

# San Francisco Hospital Extreme Heat Preparedness Checklist

San Francisco is particularly vulnerable to the health impacts of extreme heat. A study of a 2006 California heat wave found that, during extreme heat events, San Francisco’s emergency department visits increased more than almost anywhere else in the state. The purpose of this document is to consolidate best practices for hospital preparedness staff, facility management staff, and frontline clinicians as they prepare for and respond to the impacts of extreme heat on hospital facilities, patients, staff, and the services they provide. Best practices were identified through a literature review and a series of key informant interviews.

This document contains hyperlinks to online and downloadable resources. If you discover any broken links, please contact the authors at [climateandhealth@sfdph.org](mailto:climateandhealth@sfdph.org).

## Prepare Patients and Staff for Extreme Heat Events



Continuous Strategies	Action Items
<input type="checkbox"/> Review relevant guidance documents	These documents include: <ul style="list-style-type: none"> <li>• California Division of Occupational Safety and Health (CalOSH) Guidance</li> </ul>
<input type="checkbox"/> Identify patients particularly sensitive to the health impacts of extreme heat	It is important to identify the clinics and patients particularly sensitive to the health impacts of extreme heat. For the purpose of this checklist <i>heat-sensitive</i> patients include: patients with health conditions that make them particularly susceptible to heat-related illnesses, patients who are particularly exposed to extreme heat, and patients who may lack the adaptive capacity to prepare-for or recover-from extreme temperatures and heat-related illnesses. More information on factors that contribute to vulnerability can be found: <a href="http://sfclimatehealth.org">sfclimatehealth.org</a> .
<input type="checkbox"/> Engage <i>heat-sensitive</i> patients before extreme heat season	Consider using electronic health records to identify heat-sensitive patients.  Clinical staff often act as the first point of contact for many of the populations most vulnerable to the health impacts of extreme heat. Consider training clinical staff to discuss extreme heat preparedness with these patients before the onset of extreme heat season. Resources with more information can be found at <a href="http://sfclimatehealth.org/modules">sfclimatehealth.org/modules</a>
<input type="checkbox"/> Train clinicians before extreme heat season	Train clinicians to recognize and appropriately treat heat-related illness in an outpatient setting.  Train clinicians to identify and track heat-related illness, including increases in all-cause morbidity and mortality.
<input type="checkbox"/> Encourage ALL patients to sign up for AlertSF	Encourage patients to sign up for AlertSF, a free text-based emergency alert and notification system. This system provides advance warnings along with real time updates to residents about heat events and other emergencies. Patients can sign up for AlertSF at <a href="http://SF72.org">SF72.org</a> .



## Design and Maintain Facilities for Extreme Heat Events



Continuous Strategies	Action Items
<input type="checkbox"/> Incorporate multi-hazard climate preparedness into capital planning processes	Use long-range climate forecasts when designing, retrofitting, and/or planning facilities. The most up-to-date climate forecasts can be found on <a href="http://cal-adapt.org">cal-adapt.org</a> .
	Some medical equipment may lose functionality in high temperatures. This equipment should be located in building areas with adequate cooling capacity.
	Ensure that temperature-sensitive equipment is located in building areas with adequate cooling capacity.
<input type="checkbox"/> Maintain critical systems	Try to locate services for <i>heat-sensitive</i> patients in buildings with enhanced cooling capacity.
	Conduct routine maintenance on cooling equipment and other critical support systems. These systems include both patient-facing systems, but also ancillary services such as labs, IT, medicine storage, and materials management.
	Assess backup generator connection to cooling equipment and other critical systems to understand functionality if events coincide with a power disruption.

## Develop Heat-specific Emergency Plan



Strategies for Activation	Action Items
<input type="checkbox"/> Develop an extreme heat annex to your facility emergency preparedness and response plan	This annex may identify thresholds for activation, designate roles and responsibilities, develop a response grid, and identify data for collection.

## Plan For Facilities



Strategies for Activation	Action Items
<input type="checkbox"/> Identify and monitor <i>heat-sensitive</i> spaces	For the purpose of this checklist, <i>heat-sensitive</i> spaces include: buildings without air conditioning, older buildings, rooms on upper floors, rooms with large south-facing windows, rooms with equipment that may lose functionality at high temperatures, rooms and buildings that serve patients that may be especially sensitive to extreme heat, and residential spaces.  Consider installing digital thermometers to remotely monitor temperature in <i>heat-sensitive</i> spaces.
<input type="checkbox"/> Understand temperature thresholds	Every facility is different. Understand how outdoor temperatures impact your facility: When do buildings/rooms become overheated? When does medical equipment lose functionality? Note: Please adhere to temperature thresholds as identified in licensing agreements.  Review of data collection processes for adverse facility reporting to help determine threshold temperatures for your institution. These temperatures may vary floor by floor or room by room dependent on the layout of your institution.
<input type="checkbox"/> Identify strategies to protect patients and staff in <i>heat-sensitive</i> spaces	Consider using portable air conditioning units to set up make-shift cool rooms and hydration stations for patients and staff. Consider developing a rotation schedule for patients and staff to use cool room. NOTE: Use of evaporative coolers requires specialty maintenance to prevent spread of disease due to moisture.  Distribute ice, water, cooling blankets, cooling towels, and spray bottles as needed.  Implement heightened surveillance of patients and staff including adverse event reporting.  At especially high indoor temperatures, all patients and staff are vulnerable to the health impacts of extreme heat. In these events, refer to your facility's COOP and CalOSH guidelines.



Identify strategies to cool *heat-sensitive* spaces

Explore the use of portable air conditioners. Use the list of *heat-sensitive* spaces to place air conditioners in spaces with temperature-sensitive medical equipment, patients and/or staff. NOTE: Use of evaporative coolers requires specialty maintenance to prevent spread of disease due to moisture.

In a situation where electrical or cooling systems are stressed, explore re-routing / diverting building cooling systems to *heat-sensitive* spaces.

During the day: close windows, close window shades, and place protective shading on film windows. During the evening, consider opening windows to cool the facility.

Explore use of fans to cool *heat-sensitive* spaces, however there is evidence that fans become ineffective if temperatures approach 100 degrees. Be aware of regulations around the use of fans in sterile environments and other locations.

Consider turning off major unnecessary electronics that generate heat.

Identify and procure equipment to cool *heat-sensitive* spaces

This equipment may include portable air conditioners, fans, and protective window film.

## Plan for Patient Surge



Strategies for Activation	Action Items
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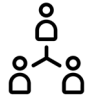
<input type="checkbox"/> Identify strategies to respond to patient surge	<p>Consider tracking medical surge during extreme heat events to approximate how your facility is impacted.</p> <p>Consider providing water and emergency cooling equipment to patients waiting for medical care. This may include ice, ice bags, fans, spray bottles, cooling blankets, cooling towels, and water.</p> <p>Consider planning to increase staffing during extreme heat events to respond to medical surge.</p> <p>If overheated facilities and medical surge significantly stress hospital functions, consider canceling non-emergency medical appointments, especially for <i>heat-sensitive</i> patients and develop a threshold at which this would occur.</p>
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<input type="checkbox"/> Identify strategies to discharge <i>heat-sensitive</i> patients	<p>In San Francisco, the health impacts of extreme heat often occur indoors. For patients who live in overheated homes, consider discharge planning that may include:</p> <ul style="list-style-type: none"> <li>• ensuring the patient has a friend or family member to care for them</li> <li>• information on public spaces with air conditioning (e.g. cooling centers)</li> <li>• information on transportation options to access cooling centers</li> <li>• educational information on the symptoms of heat-related illness</li> </ul>
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<input type="checkbox"/> Identify, procure, and maintain equipment to respond to medical surge	<p>In coordination with DPH and other local partners, in cases of significant medical surge, plan for strategic discharging to provide increased capacity</p> <p>Equipment may include ice, ice bags, fans, spray bottles, cooling blankets, cooling towels, water, and other cooling devices.</p> <p>Work with SFDPH to plan for critical resource shortages.</p>
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## Develop Communications



Strategies for Activation	Action Items
<input type="checkbox"/> Prepare targeted communications for patients and staff	<p>Consider developing messaging to proactively engage staff about anticipated patient surge.</p> <hr/> <p>Consider developing targeted multi-lingual communications to <i>heat-sensitive</i> patients about best practices to stay safe during extreme heat events. These messages should emphasize checking in on loved ones, identifying and treating heat-related illnesses, staying safe during extreme heat events, and using City-provided cooling centers.</p> <hr/> <p>Identify strategies to engage clinical and facility staff in emergency response activities (i.e. daily huddles, etc.) and to receive continuous feedback from staff about adverse events.</p> <hr/> <p>Identify outdoor workers and staff that work in <i>heat-sensitive</i> spaces. Refer to CalOSH for more guidance.</p>
<p>Participate in communications with DPH during activation</p>	

## Resources

California Division of Occupational Safety and Health (CalOSH), *Extreme Heat Guidance for Outdoor Workers*  
<https://www.dir.ca.gov/title8/3395.html>

Draft California Division of Occupational Safety and Health (CalOSH), *Extreme Heat Guidance for Indoor Workers*  
<https://www.dir.ca.gov/dosh/doshreg/Heat-Illness-Prevention-Indoors/>

Ready.gov, *Extreme Heat Toolbox*  
<https://www.ready.gov/heat>

San Francisco Department of Public Health, *Extreme Heat Preparedness Resources for Clinicians, 2019*  
[https://sfclimatehealth.org/wp-content/uploads/2019/05/ExtremeHeatResourceSheet\\_05.01.2019.pdf](https://sfclimatehealth.org/wp-content/uploads/2019/05/ExtremeHeatResourceSheet_05.01.2019.pdf)

San Francisco Department of Public Health, *Clinician Climate Change and Health Training Modules*  
<https://sfclimatehealth.org/modules/>



# San Francisco Hospital Wildfire Smoke Preparedness Checklist

San Francisco is vulnerable to the health impacts of wildfire smoke. In 2018, as smoke from the Butte County wildfires settled over the Bay Area, San Francisco’s air quality hit either unhealthy or very unhealthy for 12 straight days. The purpose of this document is to consolidate best practices for hospital preparedness staff, facility management staff, and frontline clinicians as they prepare for and respond to the impacts of wildfire smoke on hospital facilities, patients, staff, and the services they provide. Best practices were identified through a literature review and a series of key informant interviews.

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Prepare Patients and Staff for Wildfire Smoke Events	
Continuous Strategies	Action Items
<input type="checkbox"/> Review relevant guidance documents	<p>These documents include:</p> <ul style="list-style-type: none"> <li>• The Bay Area Regional Air Quality Toolkit. The Bay Area Regional Air Quality Toolkit was developed by the Bay Area Joint Information System, the Association of Bay Area Health Officials (ABAHO), Bay Area Air Quality Management District (BAAQMD), and regional public health, emergency management, public information, and election officials’ staff.</li> <li>• Wildfire Smoke: Considerations for California’s Public Health Officials. Wildfire Smoke: Considerations for California’s Public Health Officials was developed by the California Department of Public Health (CDPH).</li> <li>• Wildfire Smoke Guide for Public Health Officials. Wildfire Smoke Guide for Public Health Officials was developed by the Environmental Protection Agency.</li> <li>• CalOSH guidance</li> </ul>
<input type="checkbox"/> Identify <i>smoke-sensitive</i> patients in order to provide outreach and preparedness	<p>For the purpose of this checklist <i>smoke-sensitive</i> patients include: patients with health conditions that make them particularly susceptible to respiratory illnesses, cardiovascular illnesses, or other conditions that may be exacerbated by wildfire smoke, patients who are particularly exposed to wildfire smoke, and patients who may lack the adaptive capacity to prepare-for or recover-from the health impacts of wildfire smoke. More information on factors that contribute to vulnerability can be found: <a href="http://sfclimatehealth.org">sfclimatehealth.org</a> and the EPA Smoke Ready Toolbox at <a href="https://www.epa.gov/smoke-ready-toolbox-wildfires">https://www.epa.gov/smoke-ready-toolbox-wildfires</a></p> <hr/> <p>Consider using electronic health records to identify <i>smoke-sensitive</i> patients for preparedness.</p>





- Engage *smoke-sensitive* patients before wildfire season  
Clinical staff often act as the first point of contact for many of the populations most vulnerable to the health impacts of wildfire smoke. Consider training clinical staff to discuss wildfire smoke preparedness with these patients before the onset of wildfire season. Resources with more information can be found at [sfclimatehealth.org/modules](https://sfclimatehealth.org/modules)
- Encourage ALL patients to sign up for AlertSF  
Encourage patients to sign up for AlertSF, a free text-based emergency alert and notification system. This system provides advance warnings along with real time updates to residents about heat events and other emergencies. Patients can sign up for AlertSF at [SF72.org](https://SF72.org).

## Design and Maintain Facilities for Wildfire Smoke Events



Continuous Strategies	Action Items
<input type="checkbox"/> Incorporate multi-hazard climate preparedness into capital planning	Use long-range climate forecasts when designing, retrofitting, and/or planning facilities. The most up-to-date climate forecasts can be found on <a href="https://cal-adapt.org">cal-adapt.org</a> . Try to locate services for <i>smoke-sensitive</i> patients in buildings with enhanced ventilation.
<input type="checkbox"/> Maintain critical systems	Conduct routine maintenance on ventilation equipment and other critical support systems. Assess backup generator connection to ventilation equipment and other critical systems to understand functionality if the event were to coincide with a power disruption.

## Develop Wildfire Smoke specific Emergency Plan



Strategies for Activation	Examples
<input type="checkbox"/> Identify roles and responsibilities	This annex may identify thresholds for activation, designate roles and responsibilities, develop a response grid, and identify data for collection.

## Plan For Facilities



Strategies for Activation	Examples
<input type="checkbox"/> Identify and monitor <i>smoke-sensitive</i> spaces	For the purpose of this checklist, <i>smoke-sensitive spaces</i> include: buildings without MERV 13+ ventilation, and rooms and buildings that serve patients or staff that may be especially sensitive to wildfire smoke. For the purpose of this checklist, <i>smoke-sensitive spaces</i> include: buildings without MERV 13+ ventilation, and rooms and buildings that serve patients or staff that may be especially sensitive to wildfire smoke. During an air quality event, consider using particulate meters and/or air quality monitors to measure air quality in <i>smoke-sensitive</i> spaces. NOTE: Make sure staff is trained how to use and interpret particulate meters
<input type="checkbox"/> Identify strategies to protect and clean <i>smoke-sensitive</i> spaces	For facilities with HVAC systems, consider setting the system to 'recirculate' at the onset of the wildfire smoke event. Consider closing windows, dampers, and vents to restrict exposure to outside air. Caution: if the wildfire smoke event occurs during an extreme heat event, extreme heat response activities should take precedence. Consider regular upkeep and replacement of MERV 13+ filters, especially before wildfire smoke season. NOTE: These filters may increase load on ventilation system. Explore options to reduce exposure to outside air by disabling automatic doors and instead placing security guards at building entrances to assist patients and staff. Consider use of positive pressure to force air out.



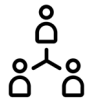
- Identify and procure equipment to protect facilities from wildfire smoke  
Equipment may include backup charcoal filters, other HEPA filters, air scrubbers, air particulate meters/air quality monitors.

### Plan for Patients and Staff



Strategies for Activation	Examples
<input type="checkbox"/> Identify strategies to plan for staff shortages	Please review your Continuation of Operations Plan (COOP) for strategies.
<input type="checkbox"/> Identify strategies for patients	During previous wildfire smoke events, some hospitals experienced an influx patients looking for guidance regarding exposure to smoke. Consider use of pre-planned wildfire smoke preparedness messaging for patients looking for advice on how to protect themselves. Refer to communications section below for strategies to reduce and respond to calls and walk-ins.
<input type="checkbox"/> Identify strategies around N95 masks	N95 masks can be a challenging and complicated issue for organizations. Please see The Bay Area Regional Air Quality Toolkit for guidance on N95 mask distribution.  It may be unsafe for certain patients to be exposed to outdoor air. Consider canceling non-emergency medical appointments, especially for <i>smoke-sensitive</i> patients and develop a threshold at which this would occur.

### Develop Communications



Strategies for Activation	Examples
<input type="checkbox"/> Prepare communications for patients and hospital staff	<p>Consider developing targeted multi-lingual communications to <i>smoke-sensitive</i> patients about best practices to stay safe during air quality events. These messages could emphasize checking in on loved ones, City-provided clear air facilities, or best practices associated with use of N95 masks. Resources can be found at:</p> <p>It is important to proactively communicate to staff about both the health impacts of wildfire smoke, but also to communicate the steps the hospital is taking to reduce exposure for patients and staff while continuing to provide health services.</p> <p>Many facilities reported a smoke smell was present in the facility even after air was filtered. Consider development of messaging to staff to prepare for lingering smoke smell and to communicate the air quality of the facility even if smoke smell is present.</p> <p>Make clear hospital policy on distribution of N95 masks. During previous wildfire events, conflicting N95 mask protocols confused clinicians, patients, and hospital administrative staff. Consider pushing out N95 messaging before the wildfire smoke event occurs.</p> <p>Identify outdoor workers and staff that work in <i>smoke-sensitive</i> spaces. Refer to CalOSH for guidance</p> <p>Participate in communications with DPH during activation</p>



## Resources

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California Division of Occupational Safety and Health (CalOSH), *Worker Safety and Health In Wildfire Regions*  
<https://www.dir.ca.gov/dosh/Worker-Health-and-Safety-in-Wildfire-Regions.html>

Association of Bay Area Health Officers (ABAHO), Bay Area Air Quality Management District (BAAQMD), *Bay Area Joint Information System, Bay Area Regional Air Quality Messaging Toolkit*  
<http://www.bayareauasi.org/aqi>

Environmental Protection Agency, *Wildfire Smoke: A Guide for Public Health Officials, 2019*  
<https://www3.epa.gov/airnow/wildfire-smoke/wildfire-smoke-guide-revised-2019.pdf>

Environmental Protect Agency, *Smoke Ready Toolbox*  
<https://www.epa.gov/smoke-ready-toolbox-wildfires>

San Francisco Department of Public Health Air Quality Preparedness Resources for Clinicians, 2019  
[https://sfclimatehealth.org/wp-content/uploads/2019/05/AirQualityResourceSheet\\_05.01.2019.pdf](https://sfclimatehealth.org/wp-content/uploads/2019/05/AirQualityResourceSheet_05.01.2019.pdf)

San Francisco Department of Public Health Clinician Climate Change and Health Training Modules  
<https://sfclimatehealth.org/modules/>