



KING COUNTY  
Healthcare  
Coalition

Prepare. Respond. Recover.

# Windstorm 2006

December 14 – 22, 2006

## **King County Healthcare Coalition After Action Report**

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## **Executive Summary**

December 14, 2006 the Puget Sound area experienced what was arguably the most powerful windstorm since the Columbus Day storm of 1962 and rivaled the Inauguration Day Storm of 1993. Partnered with torrential rains, the weather had a significant impact across all of Puget Sound. Over 1 million people lost power; winds gusted as high as 90 mph along the coast and 70 mph in the Puget Sound area. Puget Sound Energy, the area's largest electricity provider, reported 75% of customers to be without power, while Seattle City Light reported 49% of customers without service. Among the healthcare community those customers without power included hospitals, nursing homes, doctor's offices, as well as residential customers.

The need to support the healthcare system was evident from the beginning of the event. The storm provided an opportunity for many untested plans to be implemented, including activating the Regional Medical Resource Center (RMRC) and Public Health opening a special needs shelter. The primary goals of the RMRC were to provide resource support to the healthcare system, facilitate timely updates to partners, coordinate the flow of information to and from the hospitals, and collaboratively, under the auspices of the Healthcare Coalition, protect hospital resources by supporting and providing alternatives for people with medical needs.

The RMRC was housed in the Public Health Emergency Operations Center (EOC) for this event. All hospitals in the County, as well as nursing homes and boarding homes were tracked and provided support through the EOC in coordination with partners such as the American Red Cross, EMS and utility providers. Eleven of the twenty three hospitals were without power at the beginning of the event. All had back up generator power, however many lessons were learned regarding non-medical resource requests. One significant area for improvement is determining the role of logistics in the County Emergency Coordination Center and local municipality EOCs versus the role of the RMRC, which is intended to provide support for medical resources.

Co-locating the Public Health EOC and the RMRC provided a valuable opportunity for close coordination among Public Health, the Healthcare System and EMS. Due to the cold temperatures and lack of electricity many citizens were using alternate heating sources, which resulted in hundreds of carbon monoxide poisoning cases. The hospitals and Public Health working collaboratively brought this issue to light, allowing Public Health the opportunity to make carbon monoxide poisoning a reportable condition and launched the Public Health Vulnerable Populations Action Team to do targeted education about the risks of carbon monoxide poisoning.

The response to the Windstorm was the longest activation for Public Health Seattle and King County, and the first activation of the RMRC. Although this event primarily involved a significant loss of power without other adverse events, many valuable lessons were learned. The healthcare system and their partners, such as the American Red Cross and EMS, were presented with consequences not previously experienced and executed a response that supported the needs of the community as well as fostered new and existing relationships.

## **Timeline and Major Events**

- Thursday, December 14, 2006 Storm hits the Puget Sound area in the evening
- Friday, December 15, 2006 Activation of the Public Health Emergency Operations Center and monitoring of the healthcare system through the Regional Medical Resource Center began and continued through December 22, 2006.

- Friday, December 15, 2006 King County Chief of Staff, Kurt Triplett, for County Executive Ron Sims, signed a Proclamation of Emergency for King County in response to damage caused by flooding and winds.
- Saturday, December 16, 2006 Washington State Governor Gregoire signed a Proclamation of Emergency
- Saturday, December 16, 2006 The Special Needs Shelter was opened at Bellevue Community College to provide support for the medically fragile who could not be placed in a Red Cross shelter or in case of the need to evacuate a nursing home or long-term care facility
- Monday, December 18, 2006 Mt. Si Transitional Health Center evacuated, residents and care givers taken to Special Needs Shelter, occupancy 37.
- Wednesday, December 20, 2006 Mt. Si residents moved out of shelter and back to Transitional Health Center
- Thursday, December 21, 2006 Last hospital on generator power came back on regular grid
- Friday, December 22, 2006 Public Health Emergency Operations Center and Regional Medical Resource Center stood down

## **Event Overview**

The Healthcare Coalition is a network of healthcare organizations and providers that are committed to coordinating their emergency preparedness and response activities. The purpose of the Coalition is to develop and maintain a comprehensive system that assures coordination, effective communications, and optimal use of available health resources in response to emergencies and disasters. During the response to the windstorm the Regional Medical Resource Center (RMRC), the operational arm of the Healthcare Coalition, was put into action to support the needs of healthcare system partners.

### ***Regional Medical Resource Center (RMRC)***

#### **Overview**

The RMRC operated through the Public Health Emergency Operations Center during the Windstorm response. All 23 hospitals were tracked, 11 were initially without power, and the last came back on-line 7 days into the event. Over 200 nursing homes and boarding homes were tracked by making daily phone calls and providing them with resources as needs arose. The RMRC located resources such as generators, fuel for generators, firewood, refrigerated trucks and transportation for hospitals, nursing homes and boarding homes. The RMRC also coordinated with the American Red Cross to provide and distributed cots and blankets to nursing homes and community partners.

During the response the RMRC worked closely with the electric companies to ensure that nursing homes, boarding homes, and strategic resources for hospitals such as linen and laundry services and community pharmacies were placed on a priority list to receive power restoration quickly.

Coordination with hospital control and EMS were crucial to the success of this response. Facilities that could not be reached by telephone for a daily check were followed up by first responders through EMS with a “welfare” check. All locations that could not be reached by telephone had either evacuated to another location or did not have a working telephone due to lack of power. Hospital control organized daily conference calls with the hospitals to assess bed capacity, staff capacity and to capture an overview of how the region was doing. Many issues, such as linen shortages, demand from the public for pharmaceutical and home oxygen tank refills, and in-hospital sheltering were identified on these calls. Public Health participated on the calls to provide a regional status regarding power restoration, shelter activities, the carbon monoxide poisoning situation and other priorities.

### Lessons Learned

- The RMRC is intended to provide support and medical resources to healthcare system partners during an event, however non-medical resources were the bulk of resources the RMRC was coordinating. Better coordination with local EOCs and logistics coordination with emergency management needs to occur in the future.
- Improved coordination of regional conference calls is needed to ensure better participation from all hospitals, as well as non-hospital providers.
- The RMRC needs to provide daily situational updates to healthcare sectors and partners.
- The RMRC needs to acquire 24 hour contact information from all Healthcare Coalition members and partners.

### **Hospitals**

#### Overview

Hospitals were significantly impacted by the power outage, by those seeking medical care, citizens seeking shelter, and resource management challenges. Many were operating on generator back-up following the windstorm. Power was restored for most within 24 hours. Those that lost power (listed in order of restoration) include: Swedish Cherry Hill; Group Health Central; Veteran's Administration; Evergreen Healthcare; Valley Medical Center; Saint Francis; Enumclaw Hospital; Fairfax Hospital; Group Health Eastside; Swedish Issaquah; and Snoqualmie Valley Hospital. Hospitals requested that the Regional Medical Resource Center and the Public Health Emergency Operations Center work with power providers to ensure hospitals were a priority for power restoration. They also requested linen and pharmaceutical providers be added to the priority list as each plays a significant role in hospital continuity of operations.

Harborview Medical Center Hospital Control worked with the Regional Medical Resource Center and the Public Health Emergency Operations Center to provide open communication on hospital status. During the windstorm, the Regional Emergency Department (ED) Saturation Policy was not being followed universally across the region. The ED Saturation Policy states that hospitals can go on ED saturation when hospitals have exhausted the capacity of their emergency department to receive additional patients. While they are on ED saturation they will not take BLS or ALS transports **except** ALS critical patients defined as: CPR performed or on-going, in need of cathlab, or having an airway problem. The ED may be on ED Saturated for no more than 2 hours at a time and for no more than 6 out of 24 hours.

Patient tracking was also challenging during the windstorm response. Multiple patients were taken to Virginia Mason to be treated in the hyperbaric chamber. Tracking those patients and their families from hospital to hospital was challenging, especially those who were non-English speaking.

A majority of hospitals in the County experienced public use of the hospital cafeterias and emergency room waiting areas as a safe shelter. Having hospitals involuntarily utilized as shelters was taxing on hospital resources and made it difficult for hospitals to efficiently manage patient loads. Multiple hospitals came close to running out of food and many were unable to feed staff in a timely manner due to the long cafeteria lines. Shelter information needs to be continually shared with the hospitals in a timely fashion during a response and further education of the public about the purpose of shelters needs to occur.

Other influencing factors in hospital response included the lack of public access to pharmaceuticals. Several hospital pharmacies were inundated with requests from the public for prescription refills due to the closure of local pharmacies. Some hospitals opened their pharmacies for extended hours to accommodate this need. It was suggested that information regarding pharmacies that are open to the public be collected and communicated to hospitals and the public

in future events and coordination with corporate pharmacies for contingency planning would be useful.

The closure of clinics due to a lack of generators had a considerable impact on the hospitals for a variety of reasons. First, the large number of requests from clinics to store vaccines at hospital pharmacies. Second, many patients needed treatments or oxygen refills and sought these services at the hospital, consequently impacting hospital resources. Third, it was reported that some clinics and private practices had posted notes on their doors instructing patients to “go to the hospital”. Planning around such events needs to occur to more effectively triage patients that are directed to the hospitals in such a way. Fourth, communication with the hospitals about open clinics needs to be improved, so hospitals can more effectively direct patients to appropriate care.

Patient discharge was an area of concern as well and created some unique challenges during the power outage. Multiple hospitals experienced difficulties with bed space because patients did not want to be discharged and sent to a home with no power or heat. Staff education around when a patient needs to be discharged would have helped so patients were receiving consistent information. The surge capacity that was needed to deal with the influx of patients and unwillingness of patients to discharge was not available. Numerous hospitals noted a decline in staff resources due to the inability to get to work and could be mitigated by increasing staff awareness around personal preparedness as well as creating alternate transportation options or better use of existing adverse weather carpooling programs if these exist at the facility.

Not all hospitals in the county activated their internal emergency operations centers. It is believed that this would help facilitate and improve communication channels in future events.

Some valuable lessons learned arose from this event and our awareness of those issues will allow for improved capacities and response going forward.

### Lessons Learned

- Determine that hospitals and critical partners, such as linen and pharmaceutical providers, are on a priority list for power restoration.
- Further clarify and educate hospitals on the regional emergency department saturation policy and ensure implementation of the policy across the region
- Identify mechanism for patient tracking, especially when working with non-English speaking patients
- Identify strategy to continually share shelter information with hospitals and other healthcare sectors in a timely manner
- Further educate public and ED staff about use of shelters to mitigate sheltering at hospitals
- Collect information regarding open pharmacies and provide to hospitals
- Coordinate with corporate pharmacies for contingency planning
- Coordinate with Ambulatory Care community around vaccine storage contingency planning
- Improve communication with hospitals and ambulatory care regarding what clinics are open to avoid clinics posting notes such as “go to hospital” on their doors
- Develop communication and education strategy to keep frontline clinicians informed of situational events
- Increase staff awareness around personal preparedness
- Provide alternate transportation information to staff to combat staffing shortages during an emergency
- Determine patient discharge strategy for assisting patients who are well enough to go home, but don’t want to leave the hospital due to inadequate arrangements at home
- Identify strategy to encourage or alert hospitals to activate their internal emergency operations centers to address the regional response

- Continue to support hospitals and protect critical resources by monitoring other aspects of healthcare community and mitigate impact on hospital

## ***Ambulatory Care***

### Overview

The ambulatory care community experienced similar challenges during the extended power outage. Most struggled with no backup power at clinic sites, lack of alternative means for medication storage, limited access to medical records, and inoperable phone lines. Due to these challenges, the ambulatory care community struggled to communicate with staff, patients and hospitals to alert them to their situation. Some clinics are now discussing generators for their refrigerators for medication storage, as well as alternate telephone lines that do not rely on electricity to work. Staff call down systems were also identified as needed as well as establishing a dedicated line for staff to call in to report absenteeism. Clinics experienced significant financial losses due to the extended closure and loss of medication.

### Lessons Learned

- Staff call down systems identified as needed or tested
- Back up power an issue for vaccine storage and medical records
- Ambulatory Care will develop 24/7 contact information for RMRC

## ***Long Term Care***

### Overview

Nursing homes, boarding homes and other adult family homes were a primary focus during the response to the windstorm. Over 200 nursing homes and boarding homes were tracked through the RMRC by making twice daily phone calls and providing them with resources as needs arose. The specific challenges most facilities encountered were providing heat, power and food for residents. Many providers were very creative in overcoming these challenges. They moved residents to a general warming area and establishing alternate sleeping quarters to help keep residents warm. Roll away beds and cots proved problematic for many residents as they were too low and patients who had joint issues, low mobility or similar ailments found it difficult to navigate in and out of the cots. For the facilities that had generator back up, it was discovered that the generator did not power everything. Some had limited cooking ability as only one kitchen in the facility had power, others had limited ability to keep residents warm. One facility noted to ask for a refrigerator truck early to prevent food spoilage. Also, most did not have access to laundry facilities which created a challenge with linens. One facility in particular experienced multiple problems with their generator, including fuel crystallizing, due to cold temperatures and causing the generator to fail. This facility was evacuated to the special needs shelter until the problem was corrected.

As the daily calls were made and people came back on line with regular power most provided an update to the RMRC on available space within their facility that could be used on a temporary basis. It is this type of collaboration that made the response successful.

### Lessons Learned

- Further education on personal preparedness and generator usage/maintenance
- Determine appropriate alternative beds for this community for use in shelters or temporary housing
- Pre-identify essential resources (i.e. refrigerator truck)
- Identify all long-term care providers in the County; collect 24/7 contact information for each for the RMRC
- Encourage every facility to have an analog phone
- Work with local law enforcement to determine security needs for specific facilities (i.e. on-site storage of narcotics)

- Encourage facilities to investigate generator installation and wiring advance because generator installs during a response are expensive, require a licensed electrician, and are logistically challenging.

### ***Specialty Providers***

#### Overview

The Specialty Provider community is one which needs further connectivity to the RMRC during emergencies such as the windstorm. The primary specialty provider heard from at the debriefing of this event was Northwest Kidney Centers. They see over 1200 patients and provide life sustaining services. These services rely on power for consistency. They have 11 dialysis centers throughout the County. Six of the eleven were without power following the windstorm. The Kidney Centers activated their Emergency Operations Center and moved as many resources and staff as possible to the facilities with power to continue to serve clients as best they could. Thankfully only five patients of the 1200 ended up in hospitals. The Kidney Centers identified that more of their facilities need to be on generator back up and larger phone banks are needed to support the communication needs to 500 staff and 1200 patients.

#### Lessons Learned

- Identify 24/7 contact information for specialty providers and locate this information in the RMRC
- Implement generator back up at more Northwest Kidney Center facilities
- Determine phone bank support robust enough to support communication needs to over 1700 individuals

### ***Home Health and Palliative Care***

#### Overview

Home Health and Palliative Care are unique due to the fact that they provide in-home services. Following the windstorm some of the challenges Home Health staff experienced were meeting with clients that were without power, downed trees and power lines en route to client visits, limited access to gasoline to complete site visits, and inadequate supplies of oxygen or access to oxygen providers to assist clients in acquiring refills. The Home Health and Palliative Care community has a very broad base of clients they support. Some agencies were able to conduct all site visits after the windstorm despite the overwhelming challenges, which proves the tremendous dedication on the part of these individuals.

#### Lessons Learned

- Identify strategies for access to gasoline to conduct site visits during an emergency
- Determine how to receive information about safe transportation routes or transportation alternatives
- Work with RMRC to match resources with medical needs, such as oxygen supplies
- Provide 24/7 contact information to RMRC

### ***Partner Agencies***

#### Overview

Understanding the needs and roles of our partners is critical to an effective response. All agencies throughout the County were impacted by the windstorm. Some operated under emergency operations for over a week, while others closed their emergency operations centers within days. Captured below are some valuable lessons learned from key partners of the healthcare system:

#### Lessons Learned

### ***Puget Sound Blood Center***

- Blood Center experienced transportation challenges. News service traffic reports were utilized to combat these issues
- Staff found it difficult to report to work due to downed trees, traffic, etc. therefore they were asked to report to work to the nearest Blood Center to their homes

### ***Washington Poison Center***

- The Poison Center was on generator power for 8 hours.
- Power was lost for 2 hours, during those 2 hours calls were routed to a national network of poison centers
- There was a marked spike in call volume, but no need for increased staff to meet the demand
- Only 3 ESL translations were needed during the response
- The Poison Center received calls about carbon monoxide poisoning, food poisoning and gas siphoning

### ***Puget Sound Energy***

- PSE consulted with the National Weather Service and staged 200 work crews on stand by before the storm.
- PSE purchased additional cell phones and service to equip the crews
- PSE will work with Red Cross to train PSE staff as EOC representatives

### ***Seattle Police Department***

- During the response the Department and dispatch were overloaded
- No damage assessment occurred after the storm and outages
- Lack of ability to prioritize created a backlog of reported issues
- Not enough staff and training dollars to train these staff

### ***Seattle Fire Department***

- The Department is adjusting dispatch protocols to send fewer resources to more runs.
- Pre-planning and more training will be required to adjust to new dispatch protocols
- Transit issues and call service issues limited response times
- Use of generators created issues. The practicalities of these generators were not worked out prior to the response
- Transportation resources were strained for this event

### ***Medic One***

- In preparation for the storm medic stations were staffed up early
- Medic trucks had trouble acquiring fuel during the outages
- Nextel service was spotty; 800 MHz worked well

### ***Seattle City Light***

- 49% of customers were without power. 90% were restored within 22 hours
- Seattle City Light call center received 36,000 calls. The call center was English only which created language barriers with customer base
- Many employees did door to door dissemination of information to the general public. Suggested that partners could help with this endeavor in the future.
- The public needs to be educated to have generators and personal plans during storms and other disasters

### ***Hospital Central Services***

- Conserve linens – do not change the sheets daily if it is not necessary during a disaster

- Hospitals need to have back up linens. Just in time supplies of linens does not work well from a supplier perspective

### ***Seattle Human Services***

- Seattle Human Services provided outreach during the outages to check on client's safety and needs
- Depth in staffing is needed. Parks staff did not have the skills or capacity to deal with mental health issues in homeless populations
- Better messaging is needed around locations of shelters in the County

### ***King County Parks and Recreation***

- King County Parks is the lead agency for sheltering in the County
- Parks would have liked more guidance from Public Health during the beginning stages of the response
- King County ECC activation should have been sooner and at a higher activation
- Parks had a difficult time finding space with enough room to accommodate generators safely

### ***American Red Cross***

- During the response there was duplication of efforts and some gaps in communication between partner agencies
- There remains a high need for “fixed feeding sites” throughout the County. Need to encourage local jurisdictions to think “day shelters” to serve as synchronization points
- Red Cross would like to offer training to government and Public Health personnel on sheltering options

## **Conclusion**

The windstorm and subsequent power outage provided a valuable opportunity for the healthcare community and our partners to test our response plans and capabilities. Many events occurred that had not previously been planned for or anticipated. The healthcare community will certainly be better educated about the consequences of significant power outages in the future. The lessons learned in this event will assist in future preparation for the influx of public needs, such as sheltering, pharmaceutical and oxygen refill needs, as well as keep healthcare partners cognizant of the importance of activating their emergency operations centers early to facilitate efficient communication. Working with the healthcare system as a whole has proven essential to best protect the resources of the healthcare community. Coordination among all healthcare partners to overcome the challenges presented by any emergency is critical and was significantly enhanced by the assistance of the Regional Medical Resource Center and the efforts of the Public Health Emergency Operations Center during this event. The collaborative nature of all participants to respond to needs as identified and support the community during this event greatly enhanced the success of this response.

## Improvement Plan Matrix – Windstorm 2006, King County Healthcare Coalition

The following matrix outlines a work plan for the items that are required to bridge an identified gap in current planning or response activities. There is no priority order to the following list.

	<b>Actions to be Taken</b>	<b>Responsible Parties</b>	<b>Estimated Completion Date</b>	<b>Status</b>
<b>1</b>	Work with Puget Sound Energy and Seattle City Light to determine power restoration priorities for hospitals and other healthcare organizations	Regional Medical Resource Center		
<b>2</b>	Work with Puget Sound Energy and Seattle City Light to determine power restoration priorities for hospital linen providers	Regional Medical Resource Center		
<b>3</b>	Work with Puget Sound Energy and Seattle City Light to determine power restoration priorities for pharmaceutical providers	Regional Medical Resource Center		
<b>4</b>	Develop protocol to provide hospitals and other healthcare providers with updated shelter information	Regional Medical Resource Center		
<b>5</b>	Determine mechanism for collecting and disseminating information about critical available resources such as pharmacies	Regional Medical Resource Center		
<b>6</b>	Determine how to receive information about safe transportation routes or transportation alternatives for Home Health and Palliative Care Providers	Regional Medical Resource Center		
<b>8</b>	Develop communication and education strategy to provide frontline clinicians with situational updates during an emergency	Regional Medical Resource Center		
<b>9</b>	Define strategy for identifying and sharing alternate transportation information with healthcare personnel	Regional Medical Resource Center		
<b>10</b>	Identify regional strategy to encourage or alert hospitals to activate their EOCs	Regional Medical Resource Center		
<b>11</b>	Develop 24/7 contact information for RMRC on Ambulatory Care; Specialty Providers; Home Health and Palliative Care Providers	Regional Medical Resource Center		
<b>12</b>	Identify strategies to match resources with medical needs, such as oxygen refills	Regional Medical Resource Center		
<b>13</b>	Determine appropriate strategy for identifying additional long term care beds in an emergency	Regional Medical Resource Center/ Long Term Care Planner		

<b>14</b>	Identify all long-term care providers in the County and collect 24/7 contact information for each for the RMRC	Regional Medical Resource Center/ Long Term Care Planner		
<b>15</b>	Determine mechanism to collect and disseminate information about what clinics are open to hospitals	Regional Medical Resource Center/ Ambulatory Care Workgroup		
<b>16</b>	Assist Ambulatory Care Community in establishing staff call down systems	Ambulatory Care Workgroup		
<b>17</b>	Coordinate with the Ambulatory Care Community around vaccine storage contingency planning	Ambulatory Care Workgroup		
<b>18</b>	Identify patient discharge strategies for displaced patients	Hospital Emergency Preparedness Committee -Danica		
<b>19</b>	Increase hospital staff awareness around personal preparedness	Hospital Emergency Preparedness Committee - Danica		
<b>20</b>	Develop patient tracking mechanism when patients are being transferred between hospitals during an emergency, especially for non-English speaking patients	Hospital Emergency Preparedness Committee		
<b>21</b>	Work with local law enforcement to determine security needs of specific facilities (i.e. those with on-site storage of narcotics)	Long Term Care Workgroup/ Zone EOCs		
<b>23</b>	Identify strategies for access to gasoline for Home Health and Palliative Care Providers	Home Health and Palliative Care Workgroup/ Zone EOCs		
<b>24</b>	Coordinate with corporate pharmacies for contingency planning	Alternate Care Facilities Pharmacy Task Force		
<b>25</b>	Educate the region about the Hospital ED Saturation policy and make implementation improvements	Hospital Control (Harborview) and Backup Hospital Control (Overlake)		