

**EMERGENCY PREPAREDNESS
FOR DIALYSIS FACILITIES**

A Guide for Chronic Dialysis Facilities

TABLE OF CONTENTS

The Format of This Manual	1
Mitigation and Preparedness.....	1
Response.....	1
Recovery.....	1
Appendix.....	1
Introduction.....	2
Program Goals.....	2
Program Objectives.....	3
Assumptions.....	3
Some Relevant Requirements of ESRD Regulations Of 1976.....	4
Planning for an Emergency – Where to Begin?.....	6
Mitigation and Preparedness (<u>Before</u> the Emergency Occurs)	8
Hazard Assessment.....	9
"IBM Hazard Site Assessment Tool".....	9
Building Information.....	11
Insurance Review.....	12
Hazard Mitigation.....	13
Fire Mitigation Strategies.....	13
Tornado Mitigation Strategies.....	14
Hurricane Mitigation Strategies.....	15
Flood Mitigation Strategies.....	16
Severe Winter Weather Mitigation Strategies.....	17
Earthquake Mitigation Strategies.....	17
Effective Communication Planning <u>Before</u> an Event.....	19
Develop a Communication Plan.....	19
Helpful Communication Tips.....	20
No Dial Tone?.....	21
Sample Letter to a County Office of Emergency Services.....	22
Sample Public Service Announcement (PSA).....	23
Emergency Phone Numbers.....	24
Emergency Generators.....	26
Should You Purchase Or Rent A Generator or Do You Even Need One?.....	26
Determine How Much Power You Need.....	26
Know Where to Obtain Generators and Related Equipment.....	26
Develop a Generator Plan.....	27
Generators—How to Determine the Size You Need.....	28
Generator Rentals.....	29
Glossary of Electrical and Generator Terms.....	30
Record Management—"The Emergency Box".....	31
Employee and Patient Emergency Preparedness.....	32
Employee Training.....	32
Drills and Evaluations.....	33
Clamp and Cut or Clamp and Cap Procedures.....	40

Hand Crank	40
Dialysis Patient Survival Instructions (Disaster + 72 hours)	41
Emergency Diet.....	42
Drinking Water Disinfection and Storage.....	45
Response	46
Emergency Succession for Decisions—Management Decision Tree.....	47
Emergency Response Checklist	47
Patient Evacuation Priority	50
Staff Evacuation Assignments.....	50
Special Needs of Pediatric Patients	52
Communication Post Emergency	57
Recommendations for Management During Utility Loss.....	58
Internal Management of the Dialysis Center	58
External Interface	58
Maintaining a Water Supply	59
How to Calculate Water Requirements	63
Loss of Water or Power—Potential Problems and Solutions.....	63
Recovery	65
Rationing of Treatments and Alternate Schedules	66
Adult Emergency Dialysis Orders.....	66
Patient Transportation	67
Damage Assessment	68
Damage Assessment Team	68
Damage Assessment Checklist.....	69
Physical Site Damage Assessment Form	73
Equipment Damage Assessment Form.....	75
Post-Earthquake Damage Evaluation Checklist.....	77
Earthquake Damage Assessment Form.....	80
Post Flooding Evaluation Checklist	82
Immediate “First Aid” for Equipment.....	83
Immediate “First Aid” for Documents.....	84
Sustained Operations—Logistical Issues	85
Facility Issues.....	86
Staff Issues	87
Administrative Issues	90
Appendix	91
Reference Web Sites	92
Hazard Mitigation	93
Structural Mitigation.....	93
Non-Structural Mitigation.....	94
Hazardous Materials	96
Supply Checklist for Dialysis Treatment	97
Home Emergency Equipment and Supplies.....	98
Emergency Evacuation Kit for Dialysis Facilities	99

Food and Water	100
Mutual Aid and Affiliation Agreements.....	100
Planning is the Key to Survival	100
Suggested Guidelines for an Affiliation Agreement	101
Emergency Equipment/Supply Record.....	103
Temporary Disaster Staff Record	104
Emergency Dialysis Patient Record	105
Volunteer Activities.....	106
Volunteer Management Log	107
Financial Processes	108
Supply and Service Relationships	109
Fire Safety.....	111
Use of Extinguishers	111
Sprinklers	112
Fire Prevention	113
Basic Fire Safety—Occupant Instruction	113
Housekeeping/Maintenance	114
Fire/Life Safety Protection	114
How to Handle Anthrax And Other Biological Agent Threats	115
Letter and Parcel Bomb Recognition Points	117
Post-Traumatic Stress.....	118
Reactions to Stress	118
Coping With Post-Disaster Feelings.....	119
Sample Emergency Response Procedure Manual	121
The Emergency Response Team.....	122
Administrator or the Nurse-in-Charge—Life Safety Responsibilities	122
Emergency Response Team—Responsibilities	122
Emergency Response Team—Emergency Roles	122
Evacuation	123
Relocation	124
Fire.....	124
Medical Emergencies	125
Bomb Threats.....	125
Bomb Threat Checklist.....	127
Hazardous Materials	128
Civil Disorder	129
Power Outage	129
Security	130
Violence In The Dialysis Workplace	131
Earthquake.....	132
Flash Flooding.....	133
Hurricanes.....	134
Tornado.....	135
Care of Disabled Persons in an Emergency.....	136
How to Carry an Injured or Disabled Person	137

The Format of This Manual

This manual has been prepared and organized using the principles of emergency management: Mitigation, Preparedness, Response and Recovery. This guideline provides a brief overview of each section and how to use the manual most effectively. Even though this book focuses on infrastructure the dialysis facility staff needs to remember that the patient is the main concern.

Mitigation and Preparedness

Before you can plan you must know what the hazards are for your area and facility. The three basic assessments you should perform are hazard site assessment, building and insurance review. Once these are completed, you can mitigate and prepare for the known hazards. You will find specific mitigation strategies for all types of emergencies such as fire, earthquake, flooding, tornado, hurricane and severe winter weather. This chapter also gives you communication strategies, training guidelines, record management and tips on emergency generators.

Response

This section deals with how to handle an emergency as it unfolds. Emergency succession must be planned for and documented. The emergency response checklist gives the person-in-charge a detailed list of issues to consider. Finally, patient evacuation, care of the pediatric patient and communication complete the section.

Recovery

Once the first hours of an emergency have subsided, the response phase begins. Decisions on serious issues such as treatment rationing, patient transportation and emergency dialysis orders must be made in advance. How to conduct a thorough damage assessment of the facility and the “first aid” care of documents and equipment are reviewed. If the emergency becomes a sustained event, facility, staff and administrative concerns are addressed.

Appendix

The final section, which could be used as a “stand alone”, includes forms and guidelines that are helpful through the entire planning process.

Introduction

An emergency is defined as a situation requiring help or relief, usually created by an unexpected event.

Thinking about the unthinkable is the driving force behind the development of this manual.

Our ability to recognize, assess and respond to an emergency situation involving a dialysis clinic is critical to continuity of care for our vulnerable patient population.

We cannot always predict when conditions or events will require that we implement our emergency procedures. However, no matter the source and magnitude of the emergency, the principles and models you will find in this manual will apply.

Emergencies do not announce themselves to us, but our reasoned response will determine the extent to which damage can be mitigated and operations resumed. Engage staff and patients in the process through education. Preparedness is the most effective way to prevent panic.

An emergency stops being one when you are prepared for it.

Program Goals

It is important to have clear and concise goals for an effective emergency management program. Goals direct your planning efforts and resources expenditures. Elements of a dialysis facility emergency management manual should include provisions to:

- Ensure safety of employees, patients, and visitors.
- Assure availability of dialysis care.
- Protect electronic and hard copy clinical and business records (data and paper critical records).
- Mitigate damage to property and contents.
- Return to normal operations as soon as possible.

Program Objectives

This emergency management program establishes specific measures that will minimize risk to lives, enable the facility to prevent and/or minimize damages, and quickly resume operations, using internal resources and expertise. A plan should include provisions to:

- Ensure the life safety of employees and patients.
- Train all dialysis employees and patients to react appropriately in an emergency, whether at work or home.
- Expedite the resumption of dialysis operations for the patient population following an emergency.
- Encourage planning and sharing of resources (human, equipment, facilities and supplies) with other medical care facilities in the area during and following an emergency.
- Review and make necessary (reasonable) changes to buildings, systems, and equipment to ensure the integrity of structures and services.
- Comply with federal, state, and local laws and regulations.

Assumptions

When writing any emergency document, it is important to begin by noting the assumptions that affect your facility and population. The following statements often apply to dialysis centers.

- Chronic dialysis facilities and patients are usually not included in state or local disaster plans, and must plan for their own survival.
- A major disaster will increase the burden on public safety and medical resources exponentially. Emergency responders will be required to triage their response to areas where direct intervention will yield the greatest results. Hospitals will always receive priority.
- After any major regional disaster such as hurricane or earthquake, normal services may be disrupted for at least three days, compelling individuals and institutions to be self-sufficient.
- Communication is likely to be severely impacted in a major emergency. This would include land phone lines, cellular phones, radio, television and other

means. Emergency procedures must take this into account and plans must reflect alternate methods of communication.

- There are likely to be staff shortages following any major emergency. Plans should consider alternative staffing strategies and ways to get employees back to work. Employee home preparedness training is key.
- In a national emergency, physicians and nurses who are members of the Reserves may be called up without notice, depleting staff. Know which staff members are in the reserves, and plan accordingly.
- The response to a major disaster is best handled by using normal operating procedures to the extent possible. However, in a true emergency extraordinary procedures will most likely be needed.
- It is impractical to plan for all possible types and sizes of emergencies; therefore, a plan must be broadly conceived to handle all potential threats.
- In an emergency of massive proportions, chronic dialysis facilities may have to initiate rationing for their patients so that crush victims with acute renal failure can be treated.

Some Relevant Requirements of ESRD Regulations Of 1976

The 1976 ESRD Regulations could not possibly have envisioned the type and number of emergency situations that have affected dialysis and other medical operations. Although the broad principles stated in these requirements are still relevant, dialysis facilities' policies must go far beyond these minimal requirements in order to assure the safety of those for whom they are responsible. These regulations are currently under revision.

Section 405.2140 (d) Emergency Procedures:

(d) "Standard: emergency preparedness. Written policies and procedures specifically define the handling of emergencies which may threaten the health or safety of patients. Such emergencies would exist during a fire or natural disaster or during functional failures in equipment. Specific emergency preparedness procedures exist for different kinds of emergencies. These are reviewed and tested at least annually and revised as necessary by, or under the direction of, the chief executive officer. All personnel are knowledgeable and trained in their respective roles in emergency situations.

(1) There is an established written plan for dealing with fire and other emergencies which, when necessary, is developed in cooperation with fire and other expert personnel.

(2) All personnel are trained, as part of their employment orientation, in all aspects of preparedness for any emergency or disaster. The emergency preparedness plan provides for orientation and regular training and periodic drills for all personnel in all procedures so that each person promptly and correctly carries out a specified role in case of an emergency.

(3) There is available at all times on the premises a fully equipped emergency tray, including emergency drugs, medical supplies, and equipment, and staff are trained in its use.

(4) The staff is familiar with the use of all dialysis equipment and procedures to handle medical emergencies.

(5) Patients are trained to handle medical and nonmedical emergencies. Patients must be fully informed regarding what to do, where to go, and whom to contact if a medical or nonmedical emergency occurs.”

Section 405.2160 Affiliation Agreement or Arrangement:

(a) “A renal dialysis facility and a renal dialysis center (see Sec. 405.2102(e)(2)) have in effect an affiliation agreement or arrangement with each other, in writing, for the provision of inpatient care and other hospital services.

(b) The affiliation agreement or arrangement provides the basis for effective working relationships under which inpatient hospital care or other hospital services are available promptly to the dialysis facility’s patients when needed. The dialysis facility has in its files documentation from the renal dialysis center to the effect that patients from the dialysis facility will be accepted and treated in emergencies.”

Section 405.2139 (b) Protection of Medical Record Information:

“The ESRD facility safeguards medical record information against loss, destruction, or unauthorized use.”

Planning for an Emergency – Where to Begin?

An emergency is any unplanned event that can cause deaths or significant injuries to employees, patients or the public, or that can shut down the facility, disrupt operations, cause physical or environmental damage.

- Check with your local area providers. Some providers may have joined forces and developed a disaster planning committee. These small committees may be an excellent resource to use when planning for or during an emergency situation.
- Contact your state Office of Emergency Services (OES). In most cases, they can provide a list of county emergency management offices and local utility companies for your state.
- Contact your Network office or check their web site. They can provide you with a list of dialysis providers, phone numbers and number of dialysis stations.
- Each city usually has an Emergency Operations Center (EOC). Contact your City EOC to see if there are any liaisons you can make in advance. Each county has an EOC and often an Office of Emergency Services (OES). These groups are responsible for the distribution of services and resources in an affected area. The City EOC is expected to handle its own emergencies. However, if it is beyond its capabilities and it has exhausted its resources, it then goes to the County EOC. If the County EOC has exhausted its resources, it goes to the State EOC and then the Federal Emergency Management Agency (FEMA) as a last resort. Chronic treatment centers such as dialysis are not normally included in emergency plans.
- Contact your county Emergency Medical Services (EMS) Agency. Many EMS agencies have disaster councils and other committees who deal with at-risk and disabled populations during a disaster. This may be a good entry point to get your facility included in the county medical emergency plan.
- Develop a facility plan. You probably already have a plan, which may or may not be comprehensive, or may not have been reviewed and modified for many years. Perhaps you don't even know where the plan is. Don't be discouraged by the size of this manual...and remember that you can't do it all at once. Every plan begins with one step.
- Form a planning team. This could consist of the administrator, nurse-in-charge, chief technician and an administrative person. Review the entire manual before starting to get a sense of the information and the work involved. Then divide up logical sections to each team member. Schedule regular

update meetings to help motivate team members and keep them on track. Remember this is an ongoing process; it is never done!

- Review your plan and compare the elements in it to those in the Table of Contents. Determine which sections are the highest priority for your facility (or corporation) to modify or develop. Draw up a timetable and checklist for implementation. Also include in your first phase some activities that are easy to bring to completion so that everyone can celebrate successes right away. Rank the rest of the elements or topics and plan implementation over time.

A good plan takes time to develop, review, modify, and implement. Take the time you need, and do it right the first time.

Mitigation and Preparedness (Before the Emergency Occurs)

In this section you will find guidelines for performing an assessment of hazards and risks, mitigating them as feasible, and training and drilling staff and patients.

Hazard Assessment

A hazard assessment is performed to identify threats that could negatively impact the ability to conduct business and care for patients in a geographic location. There are many different types of site hazard assessment tools, ranging from the simple to the complex. Often the results are the same, so in the interest of time, a simpler tool has been selected. This instrument is known as the "IBM Safe Site Test" and was developed by IBM to quickly assess risk at any of their sites.

Prior to completing this exercise, you must get acquainted with your neighborhood. Take a map and plot a one-mile radius around your facility. Drive the area, check business names and find out who your neighbors are. Often you can have very minimal hazards at your site, but be surrounded by companies that could close your facility in minutes if they suffered a loss or accident. For example, a neighbor such as a major freeway exchange could result in a hazardous materials spill from an overturned tanker truck. Or being located near a water treatment facility could result in a serious chlorine gas leak.

"IBM Hazard Site Assessment Tool"

This probability tool provides a simple assessment and insight of risk potential for an emergency. It is not to be considered all-inclusive. It does provide a general understanding of the threats and their potential impact on operations in a building. It is in the public domain, and has been adapted slightly for this manual.

<u>Is the building within one mile of:</u>	<u>Add Points:</u>
A major interstate highway	+3 for each
A railway line	+2
A potentially hazardous neighbor	
• Research lab	+3
• Nuclear power plant	+3
• Chemical facility	+3
• Landfill	+2
• Sewer/water treatment plant	+2
• Foreign Embassy/Consulate	+1
Military Base	+2
Munitions / Explosive Plant	+2
Airport	+5
Earthquake zone	+20
Tornado zone	+10
Hurricane zone	+10
Volcano zone	+10
Flood Plain	+8
River, coastline, dam	+6

Large Metropolitan area	+15
Suburban industrial park	+6
Rural area (distance from major services)	+4
Tidal wave area (also tsunami post earthquake)	+6
Severe snow/ice/blizzard	+8

In addition, consider the following risks and add points:

If the building is steam heated	+2
For every tenant (company) using computers in the building	+1
If your offices are above the 20th floor	+4
Human Risks	
• Labor dispute or strike	+4
• Vendor/supplier strike	+4
• Theft/burglary/robbery	+2
• Terrorism	+2
• Kidnapping/extortion	+2
• Bomb threat	+4
Water sprinklers in areas with computer servers, etc.	+4
High risk tenants in your building (i.e. foreign embassy)	+4

Now subtract points if you have any of the following:

Diesel or natural gas generators	-5
Uninterrupted Power Supply (UPS) systems on critical equipment	-4
All key sensitive electronic equipment is secured (e.g., location)	-4
Human security presence 7 x 24	-3
Satellite or microwave backup communications	-3
Telecommunications route diversity	-3
An independent water supply	-3
Automatic fire detection and sprinkler system	-4
Redundant chillers, pumps, cooling towers, etc.	-3
Quarterly disaster drills with staff and patients	-3
Bi-annual review of facility disaster plan with staff	-3
Quarterly review of employee and patient contact information	-3
Security system (alarms, card key access, etc.)	-3
Structural retrofit building (older building integrity upgraded)	-5

SCORE TOTAL = _____

Refer to the next page for the score evaluation.

Score Evaluation:

50+

This is not the range to be in. If relocation capabilities are not on the horizon, consider upgrades to move towards self-reliance as much as possible. Develop and maintain your emergency management and business continuity plans quickly. Exercise these plans frequently because you are likely to need them.

28-49

Not bad, but not great. Keep a close eye on future changes around you to avoid slipping into the next higher range. Carefully consider what needs to be done to improve the situation, particularly if you scored near the high end of this range. Make sure you have recovery plans that are exercised regularly.

13-27

This is a good range to be in. Only you know if the score was driven by a lucky choice of site selection, a deliberately chosen locale, or by the investment made in site hardening and redundancy of support systems. Whatever factors contributed to this score, understand them and be sure attention is paid to them. You still need regularly exercised recovery plans.

0-12

This is an organization with complete business continuity capabilities and mature, exercised, tested, recovery plans.

Now that you know your score you can look at the areas that need changes to mitigate identified risks.

Building Information

During the risk assessment phase, it is also important to make sure you have well-documented site plans and maps. These plans and maps should be stored on and off site in a secure environment and include the following information:

- Map showing all exits and relocation area outside building
- Utility shutoffs
- Water hydrants
- Water main valves
- Sprinkler shut-offs (both regional and main)
- Gas lines
- Electrical cutoffs
- Electrical substations and main
- Storm drains

- Sewer lines
- Location of each building including name of building, street number and name
- Floor plans
- Alarm and enunciators
- Fire extinguishers
- Fire suppression systems and their operation
- Exits
- Stairwells
- Restricted areas
- Hazardous material storage (include diesel storage)
- High-value items and their location
- Location of emergency evacuation kit
- Location of any pertinent safety equipment. This may include emergency supplies, tools and first aid kits
- Dialysis chair locations and patients (used to locate patients rather than name or specific identity)

Once the information is obtained, draw out a map of the facility and note these items on the map as well as have an inventory listing. Often in an emergency, pictures or maps are more helpful than words.

Insurance Review

Lastly, now that you know your risks and your building, it is also time to assess insurance policies. This will help guide how you spend your mitigation dollars. For example, if you know that you have no coverage for hurricane damage and you are in an area with that risk, spending your mitigation dollars to prevent losses due to wind and water damage will be dollars well spent.

If you are a clinic owned by a larger corporation, check with your Risk Management Department as to what type of coverage you have at your facility.

When reviewing your insurance policy, ask the following questions:

1. Is the information technology infrastructure covered? By a separate policy?
2. Does the policy include a detailed itemization of corporate assets?
3. Does the policy pay for the restoration of electronic data?
4. Are operations performed at an outsourcing facility covered?
5. Does the policy have a utility service interruption grace period?
6. Does your insurance have "pair and set" salvage rights over your company?

7. Does your policy cover all out-of-pocket recovery costs?
 8. Is the process of determining the cost of business interruption identified?
 9. Does the policy exclude payment of legal costs from coverage amounts?
-

You may elect to do a general insurance risk assessment and you are wise to retain professional counsel. A professional risk insurance assessment may contain the following components, but there may be others:

1. Identify risk.
2. Identify loss exposure:
 - Dollar loss of asset inventory
 - Business loss from the profit and loss statement
 - Recovery plan cost
 - Continuing expenses
 - Extras expenses
 - Payroll
3. Identify insurance requirements and obtain coverage as appropriate.

Hazard Mitigation

Hazard mitigation is the process of minimizing losses by reducing risk in advance of an emergency event. Now that you know your risks, you can begin the process of hazard mitigation. Take the time in advance to work with local emergency responders (Fire Departments, Police, Emergency Medical Services) so they are familiar with the nature of your operations.

Fire Mitigation Strategies

Fire is the most common of all the hazards. Every year fires cause thousands of deaths and injuries and billions of dollars in property damage. Fire damage can be extensive from smoke, flames and water. The soot and ash that remain are extremely corrosive and can damage sensitive equipment quickly.

- Meet with the fire department to talk about the community's fire response capabilities. Talk about your operations and patient needs. Identify processes and materials that could cause or fuel a fire, or contaminate the environment in a fire.
- Have your facility inspected for fire hazards. Ask about fire codes and regulations.
- Establish procedures for the safe handling and storage of flammable liquids and gases.
- Establish procedures to prevent the accumulation of combustible materials.

- Provide for the safe disposal of smoking materials. It is best to allow no smoking in the building at all.
- Establish a preventive maintenance schedule to keep equipment operating safely.
- Place fire extinguishers in appropriate locations. § 405.2140 (a)(1)and(2)
- Ensure that key personnel are familiar with all fire safety systems.
- Identify and mark all utility shutoffs so that responding personnel can shut off electrical power, gas or water quickly.
- Determine the level of response your facility will take if a fire occurs. Among the actions to be taken are:
 - Immediate evacuation of all personnel and patients on alarm.
 - Personnel are trained in fire extinguisher use. Personnel in the immediate area of a fire attempt to control it. If they cannot, the fire alarm is sounded and all personnel evacuate.
 - A fire team is trained to fight incipient-stage fires that can be controlled without protective equipment or breathing apparatus. Beyond this level fire, the team evacuates. (As defined by the National Fire Protection Agency, the first stage of fire is the incipient stage. It is related to the start of the fire during which time there is no active flaming.)

Tornado Mitigation Strategies

Tornadoes are incredibly violent local storms that extend to the ground with whirling winds that can reach 300 mph. Spawned from powerful thunderstorms; tornadoes can uproot trees and buildings and turn harmless objects into deadly missiles in a matter of seconds. Damage paths can be in excess of one mile wide and 50 miles long. Tornadoes can occur in any state but occur more frequently in the Midwest, Southeast and Southwest. They occur with little or no warning. Damage caused by tornados is due to the severe wind and weather the twister produces. Therefore, mitigation strategies that lessen the damaging effects of wind will be helpful.

- Work with a structural engineer or architect to designate shelter areas in your facility. Ask your local emergency management office or National Weather Service office for guidance. The safe place should be the lowest part of the building and away from windows. Make sure all employees know where to go if the status progresses to a tornado warning.
- Make sure your building has wind-resistant designs and strengthen any un-reinforced masonry.
- Securing sensitive and mission critical equipment is essential.
- Assess and obtain supplies you may need during tornado season prior to it starting!
- Purchase a NOAA Weather Radio with a warning alarm tone and battery backup. Listen for tornado watches and warnings.
- Establish procedures to inform personnel when tornado warnings are issued.

- When your area has received a tornado watch, make sure all items that could blow away are tied down or brought inside.
- Have plastic sheeting and duct tape on hand to cover equipment or windows if necessary.

Hurricane Mitigation Strategies

Hurricanes are severe tropical storms with sustained winds of 74 miles per hour or greater. Hurricane winds can reach 160 miles per hour and extend inland for hundreds of miles. Hurricanes bring torrential rains and a storm surge of ocean water that crashes into land as the storm approaches. Hurricanes also spawn tornadoes. The National Weather Service issues hurricane advisories as soon as a hurricane appears to be a threat. The hurricane season lasts from June through November.

Damage caused by hurricanes is due to the severe wind and weather the storm produces. If you are located near the coast, you may also have to contend with a storm surge. Therefore, mitigation strategies that lessen the damaging effects of wind will be helpful.

- Make sure your building has wind-resistant designs and strengthen any unreinforced masonry. Check to make sure your roof is well secured.
- Securing sensitive and mission critical equipment is essential.
- Assess and obtain supplies you may need during hurricane season prior to it starting!
- Purchase a National Oceanic and Atmospheric Administration (NOAA) Weather Radio with a warning alarm tone and battery backup.
- Establish facility shutdown procedures.
- Establish warning and evacuation procedures. Make plans for assisting employees who may need transportation.
- Make plans to protect windows. Permanent storm shutters offer the best protection. Covering windows with 5/8" marine plywood is a second option. Buy in advance and keep a supply on hand.
- Have sufficient portable pumps to remove floodwaters.
- When your area has received a hurricane watch, make sure all items that could blow away are tied down or brought inside.
- At the beginning of hurricane season, give each patient a copy of the most current treatment, lab results and any special instructions.
- Store all critical records at least 24" off the floor in case flooding occurs during a facility closure.
- Have plastic sheeting and duct tape on hand to cover equipment or windows if necessary.
- Contact local Office of Emergency Services (OES) to determine if there are any special arrangements made for dialysis patients in the county emergency plan. Some Florida counties have specially designated shelters for patients on dialysis.

Flood Mitigation Strategies

Many communities can experience some degree of flooding after spring rains, heavy thunderstorms or winter snow thaws. Most floods develop slowly over a period of days and there is time to secure the environment. Flash floods, however, are like walls of water that develop in a matter of minutes. Flash floods can be caused by intense storms or dam failure. If you are in an area prone to flash flooding, these strategies must be employed.

- Establish warning and evacuation procedures for the facility. Make plans for assisting employees or patients who may need transportation.
- Store all sensitive equipment high above where probable floodwaters will reach.
- Mount electrical substations and junction boxes above floodwater heights.
- Have plastic sheeting and duct tape on hand, to cover equipment or windows if necessary.
- Have sandbags, sand and shovels on site.
- Secure outdoor items that could float away such as picnic tables, benches or outdoor chairs.
- Have sufficient portable pumps to remove floodwaters.
- Purchase a NOAA Weather Radio with a warning alarm tone and battery backup. Listen for flood watches and warnings.
- Store all critical records at least 24" off the floor in case flooding occurs during a facility closure.
- Consider the feasibility of flood proofing your facility. There are three basic methods.
 - Permanent flood proofing measures are taken before a flood occurs and require no human intervention when floodwaters rise. They include:
 - Filling windows, doors or other openings with water-resistant materials such as concrete blocks or bricks. This approach assumes the structure is strong enough to withstand floodwaters.
 - Installing check valves to prevent water from entering where utility and sewer lines enter the facility.
 - Reinforcing walls to resist water pressure. Sealing walls to prevent or reduce seepage.
 - Building watertight walls around equipment or work areas within the facility that are particularly susceptible to flood damage.
 - Constructing floodwalls or levees outside the facility to keep flood waters away.
 - Elevating the facility on walls, columns or compacted fill. This approach is most applicable to new construction, though many types of buildings can be elevated.

- Contingent flood proofing measures are also taken before a flood but require some additional action when flooding occurs. These measures include:
 - Installing watertight barriers called flood shields to prevent the passage of water through doors, windows, ventilation shafts or other openings
 - Installing permanent watertight doors
 - Constructing movable floodwalls
 - Installing permanent pumps to remove flood waters
- Emergency flood proofing measures are generally less expensive than those listed above, though they require substantial advance warning and do not satisfy the minimum requirements for watertight flood proofing as set forth by the National Flood Insurance Program (NFIP). They include:
 - Building walls with sandbags
 - Constructing a double row of walls with boards and posts to create a "crib," then filling the crib with soil
 - Constructing a single wall by stacking small beams or planks on top of each other

Severe Winter Weather Mitigation Strategies

Severe winter storms bring heavy snow, ice, strong winds and freezing rain. Winter storms can prevent employees and patients from reaching the facility, leading to a temporary shutdown until roads are cleared. Heavy snow and ice can also cause structural damage and power outages.

- Assess and obtain supplies you may need during the winter season prior to it starting!
- Listen to NOAA Weather Radio and local radio and television stations for weather information.
- Establish procedures for facility shutdown and early release of employees and patients.
- Store food, water, blankets, battery-powered radios with extra batteries and other emergency supplies for employees who become stranded at the facility.
- Arrange for snow and ice removal from parking lots, walkways, roofs, loading docks, etc.

Earthquake Mitigation Strategies

Earthquakes occur most frequently west of the Rocky Mountains, although historically the most violent earthquakes have occurred in the central United States. Earthquakes occur suddenly and without warning. Earthquakes can seriously damage buildings and their contents; disrupt gas, electric and telephone services; and trigger landslides, avalanches, flash floods, fires and huge ocean waves called tsunamis. Aftershocks can occur for weeks following an earthquake.

- Have your facility inspected by a structural engineer. Develop and prioritize strengthening measures. These may include: adding steel bracing to frames,

adding sheer walls to frames, strengthening columns and building foundations and replacing unreinforced brick filler walls

- Keep copies of design drawings of the facility to be used in assessing the facility's safety after an earthquake.
- Review processes for handling and storing hazardous materials. Have incompatible chemicals stored separately.
- Establish procedures to determine whether an evacuation is necessary after an earthquake.
- Designate areas in the facility away from exterior walls and windows where occupants should gather after an earthquake if an evacuation is not necessary
- Have a Memorandum of Understanding (MOU) with an engineering firm to complete a Building Damage Assessment. Ensure you have 24/7 contact information in the MOU.
- Have plastic sheeting and duct tape on hand, to cover equipment or windows if necessary.

Steps to Nonstructural Hazard Mitigation

In many buildings, the greatest danger to people in an earthquake is when equipment and non-structural elements such as ceilings, partitions, windows and lighting fixtures shake loose. An example would be a bookcase that falls over injuring someone and blocking egress or a television overhanging a dialysis chair that is not properly secured. Most people are injured by nonstructural hazards, not the collapse of buildings!

- Inspect non-structural systems such as air conditioning, communications and pollution control systems. Assess the potential for damage. Prioritize measures to prevent damages.
- Inspect your facility for any item that could fall, spill, break or move during an earthquake. Take steps to reduce these hazards:
 - Move large and heavy objects to lower shelves or the floor. Hang heavy items away from where people work.
 - Secure shelves, filing cabinets, tall furniture, desktop equipment, computers, printers, copiers and light fixtures.
 - Secure fixed equipment and heavy machinery to the floor. Larger equipment can be placed on casters and attached to tethers that attach to the wall.
 - Add bracing to suspended ceilings, if necessary.
 - Install safety glass where appropriate.
 - Secure large utility and process piping.
 - Shelving should have lips whenever possible. This is particularly important on any shelf above 5 feet.
 - When patients bring oxygen tanks with them, they should always be in carriers.

- Besides locking dialysis machines and portable reverse osmosis machines, consider a cable (leash) from the machines to the wall that can easily be disconnected. Machines might travel despite having brakes.

Effective Communication Planning Before an Event

Communication is usually the weakest link in even a well-developed plan and may be the most important issue during any emergency. Spend time planning your communication strategy now.

Develop a Communication Plan

- **Inventory Existing Communications**
This includes telephones, fax machines, two-way radios, mobile phones, ham radio, pagers, e-mail, web sites, toll-free numbers (800, 877, 866) and Citizen Band (CB) radios.
- **Determine Vulnerabilities**
Include in this part of your plan how to reduce or prevent threats to continued service, such as structural integrity of buildings, vulnerabilities of communication equipment and supplies.
- **Draw Maps of Key Components**
Show the location of switchboard equipment, fax machines, modems, equipment rooms, terminals, spare phone equipment and analog sets. The map should show which equipment has backup power and how long it could last.
- **Identify Critical Communication Needs**
Within your organization, each group will have different communication needs to send and receive information. Survey the groups to determine their requirements.
- **Budget**
If your plan requires new equipment, you need to communicate this to your administrator, demonstrating the cost-benefit analysis of the request.
- **Develop Diagnostic Checklists**
Determine what equipment will be needed to test for damage immediately following a disaster. Prepare easily understood checklists and instructions. If you need outside vendors to perform diagnostics, have arrangements in advance so that you will know how quickly they can respond to your needs.
- **Perform Periodic Test of the Plan**
Test frequently. Always include a communication component in any emergency exercise you perform. This could include two-way radio drills, activation of call trees, hooking up analog phones, etc.

Helpful Communication Tips

- Update contact information for all patients, key vendors and staff on a quarterly basis. (This would include home phone, mobile phone, pagers, home internet service providers and any other communication devices they possess.) This should include special treatment/transport needs. Store in a safe place at the Center, preferably in your emergency box as well as off site.
- Organize patient and employee contact information in a telephone call tree format. Do at least semi-annual tests of the tree and revise as necessary. However, always have other methods of communication in the plan such as pre-designated meeting areas at certain times, toll free numbers, web sites, etc.
- Internal phone systems require electricity. The external phone system could be operational but you may be unable to dial out unless you have an old style analog phone (only plugs into the phone jack and requires no electricity). If you are not sure about your internal phone system, contact your local telephone service provider.
- Make sure you have at least one analog phone line (companies with sophisticated phone systems often have none!). The analog phone referenced above will only work in an analog phone jack, like the one in your home.
- Consider adding a payphone to your center if there is not one now. Pay phones are part of the emergency phone system and have dial tone first after any event.
- Two-way radios, commonly known as walkie-talkies are very helpful for communication around your facility. Even the very simple ones meant for family use may be good enough for communication within the facility. Check local electronics vendors or even larger discount retailers.
- An out-of-state emergency phone number can be a lifesaver! After a large regional event such as a hurricane or earthquake, these phone numbers come up first. Establish an out-of-state number (toll-free if possible) for your staff and patients to call to find out the status of your facility, whether treatment or work schedules have changed and other critical information. Print business cards with this number on it and give to patients and staff.
 - A typical message could be – “Thank you for calling the ABC Dialysis Facility hot line. There are no emergencies to report at this time. In the event of an incident, you would call this number to get up-to-date information on center hours, emergency diet and water restrictions, treatment options and other instructions. Thank you for calling the ABC Hot Line.”
- If you have a web site, you might be able to use it to communicate with staff and patients. After any large disaster such as the World Trade Center tragedy, hurricanes or plane crashes, the Internet becomes the main source of information for many people.

- Have pre-prepared public service announcements that are available to be given to radio and television stations. This will often work well as a communication tool in smaller communities. However, in large urban areas, stations will not often broadcast this type of information. Identify your local radio stations, particularly those that broadcast in languages other than English.
- Do you have any employees or patients who are ham radio operators? If so, you might be able to use the radio as a communication tool. These systems can only be used in a regional emergency to report emergencies and needs to local fire or police, but could be very helpful. Do a survey to find out if there are “hams” in your community and speak with them about how they may be able to assist the facility. Work with local ham radio clubs for assistance during an emergency. These clubs can be located by contacting your city or county emergency agencies.
- Other communication tools include bullhorns or use of runners.
- Always have at least one battery powered radio on hand with plenty of fresh batteries.
- Always post emergency numbers in visible locations, ideally by all phones.
- Another method of communicating with staff and patients is to have a poster with the pertinent information posted on the facility main door. If possible, using a runner, deliver an 8 1/2” x 11” version to each patient and employees’ home. Include clear instructions on what you expect them to do, when you will reopen and where they can go for treatment.
- Maintain the batteries on your phone systems, phone switch and switchboard units. Change batteries regularly.
- Remember cellular phones and landlines are prone to system overload. You must have other means of communication identified in addition to those phones.
- Consider issuing employee badges that can be used during an emergency to identify your staff. These badges can quickly provide identification when there are many new workers present after an event.

No Dial Tone?

There is a natural tendency during or immediately following a major event to pick up the phone to call family and friends. Most phone systems (both land lines and mobile) are built for 10-15% capacity. Invariably, the system becomes overloaded, and dial tones are “denied.” This is a result of a process called “line load control,” a built in feature to protect the collapse of the system in times of over-utilization. When saturated, the system denies dial tone; this can last for minutes to indefinite time periods. To help minimize the problem of no dial tone:

- Make sure phones are not off the hook.
- Stay off the phone unless there is an absolute emergency.
- If you **MUST** use the phone, pick up the receiver, and hang on until you hear a dial tone. Be prepared to dial immediately when you hear the tone. If you don’t begin dialing within a few seconds, you will lose the dial tone.

- Do not flash the receiver hook. This delays the call.
- Line load control does not necessarily block incoming calls.

Remember, if your phones rely on local power, they will not work if electricity is off unless the system is on an uninterrupted power supply (UPS).

Sample Letter to a County Office of Emergency Services

Consider doing outreach to either your local Office of Emergency Services (OES) or Emergency Medical Services (EMS) Agency to introduce your facility and its special needs.

Dear County Office of Emergency Services,

This is a letter of introduction regarding our dialysis center.

Dialysis is a life-sustaining medical procedure. Our facility has *(number of stations)* dialysis stations and provides dialysis treatments to *(number of patients)* in the community. We operate *(days of operation)* from *(hours of operation)*. During most shifts we have *(number of staff)* staff caring for patients.

Dialysis requires electrical power and water. We have identified our minimal electrical needs as *(maximum load here)*. We use on an average of *(number of gallons of water)* gallons of water daily. We have contacted *(name of water vendor)* and *(electrical vendor)* as to our needs and requirements.

I would like the opportunity to speak with you regarding our emergency plan and determine how we may fit into the county's plan during any major event.

I look forward to meeting and working with you in the future.

Sincerely,

Dialysis Administrator

Sample Public Service Announcement (PSA)

(Fill in the appropriate boxes and check sections)

This is an announcement from

_____ (facility) at

_____ (street address).

To Our Employees

Do _____ Do not _____ report to work.

Our dialysis center is open _____ closed _____ .

Staff should report to

TO OUR PATIENTS

Our dialysis center is open _____ OR closed temporarily _____ .

You should remain at home until we notify you to come in.

Follow your disaster diet and instructions.

These local centers are operating:

If you have a life threatening injury or illness report to the nearest emergency room.

OTHER INFORMATION

Signed by _____

Date _____

Emergency Phone Numbers

EMERGENCY PHONE NUMBERS	
FIRE:	9-1-1
POLICE:	9-1-1
AMBULANCE/PARAMEDICS:	9-1-1
MANAGEMENT AFTER HOURS:	()

ESSENTIAL NUMBERS (INCLUDE COMPANY NAMES AND CONTACT PERSONS)	PHONE NUMBER
ADMINISTRATOR	
ALTERNATIVE DIALYSIS CENTER	
BUILDING INSPECTOR	
CHIEF TECHNICIAN	
FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA)	
FIRE DEPARTMENT- NON EMERGENCY NUMBER	
HAZARDOUS MATERIAL	
LOCAL ELECTRIC/GAS COMPANY	
LOCAL WATER DEPARTMENT	
MEDICAL DIRECTOR	
NEAREST HOSPITAL	
NEAREST MASS CARE CASUALTY CENTER	
NURSE-IN-CHARGE	
OFFICE OF EMERGENCY SERVICES - STATE	
OFFICE OF EMERGENCY SERVICES- COUNTY	
POISON CONTROL	
POLICE DEPARTMENT –NON EMERGENCY NUMBER	
PUBLIC HEALTH DEPARTMENT	
TELEPHONE REPAIR	6-1-1
TRANSPORTATION COMPANY	
WATER TREATMENT CONTRACTOR	

Emergency Generators

In an emergency, electrical power is often interrupted. Generators are expensive, require space, and ongoing maintenance; but under emergency conditions, they might make the difference in being able to serve patients. The following steps will prepare you to make an informed decision.

Should You Purchase Or Rent A Generator or Do You Even Need One?

It depends on whether or not an alternate dialysis provider is available. Most centers conduct a cost-benefit analysis (how much money would you lose daily if not operational) versus the likely risk of needing a generator. If your risk is high (hurricane or earthquake country, instability of the electrical grid) and your revenue loss would be high, it is easier to justify the expense. Consider renting one or closing the facility during the emergency and referring patients to other dialysis centers. Before making a decision look at all costs.

Determine How Much Power You Need

- Determine power distribution
What is on separate breakers? Are the reverse osmosis machines, the treatment equipment, and/or treatment lights on separate breakers?
- Whole facility or just critical loads
Determine if you need to power your whole facility or just critical loads, and determine the aggregate electrical load. Consult a qualified electrician to perform an ammeter reading of your electrical distribution box when your facility is running at peak load. Your utility bill may provide peak electrical usage.
- Power for critical loads
Prioritize individual loads (lights, pumps, machines, etc). Decide which require power immediately during an emergency. If you have a separate distribution box to feed critical loads, you may only need enough temporary power for the loads served by that set of circuit breakers. Another method is to take an ammeter reading with just the critical loads running. To determine amperage or voltage for a piece of equipment, check the nameplate.

Know Where to Obtain Generators and Related Equipment

Find a rental generator dealership. Look in the Yellow Pages under generators and rental equipment. Discuss your needs with the dealer and ask the following questions:

- Do they deliver generator sets and related equipment?
- How long does it take to get on site?

- Do they deliver at night or on holidays?
- Who installs the equipment?
- Do they supply fuel? If not, whom do they recommend?
- How are rental contracts structured?
- What kind of experience do they have in the medical fields? Any experience in dialysis?
- What technical service/support is provided?
- What if the generator fails on site?
- Do they offer training in equipment installation and operation?
- Will they come to your facility to inspect hook-ups and the suggested generator site?
- Do they have contracts with other customers for generators during an emergency? If so, where are you in the list?
- Do government agencies have precedence over private customers in the event of a disaster?
- Will they give you a contract in writing providing you with priority access to the needed equipment?
- **Consult a qualified electrician or electrical engineer.**

Develop a Generator Plan

- **Generator Location**
Generators range in size from the petite to the gigantic! Once you know how much power you need, be sure you have the space to accommodate the generator. You might need to get two smaller ones rather than a large one. It is helpful if the dealer comes to your facility to do an inspection. They can often provide tips and ideas on location, installation and other important concerns. Also check with the local building permit department and air quality board to determine if there are any regulations that govern generator use. Lastly, check with your neighbors. A loud, diesel-smoking generator could be a problem to a neighbor who could complain to local authorities.
- **Getting the Generator to your Location**
Most are towed on semi-trailers or pull trailers. Others are skid mounted and require a forklift. If you are picking up your own generator, make sure you have the right size truck or get a contract with a trucking firm for delivery.
- **Getting the Cable Routed from the Generator Outside your Building to the Electrical Distribution Boxes Inside**
An open door or window will work, but not in extreme weather. Consider installing a weather head or cable access door that can be closed when not in use.
- **Adequate Fuel**
You must have extra fuel if you need to run for an extended period of time. Ideally, have enough fuel for two or three days. An auxiliary tank of fuel is important. If you are in a very cold climate, you will need special winter fuel.

Always have at least two vendors on contract, in case one runs out or has difficulty delivering to your area.

- **Hooking Up and Maintaining the Generator**
If you don't have trained people on site, you will need an electrical contractor. Or have someone train and certify your staff. A survey of your facility and your electrical needs by a licensed electrician is essential. You may need to consider an exterior outlet on your building to be able to connect a generator.
- **Automatic Bus Transfer Switch (ABT)**
The ABT switch has power coming into the switch from the normal power source and from the emergency power source. The wires leading to the building are usually connected to the normal power source. In the event the normal power is lost, the ABT immediately transfers the building to the emergency power source. When normal power is restored, the ABT shifts the building back to normal power.
The switch that automatically starts the emergency generator is often built into the ABT. This switch automatically starts the emergency generator when normal power is lost, and shuts down the generator when normal power is restored.
- **Document the Plan**
Write the generator plan documenting the entire process from obtaining the equipment, installation and maintenance.

Generators—How to Determine the Size You Need

- Contact a qualified electrician to determine actual load, and then determine the critical and secondary loads. As an example, the following questions and methods can be used to determine your needs.
 - If you have the electrical line diagrams, you can add the circuits together that you intend to power from the generator.
 - Do you have an existing transfer switch that is rated to accommodate the capacity size of the generator?
 - Do you want to provide a full or partial backup of current building?
 - Is the business growing? Shrinking?
 - Do you want full load on generator or partial load?

The electrician must determine the amount of current you need and at what voltage. Then a generator company can tell you the size. If you base it on current load, you will get a minimum size to support those needs. Your other needs will determine the cost to increase your capacity. The installation cost is basically the same in size ranges.

How to Calculate Critical Electrical Loads

Use the following formula to express the number of kilowatts needed:

$$\begin{aligned} \text{Amps X Volts} &= \text{Watts,} \\ \text{Watts} / 1000 &= \text{Kilowatts} \end{aligned}$$

Number of Machines X (Kilowatts per machine) = Minimum Electrical Load

Example:

A Fresenius 2008E draws 15 amps maximum and runs on 110 volts,
15 amps X 110 volts = 1650 watts
1,650 watts divided by 1,000 = 1.65 kilowatts per machine

Generator Rentals

Check the Yellow Pages under "Generators" or web sites on the Internet.

Glossary of Electrical and Generator Terms

Sound Attenuation	You may need a quiet generator set if you are close to other buildings or residences. Ask for a set with sound attenuation below 92db (A) at fuel load or better.
Auto-Start/Stop Connections	This automatically starts or stops a generator if the standby unit goes down.
Radiator Exhaust Discharge	Some sets come with vertical radiator and exhaust systems designed to direct heat and exhaust away from people and buildings.
Electronic Governors	Maintains a steady electrical frequency, which is necessary for critical loads that cannot handle frequency fluctuations.
Output Bus Bars	Lets you run several pieces of equipment off one generator set by spacing multiple cable hookups.
Fuel Capacity	Generators should run for at least eight hours without the need to refuel. Determine how many tanks of fuel per day you will need. Ideally arrange to have a two to three day supply of fuel delivered with the generator.
Fuel Priming Pump	Assures easier start-up after refueling.
Charging Alternator	Ensures batteries are charging when the units are operating. If the unit is equipped with battery chargers and/or space heaters, an outside power source is required for standby generator sets.
Sight Gauges	Allow for easy checking of fuel and other fluids.
Security	Generators should be tamper-proof. Lockable doors, oil/water drains mounted inside the enclosure, and hidden exterior fuel drains help ensure security.

Record Management—“The Emergency Box”

Active medical records, including reuse records, should be secured and protected to minimize damage from wind, rain, broken glass, sprinklers, chemicals, etc.

In a disaster, records may be destroyed, unavailable, mutilated or unusable. An inexpensive but efficient method to have a back-up medical record for all of your patients is:

Purchase a sturdy, waterproof and portable container large enough to hold all of the records noted below. If possible, use a fireproof container.

The emergency box will help you to identify patients and staff, provide useful forms, schematics and important contacts.

- Copy the Medical Evidence Form (CMS 2728), the hemodialysis orders, admitting face sheet for ALL of your patients, and
 - Place them in a three-ring binder, alphabetically.
 - Keep the binder in the “emergency box.”

The emergency box should contain:

- *Advance health care directives* for all patients who have one.
- *Blank emergency forms* in the records box (see mutual aid section of the manual) and extra Patient Care Program forms.
- A *schematic drawing* of the flow pattern and operation of the treated water system.
- A *census of patients and staff* by shift in order to do an accurate head count at the evacuation area.
- *Phone numbers* of staff and patients and emergency contacts. Maintain current emergency contact information. Check quarterly.
- *Copy of mutual aid agreements.*
- List of *critical services providers* such as vendors, suppliers, etc. (Examples include plumbers, electricians, HVAC contractors)
- Disposable camera.
- A flashlight with extra batteries.

Educate staff about the “emergency box.”

- Inform all personnel of the location of the emergency box.
- Integrate the protection of this emergency box into your emergency plan and drills. Designate the person responsible. The box can be of immediate assistance to you at the evacuation area.

A basic medical supply list can be found on page 99.

Business records and temporary medical records should be treated with the same protection as permanent records. Medical and business records may need to be transported to an alternative location. Computers should be turned off at the earliest sign of disaster to minimize erasures.

Back-up critical electronic documents and store them off-site: Have both hard copy and computer back-ups whenever possible. Computer backups should be done nightly and taken off site at least weekly.

The back-ups should be stored in a safe but accessible location. Notify key employees of the location.

Employee and Patient Emergency Preparedness

Employee Training

Emergency Response Team (ERT) Training

All personnel should have emergency response team training. ERT members have assumed additional responsibilities. These responsibilities may include knowledge of

- The physical layout of the facility.
- The location of the nearest stair exit, alternate stair exit and the direct route to each.
- The location and how to use fire extinguishers.
- The patient evacuation priorities of the facility.
- The clamp and cut or clamp and cap procedures.
- How to evacuate patients.
- Emergency telephone numbers and procedures.
- How to assume control, maintain calm and prevent panic.
- How to instruct co-workers in their emergency roles.
- The emergency evacuation area location.
- The utility and water shut offs.

ERT training may include the following topics:

- Disaster preparedness for home and work (Red Cross, www.redcross.org).
- First Aid/CPR training (Red Cross, American Heart Association or local National Safety Council affiliate).
- Search and rescue (local fire department).
- Fire extinguisher use (Most fire extinguisher companies will give your staff a free in-service and allow them to shoot off extinguishers when they come for their regular, annual servicing. Call in advance to arrange. Look in yellow pages under Fire Services for vendors or contact your local fire department.)

- Your center’s emergency plan including roles and responsibilities of ERT and all staff members.
- Assisting patients in an emergency-patient safety, emergency clamp and cap or clamp and cut, hand-crank procedures, and emergency evacuation carries and drags.
- Handling of the dead after a disaster.
- Evacuation techniques.
- Hazardous chemical training (worker-right-to-know).

Drills and Evaluations

Perform timed disaster drills quarterly, be sure every shift has a drill. Disaster drills should be a part of every new staff orientation. Not all drills should be announced; a surprise drill will help reinforce learning. Drills are serious and should not be taken lightly. Regular practice can help to instill an awareness, calmness and preparedness in the minds of all.

All drills require planning to ensure the most benefit. The three essential requirements for conducting a successful drill include:

- Pre-drill education for all staff and patients. This should be an on-going effort.
- Step-by-step plan for executing the drill.
- Post-drill critique and recommendations.

The purpose of a “drill” is to practice skills necessary to ensure the safety of all. Both patients and staff should be included in the drill exercise. The drill in the dialysis setting should focus on specific tasks that are not routinely performed, but critical to the safe termination of dialysis and evacuation of patients and staff in the event of a real disaster. When designing a drill, look at your hazard assessment and pick a hazard that is applicable for your area. Vary the drill by using the “worse-case” and “ideal” scenarios.

- Worse Case Scenario results in the termination of dialysis due to traumatic separation of patient from blood lines/access needles. This will require staff to respond quickly, protect themselves from blood exposure, assist and/or verbally instruct patients, and evacuate themselves and patients.
- Ideal Scenario allows staff to have time to ensure patients are safely terminated from dialysis and removal of needles occurs after evacuation from the building when safe.

It is not necessary or desirable to actually discontinue dialysis treatments during a drill.

Drill Scenario Ideas

Consider these scenarios when conducting drills

- Major formaldehyde or renalin spill
- Fire
- Sudden power outage
- Sudden water loss
- Earthquake
- Sudden flooding
- Contaminated water supply/Chloramine break through
- Hurricane
- Tornado
- Violent patient, family or staff member

Drill Basics

Designated personnel will be strategically stationed throughout the floor to observe the actions of personnel when the drill begins or the alarm sounds.

1. The Discovery of a Disaster

- Pick someone at random and present him or her with the disaster scenario. The person will be asked to handle it as if it were a real problem. Observations will be made for:
 - Checking the area and removing anyone in immediate danger.
 - Closing the door to the room on fire to confine the fire. (if applicable).
 - Sounding the alarm by use of one or all of the following:
 - Verbally to an ERT member or other personnel.
 - Manual use of fire alarm pull box (If applicable).
 - Telephone call.

2. ERT Response to the Disaster

- ERT members perform all duties which include:
 - Bring fire extinguisher to scene of emergency if applicable. Do not actually use.
 - Communication- All communications instructions should be carried out except for calling the Fire Department.

- Locate emergency packs by each machine.
- Clamp and cut or clamp and cap each patient (simulation only, see page 38).
- Remove patients and emergency box from the building.
- Search all areas of the building.
- Complete evacuation of the building.
- Head count made at evacuation/safe refuge area.
- Verification given to management.

Step-By-Step Plan

Pre-plan each drill. Focus on a key activity each time. For example: Clamp and cut, clamp and cap, hand crank, or evacuation. Thus, the staff and patients become more proficient, and the key skill is practiced and drilled.

1. Call the drill. A designated person does this. "Our drill will now begin." (The timing process begins now.)
2. Give the designee a cue card that describes the situation and what the drill will accomplish. For example, "This is a power failure drill, we will do the hand crank technique," or this is an earthquake drill, we will practice the clamp and cut or clamp and cap technique." This situation drill should all be planned in advance by the Nurse-in-Charge.
3. This begins a chain reaction where all staff and patients are alerted to the status and the situation.
4. Assign staff to assist or instruct patients in procedures relevant to the drill.
 - If the drill is an evacuation drill, be sure that emergency documents are removed during the drill.
 - The emergency box noted in the record management section of this manual should be taken outside.
5. The person in charge directs the staff including what actions they should be taking. For example, in a power failure the procedure would be hand crank, so the action would be:
 - Face the machines
 - Turn off the machine
 - Grab the hand crank
 - Disarm the air detector (venous - line clamp)
 - Begin hand crank (See page 38)
 - Instruct patients

6. To conclude the drill, give the verbal instructions:
 - Stop hand crank
 - Turn on machines
 - Reset alarms (mute)
 - Reset air detector
 - Resume treatments
 - Timing of the drill is concluded

7. Do a quick critique immediately after the drill.
 - Have all staff sign in.
 - Review key procedures from checklist.
 - Review life safety procedures.

8. Document drill.

Timing of specific portions of the drill is important. Times to note are:

 - From discovery to staff duties beginning
 - From time alarm is first heard to last patient relocated.
 - From floor evacuate/relocate order to last arrival at safe refuge area.
 - Accurate assessment of time passage will assist in evaluating problem areas in regard to the movement of people.

Any equipment used must be returned to a state of readiness!

Post-Drill Critique and Recommendations

- The Nurse-in-Charge completes a verbal and written evaluation following each drill. Group discussions with employees/occupants will also be held.
- Points which should be covered are: not hearing the alarm, fire equipment blocked or unusable, exits and/or hallways blocked, operations hindered, duties not understood or carried out, etc.
- The Nurse-in-Charge or designee completes a Drill Report.
- Note the following:
 - Circulate the sign-in-sheet to record staff attendance.
 - File critique form and attendance record in quality assurance/ improvement report log and staff training log.
 - Ensure all facility staff attend drill or demonstrate essential skills to ERT personnel if absent.
 - Provide deadline for performance skills/drill make up for absentee staff.

Emergency Exercises

There are two other types of exercises that would provide valuable learning and training for staff: tabletop and functional trainings. These activities help reinforce learning and test policies and procedures that are not practiced in an evacuation drill. For information on the other types of exercises and how to conduct an exercise go to the Federal Emergency Management Agencies web site www.fema.gov.

Drill Critique Form

Date _____ Critique Completed By _____

Time Drill Began _____ Time Last Patient Removed From Machine _____

Time Floor Evacuated _____ Time Drill Completed _____

Place Y (Yes) or N (No) answers on the spaces provided for those items that are applicable to your facility and the emergency drill scenario.

Communications

- Was the disaster signal heard in all areas? Y or N
- Fire Department notified? Time (*Simulation*) Y or N

Evacuation Team Personnel

- Team members reported to respective areas? Y or N
- Team members carried out all assigned duties? Y or N
- Elevators brought to the Main Lobby & deactivated? Y or N
- Emergency take off demonstrated? (Hand crank, clamp & cut, or clamp & cap) Y or N
- Evacuation techniques demonstrated? Y or N

Containment of Fire

- Were all doors closed but not locked? Y or N
- Windows closed? Y or N
- Was fire extinguisher taken to fire location? (If relevant) Y or N

Evacuation/Relocation

- Were corridors & exits kept clear? Y or N
- Did the evacuation proceed in a smooth & orderly manner? Y or N
- Did visitors to the building take part in the drill? Y or N

Utilities

- Were electric & gas appliances turned off? Y or N
- Ventilation system shut down? Y or N
- Oxygen valve shut off? Y or N
- All water treatment machines & other ancillary equipment shut off? Y or N

Availability of Emergency Packs

- Were the emergency packs complete? Y or N
- Were they accessible to staff & patients? Y or N

Contaminated Water

- Dialysate into bypass? Y or N
- Water shut off? Y or N
- Ascorbic acid for chloramines break through

Hazardous Spills

- Spill kits available? Y or N
- ANSI respirators with appropriate filters available? Y or N

Remarks and Recommendations

Clamp and Cut or Clamp and Cap Procedures

These directions are for emergency situations only. Access needles will be left in place until the patients get to a safe place and are assisted with removal of needles.

- Locate the emergency pack. It should contain clamps, a pair of scissors, tape, Band Aides, and gauze.
- Clamp both access needle lines.
- Clamp both of the thicker bloodlines.
- **If** the lines have pinch clamps, pinch all four clamps closed.
- Cut or unscrew the lines **between** the closed clamps.
- If you must cut the lines, cut **ONLY** the *thicker* blood lines.
- **NEVER cut the access needle lines.**
- **NEVER, NEVER cut between the clamp and the access, the patient will bleed to death.**

“Clamp and Cut” or “Clamp and Cap” should be simulated during the drill. For demonstration purposes, consider performing the procedure on a patient who has just had their blood returned, but is not yet disconnected. Actually clamp and cut the lines with the emergency kit available on the patient’s machine at the chairside.

Hand Crank

Staff and/or patients may need to hand crank blood pumps during a power failure. This will prevent the blood from clotting. Here are suggested steps to use if you have no specific unit policy:

- Disarm the air detector (remove venous line from clamp).
- Locate and retrieve crank.
- Double check that all blood line clamps are open.
- Turn crank with direction of blood flow.
- Crank slowly, counting, for example, 1:1,000 2:1,000, 3:1,000, etc.
- Observe bloodlines for presence of air or foam.
- Determine how long the power will be off (if you can).
- Crank patients blood pump no longer than 10 minutes.
- Return blood per unit policy after 10 minutes.

The “Hand Crank” should be performed in the drill procedure. Competent patients can be taught to “Hand Crank” their own blood on the machine. In an emergency situation, there is usually not enough staff available to hand crank *all* of the machines.

Dialysis Patient Survival Instructions (Disaster + 72 hours)

Patient education is essential for post-disaster survival. Reassure patients that one missed treatment is usually not considered an emergency and can be managed. Review these guidelines on a quarterly basis with all patients.

- Emergency disconnect procedures, “Clamp and Cut or Clamp and Cap”.
- Importance of fluid and diet management.
- Self-protection if a catastrophe occurs while receiving dialysis.
- Location of emergency packs at each chairside.
- Medications to have on hand (under direction of physician).
- Importance of Medic Alert emblems.
- Location of hospitals and nearby dialysis centers.
- Instructions on when to stay home.
- Description of the facility plan.
- Instructions on care of their access.
- Emergency supplies for car.

Many of these topics are covered in the Medicare booklet PREPARING FOR EMERGENCIES; A GUIDE FOR PEOPLE ON DIALYSIS, published by the Centers for Medicare and Medicaid Services. See www.Medicare.gov for Publication #10150.

Encourage patients to post these simple five points at home. The front of the refrigerator is a great place for this information because it is easy to see.

- Stay home unless you are hurt.
- Start emergency diet that you should have received from your renal dietitian. Limit fruits and vegetables.
- Limit fluids to 1/2 normal current intake.
- Wait at home for instructions and details about available dialysis services. You may get instructions on TV or radio or by phone or messenger.
- If you must go to a shelter, alert the shelter manager of your dialysis needs.
- Inform your dialysis facility of your location.

Remember—most hospitals will not be equipped to provide chronic dialysis treatments.

Emergency Diet

The following guidelines are for use in the event of an extended emergency. Dialysis may not be available or patients may have to miss or delay dialysis. Survival will depend on the ability to follow a limited diet.

Diet Recommendations

- Stay calm. Food stored in a refrigerator and/or freezer will stay fresh for several days if appliances are opened for meal preparation only. It is best to use foods from the refrigerator before shelf-stored foods.
- Keep a one-week supply of all medications.
- It is important to eat, but choose wisely and limit fluid intake.

Diet Guidelines

Potassium

- Avoid high potassium foods, limit fruits and vegetables, select bread, rice, and pasta instead of potatoes.
- Avoid chocolate, dried beans, and dried fruit.

Fluid

- Restrict fluid to approximately one-half current intake. If patients usually gain too much weight between dialysis treatments, they will need to cut back even more.
- Avoid foods that are liquid at room temperature, such as: gelatin, ice cream, sherbet, and ices.

Salt

- Use salt-free or low sodium foods whenever possible. Do not use table salt or salt substitute (Salt substitute can be very dangerous, typically they are made from potassium chloride).

Protein

- Limit protein to one-half current intake. For example, if someone eats two eggs at breakfast, decrease intake to one. If four ounces of meat at each meal is typical, reduce intake to two ounces of meat per meal.

Suggested Emergency Food Lists

This food list is more limited than the usual renal diet. It is designed to help prevent the build up of excess fluid and waste products until dialysis is available.

Meat & Protein

- 2-3 ounces per day
- Use canned salt-free or low sodium meats such as chicken, turkey, tuna, shrimp, crab, and salmon. If not salt-free, rinse with hot water and drain. Two tablespoons of peanut butter are about one ounce of protein.

Milk

- ½ cup per day
- Do not save leftover milk unless refrigerated or on ice

Fruit

- Limit to 2- ½ cup servings per day (**No raisins**)
- Use canned fruit such as applesauce, cherries, peaches, pears, plums, and pineapple. Drain off liquid.

Vegetables

- Limit to 2- ½ cup servings per day
- Use canned low sodium vegetables such as corn, carrots, green beans, and peas.

Fluids

- Limit to one-half usual intake
- Use bottled water, soft drink, coffee, tea, juice, Kool-Aid, and Tang. **No Gatorade or sport drinks!**

Breads, Cereals & Pasta

- 4-6 servings per day
- Use dry cereals (¾ cup) puffed wheat, rice, or shredded wheat (**No Raisin Bran**), plain pasta or rice (½ cup), crackers, salt-free (4 crackers), plain cookies or vanilla wafers (4-10), regular bread (1 slice), graham crackers (3 squares)

Fats

- 6 or more teaspoons per day
- Use salt-free salad dressings, margarine, oils, and mayonnaise (with refrigeration).

Sweets

- Use as needed to increase calories.
- Diabetics use caution, but may be needed for low blood sugar reactions
- Use sugar, honey, hard candy, sourballs, gumdrops; jelly beans, jam, jelly, and marshmallows.

Emergency Food Box Shopping List: (purchase one serving sizes when possible)

Low sodium canned meats/seafood

Bottled water

Dry powdered milk or canned milk

Coffee whitener

Canned low sodium fruits/vegetables

Loaf or regular bread

Individual size cereals (No Raisin

Bran)

Vanilla cookies, wafers

Mayonnaise, salt-free salad dressing
packets, jelly

Soft drinks & powdered drink mixes

Peanut butter

Hard candy, gum, marshmallows

Low sodium crackers

Sugar or Sweet N' Low packets

Fruit Juices (4oz. cans or boxes)

Storage of Foods

- Keep foods stored in a sturdy box on the floor in a closet, service porch or garage, away from water and animals.
- Rotate bottled water every six months.
- Breads should be stored in the freezer. Crackers and cereals should be stored in a tin or sealed container and rotated monthly.
- Check canned foods for swelling, leakage, and the expiration date. Rotate canned foods every year, and replace as needed.
- Powdered drinks such as Tang, Kool-Aid, or Crystal Light can be kept on hand, but require water.
- Store sugar, candies, and dry milk in a sealed container to protect them from insects.

Drinking Water Disinfection and Storage

Bottled distilled water is preferred for drinking. However, if bottled water is unavailable, first strain water through a clean cloth or handkerchief to remove any sediment, floating matter or glass before disinfecting.

The preferred method of disinfection is boiling. Bring to a rolling boil for 10 minutes. Let cool for at least 30 seconds. You may also elect to add bleach. When added, it is essential that the water be cool prior to adding bleach.

Water may be disinfected with 5.25% - 6% sodium hypochlorite solution (household chlorine bleach). The bleach you use should not have any added soaps, fragrances, or active ingredients other than hypochlorite. After mixing, let it stand for 30 minutes. There should be a slight odor of bleach.

The preferred method for measuring bleach is an eyedropper. Other methods will produce poor results.

Use the following proportions:

Amount of Water	Clear Water	Cloudy Water
One quart	2 drops of bleach	4 drops of bleach
One gallon	8 drops of bleach	16 drops of bleach
Five gallons	40 drops of bleach (1/2 tsp.)	80 drops of bleach (1 tsp.)

The only agent used to treat water must be household liquid bleach (5.25% - 6% sodium hypochlorite solution). Other products sold in such as iodine tablets or other products commonly found in camping stores that do not contain 5.25% - 6% sodium hypochlorite solution are not recommended.

Note: Due to the chemical content, swimming pool or spa water should not be used as a primary source of drinking water.

Response

In this section you will find guidelines for the emergency response phase. This will include succession planning, Incident Command Checklist, first aid, management during utility loss, alternative dialysis schedules and emergency dialysis orders.

Emergency Succession for Decisions–Management Decision Tree

Every facility must decide who is to be in charge during an emergency. This role is assumed by the Nurse-in-Charge unless it has been delegated to another. The Nurse-in-Charge assumes control of the situation, makes immediate decisions and interfaces with emergency responders and staff. The person in charge may change when others arrive on the scene.

The following have been designated in charge in the event of an emergency. If the first person is not present or available, go to the next person listed. (Determine the appropriate order for your senior staff using your Medical Director, Administrator, Nurse-in-Charge, Assistant Nurse-in-Charge and Chief Technician.) Develop a chart noting the chain of command.

Name	Extension	Mobile	Pager	Home

Emergency Response Checklist

This checklist is to serve as a guideline for the initial response.

Immediate Response

- Assess the scene if it is safe to do so.
- Instruct someone to call 9-1-1.

Initial Assessment

- Assess facts as known.
 - Continuing danger? Take action to protect anyone in danger.
 - Assess situation and initiate further evacuation if necessary.
 - Do patients need to be removed from machines? If so, initiate clamp and cut or clamp and cap procedures.
 - Evacuate patients based on evacuation criteria
 - Greatest risk – proximity to event
 - Self sufficient – able to assist self
 - Need assistance – cannot assist self
- Has 9-1-1 been called?
 - Emergency Response Services (Police; Fire; Medical; Hazardous Materials; Alcohol, Tobacco and Firearms (ATF); Federal Bureau of Investigation (FBI), as appropriate)

- If the building is evacuated (see page 47), make sure the patient information emergency box and supplies are removed.
- Establish a Command Center and make assignments for the activities noted in this checklist.
- Conduct a staff and patient head count. Report any missing persons to emergency responders.
- Assess patient needs.

Building Assessment

- Conduct a building survey: damage, casualties, and status of the facility. *You may need a professional to perform this depending on the extent of the damage.*
- Assess utilities: water, sewer lines, gas and electricity. *You may need a professional to perform this depending on the extent of the damage.*
- Assess hazardous materials: Formaldehyde and other materials.
- Assess equipment and materials.
 - Do key vendors (contractors or equipment) need to be contacted immediately? Contact as pre-determined for re-stocking and replacement.

Medical and Search and Rescue Response

- Search for victims and triage (trained responders only).
- Assess for needed medical treatment.
- Establish first aid stations.
- Establish morgue if necessary.

Communication Protocol

- Who needs to be notified? *Remember that your Medical Director or designee must approve all clinical issues related to the care of patients.*
- Notify management decision tree. Those listed in the tree will notify others as necessary.
- Media present? All questions from the media should be directed to the facility media spokesperson.
- Will this affect patient operations going forward? If so, what is the plan of action?
- Determine the patient announcement.
- Do patients need to be notified? If so, assign the patient call tree list to the appropriate designee.
- If you have an emergency phone number for patients and staff to call for information, record an emergency update.
- If you have a web site, provide emergency information as soon as possible.

Security/Facility Control

- Does the incident area need to be secured?
- What area entrances and exits need to be secured?
- How many security staff do we need? Where?
- Who can be put in place until additional security arrives?
- Prior to any cleaning, take photos or video of the scene for insurance purposes.

- Clean up of incident site. Can the area be cleaned up or must the authorities release the area (such as in the case of a crime scene).

Escalation

- How could this situation escalate in severity?
- What controls need to be in place to avoid escalation?
- Who should be notified in an escalation?

Family/Employee Concerns

- Do families need to be notified?
- Assessment of need for professional crisis intervention, group debriefings, other concerns, etc.

Dialysis

- Determine the ability to treat patients.
- Implement alternative plans as established if unable to treat at facility. Refer to your affiliation agreement. *Remember that your Medical Director or designee must approve all decisions involving clinical issues related to the care of patients.*

Continuing Management

- Interface with responding agencies.
- Communicate with management, patients, vendors and other dialysis suppliers.
- Activate Business Continuity Plans if appropriate.
- Communicate often with employees - Rumor control and employee communication is essential.
- If you have an emergency phone number or web site, update the information at least every 12 hours.

Incident Concludes

- Inform everyone of the all clear (including those not at the site).
- Communicate with all parties who were initially notified.
- Update all managers. *Remember that your Medical Director or designee must approve all decisions involving clinical issues related to the care of patients.*
- Update management, patients, medical staff, vendors and other dialysis suppliers as applicable to the situation.
- Review incident reports
- Have all the reports been filed and reviewed?
- Post incident debriefing meeting date- schedule and invite all pertinent parties and assess emergency response and opportunities for improvement.

Patient Evacuation Priority

For emergency evacuation, triage and assess patients and staff using the following guidelines:

- **Greatest risk**
Patients and staff whose proximity to the emergency places them at greatest risk.
- **Self sufficient**
Those patients, family and visitors who can assist themselves and also assist others.
- **Needs assistance**
Those patients, staff and visitors who cannot get to a safe area without help.

After evacuation – In a designated safe area:

- Conduct a head count of patients and staff once outside.
- Triage patients, staff and visitors.
- If everyone is not accounted for, AND it is safe to do so, search the building again. If it is not safe, inform the first emergency responders on scene.
- Re-triage the group again once away from the building.

Staff Evacuation Assignments

These evacuation assignment suggestions should be modified for each facility and then reviewed and practiced during emergency drills. The nurse in charge or designee will oversee and coordinate the evacuation.

Nurse Responsibilities

- Coordinates the evacuation.
- Assist patients off machines.
- Assist with evacuation of patients.
- Once outside, assist patients and/or injured persons. Administer Normal Saline, check blood pressures, administer first aid, flush accesses, etc.

Technician Responsibilities

- Assist patients off machines.
- Assist with the transfer of patients from dialysis chairs to wheelchairs or from chairs onto sheets on the floor to drag.
- Evacuate patients to evacuation area.
- Retrieve emergency evacuation kit of medical supplies.
- Retrieve oxygen tanks, nasal cannulas and masks.

Secretary Responsibilities

- Call local emergency number.
- Retrieve roster of patients and staff.
- Retrieve patient records (paper or computer discs) and Emergency Supply Box.
- Collect blankets and sheets while leaving the building to distribute to patients and/or injured persons.
- Conduct a roll call of patients and staff once outside at the evacuation site.

Social Worker/Dietitian Responsibilities

- Assist with evacuation of patients.
- Collect blankets and sheets while leaving the building to distribute to patients and/or injured persons.
- Assist patients with transportation and shelter needs.
- Provide counseling and mental health assistance as possible.
- Provide diet instruction as necessary and possible.

Special Needs of Pediatric Patients

The majority of pediatric hemodialysis patients are treated at regional dialysis facilities, primarily at university-based programs. Unlike the adult hemodialysis population which is significantly larger and is primarily dialyzed at local dialysis facilities, pediatric patients have special needs that are best met by a team of specially trained nephrology professionals at a regional medical center. As a result, many pediatric patients travel an hour or more, up to 3 times a week, to receive the special care they require.

As a result of this concentration of care, pediatric patients present a special case for consideration when planning for emergencies. If a pediatric dialysis facility and its back up facility are damaged, or isolated in a manner that patients cannot reach the facility, responsibility for providing pediatric hemodialysis care will fall to adult dialysis facilities in surrounding communities. This section will provide information to pediatric dialysis facilities on how to prepare patients and families for dialysis in adult dialysis facilities and useful information to adult dialysis facilities to assist in the treatment of pediatric hemodialysis patients.

This section of the Disaster Preparedness Plan includes:

1. Preparing the Pediatric Dialysis Patient (Instructions for the Pediatric Dialysis Unit)
2. Emergency Pediatric Hemodialysis Orders
3. Patient Care Issues Specific to Pediatric Patients

1. **INSTRUCTIONS FOR THE PEDIATRIC DIALYSIS UNIT** **Preparing the Pediatric Dialysis Patient**

As part of the orientation process, the pediatric dialysis patient and his/her family should be prepared with disaster instructions and/or supplies in the event they cannot reach their dialysis facility or it is damaged in a disaster. Pediatric patients should have information for the locations of dialysis clinics close to their home that they can contact for care. If possible, the pediatric dialysis unit should maintain reciprocity agreements with adult community dialysis clinics and provide these clinic locations to patients. If the regional area is too large for multiple agreements, preparing the pediatric patient should be sufficient.

There are certain areas of the United States where significant damage to infrastructure in a large disaster would make the transfer of pediatric dialysis supplies to community adult dialysis facilities nearly impossible. For example, if the major bridges in the San Francisco Bay Area were damaged or closed, there would be no means of supplying surrounding communities with smaller dialyzers or smaller extra corporeal circuits. In this case, pediatric dialysis facilities would be best advised to prepare emergency dialysis packages for pediatric patients

and families to keep at home and take to an adult facility for care. This package could include:

Supply List

1. Special Dialyzer (2)
2. Bloodlines (2 sets)
3. Buretrol (if necessary) and other special dialysis supplies

In many areas of the USA, pediatric dialysis supplies can be quickly obtained from vendors to care for the pediatric patient. These include smaller dialyzers and smaller extracorporeal circuits. In this case, it may not be necessary to send emergency dialysis supplies home with families.

The pediatric dialysis prescription is carefully tailored. It is helpful for the patient to maintain an up-to-date information package to present to an adult dialysis clinic to assist that clinic in delivering care. This information package could be updated quarterly, sent home with the patient, and include the following:

Information Package

4. Treatment Prescription or Kardex
5. Treatment Flowsheet Summary (if your facility produces one) and/or a copy of two recent flowsheets
6. Pediatric Emergency Medication Dosage Guide (Weight specific)
7. Demographics/Insurance Coversheet

2. Emergency Pediatric Hemodialysis Orders

Dialyzer and Bloodlines
The total extracorporeal circuit (dialyzer and blood lines) should not exceed 10% of the patient's total blood volume (TBV). If more than 10% of the patient's circulating blood is in the extracorporeal circuit, complications related to hypotension and hypoxia could occur, including life-threatening cardiac and cerebral complications. See below for assistance in calculating TBV and Extracorporeal Volume.
Reprocessing of dialyzers with pediatric patients is extremely rare. Most pediatric patients use single-use dialyzers. Many pediatric patients are now dialyzed on affordable, single-use high-flux dialyzers.
Dialysis Time
Minimum 2 hours or prescribed time
Dialysate
2K, 2.5 Ca acid bath, HCO ₃ recommended
Heparinization
Loading Dose – 50u/kg Hourly Dose – 25 u/kg Visual assessment of extracorporeal circuit to watch for clotting

How to calculate TBV (simple calculation) and Maximum Extracorporeal Volume	
Dry Weight (kg's) x TBV Factor (listed below) = TBV	
<u>Age</u>	<u>Total Blood Volume Factor</u>
Neonate	85-90 ml/kg
Infant/Toddler (1-24 mos)	75-80 ml/kg
Preschooler to Adult	70-75 ml/kg
TBV x 10% = Maximum extracorporeal volume	

3. Issues Specific to Pediatric Patients

The Patient

The most significant issue in delivering care to the pediatric dialysis patient is the size of the patient. Many teenagers are near-adult size and hemodialysis care is very similar to an adult. However, with children less than 40 kilograms, it is necessary to think smaller about everything. You need to consider smaller dialyzers, smaller bloodlines, lower doses of medication, smaller increments of IV fluid for symptom management, and gentler dialysis treatments.

Children also react differently to complications of dialysis. It is common for children and teenagers to become very anxious when complications occur or they are in an unfamiliar environment. As a result, they may not be able to express what is causing pain or what they are feeling. Quite often, they cry and that is your indication a complication of hemodialysis is developing. Others will become fussy or whiny. Some children do not cry or indicate there is a problem until they are extremely symptomatic. Smaller children < 40kg often become mottled or acrocyanotic with dark circles under their eyes before you can identify that they have a low BP. This is where nursing assessment skills are critical in determining the problem and implementing a solution. Parents are also very helpful in sharing with staff how the pediatric dialysis unit staff treat's their child's complications.

The problems and solutions to pediatric hemodialysis complications are similar to adult scenarios. However, keep in mind that a NS bolus of 200 mls, appropriate for a 60 kg adult, would not be appropriate for a 20 kg child. Typically, a bolus of 1-3 ml/kg is appropriate.

Infants (children under the age of 1 year), are special cases and require specialized care. The adult dialysis facility may not be prepared for the care involved with this child. Infants under 10 kgs should be taken to the nearest hospital (preferably a children's hospital or one with pediatric medical and nursing staff) and treated by an acute dialysis nurse under the guidance of a nephrologist. For example, some infants on hemodialysis require blood or albumin primes of the extracorporeal circuit and adult dialysis facilities will not be prepared for this technique nor will they have the supplies on hand.

Growth and Development

Every age group has its own issues of growth and development. Unlike adults, where the goal is to improve and maintain quality of life, the goal in pediatric nephrology is to foster the growth and development of the pediatric patient while maintaining the highest quality of life possible. Most pediatric dialysis patients transplant quickly, some within weeks or months of an ESRD diagnosis.

It is important to keep in mind that children are less secure than adults and often need extra reassurance in a new environment. Another significant issue is that a child or teenager regresses in maturity when he/she becomes sick. In many cases, you may see behavior that you would expect of a child 5-6 years younger. The appropriate response is to treat that child according to his/her behavior and not necessarily guided by our expectations of his/her chronological age.

The Family

Most families are intricately involved in the care of the pediatric dialysis patient. In particular, the younger children are always accompanied to dialysis by a parent, family member or family friend. They assist the staff in a number of ways, such as calming the patient, restraining arms and legs that errantly stray in the way of staff initiating dialysis, providing assessment data to determine treatment goals, and entertaining the child during all phases of the treatment. They are our allies in the process of caring for children. Teenagers tend to be more independent and parental involvement with them decreases over time as they become more comfortable with the treatment.

The dialysis facility that accepts pediatric patients for hemodialysis treatment in an emergency scenario will have the assistance of parents and/or family members. Most parents are at the chairside for the duration of the treatment and can be very helpful in helping guide you in caring for the patient. Many parents become experts on pediatric patients as they struggle to understand what has happened to their child and how they can ensure he/she gets the best treatment and care possible. In fact, many parents understand the routine of the pediatric dialysis unit as well as the seasoned staff.

Emergency Medications

Every dialysis clinic has emergency procedures in place to treat patients who experience medical complications related to and not related to hemodialysis. Many clinics have access to emergency medications and crash carts. For those clinics that have emergency medications on hand and specially trained staff, the following is a list of medications and the dosages recommended for pediatric patients, based upon their dry weight in kilograms:

Medication	Dose per kg of dry weight
Atropine	0.01 mg/kg
Epinephrine	1mcg/kg (dwindle dose)
	10 mcg/kg
	100 mcg/kg (code dose)
Calcium Chloride	10 mg/kg
Dextrose	1cc/kg D25W
Sodium Bicarbonate	1 mEq/kg
Lidodaine	1 mg/kg

Access Issues

Most pediatric patients have external vascular access devices for hemodialysis. The majority of patients will have a permanent hemodialysis catheter, also called a central venous access device. The exit site is commonly located on the upper chest and the catheter is inserted into either the subclavian or internal jugular veins. Newly diagnosed pediatric patients may have a temporary internal jugular hemodialysis catheter.

The primary issue when dealing with pediatric dialysis catheters is that the smaller the child, the smaller the size of the catheter. Blood flows can vary widely, dependant upon the size of the patient and the size of the catheter. Typically, blood flow rate (QB) is 5-6 ml/min per kg of dry weight. For example, a 20 kg child could have a QB of 100-120 ml/min. With the variability of catheter size, dialysis staff need to check the size of the catheter to ensure the appropriate amount of heparin is instilled in the catheter post-dialysis. Some pediatric dialysis catheters hold as little as 0.9 ml of heparin.

Care of the dialysis catheter is similar to an adult. One note of caution is that pediatric patients have a higher rate of exit site infection due to increased contamination risk and a developing immune system. These patients are more immune compromised than adult nephrology patients.

Some pediatric patients have arteriovenous fistulas (AVF), or less commonly, arteriovenous grafts (AVG). Many of these patient's require special care in accessing the sites related to a common child fear of needles and avoidance of pain. It is not uncommon for these patients to apply a topical anesthetic at home to prepare the site for cannulation. It is critically important that only the most experienced registered nurses or technicians cannulate a pediatric fistula or graft. Painful infiltrations can traumatize a child and significantly raise the child's anxiety to the point where the AVF/AVG cannot be accessed.

Communication Post Emergency

Immediately After The Emergency

Landline Telephone System

- Check all telephone instruments to make sure that they are on the hook.
- Avoid using the telephone unless you have an absolute emergency.
- If you must use the telephone, pick up the receiver and leave it off the hook until you receive a dial tone. The moment the dial tone appears, begin dialing. It may stop in a few seconds as the computer controlling the phone system thinks the phone is merely off the hook and you will not be able to make the call.
- Do not flash the receiver hook! This only delays the call.
- Do not walk away from the telephone with the receiver off. You will receive a dial tone if the equipment is not damaged.
- If someone from outside the area reaches you, have him or her call the people that need to be called for you.
- Be aware that in most states, pay phones are part of the emergency phone system and get a dial tone first. If you have a pay phone at your facility, be sure to keep a roll of quarters or prepaid phone cards in petty cash for emergency phone use.
- Limit your phone usage to critical calls only until full service is restored.

Cellular Phones

- Cellular phones are likely to be unavailable and are prone to the same capacity problems that landline phones experience. Keep calls short.

Two-way Radios

- Two-way radios are likely to be the most efficient way to communicate.

Runners

- Runners are likely to be an effective communication tool for short distances.

Toll Free Employee/Patient Number

- If you activated a toll free number prior to an event, change the message to reflect the situation. Change the message every 12 hours even if there is nothing new to report. Give the date and time of your message this tells callers when the message was last updated.

Radio/Television/Print Media

- One way to communicate to staff and patients post emergency is the use of Public Service Announcements (PSA's) or articles or ads in the print media. Take time now to pre-script these messages so you can quickly grab them and with minor modifications, be sent out quickly.
- Before an emergency occurs, identify all television and radio stations that provide public service announcements (PSAs) and make arrangements to use their services in an emergency. Develop a PSA contact list that includes addresses, phone and fax numbers.

Recommendations for Management During Utility Loss

The following guidelines provide ideas on facility management without water or electricity.

Internal Management of the Dialysis Center

- Orient all staff members in a basic understanding of the flow pattern and operation of the treated water system. Clearly post flow schematics. (Put a copy in the emergency box.)
- Orient all staff members of the location and operation of the supply water main shut-off valve.
- Label clearly the flow of water and all equipment.
- Provide adequate emergency lighting in water treatment area.
- Use conventional dialyzers when available.
- Have available additional dialysis approved flexible plumbing fittings and hoses, extension cords and plumbing tools.
- Increase the frequency of water quality control testing when using an alternate water source or during an emergency situation.

The Medical Director or designee must authorize the use of an alternate water source or a change in the water system.

External Interface

- Inform your water district of the facility needs. (Review its disaster plan.)
- Have arrangements with water vendors and water treatment vendors close to your facility.
- Pre-install connectors for an outside water source.
- Establish an external area where dialysis may be delivered if the facility is damaged. (i.e. sheltered area, generators for power, tarps or tents for shelter.)
- Arrange agreements with appropriate vendors to provide dialysis in an alternate location.
- Identify alternate water source.

Maintaining a Water Supply

Education and sharing of information are the most critical steps to ensuring that water will be available. Your local water district needs to be educated to the fact that dialysis is a life sustaining therapy.

Water Supply – Work towards a written agreement with the water supplier. Water volume will be critical and implementing a deionization (DI) system as an alternative would decrease the total volume of water needed. With a deionization (DI) system, the water volume used is restricted to the volume of water utilized by the dialysis machine at the prescribed dialysate flow (e.g., prescribed dialysate flow is 500 cc/minute per machine, the DI demand is only 500 cc/minute per machine). With a demand reverse osmosis (R.O.) system, the water supply demand is dependent on the size of the R.O. system. The total water volume used by the R.O. is designed to provide the water volume needed for any and all procedures requiring treated water (i.e., the number of stations in the unit at the maximum dialysate flow, concentrate mixing [acid and/or bicarb], reprocessing of dialyzer) and includes the volume of reject water. An R.O. system with a reservoir can eliminate the water usage for functions other than the dialysis machine, but it would still produce a volume of reject water.

Example – Volume usage based on 10 stations

DI System: 10 stations at 500 cc/minute = 5000 cc/minute = 1.32 gallons/minute

Demand R.O: 10 stations at 800 cc/minute (R.O. is usually calculated at maximum flow rate) = 8000 cc/minute = 2.1 gallons/minute

Reprocessing volume is dependent on the system used could double water use = 8000 cc/minute = 2.1 gallons/ minute

Reject volume is approximately 30% of product - $8000 \times .30 = 2400$ cc/minute = .63 gallons/minute

Total: $2.1 + 2.1 + .63 = 4.83$ gallons/minute

R.O. with reservoir: flow for 10 stations (2.1 gallons/minute) + reject volume (.63 gallons/minute) = 2.73 gallons/minute.

Natural disasters like hurricanes, floods, earthquakes and tornadoes can affect the quality of the potable water delivered for dialysis by adding contaminants. Further, municipalities that supply drinking water will treat the unknown water with more chemicals, such as aluminum sulfate (alum) and chlorine/chloramines to counteract the effects of the event. Alum is one of the many types of flocculants that are added when colloidal matter in water is high. Colloidal matter is suspended matter like silt and dirt that will not settle out untreated. Flocculants will aggregate the suspended

material and force it to separate from the water. During a natural disaster, it is likely more alum would be used to treat the contaminant overload. Microbes are also a concern during a disaster so water suppliers would be inclined to add more disinfectants such as chlorine or chloramines.

In an emergency, it may be possible to use water that has only been pre-treated with softening, carbon and ultra filtration to perform hemodialysis treatments. To know if this is a viable option, perform an Association for the Advancement of Medical Instrumentation (AAMI¹) analysis on the effluent from the pre-treatment tanks. Draw the water sample from the valve just before the reverse osmosis and/or deionization purification process prior to implementing emergency use of water that has only been pretreated with softening, carbon and ultra filtration. Use the AAMI analysis test for 23 chemical contaminants (e.g., Calcium, Magnesium, Potassium, Lead, Mercury, Arsenic, etc.). Bacteriological assay is also required and must be less than 200 CFU/ml or endotoxins at less than 2 endotoxin units (EU). Labs that are “dialysis” labs all have these as a standard minimum test when submitting water for AAMI analysis. In some regions and in certain seasonal conditions, untreated water has been found to meet the quality of the AAMI standards. Make sure the ultra filtration exists for removal of bacteria and endotoxin. Remember the water may change as a result of a natural disaster. It is the medical director’s ultimate responsibility for deciding whether the final quality of the water is suitable for hemodialysis.

Alternate sources of water may come from a tanker truck, a large nearby swimming pool or another large water body source. In each case the quality of the water must be evaluated for suitability. Ensure you have the proper plumbing hoses, pipes and fittings for dialysis to make the connections to the alternate sources.

When a water system may be compromised increase the frequency of monitoring and testing the system as follows.

- Draw water samples for AAMI analysis at least daily or per each shift. The test will take about 48 hours for results. In a pinch, the dialysate can be evaluated for salts and other contaminants such as aluminum, lead and copper at a local hospital. The lab test ordered will be similar to a chem. 22 or panel 21 assay. The protein bias must be removed since the sample is not a blood specimen. Assess the lab’s ability by discussing with them what is an AAMI analysis ahead of time.
- Hardness test pre and post the water softener at least at each patient shift. Testing for hardness will test softener function and help prevent mineral scale fouling of the membrane.
- Total chlorine pre and post the first carbon tank at least hourly. Testing the water before the first carbon tank will alert the staff to any unusual fluctuations in the chlorine/chloramines levels, and testing after will indicate whether these materials have broken through. Also, check the conductivity pre and post RO/DI.

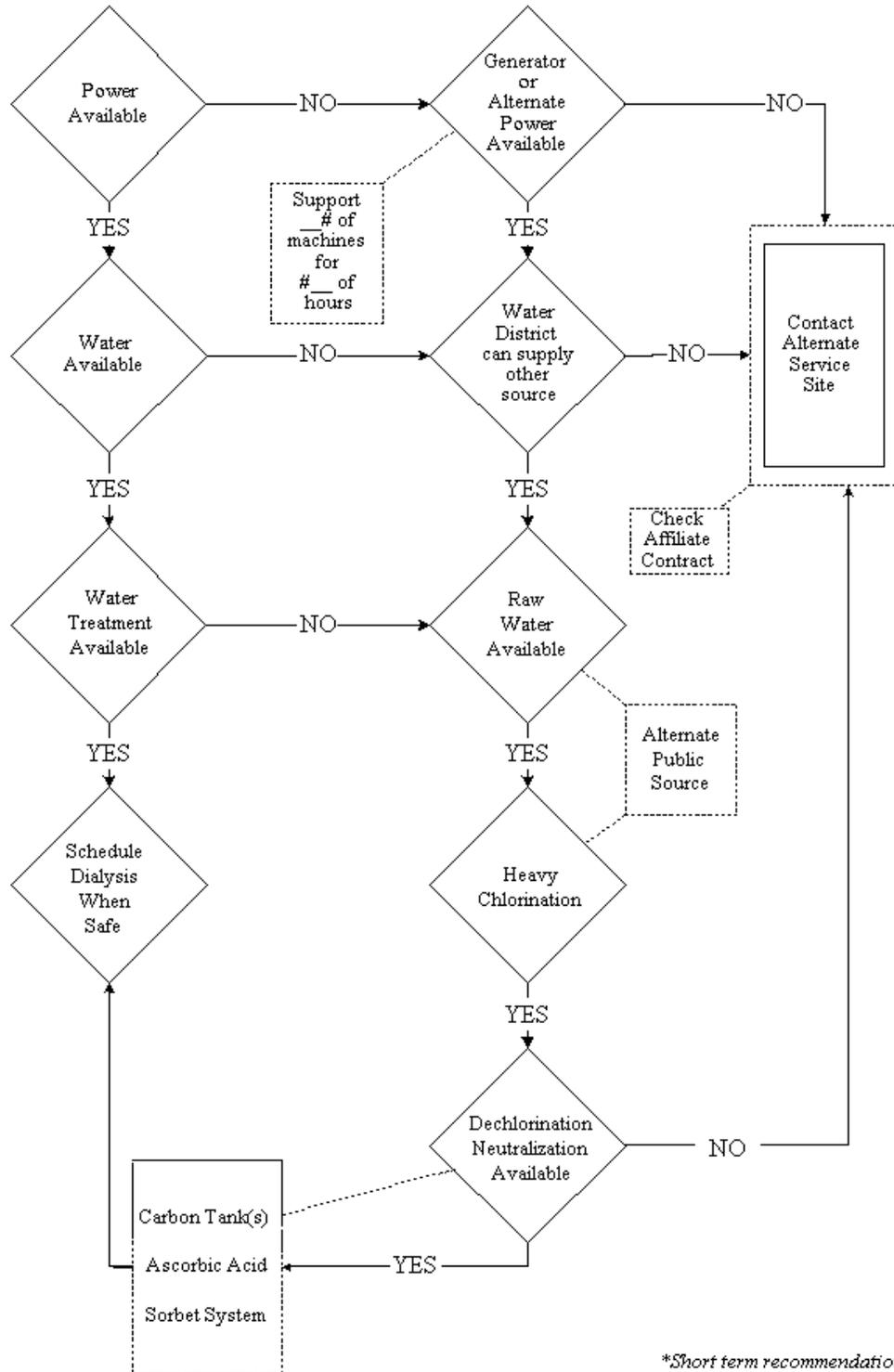
¹ Note: AAMI standards are incorporated by reference into Section 405.2150 of the 1976 ESRD Regulations.

- Check bacteria levels pre and post the RO/DI every 48 hours. Use the incubator and paddles for more available testing in the unit since outside sources might not be available.
- Perform a limulus amoebocyte lysate (LAL) after the RO/DI at least every 48 hours.
- Compare all gauges, readings, pressure gauges water quality and testing to previous values prior to the event. LAL is the formal name given to the test for endotoxin in water. Endotoxin must be less than 5 EU per AAMI standards.
- Do not delay preventive maintenance. Keep the system as “fresh” as possible to handle any reasonable contaminant load.
- Rebed carbon tanks routinely. The ability of the carbon media to adsorb chloramines/chlorine compounds is an AAMI requirement. As long as the carbon can accommodate this function, it does not need to be rebed at a specific schedule.
- Change the pre-filters routinely
- Clean the R.O. membrane(s) and disinfect the system simultaneously including the distribution loop, any R.O. storage tanks, dialysis machines and reuse equipment. Perform this process after an incident and before patients are put back on the system.
- Do not reprocess or utilize the dialyzer reuse system until the water supply returns to pre-disaster conditions.

You may be able to continue hemodialysis treatments with proper planning and with particular attention to monitoring the quality of the water.

Freestanding facilities, in particular, should inform their water districts of their location and special needs concerning water quality and quantity in the hope that the water district will make every attempt to provide a continuous water supply. When it is unable to do so via regular modes (pipe and/or hosing), it may be possible to transport water by tanker truck. However, plumbing modifications must be made to accommodate alternate sources. Remember, if you use another source for water, be aware of water quality issues. Your water district’s emergency plan is available for public review. Try to get your facility incorporated into that plan. See Figure 1 for post-disaster assessment.

Post Disaster Assessment*



*Short term recommendation only

How to Calculate Water Requirements

3,785 cc = 1 U.S. gallon

To calculate the water requirements for a 500 cc DFR for an hour run time, estimate eight (8) gallons of water per machine, or sixteen (16) gallons of water per machine for a two-hour run. *Don't forget to add in water for bicarb mixing.*

To calculate for an R.O. system volume requirement: Product flow in gallons/minute + Reject flow in gallons/minute = volume required in gallons/minute.

Loss of Water or Power—Potential Problems and Solutions

Short Term - Less than one day

Problem	Neighbor digs through water main
Solution	Schedule treatments for off day, double up shifts.

Long Term

Problem	Water main is destroyed. Water off for three days.
Solution	Water district uses nearby fire hydrant and supplies dialysis facility using fire hoses to bypass broken water main. (Water district awareness of your need will expedite this process.)
Problem	Emergency damages all water supplies, yet structure is safe for dialysis treatments. Water off for more than three days. Flooding, tornado, earthquake hurricanes or old pipes could cause this.
Solution	Water district provides usable water in tanker truck to connect to facility pre-treatment system.

Facility has additional emergency plumbing fittings and hoses to assist with water district tanker hook-up. To accomplish this:

- Splice in the quick disconnect fittings on the supply side of the facility booster pump.
- By opening these fittings and attaching where shown on the diagram, the new water supply service may be continued.
- You will need flexible tubing, hose clamps, and quick disconnects.

Problem	The emergency has severed your outgoing sewer line.
Solution	Gather your R.O. waste lines; collect them in a temporary hose system leading to the exterior of your building at the lowest point possible to allow gravity drainage of waste fluids. Check with local authorities regarding disposal of the waste fluids prior to draining to exterior of building. Discontinue use of restroom facilities to alleviate waste from backing up into building. Use plastic bags or portable toilets for human sewage. Dispose of plastic bags in sealed trashcans.
Problem	The emergency damages water supply and facility structure. Dialysis equipment and water pre-treatment may be extracted from the building. Return of water supply is unknown.
Solution	“Dialysis in a Parking Lot Model” - Emergency dialysis may be performed in pre-designated area using emergency generators for electric source and water district tanker trucks and pre-treatment sources for dialysis treatments. Conventional and high efficiency dialyzers may be used to minimize possible back filtration. Dialysis treatments may be rationed.

Dialysis machine specifications for water pressure and electrical needs are provided by the manufacturer; refer to operator's manual. When contacting generator vendors, check generator capacity and operation instructions to estimate fuel needs and physical size of the equipment required.

Caution: Be sure to operate generators according to manufacturer instructions!

Recovery

In this section you will find guidelines for beginning the recovery effort. This includes damage assessment guidelines, directives for rationing of treatments and emergency dialysis orders.

Rationing of Treatments and Alternate Schedules

The nature of the emergency may require you to ration treatments for a short time. Your facility would then have the opportunity to treat as many people as possible. This rationing is recommended as a minimum when supported with a survival diet. (See pages 42 – 43)

- External support resources

Refer to your facility's affiliation agreement. Obtain staff and useable supplies from clinics that have been damaged and cannot open.

- Sample schedule

Number of days per week	Rationing Plan
Three days a week patients	1 treatment every 4 days
Twice a week patients	1 treatment every 5 days

- Sample staff/supply needs

Extend operation days, for example open on Sunday

Extend operation hours, for example open 24 hours a day

Adult Emergency Dialysis Orders

A patient may appear at a facility that has no idea of his/her dialysis prescription. There may be a need to perform dialysis on such patients without approved orders if no physician is available for consultation. Licensed staff should use professional knowledge and experience to modify the following orders to fit each patient based on the initial assessment, and information provided by the patient. Each center's Medical Director should review these orders and authorize or change them as appropriate. Universal Precautions must be maintained at all times. *Refer to the Pediatric section for Pediatric emergency dialysis orders. See page 42 – 56)*

The Medical Review Board of the TransPacific Renal Network developed these adult dialysis emergency orders. Your facility's medical director may wish to use them or modify them according to local practice.

- Dialyzers
 - Use available dialyzers (facility specific)
 - High flux may be contraindicated - (see water assessment)
 - No reuse

- Dialysis time
 - Minimum of two hours.
- Dialysate
 - 1K+ bath
 - Maximum QB
- Heparinization
 - A one time loading bolus of 1500 - 2000 units.
 - Visual assessment of extracorporeal system may indicate need for additional heparin.

Patient Transportation

- Patients are responsible for their own transportation.
- Staff should never transport patients in their own private vehicles. This places staff in a precarious position if the patient's condition worsens during transit or if the patient stops breathing.
- Transportation companies and pre-arranged contracts for patient/staff transport post disaster should be considered. These may include cab companies, school buses, ambulans etc.
- Emergency responders such as ambulances, paramedics or fire departments will not transport patients for maintenance dialysis following a disaster.

FEMA may be of some assistance in allocating funds for transportation of patients in the event of a disaster situation.

Damage Assessment

Damage Assessment Team

Prompt damage assessment is critical for good decision-making. Immediately after life safety issues are handled, a Damage Assessment Team (DAT) should be formed with a team leader clearly identified. This is most commonly the Administrator or the Nurse-in-Charge.

Team Title	Team Member	Telephone
Disaster Assessment Team Leader	Administrator or the Nurse-in-Charge	

Considerations for the DAT

- Personal safety first!
- Use professional consultants (structural engineers, fire department, etc.)
- DAT should be emergency-specific (hazardous materials, earthquake, etc.)

Optional DAT Members

Optional DAT members may include a structural engineer on a Memorandum of Understanding (MOU), or key vendors such as contractors such as electrical or plumbing.

Team Title	Team Member	Telephone
Structural Engineer		
Plumber		
Electrician		

Key responsibilities of this team include:

- Provide a capability to quickly assess the results of a disaster and to estimate the mean time to repair or replace the damaged facility and/or its contents.
- Determine measures needed to protect assets within the facility. Initiate such measures. (i.e. security measures, relocation of assets).
- Report assessment to the Medical Director and the Nurse-in-Charge.
- Quickly assess the damage caused by the disaster and estimate the time required to repair or replace the facility and/or its contents.
- Coordinate with local governmental agencies to open facilities once a jurisdictional declaration has been made to close businesses in the disaster area.
- Coordinate with management to ensure the immediate interface with insurance claim representatives to expedite the processing and handling of all insurance claim information.
- Notify medical director of all actions taken

Damage Assessment Checklist

This damage assessment checklist can be used for most events such as hurricane, tornado, severe weather, and fire. There are special checklists for earthquake and flooding.

There are two types of assessments:

- A windshield assessment (brief, quick and for the purposes of survey only)
- A detailed assessment (using one of the checklists in this manual)

Before Assessment Begins

- Coordinate with emergency responders and professionals already present, i.e., fire and police personnel.
- No inspections should be done in buildings that are clearly dangerous, either because they're obviously near collapse, have a hazardous material release (asbestos, toxic chemicals...), or other dangerous condition. **DO NOT RE-ENTER A BUILDING UNTIL IT HAS BEEN DECLARED SAFE.**
- Brief team members on the scope of the emergency and priority of actions.
- Ensure utilities are shut off to building (if necessary). Attempt access as quickly as permitted.
- Work with Safety/Security Team to ensure that the damaged facility is properly secured after civil agencies have turned the premises over to the company.
- Barricade off the entire zone around any building where damaged walls or other overhead hazards may fall.

- Ensure that no hardware or equipment is removed (this may become an insurance issue). In the interest of protecting assets from further damage or theft, assets may be photographed, and removed by security and the DAT. Detailed notes must be taken.
- Everyone in and around the buildings should be alert to the possibility of falling objects:
 - Outside -- parapets, roof tiles, glass, and building ornamentation might fall off.
 - Inside -- ceilings, light fixtures, pipes and ducts, and tall furniture can fall.

This is particularly important after earthquakes and during aftershocks.

Inspection Guidelines

Exterior of Building

- Consult with power and light utility companies concerning the extent of damage that utility facilities have sustained, if any.
- Assess the structural system. Examine all sides. Note signs of excessive movement. Look for cracks in the foundations and lower walls.
- Examine roof for cracks, missing equipment, HVAC problems and other damage.
- Watch for non-structural hazards. Check stability of piers and utility connections.
- Look for cracks in ground and roadways. Survey the surrounding area.
- FOR EARTHQUAKES – see *Earthquake Preliminary Survey – Exterior/Structural*.

Is a Building safe to occupy?

- **If you find any of the following problems, the Buildings are probably UNSAFE.** Only emergency workers or rescuers should enter these buildings until they have been checked by a structural engineer:
 - Fire
 - Rapidly flowing water/broken pipes
 - Smell of gas
 - Building or part of building tiled/walls bulging
 - Portion of building is collapsed
 - Portions of exterior walls or concrete have fallen off exposing structure
 - Concrete floors feel unstable or appear uneven
 - Can see the floor above or below through cracks in the floor or ceiling
 - Obvious electrical arcing of wires
 - “X” shaped crack at base of walls
 - Numerous broken windows or jammed doors
- **If you find these problems, the safety of the Building is UNCLEAR.** Only emergency workers may enter the building until building is declared safe to enter.
 - Small “X” shaped cracks in interior/exterior walls

- Obvious damage to architectural features (parapets, doors jammed, surface brick)
 - Major damage to non-structural elements (ceiling tile, framework, windows, lighting fixtures)
 - Major collapse of cubical walls or furniture and fallen equipment
 - Loose wires
- **If there is NO damage greater than the following, as determined by the DAT, the Building is OK to reoccupy. ALWAYS err on the side of safety.**
 - Disruption of furniture and/or cubical walls
 - Minor dripping from sprinkler heads and pipes
 - Ceiling tiles down, light fixtures open
 - Some broken windows
 - Cracks where wallboard abuts solid columns
 - Minor diagonal cracks at corners of interior doors/windows
 - Filing cabinets/bookshelves have fallen. Books, papers, PCs on the floor

Interior of Building

Do Not Enter Obviously Unsafe Buildings

- Do not operate elevators until an elevator inspector, elevator service company or trained technician evaluates the entire system. If the elevators have been tripped, wait for the inspector to reset them.
 - Check for falling hazards.
 - Look behind ceiling panels to view the structural system.
 - Water stains on ceiling may reveal broken pipes above the ceiling or roof damage.
 - Look in stairwells and mechanical rooms.
 - Examine every floor including stairs and exits.
 - If required, have a structural engineer evaluate vertical and lateral load capacity.
 - Watch for hazards from spills, leaks, damage to fire equipment.
 - Check the rooftops of all buildings for damaged tanks and HVAC installation.
 - If chips of concrete are on the floor or other surface, investigate upward.
- FOR EARTHQUAKES – see *Earthquake Preliminary Survey – Interior/Detail*
 - Once facilities are determined safe to occupy, begin damage assessment of data processing equipment, communications facilities, and documents. Notify vendors to perform a complete and thorough assessment of their equipment.
 - Before opening cupboards and cabinets, stand aside in case the contents have been knocked against the door and fall out when the door is opened.

- With information obtained from vendors, architects, elevator maintenance company, etc. develop a detailed assessment and report on the situation, addressing the following areas:
 - Damage to the facility and property; access restrictions set by local civil and federal agencies, if any
 - Damage to the facility and property; access restrictions set by local civil and federal agencies, if any
 - Damage to data processing equipment (including communications equipment, if applicable), and estimates of time to either repair or replace the equipment
 - Any partial capabilities to provide services to users
 - Initial recommendations for consideration by management
 - Plumbing and water lines.

Follow-Up After Initial Inspection

- Advise the medical director of the estimated lengths of outages and participate in analysis of the best approach for achieving recovery of business operations.
- Begin salvage operations of the damaged offices and equipment. See “Initial First Aid for Equipment Checklist.”
- Assist in other recovery operations as necessary.
- Only AFTER all insurance representatives have acquired sufficient information for their processes, authorize and coordinate access to or removal of equipment, computer-related assets/resources and other usable items. KEEP DETAILED RECORDS OF ALL ACTIONS AND ALL COSTS.
- Initiate and monitor clean-up efforts as required.
- Notify the medical director of all findings and actions.

Physical Site Damage Assessment Form

Location	Date & Time
Building	Completed by:

General Information:

Brief description of the building: _____

Utilities information (*electricity/gas/water/etc.*): _____

Phone / computer network status: _____

People Status (injuries/trapped, etc.) _____

Flowing Water, Broken, Open Sprinkler Heads: _____

Smoke/flames present? _____

Post-Earthquake Damage Evaluation Checklist

A structural engineer must be included in an earthquake DAT. In areas of severe earthquake shaking, collapsed buildings or falling debris pose substantial danger to occupants and rescuers. Strong aftershocks can dislodge building material. The first priority is protection of the occupants; therefore evacuation of occupants to a safe refuge may be appropriate. When evacuation is necessary, a rapid inspection of evacuation routes must be done to insure accessibility. If an established route is blocked, an alternate route will need to be found.

An inspection should be done if the shaking was enough to cause books to fall off shelves. Inspectors should work in teams of two so help is readily available. Be alert to the potential of falling objects, both inside and outside the building. You would inspect the interior of the building first if you were inside, then the outside; if outside, the process would be reversed.

Step One: Survey The Building From The Outside Guidelines

- Examine all accessible sides of the structure for damage. Damage to the structural system will typically show through nonstructural finishes.
- Wood studs with plywood sheeting- new gaps between plywood sheets 1/8" or larger, nail heads pulled out, or cracks 1/8" or larger in stucco over plywood. Indicators of possible severe structural damage.
- Brick masonry walls, concrete masonry walls or concrete walls - cracks 1/8" or larger indicate possible severe structural damage.
- Concrete columns and beams - hairline cracks are generally not considered dangerous unless widespread. Exposed steel reinforcing, spalling of the concrete or severe cracking indicate possible severe structural damage.
- Steel posts, beams, diagonal braces and/or trusses - any buckling or bending (usually indicated by cracking or chipped paint) or any bolt failures or cracked welds indicate possible severe structural damage.
- Look for indicators of horizontal movement in exterior walls that may result in a building being out-of-plumb (the top of the wall not in line with the bottom). Standing 20 to 30 feet from the corner of the building, look along all four edges of the building, checking for locations where the building is leaning. An offset from the top to the bottom of a wall, beyond what may have existed prior to the earthquake, of 1" or more may indicate severe structural damage.
- Look for new fractures in the foundation or exposed lower walls in the building.

Step Two: Examine The Surrounding Site For Geotechnical Hazards Guidelines

- Geotechnical hazards are conditions that affect the supporting soils around and under buildings.
- Look for cracks, bulged ground and vertical ground movements in the area.
- Examine hillside areas above and below the site for landslide displacement or debris encroaching onto the site.

Step Three: Inspect The Structural System From Inside The Building Guidelines

- Has the load-carrying capacity of the structure decreased significantly?
- Before entering the building, look to see if anything could fall on you or if the building is in an imminent state of collapse. **DO NOT ENTER OBVIOUSLY UNSAFE BUILDINGS.**
- Ceiling panels may be removed to view the structural system.
- Look into stairwells, basements, mechanical rooms and other exposed areas to view the structural system. (See step one)
- Examine the vertical load-carrying system. Look for situations in which a post may show signs of damage, the floor or roof beams have begun to pull away from their supports or the slab or beam system has been damaged.
- Examine the lateral load carrying system. Any new offset such that the walls at any level are out-of-plumb with the wall below means some structural damage has been sustained. Look for situations in which a diagonal brace has buckled, bowed or cracked, or where walls have bowed or cracked.
- Inspect the basement for fractures and uneven settlement. Also inspect basement floors and exterior walls for cracks or bulges.
- Examine every floor including basement, roof and penthouse.
- Sheetrock and painted plywood walls show signs of distress if the nail heads show, generally at the edge of the wall. If just a few nail heads show, usually the strength of the wall has not decreased. However if many heads show or the shank of the nail is visible, the strength of the wall has decreased significantly.

Step Four: Inspect For Nonstructural Hazards Guidelines

- Look inside the building for damage to nonstructural elements such as ceilings, partitions, light fixtures, roof top tanks and other interior elements. Damage to these nonstructural elements could indicate structural damage or pose a threat to occupants.

Step Five: Inspect For Other Hazards Guidelines

- If elevators are damaged or will not operate, they should not be restarted without first being inspected by a qualified elevator mechanic. **PASSENGERS SHOULD NOT BE REMOVED FROM AN ELEVATOR EXCEPT BY A QUALIFIED ELEVATOR MECHANIC OR THE FIRE DEPARTMENT.**
- Look for spills or leaks in areas where chemicals or hazardous materials are stored. Do not attempt to handle these materials yourself. Restrict building use accordingly.
- If there is damage to the fire protection and detection system, it may be necessary to restrict building access or establish a fire watch.
- Inspect the stairs to verify they are stable and check exits for jammed doors and obstructions.

CAUTION: AFTERSHOCKS CAN CAUSE ADDITIONAL DAMAGE. AFTER EACH SIGNIFICANT AFTERSHOCK, ALL OCCUPIED BUILDINGS SHOULD BE RE-INSPECTED.

Earthquake Damage Assessment Form

Location

Date & Time

Building

Completed by:

General Information:

Brief description of the building: _____

Utilities information (*electricity/gas/water/etc.*): _____

Phone / computer network status: _____

People Status (injuries/trapped, etc.) _____

Flowing Water, Broken, Open Sprinkler Heads: _____

Smoke/flames present? _____

Has ground or pavement cracked? Landslides? _____

Have parts of the building collapsed? _____

Are there horizontal cracks in lower walls? _____

Are utility connections OK? _____

Does building or part of it seem to lean or tilt? _____

Have parts of exterior walls fallen showing the interior? _____

Has concrete fallen off beams or columns exposing the steel or reinforcing bar?

Has concrete fallen off walls exposing reinforcing bar? (Look at transition points between floors.) _____

Are there "X" shaped cracks in exterior walls (1/8 inch or larger)? _____

Have generators slipped off pads? _____

Does damage to doors, windows, parapet, etc. appear extensive? _____

Are there any doors jammed shut? _____

Is there excessive glass on the floor? _____

Have parts of floors collapsed to level below? _____

Stairways stable? Elevators working? _____

Can you see the floor above or below through cracks in floor or ceiling? (Remove ceiling / floor tile if necessary.) _____

Are there problems where major parts of the buildings meet? (Ex. Beams with columns or walls.) _____

Has concrete fallen off columns or beams exposing the steel reinforcing? _____

Has any earthquake bracing come loose or twisted? _____

Are there large cracks in interior walls? _____

Broken interior windows? Suspended ceilings down? _____

Fallen computer room equipment? Water damage below raised floor? _____

Major collapse of cubicles or furniture? Need to search for victims? _____

IF YOU HAVE FOUND ANY OF THESE PROBLEMS DURING YOUR INSPECTION, NOTIFY THE NURSE OR PERSON IN CHARGE AND DO NOT ENTER THE BUILDING.

Post Flooding Evaluation Checklist

Before Entering A Building Guidelines

- Check the outside: Call the utility company immediately if you find downed power lines or detect gas leaks. (Gas leaks will emit an odor of rotten eggs.)
- Look for external damage: Examine the foundation for cracks or other damage. Inspect entrance roofs and overhangs to be sure they still have all their supports. Look for gaps between the steps and the building.
- If any supports or portions of the foundation walls are missing or the ground has been washed away, the floor is not safe.
- Enter the building carefully: If the door sticks at the top, it could mean the ceiling is ready to fall. If you force the door open, stand outside the doorway, clear of falling debris.

After Entering The Building Guidelines

- Look before you step: The ground and floors may be covered with debris, including broken bottles and nails. Floors and stairs can be very slippery.
- Be alert for gas leaks: Do not strike a match or use an open flame when you enter the building unless you know the gas has been turned off and the area ventilated. Use a flashlight to inspect for damage.
- Turn off the electricity: Even if the power company has turned off electricity to the area, be sure to disconnect your building's power supply. Do not use electrical equipment that has gotten wet.
- Any exposed wires? Electrical wires that have been exposed to salt water are ruined and must be replaced.
- Watch for animals: Small animals flooded out of their homes may seek shelter in your building. Use a stick to poke and turn over items and scare away small animals.
- Be alert for carbon monoxide: Use a generator or other gasoline-powered machine outdoors only.
- Drain water from any lower levels carefully. Water in the ground puts pressure on basement walls and floors. Drain the basement gradually to minimize further structural damage.
- Hose the building. Most of the health hazards brought by a flood lie in the mud and silt left after the water drains away. Shovel out as much mud as possible, and hose down the building, inside and out.
- Beware of health hazards: Floodwaters may have picked up sewage and chemicals from roads, farms, factories and storage buildings. Many flooded items, such as wallboard, carpet and furniture will hold mud and contamination forever. Spoiled food, flooded cosmetics and medicine also are health hazards. When in doubt, discard them.

Immediate “First Aid” for Equipment

What to do in the First 24 Hours for Damaged Electronic Equipment

Disconnect Power -- Immediately! Do Not Energize Any Wet Equipment.

Disconnect equipment from **ALL** power sources, including backup batteries, UPS and generator connections. At power panels, remove fuses and place tape over circuit breakers to keep in “off” position. Not only is there a danger to personnel working in the area and a danger of fire from electrical shorts, but also electrochemical action can plate contaminants onto printed circuit boards and associated connectors and back-planes. This action can also remove metals. Once metal is removed, the board is not restorable.

Fire Damage

Besides heat, a fire generates combustion byproducts. These byproducts are locked into soot that condenses on all cool surfaces. Smoke exposure during fire for a relatively short time does little damage, but deposited particulate may contain active corrosive components. In the presence of humidity and oxygen these components corrode metal surfaces. Irreversible damage can occur in the time period of a few days. As all of the equipment cannot be cleaned simultaneously, immediate steps must be taken to arrest the corrosion process.

Contact equipment manufactures for specific recommendations and guidelines.

- Open windows and use fans to remove smoke.
- Control the humidity. Corrosion occurs very slowly if the relative humidity is below 50%.
- If water is standing due to water used in fire suppression, follow the steps under **Water Damage** first.
- Remove portable equipment to clean, dry area.
- Where building repairs are underway, protect the equipment with plastic drop cloths and run dehumidifiers beneath the shelter.
- Prevent further spread of smoke, soot and/or water contamination from the fire source to areas containing equipment.
- Maintain the equipment in an area where the relative humidity is below 50%. Move it to another area if necessary.

- Once the corrosion process is stabilized, the appropriate cleaning protocol can be designed and applied by a professional restoration organization.
- An electrical safety inspection must be performed on any compromised or damaged electrical equipment.

Water Damage

It is a misconception that electronic equipment exposed to water is permanently damaged. Water that has sprayed, splashed, or dripped onto electronic equipment can be removed. Even totally submerged equipment may be restored. As in the case of fire created corrosives, immediate countermeasures are imperative.

- Turn on the heating system and/or dehumidifiers to speed drying.
- If water enters through the ceiling protect the equipment with plastic drop cloths and run dehumidifiers beneath the shelter.
- Open cabinet doors, remove side panels and covers, and pull out chassis drawers to allow water to run out of the equipment.
- Vacuum and wipe water from walls floors, sub-floors, heating ducts, etc. Check under any raised computer room floors. Remove all wet carpeting, furniture and drapes.
- Critical metallic surfaces or machinery and work-in-progress should be temporarily protected with water-displacement oil.

Immediate “First Aid” for Documents

What to do in the First 24-48 Hours for Water Damaged Documents

Stabilize the Environment

It takes 48 hours for mold to grow.

- Reduce air temperature. In winter, turn off the heat. In summer, turn air conditioning down to 65 degrees F.
- Reduce humidity.
 - Increase air circulation: turn on blowers if outside air is cooler and less humid than inside air. Utilize portable fans and dehumidifiers.
 - Eliminate source of water. Remove or pump out standing water.

Prepare for Recovery

Contact professional restoration company.

- Determine quantity of materials to be salvaged.
 - Less than 50 cubic feet and damp – air dried
 - More than 50 cubic feet and soaked – frozen and freeze dried

Remove and Relocate Damaged Materials

Remove highest priority and/or wettest first. Pack materials for freezing

- Assemble wrapping/boxing teams of four persons: 1 to set up flattened boxes, 2 to wrap bound volumes or groups of file folders and 1 to box. If freezer wrap has not been pre-cut, one or more people will be needed to cut strips of paper from the rolls.
- If practical, interleave and/or wrap bound volumes or groups of file folders not exceeding 2 inches in thickness in waxed paper; items need not be wrapped tightly or completely – just enough to prevent items from sticking to each other in the box. Avoid utilizing plastic bags.
- Keeping like-sized materials together, pack items loosely in strong archives boxes and stack neatly.
- Pack bound volumes standing upright or spine down. Do not open wet volumes. Pack file folders vertically.
- Label each box with identification information.
- Place lids on boxes. Stack no more than four boxes high.
- Collect boxes and transfer to a site for stacking and shrink-wrapping onto pallets no more than four boxes high.
- Transfer materials as soon as possible by regular or refrigerated truck to freezing facility. This would be done by your selected restoration vendor.

Sustained Operations – Logistical Issues

The definition of sustained operations is not black and white. Many organizations consider any major event that lasts over 24 hours a sustained operation. The health and well-being of the staff needs to be a number one priority. The staff is the greatest asset. Any event that goes on for any length of time will produce many issues and problems for staff, their families and patients. More than likely, a Command Center will be established. Once the facility goes to a sustained operation, the Administrator or Nurse-in-Charge must make sure that the following issues are assigned and are being addressed:

Facility Issues

- Noise is a very significant issue. Noise from phones, unnecessary conversations, and poor acoustics will start to undermine people's abilities and their mental health. Be aware of this and make adjustments before you begin and then once you activate. Assign someone to monitor noise levels and intervene as necessary.
- Break room space—It is important to have break room space adjacent to the command center, so workers can take a stretch break, get some food or take a mental rest. If it is close by, they can be retrieved if there is a crisis but otherwise will get a chance to relax.
- Housekeeping—Frequent housekeeping services inside the command center, restrooms, and break areas are essential. Most offices only have service once a day. It will more than likely be required at least every six hours. A no eating rule is highly recommended in the Command Center as well as non-spill cups only.
- Air quality—Stuffy rooms will produce fatigue, dull minds, headaches and many complaints. Be aware of ventilation. As a contingency, have some standing fans for use in crowded rooms to circulate air. Use only "low fume" white board markers. Don't allow any spraying of aerosols in the Command Center. This would include hairsprays, perfumes, fixatives and room fresheners. You may also want to consider a ban on perfumes and colognes.
- Lighting—Soft overhead lighting, indirect lighting sources and natural light will reduce eye fatigue and tend to make workers more comfortable. Avoid placing computers near windows to avoid glare on the screen or the eyes from having to accommodate window light. Consider glare screens if glare is a problem. Share simple exercises to minimize eye fatigue (staring at a fixed object at least 50 feet away every 30 minutes to cause muscles to refocus; cup eyes in palms of hands and rest head in hands for 60 seconds, great stress reducer).
- Ergonomics—Poor ergonomics will result in worker fatigue, discomfort, pain and the inability to work 12-hour shifts. Well designed ergo chairs with adjustable height, tilt, lumbar support and arms are essential. Ideally computer keyboards will be on adjustable surfaces to accommodate many different workers. If using laptops, use a "regular mouse" to avoid wrist strain and remember the mouse pad. A non-glare screen will minimize eye fatigue and a phone headsets will ease neck and shoulder discomfort.
- Space—FEMA recommends at least 50-75 square feet per person in any Command Center. This will also vary depending on the amount of equipment any workstation may have. Also consider the amount of writing space or counter surface a worker will need to accommodate binders, reports and writing.

- Non-spill cups only—Use only commuter cups in the Command Center to prevent spills, potential catastrophes and housekeeping nightmare.
- Food Rules—Establish a no eating rule in the command center.
- Rest Areas—If possible have a rest area or lounge that staff can go to and take a quick "cat nap" if things are slow. Have cots, floor mats or couches. This is especially helpful on the night shift.
- First aid supplies—Basic first aid supplies, including some over-the-counter remedies, are essential. The drugs should include: aspirin, an aspirin alternative, ibuprofen, cough medication, vitamin C, cold medication and cough drops.
- Supplies—Have enough of everything for at least the first three days. This includes all medical supplies, types of office supplies and any items your team will need. Items you are likely to use "lots of" include toner, paper, markers, flip charts and masking tape.
- Parking—If workers are driving to the facility, provide secured parking. Due to worker fatigue encourage workers to drive only if they live close to the facility.
- Personnel Safety—Security is essential in the command center. Badge access only. Security staff is preferable for the building especially with a 24-hour operation. Monitor news regarding any reports of civil unrest and act accordingly for staff safety.

Staff Issues

- Nutrition—Really good food is critical...people working long hours look forward to meal breaks to break up the shift. Pick foods with the following rules of thumb: minimize sugars and caffeine- The sugar creates a yo-yo blood sugar and causes more fatigue. Excessive caffeine can result in sleep problems. Always serve complex carbohydrates along with simple ones (i.e. whole wheat muffin with fruit) to keep blood sugars more stable. Choose lower fat diet that is easier to digest. People will feel less sluggish and tired. Avoid really heavy meals that cause more fatigue and sluggishness
- Eating small meals every 2-3 hours is better. Discourage alcohol on off-hours; it interferes with deep sleep. Have lots of healthy food choices: fruit, veggies, whole wheat, lower fat, and less sugar. Have simple "safe" food that people can take into the Command Center - granola bars, cliff bars etc. However, discourage eating in Command Center overall. People need a break and the room needs to stay clean. Find out if workers have any food allergies or preferences such as vegetarian.

- Secure a *very good* caterer, have a backup. One of the things that people look forward to is meal times. Make them good and healthy!
- Mental Health—Consider having an Employee Assistance Program (EAP) counselor assigned to each shift. That individual should walk around, talk with people, and take frequent mental health temperatures of the group. They will be aware of problems often before they become obvious and they have the training to help the group or individual deal with it. If you don't use an EAP person for this role, have someone do it.
- Don't allow problems to get out-of-hand. Resolve issues quickly (between workers, functions etc.). People will be working in a close space, in stressful conditions and during a normally difficult time of the year for many people. Be aware of this and do training to help people recognize signs of stress in themselves and others and what to do about it.
- Once the initial excitement wears off and it becomes routine, watch for signs of complacency. This is when mistakes tend to happen. When boredom sets in, review procedures with team, re-engage them in the process. Perform job rotation or re-assign people to other tasks.
- Increase Comfort—In order to ease stress and make workers more comfortable, head, neck, and shoulder massage done by therapists are routine in many command centers.
- Childcare, Elder Care, Pet Care—As with family issues, childcare, eldercare and pet care may become an issue for a critical employee even though training and family involvement has occurred. Be prepared for it. Have a back up plan.
- Family Preparedness—If problems occur in your area and your staff has not prepared for their families for an emergency, workers will not stay on the job. Encourage home preparedness. Not extreme measures (like a cabin in Idaho) but what any family would do for an earthquake or hurricane. Get everyone in the family involved. Check the American Red Cross web site www.redcross.org for excellent brochures that can be downloaded and reproduced.
- Family Issues—Family preparedness training and education are critical for an employee to do well in a Command Center. This includes educating employees' families on shift work and its effects, the event and the importance of their participation in this effort.
- Shift Rotation—Rule of thumb is to stay on one shift rather than rotate in order to allow the body some time to adjust, especially in a Command Center of relatively short duration (1-2 weeks). If possible, an ideal schedule is 3 days on, 2 off with 12-hour shifts (used by police and many first responders). It is possible to work more days in a row, especially if the physical nature of the job is less demanding and the "life and death critical decisions" are few.

- Transportation—If working 12-hour shifts, consider providing transportation for workers. Fatigue may result in accidents. Hire a shuttle van and drivers for transport. Several lawsuits are pending where a worker left the job after long hours and fell asleep at the wheel and was killed.
- Housing—As with transportation, working 12-hour shifts results in little time for rest, sleep and relaxation. If workers are housed, fed and their personal issues are minimized, they will be able to do better in an aggressive schedule. Also, if there are any problems with transportation, power, etc. workers are cared for. Consider using a hotel that is close to the Command Center for housing. Rooms could be shared with one worker sleeping, then housekeeping cleans, second worker sleeps, the room is cleaned and so on. Or if families are concerned about not seeing their working spouse/family member, assign rooms to families (although this will probably not result in much rest for the worker, put more family peace).
- Incentives—Do you provide incentives for those who will have to work during the transition? How will you motivate workers? Develop bonus plans prior to the transition. It may be based on the number of days a worker works. It could be a trip, cash, or extra days off.
- Communication to Staff—Periodic briefings should be given to the entire facility. They should be short and to the point, and no more than 5 minutes. The frequency of these should depend on what is going on, but should be at least every six hours. Meetings that involve everyone create a team by helping staff to understand key issues, bringing the group together, and reducing rumors.
- Health—The health of the workers is very important. You might want to send a special note to all workers regarding flu vaccinations and be sure they receive them. Encourage people to see their physicians for a check up prior to the end of the year. Encourage staff to stay well hydrated, take nourishment, and frequent rest breaks to combat illness and reduce stress. In a major emergency, there may be a worker health clinic established.
- Stress Reduction—Some training on stress reduction techniques prior to the transition would be very helpful. Encouraging staff to learn stress reduction techniques such as deep breathing, stretching, meditation and many others will help them stay calm in the event of a crisis. Give a mini-workshop on stress reduction techniques including exercises and give printed materials for staff to read will help your staff in many difficult situations.
- Fitness—If possible, provide opportunities for workers to exercise during off time. Check into nearby health clubs or a hotel. This would be very helpful for stress reduction. Some command centers have yoga, stretching or relaxation sessions at the end of a shift.

- Determine in advance where the Mass Care Causality centers will be located. Find out where the centers will be in your neighborhood for referral post event for patients and staff. This will help to relieve your burden of providing shelter and care. (Contact local Office of Emergency Services (OES) or Red Cross.) Obtain materials from Red Cross and distribute to patients and staff.

Administrative Issues

- Cash on Hand—Cash may be necessary to purchase supplies, equipment, and food or to give as an advance to employees. Should you have some cash on hand? How much? How do you safeguard it? Include small bills for ease of use.
- Emergency Purchase Orders—Who has authority to issue emergency purchase orders? When an event occurs during a weekend, purchasing equipment may be problematic. Who can facilitate that?
- Employee/Patient Toll Free Number—Regular updates of employee hot lines will provide a valuable communication tool for all employees and management. It will reduce rumor and keep everyone informed on the facility status during the transition.
- Vendors—Do you have their emergency contact information in case you need service or supplies? Do you have another company as a backup (phones, office equipment, computers etc)? Do some of your key vendors have other patients who might drain resources: i.e. the cafeteria vendor may also have contracts with hospitals and primary responders who will get the service first.
- Safety—Command centers often have many small hazards that may add up to big accidents. Blocked fire exits, dangling cords, and trip hazards are just some of the common dangers. Consider safety- if status boards are high, get the appropriate step stool, otherwise staff are likely to be standing on office chairs with wheels.

Appendix

The following pages contain supportive materials for developing an emergency plan.

Reference Web Sites

Emergency Management Sites

FEMA	http://www.fema.gov
American Red Cross	http://www.redcross.org
Association of Bay Area Governments	http://www.abag.org
Centers for Disease Control	http://www.cdc.gov
Colorado University/Natural Hazard Center	http://www.colorado.edu/IBS/hazards/litbase/litindex.htm
Earthquake Center	http://nceer.eng.buffalo.edu
National Institute of Urban Search & Rescue	http://www.niusr.org/
National Wildland/Urban Interface	http://www.firewise.org/
Q-Safety (earthquake fasteners)	http://www.qsafety.com
US Geological Survey	http://www.usgs.gov
Volcano Center	http://vulcan.wr.usgs.gov

Weather Sites

National Hurricane Center	http://www.nhc.noaa.gov
National Oceanic and Atmospheric Administration (NOAA)	http://www.noaa.gov
Weather Channel	http://www.weather.com

Safety Sites

Federal OSHA	http://www.osha.gov

Hazard Mitigation

Definitions

Structural hazard	Any part of the building that may be damaged and cause injury i.e. floors, doors, ducts, walls, etc.
Non-structural hazard	Any contents of the building that may fall and cause injury: i.e. bookcases, file cabinets, TV's, shelves. Most injuries are caused from non-structural hazards.

Structural Mitigation

- Assess relative risk to public safety and ergonomic design for job completion (building and work space).
- Assess the building using a structural engineer.
- Develop a post-disaster preliminary survey that could be conducted by a pre-designated staff member until professional help is available.
- Determine what structural mitigation can be done now. Examples include:
 - a. Installation of an electrical transfer switches to use an emergency generator for power. This must be an automatic design. When a disaster occurs, the only ones to know how to operate changeover will not be on site, (Murphy's Law), or will be preoccupied with other tasks. Make sure that the "hook ups" are possible in advance for portable generators.
 - b. Assess whether a tanker could get to your facility and if it could get close enough to hook up.
 - c. Mark the pipes that would be used to hook up to a tanker truck for a water delivery. Make sure that the "hook ups" are possible.
 - Check with landlord regarding structural integrity if you lease space.
 - Obtain an assessment by a structural engineer if you own the building.
 - Determine what can be done in your multi-story building if elevators go out and patients are physically unable to manage the stairs. Special evacuation equipment like stair chairs may be considered.
 - Identify structural engineers. (See Engineers, Structural in your Yellow Pages.)

Non-Structural Mitigation

Identify all non-structural hazards and develop a plan of action to mitigate them including all critical equipment. Use the following list as a guide for hazard mitigation.

When deciding whether or not to secure something in place, think of a simple mathematical equation that has the following components: **Risk** (the hazards you face) X **Life Safety** (would someone be hurt or killed if the object fell, or would egress be restricted) X **Convenience** (how inconvenient would it be to secure it) X **Cost** (the cost of mitigating the hazard or replacing the object).

ITEM	IDEAS FOR MITIGATION
AIR CONDITIONERS	Bolt or leash to prevent falling.
BOOKCASES	Bolt bookcases that are over 4 feet high into studs with bolts and washers. Use an L bracket to secure to the wall or secure the cabinet to the floor through the bottom of the cabinet. Put lips on the shelves.
CABINET DOORS	Use childproof latches or positive latches.
CEILING TILES	If suspended, secure to ceiling with small chains or plastic cord.
CHEMICAL STORAGE	Do not store bleach and formaldehyde in the same cabinet. Keep doors to storage closed and locked. Use childproof latches on cabinets. Don't store chemicals together that are unsafe. Keep lids tightly sealed.
CIRCULAR PATIENT CHART STANDS	Chain or leash patient chart stands to the wall to prevent tipping.
COMPUTERS	Velcro to desk surfaces
DIALYSATE TANKS	Secure with plumbers' tape and bolt into studs. Wrap around 1/3 down from the top and 1/3 up from the bottom.
DIALYSIS CHAIR	Keep brakes secured at all times.
DIALYSIS MACHINE	Keep brakes secured at all times. Consider a leash to the wall that can be easily disconnected if needed.
FILE CABINETS	Bolt, if over four feet tall, into studs with bolts and washers. Use an L bracket to secure to the wall or secure the cabinet to the floor through the bottom of the cabinet.
HEATERS	Store low if possible. Leash to a wall.
ISOLATION AREAS	Keep heavy objects low. Good housekeeping.
IV POLES	Chain, leash, strap or bungie IV poles to the wall or machine.
LAB EQUIPMENT	Secure with Velcro.
LIGHT FIXTURES	Secure fixtures to ceiling with small chains or plastic cord.
NURSES STATION	Overhead housekeeping; keep heavy objects low and away from heads.

ITEM	IDEAS FOR MITIGATION
OFFICE EQUIPMENT	Secure smaller objects with Velcro, bolt all objects over four feet tall into studs with bolts and washers.
OXYGEN TANKS	Secure to wall by chain, bolt into studs. The chain should be about mid-tank & snug. If tank is not secured to wall it should be in a carrier.
PICTURES	Always hang on hooks and bend hooks to wall to prevent object from jumping off the hook.
PLANTS/PLANTERS	Attach hanging plants with wire to prevent falling. Keep plants on low counters and away from heads.
PORTABLE FANS	Chain, bungee or Velcro the fan securely in place.
PORTABLE SCALES	Set brakes. Chain or bungee to wall when not in use.
PRIVACY SCREENS	Brace legs at base with sandbags.
STORAGE SHELVES	Bolt into studs with bolts and washers, (if over four feet tall.) Store heavy objects low. Use a bungee cord to secure supplies in place.
SUPPLY ROOMS	Store heavy objects low. Use childproof latches on cabinet doors or strong positive latches.
TELEVISIONS	Bolt to ceiling, secure to beams/studs to prevent object jumping off the hook.
WATER HEATERS	Secure with plumbers' tape and bolt into stud. Wrap around 1/3 down from the top and 1/3 up from the bottom.
WATER TREATMENT TANKS	Secure with plumbers' tape and bolt into studs. Wrap around 1/3 down from the top and 1/3 up from the bottom.
WINDOW BLINDS	Secure with screws or bolts to prevent falling.
WINDOWS	Treat with film coating to prevent breaking. Keep blinds drawn (may be open but at least down) during treatments.

Many of these mitigation solutions are simple and inexpensive.

- Velcro computers to desk surfaces.
- Install child-proof latches on cabinet doors
- Bolt storage shelves and file cabinets into studs in the wall or use an L bracket or bolt to the floor through the bottom of the cabinet.
- Brace a water heater with plumbers tape.
- Items over four feet tall need to be secured, as they are the most likely to fall.
- Always secure those items that are near exits as they are an exit problem. If they fall, they could easily block an exit or at least make it difficult to get out.

Refer to the Federal Emergency Management Agency book "Reducing the Risks of Non structural Hazards," which provides many ideas about how to secure items in the facility. An excellent web site of Velcro and other securing devices is www.QSafety.com.

Hazardous Materials

There are many federal, state and local regulations regarding the care and handling of chemicals. The Federal OSHA regulation known as “worker-right-to-know” or hazard communication has many requirements regarding training, storage, handling and documentation of chemicals in the workplace. To review the Federal standards go to the OSHA web site at www.osha.gov.

Blood and bodily fluids are also considered to be hazardous and are also covered under a Federal OSHA standard known as Bloodborne Pathogens. Go to the Federal OSHA website to review the standard.

- Material Safety Data Sheets (MSDS): The Federal standard requires that you have current MSDS's on all chemicals at your facility. The MSDS must be up to date and available at all times for employees to reference. If a spill occurs and a worker or patient is injured be sure to send a copy of the MSDS with the person to the hospital.
- Waste procedures: Review your current MSDS's for all chemicals, regarding handling of chemical waste. This may be an issue after a disaster when waste removal is not immediately available. Make sure you have sufficient plastic bags or other approved containers to store waste for at least three days.
- Spill management: What is your ratio of spill kits to the number and volume of chemicals you store? What would you do in a bad spill situation with no assistance from the outside? Coordinate with local fire or governing body. Please refer to OSHA's hazardous waste operations emergency response standards.
- Chemical storage: Do you have chemicals stored in a cabinet where they will not fall and spill or mix with other chemicals? Do you have the appropriate hazard labels on all cabinet doors and room doors where chemicals are stored?
- Review all of your chemicals for incompatibility (certain mixtures may be hazardous or toxic i.e. ammonia and bleach).
- Employee training: Train all employees on the chemicals stored at your center and the center's spill management plan. Refer to the MSDS for each chemical for the chemical hazards.

Supply Checklist for Dialysis Treatment

Determine what supplies are necessary to dialyze patients. Use the following guide.

PRODUCT	DESCRIPTION	AMOUNT
MASTER LIST OF PATIENTS		
FISTULA NEEDLES		
NORMAL SALINE, 0.9%		
PENS		
PORT CAPS		
POWER ADAPTERS		
STANDARD TREATMENT PACKS, PRE AND POST ON/OFF KITS		
STETHOSCOPE		
SYRINGES WITH NEEDLES		
TAPE		
TRANSDUCERS		
TREATMENT FORMS		
XYLOCAINE		
DIALYZERS		
DIALYSIS TUBING A & V		
IV INFUSION LINES		
HEPARIN		
BP CUFFS		
GLOVES (LATEX AND VINYL)		
DIALYSATE		
BICARBONATE		
ALCOHOL		
BETADINE		
CLAMPS		
CATHETER CAPS		
STERILE GAUZE PADS		
BAND-AIDS		

Home Emergency Equipment and Supplies

ITEM	LOCATION
Barbecue, camp stove or hibachi and fuel (outdoor use only)	
Battery powered radio and extra batteries	
Bedding, blankets or sleeping bags	
Can opener (non-electric)	
Crescent wrench to turn off the gas main (make sure it is big enough)	
Drinking water	
Escape ladder for second story facilities	
Fire extinguisher-ABC type	
First Aid supplies	
Flashlight and extra batteries & bulb (you will be replacing these frequently)	
Garden hose (siphon or fight fires)	
Heavy gloves — leather-palmed	
Household bleach - Chlorine	
Matches, waterproof container & candles	
Non-perishable food	
Plastic silverware, paper plates, cups, aluminum foil	
Portable waterproof container to hold supplies	
Pots and pans for cooking	
Rubber boots (good for flooding)	
Sanitation supplies: Plastic bags, garbage can with secured lid, disinfectant	
Sheet plastic (paint drops), duct tape (to cover broken, windows)	
Simple tool kit: wrenches, hook and claw hammer, pliers, slot end and Phillips screwdriver, ax, 36" crow bar, shovel	
Smoke detector	
Sturdy shoes for staff (in case they have to walk home)	
Tents for triage/storage/shelter/treatment	
Whistle /horn to call for help/attract attention	
AM/FM radio	
Money in small bills	

Emergency Evacuation Kit for Dialysis Facilities

Suggested supplies to care for evacuated patients are listed below. Store these supplies in a durable, waterproof and portable container or cooler with wheels. Supplies should be routinely checked for expiration dates.

Item	Basic Supply (B) or Optional Supply (O)	Expiration Date (if applicable)
Adhesive and paper tape	B	
Alcohol wipes	B	
Aspirin and Tylenol	O	
B/P cuffs	B	
Band-aids (various sizes)	B	
Benzine	O	
Betadine	B	
Biohazard red plastic bags	B	
Blankets	O	
Butterfly band-aids	O	
Catheter Caps	B	
Clamps	B	
Cold packs	B	
Cotton-tipped swabs	O	
Dextrose, IV 50%	B	
First aid book	O	
Fistula/IV Needles	B	
Gauze rolls	B	
Gloves, latex and vinyl	B	
Glucose Meter and Strips	O	
Glucose Strips	B	
Heparin 1,000u, 5,000u 10,000u	B	
Hydrogen peroxide	B	
Instant Hand Sanitizer (<i>for when water is not available</i>)	B	
IV Lines	B	
Kayexalate (administer with physician order only)	O	
Normal Saline 0.9%	B	
Petroleum jelly	O	
Plastic Sharps containers	B	
Safety pins	O	
Sanitary napkins	O	
Scissors	B	
Sling (triangular bandage)	O	
Splints, cardboard 18" & 24"	O	
Sterile eye wash	O	
Sterile gauze pads	B	
Steri-strips	O	
Stethoscope	B	
Syringes with needles	B	
Syrup of Ipecac	O	
Thermometer, oral and rectal	B	
Tweezers	O	

Food and Water

Will you need to provide food and water as part of your facility emergency management plan? That all depends on the risks in your area. If you are in an area that is likely to have a large regional disaster such as an earthquake the answer is probably yes. If your risks are “slow-moving ones” such as hurricanes or flooding, you have sufficient time to send staff and patients home so the answer is probably no.

How long do you think you may be at your facility? One, two or three days. Use that number in your planning. In earthquake areas, three days is usually used for planning purposes.

How much food and water do you need? Most of the people who live close by will go home if at all possible. Those who commute some distance may have no alternative but to stay. Food is computed at approximately 1200 calories per day and water is 16-24 ounces per day. Multiply the number of likely “overnight visitors” times those two requirements for your allocation per day.

Mutual Aid and Affiliation Agreements

For the most part, facilities will have to depend on themselves and their professional colleagues in the area to survive in the first few days following a serious disaster. We emphasize again that acute care facilities will be overwhelmed, and that the chronic ESRD population is not integrated into or not a high priority in State or Federal planning scenarios.

Planning is the Key to Survival

Facilities should examine their current backup agreements as required in the Federal ESRD Regulations of 1976. A typical backup agreement usually will not contain the elements necessary to provide, receive, or record and pay for emergency services. In a major disaster, it is likely that many, if not all of the facilities in a geographic area will be damaged, necessitating assistance and back up from more distant facilities. Facilities must therefore identify both near and distant sources of mutual aid. In considering who can and will provide services, it is necessary to put aside considerations of ownership, referral patterns and personal bias. It is the intent of those who agree to assist each other to preserve and restore the relationship of patients to their usual physicians and facilities as quickly as possible.

A model affiliation agreement will contain these elements:

- A statement of purpose;
- Identification of parties;
- Admission policies;
- Shared staff arrangements;

- Shared inventory arrangements;
- Shared patients arrangements;
- Security;
- Protection of records; and
- Review and update the plan.

Suggested Guidelines For An Affiliation Agreement

- Purpose
To identify procedures by which the parties will provide inpatient, outpatient, and other renal related services to each other in a disaster situation. To restore as quickly as possible the integrity of the relationship of patients to their usual treatment centers.
- Admission Policies
The parties agree to provide renal related services and treatment to each other's patients within the capability of their resources.
- Shared Staff and Patient Guidelines
Once facilities have agreed to share staff and patients in an emergency, guidelines must be established. Suggested guidelines are:
 - Shared Staff Guidelines
The parties agree to share staff when requested to do so by each other. Only an authorized person can request staff; documentation will be required. Each party will keep basic records identifying those staff members who provide services, and the dates and hours worked. These persons will become "temporary disaster staff." Payment for the provision of services will be made by the facility requesting the staff. Professional liability, including workers compensation, will be the responsibility of the requesting facility. These arrangements apply only to those staff who are authorized to work in the affiliate. Copies of temporary time sheets will be given to the employee's facility manager. Other individuals, who arrive unsolicited, can be classified as non-paid volunteers.
 - Shared Patient Guidelines
If patients arrive without orders, and no M.D. consultation or confirmation is available, the facility will utilize the suggested adult emergency dialysis orders noted in the recovery section of this manual. An emergency medical record will be created. Qualified personnel will initiate a basic emergency medical assessment. To the extent possible, patients should be treated by staff familiar to them. The patient is to be returned to the home facility as soon as possible. A copy of the emergency record will be sent to the home facility manager. Billing to the payment source will be done by the facility providing the treatment.

- **Shared Equipment and Guidelines**
Equipment and supplies will be provided to each other by authorized persons. Detailed documentation should be maintained including at least:
 - Names of those requesting the equipment/supplies
 - Description of supplies and equipment, including serial numbers
 - Names of those receiving the equipment/supplies
 - It is the responsibility of those persons borrowing consumable supplies or equipment to return them in kind, or to make payment to the lending/supplying facility. It is the responsibility of those borrowing equipment to return it in satisfactory order, or to compensate the lending facility. Copies of the document should be sent to the borrowing facility's manager, and can thus serve as a combination packing order and tickler invoice.

- **Security**
It is the responsibility of the borrowing facility to provide security for supplies, equipment and records.

- **Confidentiality and Protection**
All temporary records are treated with the same respect and protection as are afforded permanent facility records.

- **Frequency of Review**
The agreement should be reviewed annually and updated as required.

Sample forms for staff, equipment and patients follow.

Volunteer Activities

Family and friends may arrive on the scene to volunteer after an emergency. Volunteers can be assigned to numerous non-medical assignments. Always consider safety and the volunteer's abilities before assigning roles.

- Develop a list of non-medical jobs that can be done by volunteers such as: clean-up, record keeping, inventory, runners, comfort, and refreshments.
- Keep a record of volunteers, especially if they assist in transporting equipment and supplies.

Use the following forms are to assist you in managing your volunteers.

TASKS TO BE COMPLETED	RESPONSIBLE VOLUNTEER
DEBRIS CLEAN-UP	
RECOVERY OF FILES	
CLEAN-UP OF USABLE SUPPLIES	
INVENTORY OF SUPPLIES	
REFRESHMENTS	
RUNNER	
TRANSPORTATION	
TELEPHONES	
TRANSPORT SUPPLIES & EQUIPMENT	

Financial Processes

The financial aspects of business recovery must begin immediately.

For a 20-station facility, using average rates (an assumption that varies GREATLY from state to state) the losses could run from \$36,000 (2 full shifts a day) to \$54,000 (3 full shifts a day) for a three day loss. The facility is obliged to continue spending money for fixed operating expenses (rent, insurance) **and** the cost of the disaster recovery.

Obtaining supplies -

It is unlikely that you will have enough cash on hand. Your affiliation agreement should define how others can lend you supplies. Develop a purchase order form for emergencies.

Emergency payroll -

If done off site, consider alternative arrangements. If payroll cannot be processed, consider draws/loans until it can be completed. Negotiate an agreement with your local bank to assist.

Billing -

How long can your facility go without billing?

- Develop plans for alternate billing.
- Contact your fiscal intermediary. You might be able to arrange emergency reimbursement procedures.

Personnel policies -

Examine your personnel policies. Policies should be updated periodically and staff informed of changes. Do your policies specify your pay policy if your facility is closed for an extended time due to damage?

- Suggestions: Use of accrued vacation time, or accrued paid time off (PTO). What is an appropriate maximum for this situation?
- Update staff semi-annually on personnel matters.
- Orient new staff.
- Consider special compensation/incentives formulas for staff who report for work in a defined emergency situation.

Inventory control -

In order to promptly and efficiently process insurance claims, an accurate inventory is essential.

- Inventories should be current, with equipment ID numbers, model numbers, costs, and dates acquired.

Insurance -

Review your insurance policies periodically directly or through your Financial Services Department, making sure that your coverage is keeping pace with the increased value of your buildings and equipment. Review limitations and exclusions. Examine particularly the loss of income provision of your business policy.

- Know what your policy covers, and more importantly, what it does not cover. Losses due to earthquake and floods are generally NOT covered by your business policy. Special policies for these disasters are available, but are usually prohibitively expensive.
- Review the provisions of your insurance regarding the death, personal injury or other disaster related adversities to patients and staff.

Government assistance -

State or Federal programs may be able to provide assistance and loans after a disaster. Check the telephone book for the Small Business Agency, and Federal Emergency Management Agency (FEMA) and call for more information. Remember, you will need detailed documentation including dates acquired, costs, serial numbers, etc., for equipment replacement.

Supply and Service Relationships

Arrange Memorandum of Understanding (MOU's) with important supply and service vendors.

Vendors may be affected by the emergency and be temporarily or permanently unavailable to supply your facility. Usual lines of supplies will be interrupted. You should identify in advance those vendors/suppliers who may be able to supply you quickly post disaster. Consider distance and hazards that may separate you. For example, roads may be impassable or bridges down. Air and rail transportation may be unavailable.

The Small Business Administration (SBA) notes that 50% of all businesses that have a "disaster" never recover, and of those who do recover, 80% will fail in the next two years. 85-90% of businesses do not have a disaster recovery plan.

Professional (Non-Medical)	Contact Person	Contact Numbers
Electricians		
Plumbers		
Security		
Structural engineers		
Building Contractors		
HVAC Contractor		
Restoration Vendors (clean-up)		

Medical Supply Vendors	Contact Person	Contact Numbers
Dialysis supplies		
Medical rental (wheelchairs, gurneys)		
Pharmacies		

Other Vendors	Contact Person	Contact Numbers
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Neighborhood grocery		
Transportation for staff/patients		
Nearby lodging – hotels motels		
Backup Generator Vendor		
Water tanker vendor		
Rental company i.e. emergency lighting		
Tents		
Trailers		

Fire Safety

Use of Extinguishers

Dry chemical fire extinguishers are located at strategic points around the building. The first line of defense in preventing fires is good housekeeping. Extinguishers are the first line of defense in fighting fires. Each extinguisher is the proper type for the fire that will most likely occur in that vicinity. If a fire is discovered while it is still small enough for the extinguisher to be effective:

- Remove the extinguisher from its place and hold it upright. Stand back 8 to 10 feet from the fire. Follow the acronym **P A S S**.
 - **P**ull the retaining pin.
 - **A**im the nozzle at the base of the flames, and
 - **S**queeze the handle completely. This will discharge the extinguishing agent at the fire. Use a sweeping motion from side-to-side.
 - **S**weep from side to side. Go slightly beyond the fire area with each pass. Once the fire is out wait before leaving the area. You may need to make a further application, in case the fire re-ignites.
- Cover your mouth and nose whenever possible with a wet cloth. When you extinguish a fire, a great amount of smoke may be generated, so be very careful. The smoke may also generate noxious fumes, exercise caution. Smoke inhalation is the major cause of fire deaths in this country.
- Begin evacuation procedures if it is not feasible to use an extinguisher.
- Close as many doors and windows behind you as possible to contain the fire to the smallest area possible.

CLASSES OF FIRES	
CLASS A	Fires involving ordinary combustible materials (wood, clothing, paper, rubber, and many plastics)
CLASS B	Fires involving flammable or combustible liquids, flammable gases, greases, and similar materials
CLASS C	Fires involving energized electrical equipment (computers, transformers, motors, and appliances)
CLASS D	Fires involving certain combustible metals (magnesium, titanium, sodium potassium, etc.)

All fire extinguisher labels display letters and/or symbols to indicate types of fires they are designed to put out.

Fire extinguishers are available throughout the building and they are usually located on a wall near an exit leading to a stairwell. All employees should be familiar with the location and type of extinguisher nearest their workplace.

TYPES OF EXTINGUISHERS		
TYPE	RATING	DESCRIPTION
DRY CHEMICAL	ABC	Most common type found in buildings. Effective on all common type fires, but leaves powdery residue that may be detrimental to electronic equipment.
HALON	ABC	Leaves no residue - preferred in computer rooms or where very delicate electronic equipment is in operation.

Sprinklers

- Independently activated sprinkler heads may release as much as 50 gallons of water every minute. If fire spreads to other areas, additional sprinkler heads will automatically turn on.
- The action of a single sprinkler head is often sufficient to contain 95% of all fires. For a sprinkler to be fully effective there must be at least 18 inches between the ceiling and the top of any object. This allows for the widest coverage of water and minimizes the chance of fire spreading. If there are boxes or equipment stacked high enough to impede the effectiveness of any sprinkler, they must be moved.

Fire Prevention

- Do not accumulate discarded files and paper trash in your office or storage areas. Pay special attention to housekeeping in areas that produce a lot of trash such as storage areas, duplication areas or kitchens.
- Keep electrical cords in good repair. Inspect periodically and report frayed cords to facilities management. Unplug all electrical equipment that is not working or in need of repair. Do not overload wall outlets.
- Smoke only in smoking areas. Do not empty ashtrays in wastebaskets that contain paper or other flammable materials.
- In areas with sprinklers; there must be at least an 18-inch clearance from the bottom of the sprinkler head to the top of any object underneath the sprinkler head.
- Leave all hallways free of boxes and trash. They must be kept open to provide for a quick exit.
- Propping fire doors open is a direct violation of the Fire Code and will allow smoke and fire to spread throughout the floor.
- Check all electrical equipment at the end of the day, to make sure it is turned off. This includes copiers, coffee pots, typewriters, computers and printers.
- Do not use electrical or any type of space heater.

Basic Fire Safety—Occupant Instruction

All occupants of a building should be made aware of situations that can cause both safety and fire hazards. The goal of training is to identify the specific areas and hazardous situations that are most common to the building. When such hazards exist, appropriate personnel should be advised immediately to correct or report the conditions. Listed below are items of concern: (If helpful, this lower section can be copied and used as a checklist.)

Housekeeping/Maintenance – Safety Checklist

- | YES | NO | |
|--------------------------|--------------------------|--|
| <input type="checkbox"/> | <input type="checkbox"/> | 1. All no smoking regulations being observed? |
| <input type="checkbox"/> | <input type="checkbox"/> | 2. Combustible waste placed in proper/approved containers? |
| <input type="checkbox"/> | <input type="checkbox"/> | 3. Trash/rubbish removal made on a regular basis? |
| <input type="checkbox"/> | <input type="checkbox"/> | 4. Flammable liquids safely stored in approved containers? |
| <input type="checkbox"/> | <input type="checkbox"/> | 5. No smoking signs posted in above area? |
| <input type="checkbox"/> | <input type="checkbox"/> | 6. Proper/approved ventilation provided in above area? |
| <input type="checkbox"/> | <input type="checkbox"/> | 7. All electrical plugs, switches and cords legal and in good repair with minimal or no use of extension cords from outlets? |
| <input type="checkbox"/> | <input type="checkbox"/> | 8. Adequate clearance maintained at all Sub Panels (3 feet)? |
| <input type="checkbox"/> | <input type="checkbox"/> | 9. Electrical equipment and devices turned off when not in use? |
| <input type="checkbox"/> | <input type="checkbox"/> | 10. Portable heaters? (None are allowed in the building.) |

Fire/Life Safety Protection - Checklist

- | YES | NO | |
|--------------------------|--------------------------|--|
| <input type="checkbox"/> | <input type="checkbox"/> | 1. Adequate lighting in corridors, exits and stairways? |
| <input type="checkbox"/> | <input type="checkbox"/> | 2. Exit signs illuminated as required? |
| <input type="checkbox"/> | <input type="checkbox"/> | 3. Evacuation routes adequately posted? |
| <input type="checkbox"/> | <input type="checkbox"/> | 4. Evacuation signs maintained - none defaced or missing? |
| <input type="checkbox"/> | <input type="checkbox"/> | 5. Fire doors in operable condition. (Doors are not to be wedged or blocked open, especially at stairwells) |
| <input type="checkbox"/> | <input type="checkbox"/> | 6. Stairwells free of obstacles, storage, refuse, etc? |
| <input type="checkbox"/> | <input type="checkbox"/> | 7. Corridors and exits maintained unobstructed? |
| <input type="checkbox"/> | <input type="checkbox"/> | 8. Fire life safety systems tested as required by code? |
| <input type="checkbox"/> | <input type="checkbox"/> | 9. Fire sprinkler inlets and shut-off valves visible/accessible? |
| <input type="checkbox"/> | <input type="checkbox"/> | 10. Fire sprinkler heads clean and unobstructed (minimum 18" clearance)? |
| <input type="checkbox"/> | <input type="checkbox"/> | 11. Adequate clearance (3 feet) for all fire extinguishers/hoses? |
| <input type="checkbox"/> | <input type="checkbox"/> | 12. Fire equipment in proper/legal locations? Fire equipment is in good condition and properly/regularly tested (check tag)? |
| <input type="checkbox"/> | <input type="checkbox"/> | 13. ERT list updated and posted at each building? |
| <input type="checkbox"/> | <input type="checkbox"/> | 14. Tenants/new employees instructed on emergency plans? |
| <input type="checkbox"/> | <input type="checkbox"/> | 15. Other observations (turn page over for comments) |

Report Submitted By: _____

Date: _____

How to Handle Anthrax And Other Biological Agent Threats

Many facilities around the country have received anthrax threat letters. Most were empty envelopes; some have contained powdery substances. The purpose of these guidelines is to recommend procedures for handling such incidents.

DO NOT PANIC

- Anthrax organisms can cause infection in the skin, gastrointestinal system, or the lungs. To do so, the organism must be rubbed into abraded skin, swallowed, or inhaled as a fine, aerosolized mist. Disease can be prevented after exposure to the anthrax spores by early treatment with the appropriate antibiotics. Anthrax is not spread from one person to another person.
- For anthrax to be effective as a covert agent, it must be aerosolized into very small particles. This is difficult to do, and requires a great deal of technical skill and special equipment. If these small particles are inhaled, life-threatening lung infection can occur, but prompt recognition and treatment are effective.

Suspicious unopened letter or package marked with threatening message such as “ANTHRAX”:

- Do not shake or empty the contents of any suspicious envelope or package.
- PLACE the envelope or package in a plastic bag or some other type of container to prevent leakage of contents.
- If you do not have any container, then COVER the envelope or package with anything (e.g., clothing, paper, trash can, etc.) and do not remove this cover.
- Then LEAVE the room and CLOSE the door, or section off the area to prevent others from entering (i.e., keep others away).
- WASH your hands with **soap and water** to prevent spreading any powder to your face.
- What to do next...
 - If you are at **HOME**, report the incident to local police.
 - If you are at **WORK**, report the incident to local police, **and** notify your building security official or an available supervisor.
- LIST all people who were in the room or area when this suspicious letter or package was recognized. Give this list to both the local public health authorities and law enforcement officials for follow-up investigations and advice.

Envelope with powder and powder spills out onto surface:

- DO NOT try to CLEAN UP the powder. COVER the spilled contents immediately with anything (e.g., clothing, paper, trash can, etc.) and do not remove this cover!
- LEAVE the room and CLOSE the door, or section off the area to prevent others from entering (i.e., keep others away).
- WASH your hands with **soap and water** to prevent spreading any powder to your face.
- What to do next...
 - If you are at **HOME**, report the incident to local police.
 - If you are at **WORK**, report the incident to local police, **and** notify your building security official or an available supervisor.
- REMOVE heavily contaminated clothing as soon as possible and place in a plastic bag, or some other container that can be sealed. This clothing bag should be given to the emergency responders for proper handling.
- SHOWER with soap and water as soon as possible. Do Not Use Bleach Or Other Disinfectant On Your Skin.
- If possible, list all people who were in the room or area, especially those who had actual contact with the powder. Give this list to both the local public health authorities so that proper instructions can be given for medical follow-up, and to law enforcement officials for further investigation.

QUESTION OF ROOM CONTAMINATION BY AEROSOLIZATION:

For example: small device triggered, warning that air-handling system is contaminated, or warning that a biological agent released in a public space.

- Turn off local fans or ventilation units in the area.
- LEAVE area immediately.
- CLOSE the door, or section off the area to prevent others from entering (i.e., keep others away).
- What to do next...
 - If you are at HOME, dial “911” to report the incident to local police and the local FBI field office.
 - If you are at WORK, dial “911” to report the incident to local police and the local FBI field office, and notify your building security official or an available supervisor.
- SHUT down air handling system in the building, if possible.
- If possible, list all people who were in the room or area. Give this list to both the local public health authorities so that proper instructions can be given for medical follow-up, and to law enforcement officials for further investigation.

<http://www.bt.cdc.gov/DocumentsApp/Anthrax/10122001Handle/10122001Handle.asp>

<p>For the most current information on biological weapons, go to the Center for Disease Control (CDC) web site @ www.cdc.gov or Federal OSHA www.osha.gov</p>

Letter and Parcel Bomb Recognition Points

The following information is provided by the US Postal Service and the Federal Bureau of Investigation in response to mail bomb threats.

The following points serve as clues for suspicious packages or letters:

- Excessive postage
- Stamps instead of postage meter
- Incorrect titles
- Titles but no names
- Misspellings of common words
- Oily stains or discoloration
- No return address
- Excessive weight, especially for size of letter or parcel
- Rigid Envelope
- Lopsided or uneven envelope
- Protruding wires or tinfoil
- Visual distractions
- Foreign mail, air mail or special delivery
- Restrictive markings such as confidential, personal etc.
- Handwritten or poorly typed addresses
- Excessive securing material such as masking tape, string etc.
- Return address different from postmark city.

Precautions

- **Never** accept mail, especially unexpected packages at your home from a foreign area
- Make sure family members and clerical staff know to refuse all unexpected mail at home or office
- **Remember it may be a bomb. Treat it as a suspect. Isolate it!**

Post-Traumatic Stress

Dealing with the feelings that occur after a disaster is critical for recovery. The earlier that issues can be addressed, the sooner there can be recovery. Even though employees have been well trained and prepared, they still may not be able to handle the emergency. Post traumatic stress affects everybody. Use the information on the next page as a handout.

The events of September 11, 2001 are a good example of how a traumatic event can seriously affect a large number of people. Plan now for psychological services for staff and patients. Resources may include: clergy, local mental health centers, social workers, county psychological associations and commercial employee assistance programs.

Reactions to Stress

Anger	Feeling Of Loss	Muffled Hearing
Anxiety	Feelings Of	Muscle Tremors
Confusion	Inadequacy	Nausea
Criticism	Forgetfulness	Nightmares
Decreased Libido	Frustration	Persistent Thoughts
Denial	Grief	Shock
Depression	Guilt	Sleep Disturbance
Difficulty	Headaches	Stomach Cramps
Concentrating	Helplessness	Sweating
Disorientation	Irritability	Visual Flashbacks
Emotional Numbing	Letdown	Withdrawal
Fatigue	Loss Of Appetite	
Fear	Memory Problems	

Other reactions include

- Increased alcohol use or substance abuse
- Intense concern for family members
- Sense of unreality or being like a “movie”
- Anger at supervisors/organization
- Difficulty making decisions
- Feelings of being unappreciated
- Distortions in time perspective
- Sense of being in a bad dream
- Persistent interest in the event

Coping With Post-Disaster Feelings

People can take steps to help themselves, family members, and each other cope with difficult incidents. The following is a list of self-help suggestions:

- Within the first 24 to 48 hours...periods of strenuous **physical exercise alternated with periods of relaxation** will alleviate some of the physical reactions to a stressful situation.
- **Structure your time** by keeping busy.
- **Remind yourself** that you are normal and having normal reactions. Don't label yourself as "crazy", "wacko", "weak", or "unfit".
- **Talk** is one of the most healing medicines. Talk to people who you know care about you. People do care.
- **Be aware** of numbing the pain with overuse of drugs or alcohol. Don't complicate things further with substance abuse problems.
- **Keep your life as normal as possible.**
- **It is all right to spend time by yourself.**
- **Help your co-workers** as much as possible by sharing feelings and checking out how they're doing. (respect their feelings of not wanting to talk about the incident)
- **Do things** that make you feel good.
- **Realize that those around you are also under stress** and may not act or react in a manner you would normally expect.
- **Keep a journal.** Writing during sleepless hours may help.
- **Don't make any big life changes**, buying that Ferrari or house you've always wanted, going to Reno to get married suddenly, etc.
- **Do make as many daily decisions as possible**, which will give you the feeling of control over your life.
- **Consult a mental health professional if you need assistance.**
- **Make plans** now on how to find your loved ones after a major emergency.
- **Take time now to plan** for a future disaster - assemble water, food, emergency and first aid supplies.
- **Help in relief efforts** if you feel up to it. Sometimes donating time, supplies, or blood can help the grieving process.

- **HUMOR!** Laughter and humor relieve stress and contribute to a sense of well-being. See a funny movie, tell jokes, or rent a Marx Brothers video.
- **Lower your expectations of yourself** - you don't have to resume all of those activities you were doing before the disaster. Get back into things slowly, allowing time for you to recover.
- **Watch your diet** - avoid caffeine and sugar.
- **Get outdoors** - take a walk, enjoy a bit of nature.
- **Decrease the amount of time you watch television reports or listen to the radio.** with some discretion. You can only stand so much disaster news.
- **Practice patience** when dealing with others, driving, or with living through the next few weeks.
- **Count your blessings.**

Sample Emergency Response Procedure Manual

In this section you will find general (non-medical) guidelines for a variety of man-made and natural disasters.

The Emergency Response Team

The Emergency Response Team (ERT) is made up of employees who accept a special responsibility for their fellow workers and patients. It is their duty to assist in implementing emergency management procedures that assure safety in a time of crisis. In most facilities, all staff members are on the ERT.

The Administrator or the Nurse-in-Charge is the person responsible for coordinating the efforts of police and fire departments with the ERT while on the property.

Administrator or the Nurse-in-Charge—Life Safety Responsibilities

- Implement a program of general fire prevention for the building.
- Implement a program of training for ERT members and employees regarding the Emergency Response Plan.
- Provide training for designated persons to serve as assistants or alternates to the Administrator or the Nurse-in-Charge
- Assure development of a program of regular inspections, maintenance, testing, and re-certification of all fire and life safety equipment and apparatus.
- Act as a liaison between the Fire Department and the facility.
- Put into effect the Emergency Response Plan.
- Assure the building keys are presented to a Fire Department Officer in a fire emergency.
- Notify the Medical Director

Emergency Response Team—Responsibilities

- Know the physical layout of the floor and adjacent floors.
- Know the location of the nearest stair exit, alternate stair exit, and the direct route to each.
- Know the location, condition (charged), and use of fire extinguishers.
- Know how to remove patients from machine and assist to exit.
- Know emergency telephone numbers and procedures.
- Know how to assume control, maintain calm and prevent panic.
- Instruct co-workers in their emergency roles.

Emergency Response Team—Emergency Roles

The Nurse-in-Charge will ask fellow employees for assistance in assuming the following roles in an emergency.

- Assisting Patients

Using the patient evacuation priority list, remove patients from machines and assist to an exit. If patients require assistance, ask others to help.

- **Searching the Area**
At the direction of the Nurse-in-Charge begin a search of the area. Always work in pairs and search all work areas, coffee rooms, supply rooms, and rest rooms to confirm that everyone heard the alarm and is proceeding to evacuate. Be absolutely certain that no one is left on the floor. Close all doors and windows as you proceed. Advise the Administrator or the Nurse-in-Charge when the floor is vacant.
- **Elevator Lobby**
If there is an elevator in your building, at the direction of the Nurse-in-Charge, direct people away from the elevators and to the exit stairs. This is to remind persons that they must not use the elevator during an emergency.

Evacuation

- Remain calm.
- The Nurse-in-Charge makes the decision to evacuate and method to be used.
- Close all doors as you exit. Do not lock doors as it will hinder firefighters and rescuers.
- Don't use elevators. Use stairs.
- Only take personal belongings and medicines with you.
- Move in an orderly fashion toward the stairs or nearest safe exit and leave the building. Move away from the building to a safe area.

When evacuating, use caution when you approach a closed door:

- Carefully check for heat with the back of your hand by lightly touching the door near the top. Then check the doorknob for heat. If it is hot, go to an alternate exit.
- Brace yourself, and open the door slowly even if it is cool to the touch. You may need to shut it quickly if you encounter flame or smoke.
- Enter the area carefully and close the door behind you if you find it filled with smoke.
- Drop to your hands and knees and keep your face near the floor where the air is better whenever there is heavy smoke. Smoke contains hot and toxic gases.

- Follow the wall to the nearest exit and leave the building.

What to do if you are trapped in a building

- First of all, stay calm. Try to go to a room with an outside window and stay there.
- If there is a working telephone in the room, call the Fire Department, 9-1-1, and tell them exactly where you are, even if you see fire trucks below.
- To help rescuers find you, stay where they can see you and wave something bright and light-colored to attract their attention.
- To keep smoke out of your refuge area, use clothing, towels, newspapers, etc. to stuff the cracks around the door.
- Patient and personal safety is always first.

Relocation

In some emergency situations, it may be appropriate to relocate people to another area of a building to avoid exposure to a hazard. The decision to temporarily relocate to another part of the building will be made by Emergency First Responders (Police or Fire) or the Administrator or the Nurse-in-Charge after consultation with public safety personnel.

Fire

If you smell smoke, or see smoke or fire, or hear the fire alarm:

- Call the Fire Department 9-1-1. Remain calm and identify yourself. Report the location and nature of the emergency.
- Notify _____ (management)
- Warn others in the immediate area.
- Use an extinguisher only if it is a small fire and you have been trained to operate one. If you extinguish the fire, you still must call the Fire Department.
- Begin evacuation procedures. Rescue anyone (including yourself) who is in immediate danger from fire.
- Remove patients in immediate danger from machines and the area. Then using the patient evacuation priority list help other patients needing assistance.

- Clamp and cut or clamp and cap blood lines and remove patients to a safe area.
- Shut off appliances and other equipment as you leave an area. Do not turn off lights.
- Report status of evacuation to Fire Department.

Medical Emergencies

- Stay calm and gather the information.
- Activate Emergency Services by calling 9-1-1
- Identify yourself and your location.
- Describe the emergency situation.
- Advise fellow employees of the emergency and ask for assistance. Send an employee to the front of the building to greet responders and take them to the victim.
- If blood is present, wear gloves.

Refer to your own internal procedure manual for procedures on:

- CARDIAC ARREST
- SEVERE HYPOTENSION
- POSSIBLE HEMOLYSIS FROM CONTAMINATED DIALYSATE, ETC.
- SEIZURES

Bomb Threats

If you receive a bomb threat by phone, you should:

- Use the bomb threat checklist (see next page)
- Remain calm and keep the caller on the line as long as possible. Ask that the message be repeated.

- If the caller does not indicate the location of the bomb or the time of possible detonation, you should ask for this information.
- Pay particular attention to peculiar background noises such as motors running, music, or any other noise that may give a clue as to the location of the caller.
- Listen carefully to the voice (male, female, adult, and child), voice quality (calm, excited), accents, and speech impediments.
- Immediately after the caller hangs up, report the threat to your immediate supervisor who will call the Police. Do not use the phone the threat was received on, leave off the hook in case *69 may be used.
- Wait for further instructions. (Be prepared to describe the threat to the police in as much detail as possible.) The decision to evacuate as a result of a bomb threat will be based on the details available and whether this appears to be a legitimate threat or a prank.
- Do not mention the call to anyone else. This will avoid unnecessary panic.

If evacuation is needed:

- Leave doors and windows open to let the blast wave escape.
- Take your personal items such as briefcase, purse, and other small items that might delay the search.

Letter or package bombs are less common and it is unlikely that employees would detect them. If you receive a package that you feel is suspicious, call **911** and the police will review it and call the bomb squad if necessary.

Bomb Threat Checklist

Questions To Ask:

- 1) When is the bomb going to explode?
- 2) Where is it right now?
- 3) What does it look like?
- 4) What kind/size of bomb is it?
- 5) What will cause it to explode?
- 6) Did you place the bomb?
- 7) Why?
- 8) What is your address?
- 9) What is your name?

Describe the Caller's Voice:

Calm	Angry
Excited	Slow
Rapid	Soft
Loud	Laughter
Crying	Normal
Distinct	Slurred
Stutter	Nasal
Whispered	Lisp
Raspy	Deep
Accent	Disguised
Clearing Throat	Ragged
Deep Breathing	Cracking
Familiar? Who?	

Describe the Threat Language:

Well Spoken	Incoherent
Foul	Irrational
Righteous	Grammar
Choice of Words	Taped
Message Read	

Note Background Sounds:

Street Noise	Booth
Cafe/Bar	Voices
PA System	Music
House Noises	Motor
Animal Noises	Office
Clear	Static
Long Distance	Local
Factory Machinery	Other

Any words or phrases that stood out?

Exact Wording of the Threat:

Sex of the caller: Race:
Age:
Length of call:
Time the call ended:
Date:
Phone number where call was received:

Hazardous Materials

- In the event of a hazardous materials incident:
 - Call 9-1-1
- Spill kits are located _____
- Give your name, the exact location of the material released, telephone number and your extension. Report any injuries. Identify the type of materials involved, if known. Describe the effect of the incident, i.e., the activity of the hazardous material and its reaction on the surroundings; describe the colors, smells or visible gases being produced.
- If it is necessary, evacuate the immediate area and keep others out. If fumes are being produced, restrict the area. Move away from the hazard and take your personal belongings. Do not enter a restricted area to get your belongings or go back for them. Only trained and properly equipped emergency personnel may enter an area that is contaminated.
- Activate a buddy system and assist others who cannot leave on their own. Employees will stay with their partners and observe them for signs of chemical or heat exposure.
- Refrain from smoking. Strike no matches or lighters.
- Do not eat or drink. Do not apply cosmetics; they mask true skin color and tone.
- Respond specifically as directed by emergency responders.
- Stay clear of arriving emergency vehicles and remain out of the way. Make yourself available for questioning and carefully document all details immediately.
- Employees trained in emergency chemical clean-up are the only authorized staff to address any chemical spills. Appropriate personal protective equipment must be used.

Refer to the internal emergency procedure manual for handling of Formaldehyde and other toxic spills. Be aware that the more quickly you clean up formaldehyde, the sooner you contain the vapors that are the main problem with a spill.

Civil Disorder

- Should you witness an unruly crowd or one that threatens your safety immediately dial 9-1-1.
- Remain within the building. Do nothing to antagonize the demonstrators. Inform all other personnel to do likewise. Do not travel to other buildings, unless you are directed to do so by facilities personnel or the police.
- Close all drapes in exterior rooms and then avoid window areas. You could become a target. Lock all doors.
- Focus your attention away from the incident. Leave the area of disturbance to prevent injury or possible arrest.
- Report to the core area of the building (away from the exterior of the building).
- Stay off the phone. Avoid unnecessary inquiries that tie up communications systems.
- Use good judgment and remain calm. Stay in your office/department unless you are in an unsafe position or instructed to leave by the police or other emergency responders.
- Secure all valuable materials in a vault, safe place or at least out of sight.
- Cooperate. Certain services may be limited during a disturbance. Access will be restricted. Withdraw from the area until it is safe to enter. Your safety is the primary concern.
- If demonstrators enter the premises, keep calm, be courteous and avoid an incident. Avoid actions or verbal responses that may provoke the situation. Avoid arguments, provocative statements or entering into a debate with a participant. They have entered the building to propagandize, confront or agitate the building's occupants. Let them make their point. Frustrating them is dangerous and provocative. Do not try to reason with them. Call the police to have the individuals removed if you can do so without incident.

Power Outage

The most common type of utility disruption is a power outage.

- Remain calm. Get out flashlights.
- Assess situation. Determine the need to remove patients from machines.

- If power failure is prolonged or patient is in danger, remove patient from machine using established hand crank procedures.
- Turn off and disconnect all electrical appliances and lights to prevent a power surge once electricity resumes. (include your computers)
- Reestablish order and a sense of the familiar.
- Walk, do not run, to avoid falls when evacuating. Instruct or assist patients to walk.
- Keep to the right in hallways, stairs, sidewalks, and all pedestrian walkways.
- Allow time for your eyes to adjust to the light before venturing forth into the darkness.
- If you are unsure of your safety in the dark, stay where you are and call for help. Instruct patients to do the same.
- ERT members should search the floor to check for injuries.
- Turn on radios to find additional information.

Due to the electrical crisis in California and the Pacific Northwest, rolling blackouts are now a possibility on a more frequent basis. If advised of an impending blackout, turn off computers, printers and other electrical devices immediately and keep off until power is resumed. As directed by the Nurse-in-Charge, remove patients from machine. Electrical utilities report that these blackouts are not to exceed two hours in duration.

Security

- Avoid the habit of routinely leaving valuables on the desk unguarded. Carelessly hanging a purse or suit coat containing your wallet, keys or other items of value behind your desk chair, nurses' station, lockers or on a coat rack is asking for trouble.
- Valuables should not be left in your desk unattended or overnight. Rings, watches, money, pocket calculators and small radios are easy targets for thieves.

- Activate a “buddy system” when traveling to your car, throughout the building or in isolated areas after hours or call hospital security guards.
- Illuminate the main lobby and all main entrances and exit doors all night long.
- Exercise caution and use the elevators instead of the stairs as long as it is safe to travel from floor to floor. If a suspicious person enters the elevator, exit before the doors close.
- Equip utility closets, especially those on common hallways, with dead bolt locks and keep them locked. These small areas are ideal hiding places.
- Insist that all deliveries and pickups be made at the reception desk or other designated area. No outside messengers should be allowed to roam the premises. Ask all visitors to check in at the nurse’s station.
- Ask for identification. Anyone can purchase a uniform in order to gain admittance. Hard hats, tool belts, coveralls, schoolbooks, etc., tend to stamp a person as above suspicion. Props and costumes are part of the criminal’s stock in trade. Do not hesitate to challenge “strangers” or ask for ID.

Violence In The Dialysis Workplace

Acts of violence in the work place by or between patients and dialysis staff may lead to or exacerbate an emergency situation. Health care workers face a significant risk of job related violence.

We live in an increasingly rage filled and violent society, and it is naïve to assume that dialysis facilities are exempt from incidents that lead to or result in physical or mental harm.

Employers have a general duty to provide their employees (and patients) with a work place free from recognized hazards likely to cause death or serious physical harm. Employers can be cited for violating the general duty clause if there is a recognized hazard of workplace violence in their establishments and they do nothing to prevent or abate it. Dialysis facilities must provide a safe and healthful workplace through programs adapted to their special needs.

The program should include as a minimum:

- A commitment to a policy of zero tolerance for workplace violence, threatening behavior and related actions
- A prohibition against weapons and firearms
- Orientation and continuous training for staff
- Dissemination of policies to staff and patients
- Guidelines on when to terminate or not to initiate treatments in certain instances

- Clear policies for patients regarding rights and responsibilities

Excellent resources include OSHA Guidelines for Preventing Workplace Violence for Health Care and Social Services Workers, US Department of Labor, OSHA 3148, 1996, National Institute of Occupational Safety and Health (NIOSH), Information on Preventing Workplace Homicides. Public safety officials, human resources and employee assistance professionals are also good resources. You may want to visit the OSHA web site, www.osha.gov.

Earthquake

Once the shaking starts:

- Duck, cover your head and body and hold on under a hard surface like a desk or table.
-OR-
- Stand in an interior doorway of a load-bearing wall. Keep the door from swinging. With your back firmly against the doorframe, extend your arms and brace yourself.
- Instruct patients to roll over to protect their access arm and stay seated until instructed by staff. If possible, cover head with arm or blankets or pillows.
- Assist patients if possible.
- Face away from any windows.
- Stay clear of tall objects that may tilt and topple over.
- Stay in the building. Do not run outside.

Once the initial shocks have subsided:

- Remain calm, be prepared for aftershocks.
- Assist patients, remove from machines if situation deemed appropriate.
- Check for injuries and give first aid.
- After the quake subsides, get out flashlights. Even if the power is still on, it may not stay on long.
- Institute a thorough search of your floor, checking stairwells, bathrooms, elevator lobbies, closets, etc.
- Take out and turn on a battery operated radio. Assign someone to keep track of what is going on in the rest of the area.

- Prepare a condition report for your area. This report should contain:
 - The number of people on your floor or unit.
 - The number of injured people on your floor, with a brief description of their injuries.
 - A brief description of any apparent structural damage on your floor, i.e. ceiling collapse, large cracks in core walls, broken glass. Any other immediate needs you have.
- Provide this report to Management if possible.
- Take inventory of your emergency supplies. Remember, you may be staying in the building for a few days. Conserve your supplies.
- DO turn off any lighting or electrical devices.
- DON'T use the telephone except in extreme emergencies.
- Make mental notes of the scene i.e. gas smells, chemicals, damage, etc. You may need to pass this information on to the hazardous materials team, EMS or building inspector.

Flash Flooding

- Care for patients as necessary. Follow standard nursing/medical procedures.
- Evacuate facility as advised. If leaving the facility, keep the following things in mind:
- Know where high ground is and get there immediately if you see or hear rapidly rising water.
- Get out of areas subject to flooding. This includes dips, low spots, canyons, washes, etc.
- Avoid already flooded and high velocity flow areas. Do not attempt to cross a flowing stream on foot where water is above your knees.
- Do not drive through flooded areas or cross water that may be more than knee deep. If you have doubts, don't cross. Shallow, swiftly flowing water can wash a car from a roadway. Also, the roadbed may not be intact under the water. If the vehicle stalls, abandon it immediately and seek higher ground — rapidly rising water may engulf the vehicle and its occupants and sweep them away.
- Be especially cautious at night when it is harder to recognize flood dangers.
- Do not camp or park your vehicle along streams and washes, particularly during threatening conditions.

- Keep alert for signs of heavy rain (thunder and lightning), both where you are and upstream. Listen to commercial radio or TV, or NOAA Weather Radio for Watch and Warning Bulletins. Watch for rising water levels.

Flash Flood Watch means it is possible that rains will cause flash flooding in the specified area. Be alert and prepared for a flood emergency.

Flash Flood Warning means flash flooding has been reported, is occurring or is imminent in the specified area. Move to safe ground immediately and take the necessary precautions.

Hurricanes

When a hurricane threatens your area, you will have to make a decision whether you should evacuate or whether you can ride out the storm in safety. If local authorities recommend evacuation, you should leave! Their advice is based on knowledge of the strength of the storm and its potential for death and destruction. Evacuate the facility before professionals deem the situation dangerous. The following information is for personal use as facilities should be closed in sufficient time to avoid having staff and patients at the site at the time of a hurricane.

In general:

- If you live on the coastline or offshore islands, plan to leave.
- If you live in a mobile home, plan to leave.
- If you live near a river or in a flood plain, plan to leave.
- If you live on high ground, away from coastal beaches, consider staying. In any case the ultimate decision to stay or leave will be yours. Study the following list and carefully consider the factors involved — especially the items pertaining to storm surge.

Pre-planning

- Plan your time before the storm arrives and avoid the last minute hurry that might leave you marooned or unprepared.
- Learn the storm surge history and elevation of your area.
- Learn safe routes inland.

- Learn locations of official shelters.
- Trim back dead wood from trees.
- Check for loose rain gutters and down spouts.
- If shutters do not protect windows, stock boards to cover glass.

Tornado

When a tornado threatens, your immediate action can save your life. Follow these tips for safety.

- In hospitals, go to pre-designated shelter areas. Interior hallways on the lowest floor are usually best.
- Protect patients. Remove from machines if necessary.
- Stay away from windows, doors, and outside walls.
- Protect your head. Lie face down, draw your knees up under you, and cover the back of your head with your hands.
- Get under something sturdy.
- Go to the basement or to an interior part on the lowest level – closets, bathrooms, or interior halls in small buildings.
- Assist patients in the event of a relocation.
- Listen to your radio, television, or NOAA Weather Station for the latest National Weather Service Bulletins.
- Do not leave the building or your shelter area until an all clear is advised.

TORNADO WATCH: Tornadoes and severe thunderstorms are possible.

TORNADO WARNING: Tornado detected; take shelter immediately. Tornadoes often accompany severe thunderstorms and are only one of many thunderstorm hazards. Others include lightning, winds, rain or hail.

Care of Disabled Persons in an Emergency

- Prevent injury and further damage to the victim. Ensure safety for yourself and others.
- Keep a level head. A demand for immediate action often translates into insecurity and fear. Keep your focus and concentrate. Be patient. Speak clearly and directly about the emergency.
- When responding to assist a disabled person, identify yourself and your purpose for being there. Allow the individual the opportunity to establish your position before you continue. Describe your actions before you do them and as you do them.
- Use “clock-face” directions to orient people. For example: “The door is at 3 o’clock.”
- Use a pad and pencil as an alternative method to language. It enables you to describe a message in pictures. Be simple and clear. Write slowly and give yourself plenty of room for “comment.”
- Isolate hysterical people and deal with them in simple, firm, and clear language. Emergency situations disorient because of unexpected circumstances and lack of control.
- Wheelchairs are an exceptional challenge. An inexperienced person should only attempt to move a person in a wheelchair as a last resort, except in a fire evacuation situation. The Fire Department will evacuate a person from a stairwell in most situations.
- Secure the chair by setting the brakes anytime you attempt to move a person in or out of the chair and if you plan to leave them unattended for even a moment. If there is a seat belt, secure it around the person in the chair.

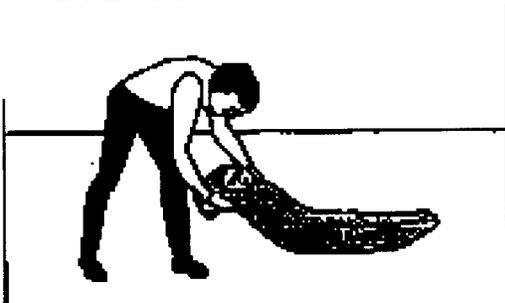
How to Carry an Injured or Disabled Person

The preferred method of carrying injured or disabled persons will vary, according to:

- The condition/walking ability of the person to be carried.
- The space in which the person is to be carried.
- The number of people available to assist.

Always follow rules for safe lifting and carrying to prevent back strain.

ONE PERSON CARRIES



Blanket Drag

For conscious or unconscious person.

A blanket, rug, coat is placed under the person's head and torso. The rescuer grasps the end of the cloth at the head and drags the victim to safety.



Pack Strap Carry

For a conscious person.

Rescuer kneels in front of the chair and places the person's arms over his/her shoulders and across the chest. Rescuer leans forward and raises slowly to a standing position.

TWO PERSON CARRIES



In-Chair Carry

For a conscious person.

One rescuer leans the chair backward while the other rescuer faces the chair and grab's the chair's front legs. Rescuers lift the chair while keeping backs straight.



Extremities Carry

For conscious or unconscious person.

One rescuer stands at the head of the victim, the other at the feet. The head rescuer slips his/her arms under the victims wrists across the chest. The second rescuer places the victim's legs on either side of his/her own and grasps the victim just under the knee.

