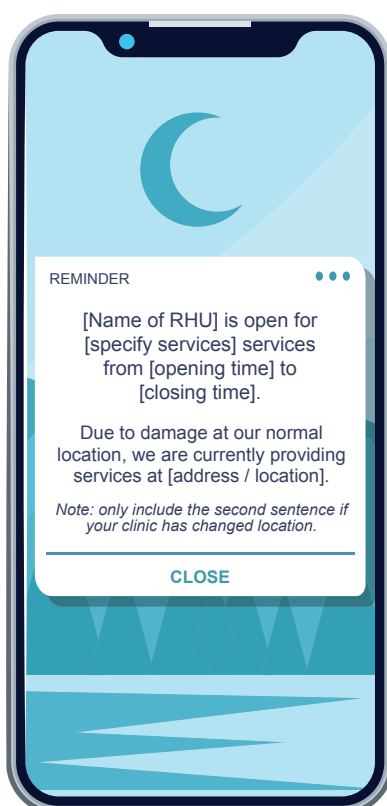


A typhoon is forecasted for [impacted region]. Pay attention to local media outlets for updates on the typhoon. Evacuate when instructed. Turn off gas and water supplies before you evacuate. Once you are in a safe building, stay inside until you hear or see an official message that the typhoon is over. Stay away from windows because you can get hurt by pieces of broken glass or flying debris. Stay in a room with no windows or go inside a closet. Keep your emergency supply kit ready to go. Remember to bring:

- A Go Bag with essential items
- All medications plus an extra stock for seven days
- Medical paperwork, including a list of all conditions, medications, and dosages taken
- Charged essential medical equipment and back-up batteries
- All assistive devices including eyeglasses, dentures, hearing aids, and communication devices

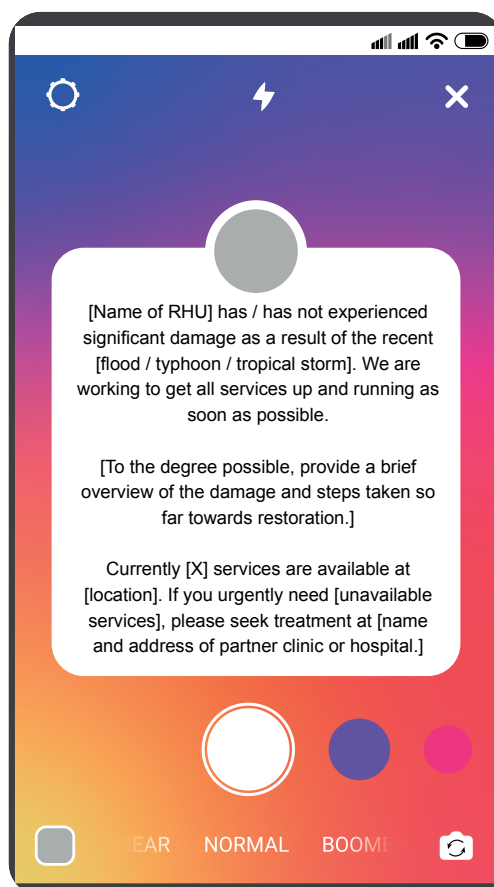
During a Flood, Typhoon, or Tropical Storm

Recorded Phone Message or Email – Prepare for Evacuation

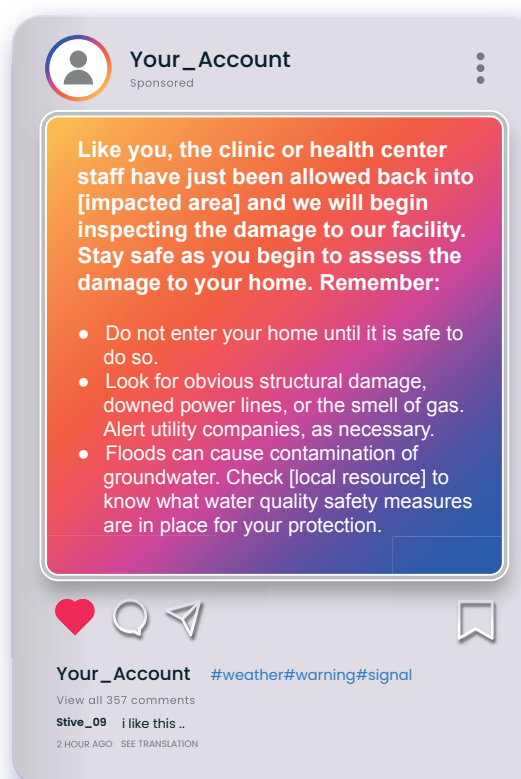


After a Flood or Typhoon

Recorded Phone Message or Email – Clinic Status



Social Media Post or Text Messages – Clinic Status and Safety



NOTES:

[illegible]

Appendix for How to Use This Toolkit

Appendix A

Designate Preparedness Lead and Form a Resilience Committee

Designating a Preparedness Lead is crucial for coordinating weather preparedness and response tasks within the clinic or health center. This role ensures there is a clear point of contact responsible for overseeing the development and implementation of weather-related policies and procedures described in this toolkit.

The Preparedness Lead can be a health care provider, qualified safety and health professional or a facility manager. Having a primary and alternate Preparedness Lead helps maintain continuity in case of staff absence.

The Preparedness Lead and their alternate should regularly monitor weather forecasts and alerts for all types of hazards, including extreme heat, wildfires, hurricanes, and floods (see PAGASA at <https://www.pagasa.dost.gov.ph/>). They should be signed up for local emergency alert systems to ensure they receive location-specific hazards alerts. While some systems are automatic, many are opt-in and require visiting the local emergency management website to sign up.

The Preparedness Lead(s) should oversee emergency preparedness and response efforts within the clinic or health center, ensuring that staff are informed about safety procedures, expectations, available resources, and the designated personnel responsible for these operations.

During an extreme weather event, the Preparedness Lead(s) should monitor impacts on transportation and utilities that may affect staff and patients getting to the clinic or health center and its ability to operate. They should also reach out to Emergency Operation Center and community partners to confirm the availability of community resources, such as evacuation centers. This information should be shared with staff, and patients.

The Primary Preparedness Lead for our health center is: _____

The Secondary Preparedness Lead for our health center is: _____

Preparedness Lead

- Identify and register for emergency notifications and warnings from national, provincial, and city/municipal emergency management.
- Identify the potential hazard risk for your facilities by researching hazard maps <https://noah.up.edu.ph/> and build collaborative relationships with your national, provincial or city/municipal emergency management office to assist with preparedness and response planning.
- Establish a communication plan to rapidly notify and update both employees and patients in the event of extreme weather conditions.
- Determine contingency plans, such as identifying alternative locations for the health center in case the facility becomes inaccessible.
- Create remotely accessible backups of all emergency contact and response information to allow for access in the event the facility is inaccessible. Patient information and records should be securely stored off site or in the cloud.
- Support clinic or health center staff in enhancing their personal and family preparedness, ensuring they feel confident and ready for emergencies.
- Brief staff on local risks and develop inclusive plans and resources tailored to your clinic or health center's specific patient population, location, and unique context. Clearly define staff expectations and review them annually.

Committee

With support from the head of facility, the Preparedness Lead should establish a committee to oversee the development and implementation of policies for facility improvements and cost planning for extreme weather-related emergencies. If possible, this committee should be connected to longer-term clinic or community health center improvements and broader community resilience efforts. The committee should work in close collaboration with the head of the facility. The committee can help:

- Advise on infrastructure improvements and develop longer-term improvement plans that align with emergency preparedness, resilience recommendations, and the clinic or health centers longer-term strategic goals.
- Develop strategies for procuring, replacing, and maintaining infrastructure. This may include phasing out energy intensive or polluting equipment and transition to sustainable, renewable energy sources.
- Plan the acquisition and review of emergency supplies, such as water, food, first aid kits, and backup power sources.
- Support the development and implementation of clinic preparedness programs: staff training, exercises, resource acquisition, plan reviews and updates.

By establishing a dedicated Preparedness Lead and committee, clinics and health centers can ensure a comprehensive and coordinated approach to preparing for and responding to the various weather-related hazards.

Appendices for Providers

Appendix A

Relevant Clinical Practice Guidelines from the Department of Health of the Philippines



Clinical practice guidelines developed by the Department of Health of the Philippines and collaborating organizations are available for a variety of medical conditions or situations that may be relevant following floods and typhoons. The full list of clinical practice guidelines is available from the Department of Health website (<https://doh.gov.ph/dpcb/doh-approved-cpg/>); links are provided to the most relevant content here:

CPG: Screening for Mental Health and Addiction

<https://drive.google.com/file/d/1Nq-QO0UYMh0MiLWeKmO8CSdcuZyFdlbg/view>

CPG: Management of Acute Infectious Diarrhea in Children and Adults

<https://www.psmid.org/cpg-for-acute-infectious-diarrhea/>

CPG: Diagnosis, Management, and Treatment of Typhoid Fever in Adults

<https://www.psmid.org/diagnosis-treatment-and-prevention-of-typhoid-fever-in-adults-2017/>

CPG: Diagnosis and Treatment of Adult Tuberculosis

<https://drive.google.com/file/d/1v9lVYXYiOjOp01CKSEUkruSM7cHvSoP5/view>

CPG: Diagnosis, Management and Prevention of Dengue for Adult and Pediatric Filipinos in the Primary Care Setting

https://drive.google.com/file/d/1jHeKHrAli_ih9655DZ8K5GcHkQPDv8v9/view

CPG: Immunization for Adults

<https://drive.google.com/file/d/15bZXoiltUJxGMlp5wgOMxl70tY6PTpIE/view>

Appendix B

Other Relevant Guidelines for Specific Flood-related Health Conditions



Infectious Diseases

- Yonson, R. (2018). Floods and Pestilence: Diseases in Philippine Urban Areas. *Economics of Disasters and Climate Change*, 2(2), 107–135. doi:10.1007/s41885-017-0021-2

Trauma

- WHO Guidelines for Essential Trauma care: <https://www.who.int/publications/i/item/guidelines-for-essential-trauma-care>

SSTIs

- The Philippine National Antibiotic Guidelines: <https://ritm.gov.ph/national-antibiotic-guidelines-2017/>

Drowning

- US Military JTS CPG for Drowning: https://jts.health.mil/assets/docs/cpgs/Drowning_Management_17_Mar_2025_ID64.pdf
- Wilderness Medical Society Practice Guidelines for Treatment and Prevention of Drowning: <https://journals.sagepub.com/doi/full/10.1016/j.wem.2019.06.007>

Electrocution

- Emergency Medicine Practice Guide Evidence Based Review of Electrical Injuries: <https://med.fsu.edu/sites/default/files/userFiles/1118%20Electrical%20Injuries%20EMP.pdf>

Pneumonia

- Philippine Society for Microbiology and Infectious Diseases CPG for Management and Prevention of Adult Community Acquired Pneumonia: <https://www.psmid.org/wp-content/uploads/2021/12/2020-Community-Acquired-Pneumonia-Clinical-Practice-Guidelines.pdf>

Leptospirosis

- PhilHealth Policy Statement: https://www.philhealth.gov.ph/partners/providers/pdf/Leptospirosis_Policy_Statements.pdf
- Philippine Society for Microbiology and Infectious Diseases CPG for Leptospirosis: <https://www.psmid.org/wp-content/uploads/2020/03/CPG-Leptospirosis-2010.pdf>

Hepatitis E

- WHO fact Sheet: <https://www.who.int/news-room/fact-sheets/detail/hepatitis-e>
- US CDC Guidance: <https://wwwnc.cdc.gov/travel/yellowbook/2024/infections-diseases/hepatitis-e>

Hepatitis A

- WHO fact sheet: <https://www.who.int/news-room/fact-sheets/detail/hepatitis-a#:~:text=Treatment,liver%2C%20e.g.%20acetaminophen%2C%20paracetamol>
- US CDC Clinical Care guidance: <https://www.cdc.gov/hepatitis-a/hcp/clinical-care/index.html>

Emergency Kit Checklist

- UNICEF go bag guidance: <https://www.unicef.org/philippines/emergency-go-bag-checklist>

Vaccination

- CPG for Adult Immunization: <https://www.psmid.org/clinical-practice-guidelines-for-adult-immunization-2018>

Appendix C

Anticipatory Guidance Template



The following questions are a template to help health professionals provide anticipatory guidance to help their patients prepare for typhoons and floods.

Part 1: Help Patients Understand Their Risk

Ask: Do you know the risks to your health during a flood or typhoon?

- Help your patient identify their health risks from flooding and typhoons. Examples include drowning, injury, and infections. You can find information to discuss in the list of health impacts provided earlier in this document. IEC materials are also available to help guide this conversation.

Ask: Do you know how to check if there is a risk of flooding or typhoon impacts where you live or work?

- If not, you can suggest PAGASA or local television or radio stations. Encourage patients to take steps to stay safe, such as evacuating from low-lying areas before a storm actually occurs, at which point it may be too late.

Part 2: Help Patients Know What to Do During a Flood or Typhoon

Ask: Have you planned what you will do if there is a flood or typhoon?

- Establishing a plan before there is an imminent threat can be lifesaving, especially if a patient requires assistance to evacuate. Help patients identify critical actions (evacuation, sheltering, etc.) ahead of time.

Ask: If there was an evacuation order, would you evacuate?

- For individuals with physical or medical vulnerabilities, reviewing the risks from floods and typhoons may help motivate them to evacuate when necessary.

Ask: If you need to evacuate, where will you go, and how will you get there? If you need help, who will you call?

- If a high-risk patient will not have the needed assistance to evacuate, a provider can ask permission to share the patient's contact information with local emergency managers or other resources.

Ask: Have you prepared an Emergency Kit or Go Bag, including important documents, supplies, and medications?

- If a patient has not made an emergency kit/Go Bag, you can advise them on being ready to evacuate with critical medicines, documents, and other items; consider providing materials on individual disaster preparedness actions, including emergency kit/Go Bag checklists.

Part 3: Help Patients Know How to Stay Safe After a Flood or Typhoon

Ask: Do you know the risks to your health after a flood or typhoon?

- Help your patient identify their health risks after flooding and typhoons. Advise patients that the following days and weeks can be a particularly stressful time, with patients potentially experiencing mental health impacts, exacerbations of chronic disease, and issues accessing clean food, water, and shelter. You can find additional information to discuss in the section on the health impacts of flooding earlier in this document.

Ask: Do you know that damaged or flooded housing can be dangerous to your health?

- Advise them to make sure their home is safe to enter after a flood or typhoon, and to have a qualified person check for structural problems and for wet areas that can lead to the growth of mold.

Ask: Do you have a plan for how to keep treating your chronic medical conditions after a flood or typhoon?

- Interruptions in supply chains and clinic and pharmacy closures can make it difficult for patients to get their usual treatment. Advise patients on where they might be able to go to get appropriate care or necessary medical supplies, if this information is available.

Appendix for Patients

Appendix A

Plan for Power Outages

Purpose

Extreme weather events frequently can lead to power outages. This can lead to issues with using electricity-dependent devices and refrigeration. This in turn can impact health.

Here is how to prepare for power outages so that you do not have to suffer the impact of power outages.

1. I will try to conserve electricity if it is really hot. This can help prevent blackouts.
2. If I use **medical equipment that needs electricity or batteries**, I will have a backup plan so I can use them if the power goes out.
3. If the power goes out, I will:
 - Use my backup electricity generator
 - Have a backup battery fully charged in my home
 - Evacuate somewhere that has power
4. If I have **medications that require refrigeration**, I will have a cooler and ice or ice packs ready to store them, as well as a thermometer to check the temperature inside the cooler.
5. If I get water from a **well with an electric pump**, I will have a backup plan so I will have enough water to drink if the power goes out.
6. If the power goes out, I will:
 - Have ____ gallons of bottled water at my home (at least 1 gallon per person, per day).
 - Have ____ meals that do not require cooking (several days of non-perishable food, per person).
 - Evacuate to a safe location before a power outage occurs or flooding prevents evacuation.
7. After an extreme weather event, I may want to **test my well water for pollution** before drinking it. I can do this by contacting the local health department to have well water sampled and tested for contamination. Or, I can call the officer to find a certified lab city/municipal sanitary inspector nearby to bring a sample for testing.
8. If I have **electric heat or air conditioning**, I will not:
 - Try to heat my home by burning fuels, such as wood or propane, indoors
 - Use a gas oven or stove to heat my home
 - Use an electricity generator or gas grill indoors
 - Run my car with the garage door closed for air conditioning

*These can all result in **carbon monoxide poisoning**, which can be deadly.*

9. If I am too cold or hot because the heat or air conditioning does not work from a power outage, I will go someplace where heat or air conditioning is available.

If I am too cold during a power outage, I will go to: _____

If I am too hot during a power outage, I will go to: _____

If I need help getting someplace warm or cool, I can call:

Name

Phone

1. _____

1. _____

2. _____

2. _____

Appendices for Administrators

Appendix A

Facility Repair and Re-Entry

Purpose

Before returning to your clinic, ensure the appropriate authorities have said it is safe to return. If the building has been damaged by a storm or flooding, do not enter the building until a proper safety inspection has been completed to ensure structural integrity. If repairs are needed, consider how your clinic will communicate with staff, patients, and stakeholders to keep them informed about the status of the building and any changes to normal operations.

Considerations for High Wind:

- Structural integrity and inspection should include:
 - Roof inspection
 - Load-bearing beams and walls
 - Structural metals
 - Windows
 - Interior walls and framing
 - Exterior equipment systems (HVAC, solar, etc.)
 - Cracks or gaps in the building envelope (windows, doors, and utility penetrations)

Considerations for Facility Flooding:

- Excess water removal and drying time.
- Mold remediation including minimizing spore dispersion during the cleaning process.
- Determining what medical and office equipment can be salvaged.
 - Has all furniture and equipment been inspected, repaired, and disinfected?
 - Has porous furniture that was wet been discarded?
 - Were mattresses discarded if they were underwater or wet?
 - Have all linens been laundered?
 - Have medications and supplies that were damaged or contaminated been discarded?
 - Are medical gas and suction systems including air lines operable and cleaned?
 - Have ice machines been flushed, cleaned, and disinfected?
 - Structural integrity (In addition to the considerations for high winds):
 - Cracks in the foundation (new or widening)
 - The structure dislodged from the foundation
 - Flooring (spongy or newly uneven/wavy materials)
 - Requirements prior to re-opening:
 - Potable water
 - Functional sewage system
 - Adequate waste and medical waste disposal system
 - Certification of occupancy

General Safety Considerations and Assessment Needs:

Trained professionals should do assessments of infrastructure and critical equipment. This includes an assessment of the following systems:

- Structural integrity and missing structural items
 - Assessment of water damage, hidden moisture, and signs of mold growth
- Electrical system damage, including high voltage, insulation, and power integrity
- Water distribution system damage
- Sewer system damage
- Fire emergency systems damage
- HVAC system damage including all ductwork and filtration systems
- Medical waste and sharps disposal system
- Medical gas system damage
- Properly cleaned, disinfected, and calibrated medical equipment
- Hazardous chemical storage and/or disposal system

Facility Repair and Re-entry Checklist

Done	Task	Assigned to
	Only return to the area when it is deemed safe by local emergency management or appropriate authorities.	
	When it is safe to return, inspect the clinic from the outside to look for tilting or displacement of the structure, cracks in the foundation, and any buckling or sagging of the roof or flooring (if visible from the outside).	
	Look for heavily damaged trees that could fall and harm people or structures. Contact a tree removal company for management.	
	Look for downed or damaged power and communications lines. Contact utility companies if observed.	
	Check for the presence of snakes, rodents, and other animals inside the facility.	
	Check for the smell of natural gas. <ul style="list-style-type: none"> • Contact the gas company if observed. • Shut off the gas supply if it is outside the building. 	
	Once an expert has deemed the building safe to enter, take protective measures such as wearing thick-soled shoes, heavy work gloves, long pants, and a long-sleeved shirt. If there is the possibility of mold, don a fit-tested N-95 mask before entering the building. Staff with respiratory conditions (e.g., asthma) or immunosuppression should not enter buildings with water leaks or mold growth.	
	Check the functionality of the clinic including: <ul style="list-style-type: none"> • Exam rooms • Office furniture • Computer systems • Refrigeration systems • Pharmacy supply and equipment • If the clinic uses paper documentation, check for damage to patient and pharmacy records. 	
	Ensure any private patient data and pharmaceuticals are well secured. They may need to be moved to a secondary site.	
	Call the clinic's pre-identified assessment team(s) to start the inspection of the building. The results of this inspection will determine what steps to take for building restoration and should at a minimum address all General Safety Considerations listed above.	
	Contact the clinic's pre-identified restoration team to prioritize and begin work.	
	Work with the assessment and restoration teams to identify if some sections of the clinic may be able to open before others. This will help with planning a staged re-opening.	
	Document all damage with photographs and written descriptions for insurance claims and repair references.	
	Keep detailed records of repair costs, contractor invoices, and any communications with insurance providers.	

Adapted from guidance from the [CDC](#), [FEMA](#), [AIHA](#), and [Rytech Restoration](#).

Appendix B

Health Center Power Outage Preparedness and Response

Purpose

This document provides recommendations for policies and procedures in the event of a power outage that can be included in a facility's emergency plan or in a standalone power outage plan. These plans can help ensure the safety of staff and patients in the event of a power outage. Improving clinic resilience may have the added benefit of improving clinic sustainability and cost-savings.

Power Outage Preparedness

1. Develop policies and procedures for a) periods of time when a power outage occurs, and clinic operations can rely on backup power, and b) situations when backup power is unavailable or fails.
 - a. Responses to power failures may include limiting services, communicating operational changes to staff and patients, and assisting high-risk patients out of the facility.
2. Have an inventory of what equipment is and is not powered when using a generator or battery.
 - a. Have equipment clearly marked, including power outlets.
 - b. Update inventory when new equipment is purchased, or facility electrical upgrades occur.
3. Explore partnerships with local hospitals for short-term refrigeration of vaccines and medications in case of a power outage.
4. Implement policies to reduce energy demand during normal operations, which translates into less backup energy needs during outages:
 - a. Install a smart thermostat.
 - b. Install motion sensor lights.
 - c. Use LED bulbs throughout the facility (LEDs use less electricity and produce less heat).
 - d. Conduct an energy audit to identify other opportunities for energy savings.
5. Develop a purchasing schedule policy to procure energy-efficient equipment to limit the strain on generators during power outages.
6. Understand the capability of your backup generators, including the anticipated length of time they can run with various electrical loads with the current amount of fuel.
 - a. Create an easily understood comparison chart of electrical load to the length of time the generator can function, with examples of equipment, to improve the duration of backup power.
7. Identify staff members to oversee the implementation of each of these policies and ensure they are followed through.

Partnerships and Vendors

Contacting Partners

Establish relationships with power-related companies, such as electrical utility companies, generator service companies, electricians, and others. Plan for at least annual communication with these companies to check on the status of any verbal or written agreements, especially those that pertain to power outages. All formal business relationships such as with vendors should have written agreements. Create agreements with partners to receive emergency maintenance in case alternative power sources fail during an extreme heat event.

1. **Utility Companies:** Contact your power company to identify if your clinic is listed as a priority location during a power outage. Priority locations may receive preferential access to electricity during system outages or have electricity restored earlier.

- a. Also, inquire as to whether notice can be given in advance of planned outages and provide them with point of contact information for your clinic.
- 2. Electricians and Contractors:** Establish a relationship with an electrical or contractor company to have the facility generator regularly inspected and maintained to prevent deterioration.
- 3. Rental Companies:** Work with rental companies and develop partnerships to ensure the clinic can obtain extra generators and equipment in case the generator fails to operate during power outage due to flood and typhoon.
- 4. Community Organizations or Businesses:** Work with local businesses, organizations, or health centers to identify backup cold chain options in case the supply gets too warm.
- 5. Staff members:** Identify who will oversee the implementation of each of these policies and ensure they are followed through.

Emergency Power Sources

Emergency Power Options

1. Work with an electrician to receive an evaluation of the possibility of installing generators or backup batteries and prices for the installation. An evaluation may be able to identify the right size of generators or batteries needed to run a portion of the facility or the entire facility, along with the price of labor required to complete the installation.
- 2. Generators**
 - a. Gas/Diesel generators are the most affordable backup power source available. These can range from portable generators to industrial generators which can be installed into the ground and configured to turn on when the power grid fails.
 - i. Benefits: These are generally less expensive up-front and may be more reliable for large facilities.
 - ii. Drawbacks: Requires purchase and storage of combustible fuels, requires regular maintenance and refueling during extended power outages, and contributes to local air pollution.
 - b. Solar power systems are more expensive but more environmentally friendly, do not contribute to local air pollution, and can be more cost-effective in the long term. These can also range from small portable systems to larger stationary systems with panels and energy storage.
 - i. Benefits: These do not rely on fuel sources during prolonged power outages, and they do not contribute to local air pollution. These can often be used during non-emergency times to reduce energy costs.
 - ii. Drawbacks: More expensive up-front than fuel generators. Powering a full facility may require more space for solar panels than is available on a facility's roof.
- 3. Battery Storage**

Battery storage is necessary for solar power systems to be practical during power outages. Backup batteries can also be used without solar by charging batteries from grid power, however, during outages, recharging these systems will be unlikely until grid power is restored. While battery storage can be expensive up-front, the size and carrying capacity of battery systems are increasing while manufacturing costs have been decreasing over time.

 - a. Benefits: Quieter than a generator. Can be stationary or portable, does not rely on purchasing fuel, and does not emit pollutants.
 - b. Drawbacks: Significant expense up front, especially to power a full facility.
- 4. Hybrid Systems**
 - a. A hybrid solar, battery, and fuel generator system may be a cost-effective way to ensure power to essential equipment.

Procurement

1. Identify a purchasing schedule to buy gas/diesel generators (or replace old ones as they become outdated or inefficient), backup battery storage, and sustainable energy such as solar.
 - a. Create policies to set aside funds in a reasonable period for each large purchase over time.
 - b. Consider guidelines for generator specifics (such as energy output, size, weight, and other factors that could be critical to effectively powering your clinic).
2. Create policies for generator placement to encompass safety, such as away from windows, doors, air conditioning units, or any air intake for the facility to prevent carbon monoxide and other pollution from getting into the facility if it is a gas or diesel generator.
3. Create policies for generator placement to ensure the generator is easily accessible for maintenance but also remains cool, receives adequate airflow during flood and typhoon, and prevents carbon monoxide poisoning to patients and staff in the area.
4. Identify staff members to oversee the implementation of each of these policies and ensure they are followed through.

Upkeep

1. Schedule annual maintenance and inspections for the clinic's emergency power sources.
 - a. Maintenance and upkeep are critical to ensuring equipment will turn on and run properly when needed.
 - b. Schedule maintenance during the off-season to save on costs.
2. Schedule a regular cycle to ensure the clinic's generator is running properly and continues operating.
 - a. It is optimal to run a generator monthly for at least 30 minutes to keep it functioning smoothly.
3. Identify staff members to oversee the implementation of each of these policies and ensure they are followed through.

Refueling

1. Create a refueling schedule to ensure the generator(s) is ready to operate when least expected.
2. Identify personnel and/or vendors with the task of refueling the generator(s) and establishing a schedule to refuel during emergency operations.
3. Fuel Sources: Establish an agreement with suppliers to ensure fuel can be delivered or picked up during emergency operations or so fuel supplies can be held for your clinic's needs.
4. Identify staff members to oversee the implementation of each of these policies and ensure they are followed through.

During a Power Outage

1. Implement policies to reduce energy demand, especially while on backup power.
 - a. Set thermostats to 24°C.
 - b. Install motion sensor lights.
 - c. Use LED bulbs throughout the facility (use less electricity and produce less heat).
 - d. Turn off and unplug all computers and monitors that are not in use.
 - e. Unplug appliances such as microwaves and coffeemakers.

