Disaster Preparedness:

A Guide for Chronic Dialysis Facilities

Second Edition

Note: This manual is intended as a guide and does not represent a comprehensive disaster preparedness program for your facility. As your specific needs may exceed the scope of the information presented here, you should also seek professional guidance from qualified risk managers, engineers, and technicians to create the best plan for your center. The Kidney Community Emergency Response Coalition (KCER) also provides resources for the development of facility-specific disaster plans.

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1 About this Manual

The Kidney Community Emergency Response (KCER) Coalition formed in 2005, in response to Hurricane Katrina's devastating impact on the ability of end stage renal disease (ESRD) patients to access dialysis treatment or kidney transplant medicine. With a goal of providing nationally coordinated information to the kidney community, the KCER Coalition assists ESRD Networks, the Centers for Medicare & Medicaid Services (CMS), renal-related organizations, and other groups to ensure timely and efficient disaster preparedness, response, and recovery efforts. KCER develops resources to save lives, improve outcomes, empower patients and families, educate healthcare workers, build partnerships with stakeholders, promote community awareness, and support the ESRD Program.

History of this Manual

The Loma Prieta earthquake struck the San Francisco Bay Area of California on October 17, 1989. The earthquake lasted approximately 15 seconds and measured 7.1 on the Richter scale. The quake killed 67 people, injured another 3,757, and left some 8,000 – 12,000 people homeless.

This disaster caused the temporary closure of several dialysis facilities, severely impacting patients' access to care. There was an obvious need for additional disaster preparedness for dialysis facilities. With funding from CMS, ESRD Network 17 (The TransPacific Renal Network) developed "*Emergency Preparedness for Dialysis Facilities*," a manual including best practices for preparing for and responding to disasters based on many lessons learned from the Loma Prieta earthquake.

KCER has been responsible for this update of the manual.

Format of this Manual

Following the introduction, this manual is organized according to the principles of emergency management: Mitigation, Preparedness, Response, and Recovery. Although this manual focuses on infrastructure, the patient is the primary concern. Please note that throughout this resource, the terms "disaster" and "emergency" are used interchangeably.

Mitigation

Synonymous with prevention, mitigation means reducing or eliminating hazards. Efforts to mitigate hazards include standardized building codes, adequate insurance, flood plain management, earthquake retrofitting, and storm shutters.

Preparedness

A state of preparedness involves ongoing planning, organizing, training, equipping for, and exercising for an emergency/disaster response. Preparedness also includes corrective actions based upon evaluation of past training events and responses.

Response

Each emergency or disaster will require its own response. Effective responses meet the immediate needs of both victims and responders. Activities performed during the response phase include evacuation, communication, sheltering, search and rescue, and mass care.

Recovery

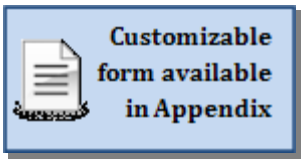
In the recovery phase, an organization resumes its normal activities and operations. Following a disaster, this phase also involves development of new mitigation strategies to ensure that the facility will be more resilient to disaster in the future.

Appendix

The final section includes forms and guidelines that are helpful through the entire planning process. These forms are also available on the KCER website, www.kcercoalition.com.

Icons Used in this Manual

Denotes an important concept.



Indicates that a customizable form is available in the Appendix.

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2 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.

Goals and Objectives of a Facility Preparedness Plan

An effective dialysis facility disaster preparedness program is goal-driven. Clear goals create strong planning efforts and appropriate resource expenditures. Elements of a successful program include methods to safeguard patients as well as the facility (which in turn protects patients). Therefore, programs should include provisions for:

Patient Safety

Patient safety provisions should:

- Ensure the availability of dialysis care (which may necessitate adjusting treatment times or adding shifts).
- Expedite the swift resumption of dialysis operations.
- Train all dialysis patients and employees to react appropriately in a disaster situation, whether at work or home.

Facility Safety

Facility safety provisions should:

- Protect electronic data and hard copy clinical and business records.
- Mitigate damage to property and facility/building contents.
- Encourage year-round collaboration with key partners on local, state, and federal levels.
- Encourage planning and sharing of resources (workforce, equipment, facilities, and supplies) with other local medical facilities during and following a disaster.

- 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, in addition to facility policies.

Disaster Preparedness Regulations: ESRD Conditions for Coverage

The 2008 revised ESRD Conditions for Coverage set forth requirements for disaster planning and response for all dialysis facilities. The Conditions for Coverage require all facilities to provide patient education, staff training, planning, and facility drills. All facilities should plan for hazards, including influenza pandemics, with the potential to impact patients, staff, and community.

§ 494.60 Condition: Physical Environment.

(d) ***Standard: Emergency preparedness.*** The dialysis facility must implement processes and procedures to manage medical and nonmedical emergencies that are likely to threaten the health or safety of the patients, the staff, or the public. These emergencies include, but are not limited to, fire, equipment or power failures, care-related emergencies, water supply interruption, and natural disasters likely to occur in the facility's geographic area.

(1) ***Emergency preparedness of staff.*** The dialysis facility must provide appropriate training and orientation in emergency preparedness to the staff. Staff training must be provided and evaluated at least annually and include the following:

(i) Ensuring that staff can demonstrate knowledge of emergency procedures, including informing patients of—

(A) What to do;

(B) Where to go, including instructions for occasions when the geographic area of the dialysis facility must be evacuated;

(C) Whom to contact if an emergency occurs while the patient is not in the dialysis facility. This contact information must include an alternate emergency phone number for the facility for instances when the dialysis facility is unable to receive phone calls due to an emergency situation (unless the facility has the ability to forward calls to a working phone number under such emergency conditions); and

(D) How to disconnect themselves from the dialysis machine if an emergency occurs.

(ii) Ensuring that, at a minimum, patient care staff maintain current CPR certification; and

(iii) Ensuring that nursing staff are properly trained in the use of emergency equipment and emergency drugs.

(2) ***Emergency preparedness patient training.*** The facility must provide appropriate orientation and training to patients, including the areas specified in paragraph (d)(1)(i) of this section (as detailed above).

(3) *Emergency equipment.* Emergency equipment, including, but not limited to, oxygen, airways, suction, defibrillator or automated external defibrillator, artificial resuscitator, and emergency drugs, must be on the premises at all times and immediately available.

(4) *Emergency plans.* The facility must—

(i) Have a plan to obtain emergency medical system assistance when needed;

(ii) Evaluate at least annually the effectiveness of emergency and disaster plans and update them as necessary; and

(iii) Contact its local disaster management agency at least annually to ensure that such agency is aware of dialysis facility needs in the event of an emergency.

§ 494.180 Condition: Governance.

The ESRD facility is under the control of an identifiable governing body, or designated person(s) with full legal authority and responsibility for the governance and operation of the facility. The governing body adopts and enforces rules and regulations relative to its own governance and to the health care and safety of patients, to the protection of the patients' personal and property rights, and to the general operation of the facility

(g) Standard: Emergency coverage.

(1) The governing body is responsible for ensuring that the dialysis facility provides patients and staff with written instructions for obtaining emergency medical care.

(2) The dialysis facility must have available at the nursing/monitoring station, a roster with the names of physicians to be called for emergencies, when they can be called, and how they can be reached.

(3) The dialysis facility must have an agreement with a hospital that can provide inpatient care, routine and emergency dialysis and other hospital services, and emergency medical care which is available 24 hours a day, 7 days a week. The agreement must:

(i) Ensure that hospital services are available promptly to the dialysis facility's patients when needed.

(ii) Include reasonable assurances that patients from the dialysis facility are accepted and treated in emergencies.

Effective Planning for an Emergency

When planning for an emergency, be sure to complete the following key tasks:

1. **Check with other nearby dialysis facilities**. Some dialysis facilities may form a cooperative disaster planning organization, which can prove an excellent resource before or during a disaster.
2. **Contact your ESRD Network by phone or check its website**. The Network can provide you with a list of nearby dialysis facilities and phone numbers. Dialysis facility information is also available on the Dialysis Facility Compare website at www.medicare.gov. Note that Dialysis Facility Compare does not include updated information on facility open/closed status.

3. **Determine if your county has an emergency management agency**. With the cooperation of other local first responders, these agencies often operate Emergency Operations Centers (EOC), which are central locations responsible for distributing services and resources in affected areas. Each local jurisdiction handles its own emergencies. Facilities should provide education about ESRD to the local emergency management agency, emergency medical services agency, American Red Cross, and other key disaster agencies in their jurisdiction.

4. **Contact your county emergency medical services (EMS) agency**. Many EMS agencies have councils or committees dedicated to serving at-risk and disabled populations during disasters. Making contact with this agency can result in your facility being incorporated into the county medical emergency plan. EMS agencies should be provided education about ESRD and the needs of the vulnerable patient population.
5. **Form a planning team**. A typical team consists of the facility administrator, charge nurse, chief technician, social worker, dietitian, Medical Director, and an administrative assistant. Regular meetings will assist in motivating team members and keeping them on track.
6. **Develop a facility plan**. This Manual can assist in creating an effective plan. Careful review of its contents should precede the facility planning process. Once the plan has been formulated, all staff should be fully trained. Regular practice drills, maintenance, and aligning the plan with your county and state emergency management plans are crucial.
7. **Provide education about disaster preparedness to your patients**. This includes information to meet the requirements as described in the ESRD Conditions for Coverage.
8. **Review your plan**. Use the Table of Contents of this Manual as a roadmap when considering the elements in your own plan. Determine priority levels for each section and create a timetable and checklist for implementation.

Review and test your emergency plan regularly to ensure that it is understood by all staff and patients. Familiarize new staff with the plan during new hire orientations.

Communicating with Emergency Management

Chronic dialysis facilities and patients may not be included in state or local disaster plans. Local emergency management offices may not be aware of the existence of dialysis facilities and patients in their jurisdiction, or the importance of disaster planning for the kidney community. The structure of local emergency management agencies differs from region to region.

According to the ESRD Conditions for Coverage, dialysis facilities must annually contact and develop a communicative relationship with the local disaster management agency. Emergency management agencies

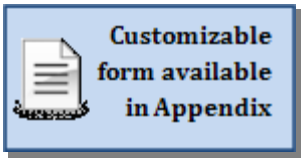
should be made aware of your location, needs for water and electricity, number of patients, emergency contact information, and possible issues that may arise in the event of a disaster. This communication ensures that the facility fits into community plans and allows the facility to become familiar with emergency management resources and contacts in its area.

This annual contact should be documented in the facility's Quality Assessment and Performance Improvement (QAPI) program and will help expedite restoration of interrupted services due to an emergency or disaster.

The requirement to contact the local emergency management agency is not intended to take the place of the regulation requiring the dialysis facility to maintain disaster plans and provide staff and patient education, but is intended to encourage dialysis facilities to collaborate on a local level with the agency that would provide/coordinate response activities after a disaster. The contact will not only serve as practice in communications, but will also build a working relationship. This relationship will ensure mutual understanding of local resources; the assistance that may be available to your facility and patients; and roles, responsibilities, and limitations. Emergency management agencies are not legislatively required to provide financial support to dialysis facilities and may be financially unable to provide resources.

It is also imperative to regularly update the emergency management agency in your area about your facility's status. This information enables emergency management to determine available resources and services that might be needed in the event of a disaster affecting your facility. It is recommended that you forward this information to your county emergency management agency on an annual basis and/or any time there is a change in this information.

In order to ensure the availability of life-saving dialysis services during an emergency or disaster, the facility should also collaborate with its ESRD Network, suppliers, utility service providers, State Survey Agency (SSA), and other nearby dialysis facilities. Resources available from the KCER Coalition can assist facilities in meeting this requirement, and can be accessed at www.kcercoalition.com.



Customizable forms for your facility to use are available in the Appendix.

These forms will allow you to document annual contact with the local emergency management agency and to inform emergency management of your facility's status. Complete a separate form for each clinic.

3 Mitigation

Synonymous with prevention, mitigation concerns itself with reducing or eliminating hazards.

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

Every day, hazards threaten homes and businesses across the United States, including dialysis centers. A hazard is any source of danger. A hazard can vary in levels of magnitude and rate of occurrence, and fluctuate across geographic areas.

Hazard mitigation includes steps the facility can take to reduce or eliminate the long-term impacts of potential hazards. Understanding hazard mitigation at the local level enables a facility to lessen vulnerability to various hazards, which can result in less business disruption and a faster return to normal after an emergency.

Identifying potential hazards is the first step in mitigation. Hazard identification varies based on region as well as facility, which means that every organization and community will have its own unique mitigation plan.

Any hazard has the potential to cause a disaster.

A hazard can be a natural weather event (such as a flood, a hurricane, a thunderstorm, severe heat or cold, a tornado, a tropical storm, or a wildfire) or geophysical activity (such as a volcano eruption or an earthquake). Hazards can also be manmade or technological, such as a hazardous materials accident, terrorist attack, or nuclear power plant leak.

Manmade Disasters	Fire | Nuclear Plant Meltdown/Disaster | Riot/Civil Disorder | Terrorism Toxic Materials Spill | War (Conventional/Biological/Chemical/Nuclear)
Natural Disasters	Avalanche | Drought | Extreme Temperatures | Earthquake Flash Flooding | Flooding | Hail Heavy Thunder Storms | High Winds Hurricanes | Mud/Rock Slides | Severe Winter Weather Tidal Wave/Tsunami | Tornadoes | Volcano Eruption | Wildfire
Technological Failures	Communication | Electrical | Heating/Cooling Information Technology System
Other Incidents	Community Infrastructure Breakdown (Bridge Collapse, Dam Break) Disease Outbreak | Transportation Failure | Utility Failure

Hazard Identification and Risk Assessment

According to Long and John (1993), risk assessment is a process or methodology for evaluating risk that analyzes the probability and frequency of occurrence of a hazard event, exposure of people and property to the hazard, and the consequences of that exposure. Using the risk matrix approach, both the magnitude and frequency of occurrence of a hazard are given a qualitative measure that allows for the prioritization of risk among multiple hazards.

The risk matrix approach to hazard identification and risk assessment includes the following important steps:

1. **Identify and Characterize Hazards:** Define and describe hazards and their severity, causative factors, and interrelationship with other hazards.
2. **Screen Risk:** Rank identified hazards based on relative degree of risk.
3. **Estimate Risk:** Apply the process or methodology to evaluate risk.
4. **Assess Acceptability:** Determine tolerance level of identified risks.
5. **Develop Alternatives to Reduce Risk:** Select cost-effective actions - including technological and management controls - to reduce or mitigate unacceptable risks.
6. **Implement Necessary Mitigation Measures:** Implement mitigation measures to control risk to acceptable levels.
7. **Control and Review:** Periodically monitor and review risks.

To further assist with risk assessment, a Hazard Vulnerability Analysis tool has been provided in the Appendix. Use it as a guide, tailoring it to suit your organization's specific needs. You may choose to include the Hazard Vulnerability Analysis tool in your QAPI program.

Building Information

Mitigation allows the facility to lessen or reduce the amount of potential damage from hazards such as floods, fires, and other events. Some common forms of mitigation include installing hurricane shutters, earthquake retrofitting, using fire-resistant building materials, replacing windows with shatter-resistant glass, or purchasing flood insurance.

Structural mitigation encompasses the technological and engineering activities that attempt to reduce the community's hazard vulnerability altogether via dams, levees, or seawalls. Nonstructural mitigation preventative measures include the acquisition and relocation of homes and businesses located on potentially impacted property to a less hazardous area.

During the risk assessment phase, it is important to make certain the facility has detailed site plans, maps, and inventories. If located in an area with community evacuation plans for hurricanes, tsunamis or floods, add this information to facility planning materials.

Clearly document the items in the list that follows (as applicable to your facility). Pictures often are more helpful than words, and insurance carriers sometimes require photographs.

Building Information List

Document the following items as applicable:

- Map showing all exits and the relocation area(s) outside the building
- Utility, water, gas, and electrical shutoffs
- Water hydrants
- Water main valves
- Sprinkler shut-offs (both regional and main)
- Gas, water, and sewer lines
- Electrical substations and mains
- Storm drains
- Location of each building, including name of building and street number
- Floor plans
- Alarms
- Fire extinguishers and fire suppression systems and their operation
- Exits
- Stairwells
- Restricted areas
- Hazardous material storage (include diesel/fuel storage)
- High-value items and their location
- Location of evacuation kit/emergency box
- Location of any pertinent safety equipment, including supplies, tools, and first aid kits
- Dialysis treatment locations and other potential staff or patient locations, such as restrooms, training rooms, waiting rooms, break rooms, and storerooms

Insurance Review

Through careful assessment of insurance policies, determine if the dialysis facility has sufficient coverage in the event of a disaster. Reviewing policies can also help establish mitigation project priorities and necessary next steps. The information on these pages should be used as examples and NOT as a substitute for legal or financial advice.

When reviewing your insurance policy, consider the following:

- Is the information technology infrastructure covered? If it isn't covered by the main policy, is it covered by a separate policy? Does the policy cover the restoration of electronic data?
- Does the policy include a detailed itemization of corporate assets?
- Does the policy have a utility service interruption grace period?
- Does the policy cover all out-of-pocket recovery costs, such as extra operational expenses?
- Is the process of determining the cost of business interruption identified?
- How does the policy address payment of legal costs in coverage amounts?
- Are deductibles and limits of insurance appropriate for your facility, based on the level of your potential exposure?

After completing your risk assessment, identify the insurance your facility requires and obtain additional coverage as appropriate. You may elect to perform a general insurance risk assessment, or you may wish to obtain professional advice. A professional risk insurance assessment can expose areas in which your facility could be weakened by disaster and may include, but not be limited to the following:

- Risk identification
- Loss exposure identification
- Dollar loss of asset inventory
- Recovery plan cost
- Continuing expenses
- Extra expenses/payroll.

Planning for a Pandemic

Pandemics are outbreaks of infectious disease that spread through human populations across a large region, such as a state, country, continent, or even worldwide. **Pandemic flu is a global outbreak of flu disease that occurs when a new type of influenza virus appears.** The virus spreads quickly from person to person. For years, scientists have been alerting government health departments to prepare for pandemics. In March 2009, this warning became a reality when a new influenza virus, H1N1, was first detected in the United States. In June 2009, the World Health Organization officially declared the H1N1 outbreak a pandemic. There were minimal cases of confirmed H1N1 flu in dialysis patients; and no deaths reported.

Patients with chronic kidney disease who are on dialysis or who have had a transplant should learn about pandemics and their consequences in advance. Special plans must be made in order to protect themselves and their families.

Please reference the Pandemic link the KCER website at www.kcercoalition.com to find out more detailed information on how to prepare patients, families, and facilities for pandemic events.

A customizable Pandemic Checklist is available in the Appendix.

4 Preparedness

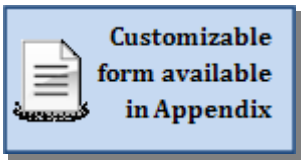
An organization is in a state of preparedness when conducting ongoing planning, organizing, training, equipping, and exercising for disaster response. Preparedness also includes corrective actions based upon evaluation of past training events and responses.

Preparedness encompasses disaster planning, warning systems, stockpiling of food and medical supplies, training, and public education. The Department of Homeland Security (DHS) describes the four "mutually reinforcing" pre-impact preparedness components as:

- Planning
- Organizing, equipping, and training
- Exercising
- Evaluating and improving

The planning process is a critical step in emergency management. A plan should have a clear structure for authority, chain of command, and span of control. Through preparedness, all planners and responders gain awareness of their roles and responsibilities. "Equipping" refers to the plan's ability to efficiently respond to a disaster, based upon physical resources, such as having adequate supplies on hand for extra treatments. It can also include the facility's readiness to purchase computers, equipment, and other necessary tools after a disaster. Training guarantees the staff is familiar with and is able to perform necessary functions to meet the emergency management program's goals and objectives.

A preparedness assessment is critical in developing and implementing disaster plans. Using general categories, organizations can accurately assess disaster readiness and better mitigate, prevent or lessen the effects of any event that could interfere with normal operations.



The Appendix contains a detailed Preparedness Assessment tool that you can use to develop, implement, and revise your preparedness plans.

Effective Communication Planning Before an Event

Clear and effective communication is crucial in the event of a disaster. The following steps represent a strong communication strategy:

1. **Inventory existing communications.** This includes telephones, fax machines, two-way radios, cell phones/text messaging, ham radios, Citizen Band (CB) radios, pagers, e-mail addresses, websites, and toll-free numbers.
2. **Determine vulnerabilities.** Establish a method to reduce or prevent threats to continued service, such as structural integrity of buildings and vulnerabilities of communication equipment and supplies.

3. **Create maps of key components.** Show the location of communications equipment, including fax machines, modems, equipment rooms, computers, and phone equipment. Be sure to have a phone on site that is not reliant on electricity. Clearly denote the equipment with back-up power and its length of charge.
4. **Identify critical communication needs.** Staff and patients have different needs to send and receive information. Survey both groups to determine their requirements.
5. **Budget.** If the plan requires new equipment, communicate this to the facility administration.
6. **Develop diagnostic checklists.** Determine what communication devices the facility needs to test for damage immediately following a disaster. Prepare easily understood checklists and instructions. If outside vendors are required to perform diagnostics, investigate how quickly such companies can respond to the facility's needs and make advance arrangements with them.
7. **Perform a periodic test of the plan.** Plans should be tested at least annually. This could consist of two-way radio drills, activation of call trees, hooking up manual phones (not requiring electricity), and testing satellite phones and fax lines.

All employees should develop personal disaster plans that cover caring for their families and returning to work after a disaster. Ensure that staff and patients have clear instructions on what to do following a disaster, including carrying government-issued photo identification at all times.

Communication Tips

Maintain up-to-date contact information. Review files for all patients, key vendors, and staff on a quarterly basis and highlight any special treatment/transport needs. Store this information in a safe place in the facility, preferably in the emergency box (a box containing important documents pertaining to facility operations, staffing requirements, and secured patient records, among other items) and in another off-site location.

Create a contact telephone tree for patients and employees. Perform semi-annual tests of the call tree and revise as necessary. Always have alternate methods of communication, such as pre-designated areas to meet at certain times, toll-free numbers with pre-recorded messages, and websites.

Check access to phones and emergency phone numbers. Ensure access to a telephone that does not require electricity. Always post emergency numbers in visible locations by all telephones. Check and change batteries regularly. Remember cellular phones and landlines may not be operational in a disaster, so other means of communication must be identified. Consider working with local ham radio clubs for assistance during a disaster. Ask if any employees or patients are ham radio operators and use their equipment if possible.

Consider using two-way radios or walkie-talkies within the facility. Always have at least one battery-powered or hand-crank radio, and be certain there is a sufficient supply of batteries for radios that require them.

Establish a local or toll-free hotline number for staff and patients to explain the facility's status, whether or not treatment or work schedules have changed, and other critical information. Regular updates of employee hotlines provide a valuable communication tool for employees and management. Timely updates reduce rumors and keep everyone informed of the facility's status. This system could also provide a recorded message for disaster and non-disaster situations. Print business cards with this number on it and give these to patients and staff.

The facility should prepare pre-scripted public service announcements (PSAs). Write these messages ahead of time, in order to quickly send information to the media. Before an emergency occurs, identify all television and radio stations that provide emergency information and make arrangements to use their services when needed. Develop a PSA contact list that includes addresses, phone, and fax numbers of local media providers. The PSAs should be readily available for distribution to local radio/TV stations.

Consider issuing employee badges to identify staff during a disaster. These badges will prove helpful in the event there are any new workers present after a disaster and will assist patients in recognizing facility employees when they access care.

Have an up-to-date website for use by staff and patients with Internet access. Display a poster with important emergency information in a highly-visible location in a main area of the facility.

Record Management: "The Emergency Box"

Every facility should at the very least have a box containing important, irreplaceable documents.

An emergency box should at least contain the following:

- Copies of the Medical Evidence Form (CMS-2728), hemodialysis orders, and admitting sheets for every patient
- Blank copies of the Patient Activity Report
- Advance healthcare directives for patients (if applicable)
- Patient census with names and contact numbers
- Phone numbers of staff and emergency contacts
- Copies of mutual aid agreements and contracts
- Important schematics, such as the water system's flow pattern and operation
- List of critical service providers (vendors, suppliers) with contact numbers
- Disposable camera
- Flashlight with extra batteries.

Active medical records, including hemodialysis reprocessing records if applicable, should be secured and protected to minimize damage from wind, rain, broken glass, sprinklers, chemicals, and other hazards, as well as secured in compliance with HIPPA regulations for protected health information (PHI). In a disaster, records in the affected facility may be destroyed, mutilated, or unusable.

Staff should be educated about the emergency box and informed of its location. Integrate the protection of this emergency box into the facility disaster plan, incorporate its use into facility drills, and designate a person to be responsible for the box. The box can be of immediate assistance at the evacuation area.

Back-up your critical electronic documents, store back-ups off-site, and maintain both hard copy and electronic back-ups whenever possible. Perform electronic back-ups nightly and remove the most recent back-up from the facility at least once a week. The back-ups should be stored in a safe but accessible location. Notify key

employees of the location. Business records and temporary medical records should receive the same protection as permanent medical records. Medical and business records may require transporting to an alternate location.

An inexpensive but efficient back-up record tool is a sturdy, waterproof and/or fireproof portable container large enough to hold a large 3-ring binder.

Affiliation Agreements

Facilities should review their back-up agreements on an annual basis and identify both near and distant sources of mutual aid.

Elements of a model affiliation agreement include the following:

- Statement of purpose
- Identification of parties
- Admission policies
- Shared staff arrangements
- Shared inventory arrangements
- Shared patient arrangements
- Security
- Protection of records
- Schedule for review and update of the plan.

Affiliation agreement elements and details will include:

1. **Purpose.** The purpose of an affiliation agreement is to identify procedures by which the parties will provide inpatient and/or outpatient dialysis, back-up for home dialysis patients and other renal-related services for each others' patients in a disaster situation and procedures for restoring, as quickly as possible, the integrity of the relationship of patients with their usual physician and dialysis facility.
2. **Admission Policies.** When developing an agreement, the parties should discuss how to provide renal-related services and treatment to each other's patients within the capability of their resources. This would include updated admission policies to detail how patients would be admitted in emergency conditions.
3. **Shared Staff Guidelines.** Upon request, the parties may agree to share staff (known as "temporary disaster staff") with proper documentation from authorized personnel. Each party will keep basic records identifying staff members and the dates and hours worked. Payment for the provision of services, professional liability, and workers compensation will be the responsibility of the requesting affiliate. These arrangements apply only to staff authorized to work in the affiliate. Copies of timesheets for temporary disaster staff may be provided to the employee's facility manager.
4. **Shared Patient Guidelines.** Prior to an emergency situation, the clinical staff should work with the Medical Director to create/approve a set of standing orders for treatment during an emergency. The parties should also agree on efforts to share patient treatment information, including Hepatitis B status. These guidelines should direct the creation of an emergency medical record and ensure qualified personnel will initiate a basic emergency medical assessment.

Whenever possible, patients should be treated by staff familiar to them. Patients should return to their home facility as soon as possible, and a copy of the emergency record should be sent to the home facility administrator. Billing to payment sources should be handled by the treating facility.

5. **Shared Equipment and Supplies.** Equipment and supplies should be provided to affiliate centers with appropriate authorization. Detailed documentation should be maintained. This should include the names of those requesting the equipment/supplies, a description of supplies and equipment including serial numbers, and the names of those receiving the equipment/supplies. Copies of the document should be sent to the borrowing facility's administrator to serve as a combination packing order and tickler invoice.
   It is the borrower's responsibility to return consumable supplies or equipment in kind, or to make payment to the supplying facility. It is the responsibility of the borrowing facility to provide security for supplies, equipment, and records.
6. **Confidentiality and Protection.** All temporary records should be treated with the same respect, security, and protection afforded permanent facility records.
7. **Frequency of Review.** The agreement should be reviewed annually and updated as necessary or required.

How many patients can your facility handle in an emergency situation? As a back-up facility, it is critical to determine how many other centers you can reasonably assist in the event that multiple facilities lose their ability to serve all their patients at the same time.

Boil Water Advisories

If your area is under a Boil Water Advisory (BWA), use bottled water for drinking and cooking. **Never** drink floodwater, rain water, or water from a pool or Jacuzzi/hot tub.

What is a BWA?

Authorities will issue a BWA to protect the community from waterborne infectious agents only after careful consideration by public health regulatory agencies and municipal water departments after positive tests (e.g., positive samples for fecal coliforms, changes in turbidity measurements) or line breaks.

What should you do under a BWA?

For personal use, create a supply of water for cooking, drinking, and tooth brushing by bringing water to a rolling boil for one minute. Timing starts when the water starts to bubble. Cool the water, then place in clean containers for use or refrigerate.

You can use hot (not boiled) soapy water for dishwashing and kitchen/bathroom surface cleaning. As a precaution, add one tablespoon of bleach per gallon of water used. You do not need to treat laundry water. Unless specifically listed in the BWA, you do not need to treat water for showering.

For personal use, you can disinfect water with household chlorine bleach, which is a 5.25% to 6% sodium hypochlorite solution. The bleach should not have any added soaps, fragrances, or active ingredients other than sodium hypochlorite. After mixing the bleach into the water, let it stand for 30 minutes before use. You should

detect a slight odor of bleach. It is preferred that you use an eyedropper to measure bleach, as other methods will produce poor results.

The correct ratios are:

Amount of Water	Clear Water	Cloudy Water
1 Quart	2 drops of bleach	4 drops of bleach
1 Gallon	8 drops of bleach	16 drops of bleach
5 Gallons	40 drops of bleach (1/2 teaspoon)	80 drops of bleach (1 teaspoon)

The ONLY suitable agent for treating water that would be potentially available to you in an emergency is household chlorine bleach (5.25% to 6% sodium hypochlorite solution). Other water treatments, such as iodine tablets or other products commonly found in camping stores that do not contain 5.25% to 6% sodium hypochlorite solution, are not recommended.

Can you dialyze patients during a BWA?

Yes, if the water treatment components in use are sufficient to remove or destroy bacteria. Reverse osmosis (RO) will protect the product water from having microbial contamination. The Deionization (DI) unit does not remove or destroy bacteria, so if DI is being used as the main water treatment (rather than RO), you will need a submicron or endotoxin/ultrafilter downstream of the DI unit. If an ultraviolet (UV) irradiator is used, the ultrafilter should be located after the UV irradiator. Close monitoring of the conductivity and percent rejection (for RO) or resistivity (for DI) of the product water will be needed to detect any decrease in quality. Also consider weekly microbial assessment of the product water during the BWA.

Keep in close contact with the municipal water supplier because they may choose to "shock" treat their distribution system with a high level of chlorine to bring it back into compliance with the acceptable standards for drinking water. If the city "shocks" its water system, you may see chlorine/chloramine breakthrough. Review the facility's testing procedures with staff and alert them to be vigilant for potential breakthrough to protect patients from exposure to chlorine/chloramine. You should increase the frequency of chlorine monitoring from each patient shift to every hour if you are aware that the municipality has "shocked" their distribution system.

Emergency Generators

Unless your facility is located in a state where the ESRD licensing rules require emergency generators, your decision to purchase or rent a generator likely depends on whether an alternate dialysis facility is available. You may consider renting a generator or closing the facility during the disaster and implementing your facility back-up plan. Before making a decision, look at all factors, most importantly the needs of your patient population.

To determine the size of generator needed, contact a qualified electrician to determine actual load, critical, and secondary loads. The electrician must determine the amount of current you need and at what voltage. With this information, a generator company can tell you the size of the generator required.

Recognize arrangements to test a generator will need to be completed far in advance of any disaster. To find a rental generator dealership, look in the Yellow Pages or search the Internet for generators and rental equipment. Discuss your needs with a qualified technician. Other options for emergency power may include access to corporate-owned generators deployed to disaster areas as needed.

Educate yourself about generators.

Generators differ greatly in size. Once you know how much power you need, be sure you have the space to accommodate the generator. A qualified generator dealer may be able to assist you in determining where to locate the generator at your facility. Check with local laws and regulations regarding generator placement and use.

To use an emergency generator on a temporary basis, you will need to get the cable routed from the generator outside your building to the electrical distribution boxes inside. An open door or window may work, but not in extreme weather. Consider installing a cable access door that can be closed when not in use.

You must have access to extra generator fuel in case you need to run it for an extended period of time. Ideally, have enough fuel for two or three days. An auxiliary tank of fuel is important. It is recommended that fuel be part of the procurement discussion with the generator dealership. To determine fueling needs, items of importance to cover include the following:

- What is the size of the fuel tank (gallons)?
- How much initial fuel will come with the generator?
- What is the generator full load fuel consumption rate in gallons per hour (GPH)?
- Does the rental dealership offer fueling options? If not, can they suggest vendors that do?

A certified/trained technician should hook-up and monitor/maintain the generator. It may be possible for a staff person to be qualified for this task.

The generator plan should document the entire process from obtaining the equipment and fuel to installation and maintenance.

Ensure protection for your generator and fuel against damage or theft. A generator dealership can discuss products to discourage theft, including wheel locks, chains, and hitch locks.

Always operate generators according to the manufacturer's instructions, and never operate generators indoors due to the risk of carbon monoxide poisoning.

Disaster Preparedness for Patients

Patient education decreases the risk of illness or injury due to disasters. Facilities should review these guidelines on a quarterly basis with all patients:

- Emergency disconnect procedures: "Clamp and Cap."
- How to "hand crank" a dialysis machine if a power outage occurs.
- Importance of fluid and diet management.
- Self-protection if a catastrophe occurs while receiving dialysis.
- Location of chairside emergency packs, if applicable.
- Medications to have on hand (under direction of physician).

- Importance of Medic Alert emblems.
- Location of hospitals and nearby dialysis centers.
- How to locate dialysis centers through the ESRD Network or www.Medicare.gov/Dialysis (Dialysis Facility Compare).
- Instructions regarding when to stay home.
- Description of the facility's disaster plan.
- Instructions regarding care of their dialysis access and medical information needed.
- Emergency supplies for their vehicle, including medications.
- Facility communication plan.
- Instructions about the importance of having back-up transportation plans.
- Emergency operations center telephone numbers.
- Shelter information.
- Evacuation zone information.

Patient Preparedness at Home

Patients can take steps to prepare for disasters in their own homes. Encourage patients to post these simple points at home:

- Stay home unless you are told to evacuate, or unless you are hurt.
- Start the emergency renal diet as soon as a disaster occurs.
- Limit fluids to one-half of your usual amount.
- If you must go to a shelter, alert the shelter manager that you are a dialysis patient.
- Inform your family and dialysis facility of your location.
- Remember that most hospitals will not have enough staff or equipment to provide chronic dialysis treatments.

Patient and family emergency preparedness resources are available on the KCER Coalition website (www.kcercoalition.com) including a family plan, first aid kit recommendations, and the CMS Manual, *Preparing for Emergencies: A Guide for People on Dialysis.*

Prior to creating their own personal plan, patients and families must know their facility's plan. Make sure your patients know who to report to and the procedures to follow in the event of a disaster. Also, remind staff to have personal plans in place for family and pets, so they are available to take care of patients when needed.

Emergency Renal Diet

During or immediately after a disaster, dialysis may not be available or patients may have to miss or delay dialysis treatment. Dialysis patients can stay healthier during a disaster by following a limited diet. A renal

dietitian should help patients develop an emergency diet plan to meet specific medical needs. The information on these pages should be used as examples and NOT as a substitute for medical treatment or advice.

Storage of Foods

- Keep an emergency supply of foods stored in a sturdy box on a shelf in a dry place.
- Check and resupply or rotate supplies every six months.
- Check canned foods for swelling, leakage, and expiration date.
- Store dry goods in a sealed container to protect from insects and moisture.

General Emergency Diet Guidelines for Dialysis Patients

- Avoid high potassium foods. Restrict intake of fruits (including dried fruit), vegetables (including potatoes), chocolate, and beans according to recommendations by a renal dietitian.
- Restrict fluid and protein as recommended by a renal dietitian.
- Use salt-free or low sodium foods whenever possible; do not use table salt or salt substitute.

Suggested Emergency Food Supply Shopping List

(Purchase single-serving sizes when possible)

- Low sodium canned meats/seafood
- Bottled water
- Dry powdered milk or canned milk
- Coffee creamer or soy/rice milk
- Individual canned fruits
- Canned low sodium vegetables
- Loaf of regular bread
- Individual serving size low salt cereals, such as puffed rice or wheat
- Vanilla cookies, wafers, or graham/animal crackers
- Individual packets of mayonnaise, low sodium/salt-free salad dressing packets, jelly
- Clear soft drinks like lemon-lime or ginger-ale
- Powdered drink mixes like lemonade, tea, coffee, or Tang
- Peanut butter, unsalted
- Hard candy, gum, marshmallows, jelly beans
- Low sodium crackers/pretzels
- Sugar or artificial sweetener packets
- Salt-free seasoning, such as Mrs. Dash
- Fruit juice, such as cranberry or apple juice (4 ounce cans or boxes)

Suggested Emergency/Disaster Diet

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

Meat and other Protein (Two to three 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 unsalted peanut butter provide about one ounce of protein.

Milk (Two half-cup servings per day, for a total of one cup per day)

- Do not save leftover milk unless refrigerated or on ice.
- Use rice or soy milk as an alternative.

Fruit (Limit to two half-cup servings per day, for a total of one cup per day)

- Use canned fruit such as applesauce, or canned cherries, peaches, pears, plums, and pineapple.
- Drain and discard liquid.
- No raisins or orange juice.

Vegetables (Limit to two half-cup servings per day, for a total of one cup per day)

- Use canned low sodium (no salt added) vegetables such as corn, carrots, green beans, and peas.

Fluids (Limit to one-half usual intake or about 16 ounces per day)

- Use bottled water, soft drinks, coffee, tea, apple, grape, or cranberry juice, Kool-Aid, and Tang.
- No "sports drinks", such as Gatorade or PowerAde.

Breads, Cereals, and Pasta (Four to six servings per day)

- Use dry cereals (three-fourths cup), such as puffed wheat, rice, or shredded wheat (no Raisin Bran)
- Plain pasta or rice (one-half cup)
- Crackers, salt-free (four crackers)
- Plain cookies or vanilla wafers (four to ten)
- Regular bread (one slice)
- Graham crackers (three squares).

Fats (Six or more teaspoons per day)

- Use salt-free salad dressings, margarine, oils, and mayonnaise (with refrigeration).

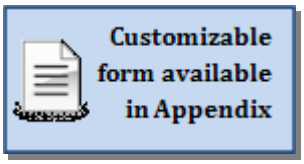
Sweets (Use as needed to increase calories)

- Diabetics should use sweets with caution, but have some available for low blood sugar reactions. Instant glucose tablets, sugar, hard candies, and sugared soda can be used to treat low blood sugars (no orange juice or chocolate).
- Use sugar, honey, hard candy, sourballs, gumdrops, jelly beans, jam, jelly, and marshmallows.

For additional information on emergency meal planning, please visit The National Kidney Foundation (NKF) website at http://www.kidney.org/atoz/content/emergencymealdb.cfm.

Patient Identification Cards

The dialysis patient identification card displays critical information in a readily available format for use in a disaster. This is not a substitute for medical records, but can help patients and dialysis facilities locate information in case of an emergency.



The Appendix contains a detailed example of a Patient Identification card for you to review.

If a patient must evacuate to another area, or is unable to return home, or their regular dialysis facility is inaccessible due to a disaster, this identification card provides basic information to first responders and to the receiving dialysis treatment facilities. Patients should fill in the blanks with the most current information and carry this identification card with them in their wallet or purse at all times.

An example of a Patient Identification Card is can be found in the Appendix. To download and print these cards, visit www.kcercoalition.com. Print these cards on lavender card stock if possible as lavender has been chosen as a specific color to identify dialysis patients.

Staff Education

Staff training and education requires knowledge of the following:

- The facility's physical layout
- The location of the nearest exit and alternate exit, and the direct route to each
- The location and proper use of fire extinguishers
- The patient evacuation priorities of the facility
- The "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 disaster roles
- Evacuation routes and a safe meeting place
- Utility and water shut offs.

Potential Training Topics (Resources)

Facilities should refer to the following resources for information on potential training 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 provide free in-service training and allow staff to practice the use of a fire extinguisher during regular annual servicing (Look in the yellow pages or contact your local fire department to arrange this training).
- Your facility's disaster plan, including roles and responsibilities of key staff members.
- Assisting patients in an emergency, patient safety, and safe physical movement of patients who are not independent.
- Handling of the deceased after a disaster.
- Hazardous chemical training.

Suggested "Clamp and Cap" Procedures

These are suggestions for disaster situations only. When immediate evacuation of the facility is required, the patient's blood will not be returned and access needles will remain in place until patients arrive in a safe place and can receive assistance removing needles. "Clamp and Cap" procedures should be simulated during a disaster drill.

- Locate the emergency pack.
- Clamp both lines which are directly connected to the needles or catheter.
- Clamp both of the thicker bloodlines.

- If the lines have pinch clamps, pinch all four clamps **completely** closed.
- Unscrew the lines between the closed clamps and cap the ports of the lines still connected to the catheter or needles.

NEVER cut the access needle lines or between the clamp and the access. Catheters should NEVER be cut.

Blood Pumps

Staff and/or patients may need to hand crank blood pumps to prevent blood from clotting and to return the blood to the patient during a power failure. "Hand Cranking" should be simulated during a disaster drill.

If you have no specific policy, you can follow the suggested steps below:

- Ensure saline bag is full.
- Reinfuse arterial line and clamp bloodline, needle, and/or catheter clamp.
- Locate and retrieve crank.
- Remove venous line from air detector clamp.
- Double check that the venous line clamp is open.
- Turn crank in direction of blood flow.
- Crank slowly.
- Observe bloodlines for presence of air or foam and monitor venous needle and/or catheter site.
- Stop cranking when air or foam nears the venous needle or catheter line.
- Clamp venous bloodline and needle or catheter after reinfusion.

Special Needs Considerations

Dialysis providers should be aware that patients may present during a disaster situation that have special care needs not usually treated in their facilities. These may include home peritoneal dialysis patients, hemodialysis patients utilizing the buttonhole cannulation technique, and pediatric dialysis patients. It is important to consider special needs populations while developing the facility plan and mutual aid agreements with other facilities. This should include whether or not you will be able to provide the supplies and procedures for these special needs patients and how you will triage these patients for appropriate care if you are not able to treat them. This preparation will allow you to better manage these patients during the disaster response.

Additional Resources for Special Needs

Buttonhole Technique Information	www.fistulafirst.org
Infection Control for Peritoneal Patients	www.bt.cdc.gov/disasters/icfordialysis.asp
Ready Kids	www.ready.gov/kids/
FEMA Kids	www.fema.gov/kids
Sesame Street Ready	www.sesamestreet.org/ready
Kids Get a Plan	www.kidsgetaplan.com/

Exercises, Drills, and Evaluations

Exercises (mock disaster drills) are an essential component to disaster preparedness. By performing exercises, a facility can better prevent, prepare for, respond to, and recover from disasters. Exercises train employees and staff and test all aspects of a dialysis facility's disaster response. Exercises may range widely in cost, size, scope, complexity, purpose, and approach. For example, exercises can consist of training and drills or an in-depth discussion that evaluates and confirms the soundness of policies and procedures.

Do not discontinue dialysis treatments during a drill.

The ESRD Conditions for Coverage include language related to disaster preparedness and the staff's ability to demonstrate their roles and responsibilities in implementing the facility's disaster preparedness plan. The Conditions for Coverage require testing and revising the facility disaster plan at least annually. Quarterly disaster exercises are encouraged.

Be sure every shift has the opportunity to participate. Not all drills should be announced, as a surprise drill helps reinforce learning.

The FEMA Independent Study Course, *Introduction to Exercises IS-120A*, introduces the basics of emergency management exercises. It also builds a foundation for subsequent exercise courses. Access this course and others at no cost at www.training.fema.gov/is.

Why Conduct Exercises and Drills?

Exercises improve readiness**.** All exercises require planning to ensure the most benefit. Three essential requirements for conducting a successful drill are: a step-by-step plan for executing the drill, ongoing year-round education for all staff and patients, and post-drill critique and recommendations.

The best way to determine the appropriate exercise is to assess your facility's capability and needs. The needs assessment will identify:

- Activities most requiring rehearsal/practice.
- Potential exercise participants (which staff and/or patients will participate).
- Plausible hazards and their priority levels.

For example, if facility disaster plan was recently updated, the new policies/procedures should then be validated. Your needs assessment should reflect the goal to design and conduct an exercise testing the updated parts of the plan.

A scenario drives an exercise. The storyline should involve the participants and the threat (type of hazard/disaster). Each scenario will be unique to the needs of each facility. Choose a scenario that is likely to happen and one that will test facility disaster plans. Scenario narratives should engage exercise participants in a way that approximates real-world emergencies.

At a minimum, the narrative should address these questions:

- Where does the initiating event take place?
- How dangerous and persistent is the emergency/disaster?
- What is the impact of the incident?
- What time of day does the event take place?
- What is the sequence of events?
- What other factors would influence procedures?

Mock Disaster Drill Guide

This situation drill should be planned in advance, and planners should provide the staff adequate information about the disaster drill scenario. Assign staff to assist or instruct patients in procedures relevant to the drill. Most items in the exercise will be simulated, not actually performed.

Strategically station personnel throughout the facility to observe the actions of others once the drill begins. A designated person should announce the drill. The person in charge can assist in directing staff in their assignments. Staff and patients should simulate how they would respond given the disaster scenario.

An accurate assessment of the passage of time will assist in evaluating areas needing further attention prior to the next drill. Therefore, time the following portions of the drill:

- From time of discovery of a disaster to staff beginning duties.
- From time the alarm is first heard to the simulation of the last patient being evacuated.
- From facility evacuate/relocate order to simulation of the last person's arrival at safe refuge area.

The Discovery of the Disaster

Choose patients or staff members in the facility. Explain the scenario and ask how they would respond to the disaster.

Observe the Participants

- Check the area and simulate removing anyone in immediate danger.
- Close the door to the room on fire to confine the fire (if applicable).
- Sound the alarm by use of one or both of the following:
    - Verbally to a key staff member or other personnel.
    - Simulate the use of fire alarm pull box (if applicable).

Staff Response to the Disaster

Observe to ensure that your key staff members perform all of the following duties:

- Bring fire extinguisher to scene of emergency, if applicable.
- Locate emergency packs by each machine, if applicable.
- Simulate "Clamp and Cap" on each patient's blood lines.

- Simulate removing patients and emergency box from the building.
- Search all areas of the building.
- Simulate a complete evacuation of the building.
- Simulate a headcount made at evacuation/safe refuge area.
- Verify headcount given to management.

Concluding the Drill

To conclude your drill:

- Designated person will give verbal instructions to conclude the drill.
- Staff should perform an abbreviated critique immediately after the drill.
- Document the drill and findings.

Post-Exercise Documentation and Quality Improvement:

Once the drill is complete, perform the following steps to document your drill performance and identify areas for improvement:

- The administrator should complete a verbal and written evaluation following each exercise and hold a group discussion with employees.
- Note problems such as individuals not hearing the alarm; blocked or unusable fire equipment, exits, and/or hallways; operations hindered; duties not understood or carried out.
- Record staff and patient attendance/participation with a sign-in sheet.
- File the evaluation report and attendance record in the quality improvement report log and staff training log.
- Develop a quality improvement plan to address areas where improvement is needed. This could be incorporated into the facility QAPI program.

The Appendix contains sample Mock Drill Planning and Mock Drill Evaluation forms for you to use.

5 Response

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

Each emergency or disaster will require its own response. Effective responses meet the immediate needs of both victims and responders.

Response always follows a disaster, but may overlap with preparedness and recovery. A sample of response activities include evacuation, protective actions, mobilization of emergency personnel and resources, search and rescue, emergency shelter, mass feeding, medical care, security within the impact area and damage assessment and control.

Use local volunteer agencies to supplement disaster response activities. Community Emergency Response Teams (CERTs) are community-based volunteer groups specially trained to respond to local emergencies and disasters. Because there are a limited number of professional responders, it is important to train and use community volunteers to complement emergency management programs. Using CERT and other volunteer groups also increases community resiliency by creating a more prepared public.

Community Assistance

The agencies/resources tasked with coordinating and/or providing information about emergency response differ throughout the country in terms of structure and chain of command. Some are organized through fire or police departments, others may be independent of other agencies. Some have a large number of staff, others are coordinated by one person.

State and local emergency management agency websites often provide email notification registries, allowing participants to receive important disaster-related news. Such websites may also offer training and education to help improve communication among local first responder agencies. Local resources for disaster preparedness and response include, but may not be limited to:

- 211 (Community based information and referrals)
- 311 (Non-emergency police calls)
- United Way
- American Red Cross
- Medical Reserve Corps
- Community Emergency Response Teams
- Citizen Corps

Many of these organizations can provide volunteer assistance and additional education.

All disasters and disaster responses are local. The first and primary contact with a government entity in the event of a disaster is your local EOC. If a disaster exceeds a county's resources, assistance from surrounding counties (in the form of mutual aid or mutual assistance) may become necessary. Help from state emergency management agencies may be required. In the event a disaster overwhelms state resources, the governor can

request assistance from the Federal Emergency Management Agency (FEMA); this coordinating agency is not a first responder, and its resources become available only by Presidential declaration, following a governor's request.

Response Operations

Response begins immediately after a disaster occurs. Response encompasses the activities addressing the short-term, direct effects of an event. Response also includes the execution of disaster plans and activities designed to limit loss of life, personal injury, property damage, and other unfavorable outcomes. Response involves putting preparedness plans into action.

As dictated by the situation, some response activities include:

- Applying plans and actions to limit the impact of the disaster (such as evacuations).
- Increasing security operations to provide for the safety of your facility, patients and staff.
- Continuing to gather information about the disaster situation, as well as new information for response and assistance.
- Restoring utilities and transportation services.
- Ensuring continuity of care for your dialysis patients, including patients who may have evacuated to your area in search of dialysis treatment.

One of the first response tasks is to conduct a situation assessment. Assessment includes all immediate response activities directly linked to identifying imminent hazards and initial life-saving and life-sustaining needs. The ability of local governments to perform an assessment within the first few hours after an event is crucial to providing an adequate response. Coordinated and prompt assessments enable facilities to:

- Prioritize response activities.
- Allocate scarce resources.
- Request additional assistance from mutual aid partners quickly and accurately.

Obtaining accurate information quickly through rapid assessment in an organized manner is critical. This includes information about:

- Life-saving needs, such as evacuation and search and rescue.
- The status of the dialysis facility, availability of transportation, utilities, communication systems, and fuel and water supplies.
- The status of critical/support entities, such as police and fire stations, medical care providers, water and sewage treatment facilities, and media outlets.
- The risk of damage to the dialysis facility, equipment, patients, and staff.
- The number of patients and staff displaced because of the event and the estimated damage to their homes.

Essential information also includes the potential for cascading events, which occur as a direct or indirect result of an initial event. For example, a flash flood can disrupt electricity to an area which can then contribute to

additional events. Good planning, training, and exercising via drills before an event can reduce the impact of cascading events.

Emergency Response Action Steps

The following steps serve as a guideline for an initial response. Actual response activities will vary depending on the size, type, and location of the disaster, as well as the availability of trained staff and the number of patients present in the facility.

Immediate Response

- Instruct someone to call 911, if necessary.
- Assess the scene if it is safe to do so.

Initial Assessment

- Assess known information and take action to protect anyone in danger.
- Initiate "Clamp and Cap" procedures if patients need to be evacuated.

Patient Evacuation Priority

Triage and assess patients as follows:

- Begin with patients and staff whose proximity to the emergency places them at greatest risk.
- Individuals who are self-sufficient, including patients, family, and visitors who can assist themselves and others.
- Individuals who need assistance are those who cannot get to a safe area without help.

After Evacuation

- Meet in the designated safe area.
- Assess patient needs. Triage patients, staff, and visitors.
- Conduct a head count of patients and staff once outside.
- If everyone is not accounted for, and it is safe to do so, search the building again.
- If the building is not safe, inform the first responders on scene of any missing persons.
- Make sure the emergency box and any necessary supplies are removed.
- Establish a command center or a centralized location for key response staff.
- Determine whether treatment will be interrupted for an extended period of time and if so, implement plans as established.
- Provide information on treatment plans to patients before they leave the area. Give the patients their treatment flowsheet and instructions in a large plastic zip lock bag (to prevent the papers from getting wet, lost, or damaged), if available.

Medical/Search and Rescue Response

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

Building Assessment

- Conduct a building survey to assess for any damage to the facility. Conduct assessment only after clearance by emergency responders.
- Assess the availability of utilities, water, sewer lines, gas, and electricity.
- Check for the presence of hazardous materials.
- Assess equipment and supplies for damage or loss and contact key vendors if necessary.
- Consider how the situation could escalate in severity.
- Determine if the area needs to be secured.
- Determine who will be responsible for cleaning up the site. Assess whether the area can be cleaned up immediately or if authorities must first release the area.

Communication Protocol

- Contact the Medical Director or designee, staff, families, and patients as appropriate.
- If the media is present, designate a media spokesperson.
- Contact media to broadcast a PSA, if needed.
- Provide important information updates as soon as possible, by phone, hotline, or website.
- If the facility is not operational, post a sign with contact information including any toll-free numbers for patient assistance.
- Notify your ESRD Network, SSA, and local emergency management agency of facility status and needs.

Continuing Management

- Coordinate and communicate with responding agencies.
- Communicate with corporate management, patients, vendors, and other dialysis suppliers in a timely manner.
- Activate Business Continuity Plans, as appropriate.
- Update telephone, hotline and website information as it changes or as new information becomes available.
- Communicate your facility status to your ESRD Network and SSA as an ongoing update.

Evacuation Assignments and Considerations

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

Nurse Responsibilities

- Coordinate the evacuation.
- Disconnect patients from dialysis machines.
- Assist with evacuation of patients.
- Once outside, assist patients and/or injured persons.
- Address other medical needs as necessary, including performing blood pressure checks, administering first aid, and providing other care.

Patient Care Technician Responsibilities

- Help take patients off of machines.
- Assist with any needed transfer of patients for evacuation.
- Evacuate patients to designated area.
- Retrieve emergency evacuation kit of medical supplies.
- Retrieve portable oxygen tanks, nasal cannulas, and masks.

Social Worker/Dietitian Responsibilities

- Assist with evacuation of patients.
- Collect information from patients regarding any plans for evacuation from their home and contact numbers.
- Assist patients with transportation and shelter needs.
- Provide counseling and mental health assistance as possible (social work).
- Provide diet instruction as necessary and possible (dietitian).

Support Staff Responsibilities

- Call local emergency number.
- Retrieve roster of patients and staff.
- Retrieve patient records (paper or computer discs) and emergency supply box.
- Collect blankets, sheets or extra cover gowns while leaving the building to distribute to patients and/or injured persons.
- Conduct a roll call of patients and staff once outside at the designated safe area.

Patient Transportation

- Patients are responsible for their own transportation.
- Staff should not transport patients in their own private vehicles.
- Consider transportation companies and pre-arranged contracts for moving patient/staff as necessary.
- Emergency responders such as ambulances or fire departments may not be able to transport patients for maintenance dialysis following a disaster.

Incident Conclusion

- Inform staff and patients when the situation is safe.
- Update management, patients, staff, vendors, and other dialysis suppliers as applicable to the situation; review and file all incident reports.
- Schedule a post-incident debriefing meeting and invite all pertinent parties to assess the response and identify opportunities for improvement.

Emergency Succession for Decisions

A prompt assessment of damage can assist in good decision-making. Immediately after handling life safety issues, evaluate the safety of the facility. The dialysis facility should designate an employee to be in charge during a disaster. The person in charge may change when others arrive on the scene. The designated person in charge will assume control of the situation, make immediate decisions, and interface with first responders and staff.

The Appendix contains a form that can be used to clearly designate the individual in charge during a disaster.

Damage Assessment Key Responsibilities

- Quickly assess the impact of the disaster and estimate the time to repair or replace the damaged facility and/or its contents.
- Determine measures needed to protect assets within the facility. Initiate such measures.
- Report assessment to the Medical Director and the facility administrator.
- Coordinate with local governmental agencies on whether or not to provide treatment if a jurisdictional declaration has been made to close businesses in the disaster area.
- Coordinate with corporate management to ensure the immediate interface with insurance claims representatives to expedite the processing and handling of all insurance claim information.
- Notify the Medical Director of all actions taken.
- Notify the ESRD Network and SSA of the facility status, particularly if it is inoperable or has reduced capacity.

The Appendix contains a chart for you to list employees that are responsible for damage assessment in your facility.

Potential Issues Following a Disaster

Facility

- Indoor and outdoor air quality may be a concern after a disaster. Evaluate your facility for air quality, including temperature. You may need to use fans or additional heaters.
- Ensure that your facility is properly lit to provide a safe environment for patients and staff.
- Have essential basic first aid supplies ready.
- The facility should have enough supplies on hand for 3 days post-disaster. This includes supplies for the office, break room, and restrooms; and cleaning supplies, dialysis supplies, and medicines.
- Ensure frequent housekeeping services are provided inside the facility, patient treatment area, restrooms, and break areas.
- Noise from phones, unnecessary conversations, and poor acoustics may interfere with an employee's ability to concentrate and provide safe care and could create a stressful environment. Evaluate the facility for noise reduction techniques, such as discouraging cell phone conversations or providing a quiet break room where employees can eat, rest, and relax.
- If workers are driving to the facility, provide secured parking if possible.
- Building security staff is preferable, if the facility needs to operate longer hours or even around the clock. Monitor news regarding any reports of civil unrest and act accordingly.
- Small hazards, such as blocked fire exits, dangling cords, and water on the floor, can create a big accident.

Staff

- Plan to provide food and water for staff because restaurants and grocery stores may be closed.
- Consider having an Employee Assistance Program (EAP) counselor available to provide awareness, education, and assistance in recognizing and treating mental health issues.
- Identify potential staff issues and work to resolve them quickly. Managers should be accessible to staff and available to provide guidance and timely problem solving.
- Family issues, such as childcare, eldercare, and pet care may become an issue for staff. Remind staff to implement their family disaster plan.
- Evaluate your staffing needs and develop a shift rotation that best suits the situation and your available staff.
- Evaluate the facility's ability to assist in providing transportation for staff.
- Some employees may have damaged or destroyed homes. Evaluate the need to provide assistance with staff housing.
- Consider providing incentives to encourage staff members to come to work during a disaster.

- All staff members should be briefed at least daily on the current situation and whenever the situation changes. Briefings should be timely and effective to provide the necessary information for staff to perform their duties and address patient and staff concerns.
- Employee health is important for the facility's ability to provide care for patients. Encourage staff to take breaks, eat healthily, rest, and engage in stress-reducing activities.
- Provide information to all disaster victims on the location and availability of disaster recovery centers, mass care, and comfort centers.

Administrative

- Implement your business continuity plan to address issues.
- Cash may be necessary to purchase supplies, equipment and food, or to give an advance to employees. Determine how much cash you will need on hand and how you will safeguard it. Include small bills for ease of use.
- Purchasing equipment may be problematic, especially when an event occurs during a weekend.
- Determine who has authority to issue emergency purchase orders.
- Regularly update employee hotline messages for employees and management. Timely updates reduce rumors and keep everyone informed of the facility's status.
- Ensure that you have emergency contact information for vendors in case you require service or supplies.
- Make sure to have a back-up company for phones, office equipment, and computers. Determine whether some of your key vendors have other clients who might drain resources.

Recommendations for Management During Utility Loss

Internal Management of the Dialysis Center

- Ensure that the Medical Director or designee authorizes the use of an alternate water source or any change in the water system.
- Orient all staff members to the flow pattern and operation of the water system in use.
- Clearly post flow schematics on all equipment.
- Orient all staff members to the location and operation of the supply water main shut-off valve.
- Provide adequate emergency lighting in the water treatment area.
- Have additional dialysis-approved flexible plumbing fittings and hoses, extension cords, and plumbing tools available.
- Increase the frequency of water control testing when using alternate water sources or during an emergency situation.
- If a different method of water testing must be used, be sure all staff are in-serviced and demonstrate competency in the new method.

External Interface

- Inform your water district of the facility's needs.

- Have arrangements with water vendors and water treatment vendors close to your facility.
- Pre-install connectors for an outside water source.
- Consider establishing an external area where dialysis could be delivered if the facility is damaged (sheltered area, generators for power, tarps or tents for shelter). Consult with the SSA in making such plans.
- If needed, develop affiliation agreements with other facilities to provide dialysis in an alternate location.

Communicating After a Disaster

After a disaster, cellular phones may be unavailable and, when they are available, may be prone to the same capacity problems that landline phones experience. It is recommended to maintain a landline telephone. When considering your communications systems at the facility:

- Maintain at least one analog telephone that does not require electricity to function.
- Check all telephones to make sure they are hung up appropriately on the receiver.
- Limit phone usage to critical calls until full service is restored.
- If phone service is limited and someone from outside the area reaches you, use that individual to communicate urgent information to outside parties.
- Update the facility's voicemail with applicable information.

If using a cellular phone, keep calls short and use text messaging if possible. Text messaging may work when verbal calls are not possible.

Two-way radios can provide an effective way to communicate and runners can be effective for short distances. Local ham radio operators may be able to assist with long distance communication and updates.

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 update in each message. Distribute your pre-written PSA to the media.

Restoring Water Treatment Systems and Dialysis Machines to Use After a Disaster

These directions are for use if:

- The building has not been flooded.
- Utilities have been restored.
- The physical facility is in operational condition and adequate water flow and pressure are available, although source water may be subject to a BWA.
- If the facility was flooded, please see the CDC guidelines for recovery of a flooded building at www.bt.cdc.gov/disasters/floods/.

To begin restoring water treatment systems and dialysis machines for use:

1. Flush all pre-treatment equipment to the drain for at least 30 minutes to remove any stagnant water from the system.
2. Test the level of free chlorine and chloramine in the building's source water (expect it to be higher than normal).
3. Test chlorine and chloramine after the primary carbon tank to verify that the water has level of equal to or less than 0.1 ppm total chlorine.
4. If the total chlorine after the primary carbon tank is >0.1ppm, test the levels after the secondary carbon tank. If the total chlorine is at or below this level after the second carbon tank, notify the Medical Director. Treatment may continue if approved by the Medical Director and you monitor the chlorine at least hourly and change out the carbon tanks as soon as possible and within 72 hours.
5. Flush the distribution system (to drain if possible).
6. Disinfect the RO and the distribution system and rinse. Test for residual disinfectant levels to ensure adequate rinsing.
7. Replace all cartridge filters.
8. Compare the product water quality readings to the facility's historical data. A significant difference could mean that the RO membranes are damaged or the quality of the incoming water has drastically decreased. If the level of total dissolved solids (TDS) is more than 20% higher than historical readings, consult with the Medical Director to consider using DI tanks as a polisher on the product water, followed by an ultrafilter to minimize microbial contamination.
9. If only DI tanks are being used, the water should be treated with an ultrafilter to remove bacteria and endotoxins. The use of a UV irradiator would provide additional protection. Make sure the DI product water is continuously monitored and producing water that has >1 megohm-cm specific resistivity (or conductivity of < 1 microsiemen/cm). An automatic divert to drain valve and audible and visual alarms in the treatment area are also required to ensure patient safety in the event that DI tanks exhaust while being used for treatment.
10. Increase frequency of monitoring:
    - Check chlorine/chloramines levels hourly.
    - Verify hourly that the product water quality is acceptable, based on resistivity or conductivity.
    - Draw representative water cultures and endotoxin tests as soon as possible. If it is possible to test for endotoxin on site, do this before treating patients; report all results to the facility's Medical Director.
    - Monitor water cultures and endotoxins at least weekly. If possible, test for endotoxins on-site daily.
11. Anticipate an increased level of particulate matter in the water. Monitor the pressure drop across pre-treatment components and backflush or replace as necessary.
12. Anticipate re-bedding the carbon tanks as soon as possible.

13. Send a sample of product water for an Association for the Advancement of Medical Instrumentation (AAMI) analysis as soon as is practical.
14. Clean the RO membranes as soon as is practical.
15. Chemically disinfect the dialysis machines and rinse. Test for residual disinfectant levels to ensure adequate rinsing.
16. Bring up the conductivity on the dialysis machines and "self test" the machines to verify proper working condition. If a machine fails the "self test," perform needed repairs prior to using that machine.

If the product water TDS is high and the percent rejection is in line with historical performance, the RO membranes are most likely acceptable, but the feed water may have a higher than usual level of contaminants. DI polishing will help cope with the extra burden in the feed water.

If the product water TDS is high and the percent rejection is lower than historical values, the RO membranes are probably damaged and should be replaced promptly. DI polishing should be used until the RO membranes can be replaced.*

* This information was prepared in collaboration with the Centers for Medicare & Medicaid Services and the Food and Drug Administration.

Safe Use of "Tanker" Water for Dialysis

Facilities that provide renal replacement therapy for patients with ESRD in the form of maintenance hemodialysis have a very large demand for water. Water is used in maintenance dialysis facilities to prepare dialysate and to rinse and reprocess dialyzers for reuse on the same patient. During disaster situations, the local municipal distribution of water may be disrupted for extended periods of time.

For the Water Hauler/Supplier:

- The supplier should verify that the water being delivered meets Environmental Protection Agency (EPA) drinking water standards. If the water supplied is safe for consumption, then it may be used as source water for a water treatment system. The trucked water must come from an approved public water supply.
- Other sources of water (i.e., private well) can be used only if shown to be safe to use by bacteriological, and possibly chemical and radiological, testing and approved by the state drinking water authorities.
- Commercial milk or potable water tanker trucks are preferred. However, trucks designed for the transport of wine, vegetable oil, beer, or other food products may also be used.
- The truck container must be contaminant-free, watertight, made of an EPA, Food and Drug Administration (FDA), or National Sanitation Foundation (NSF) approved water- or food-grade material (can be used for transportation of items for human consumption) that can be easily cleaned and disinfected.
- To ensure that water hauling equipment is adequately disinfected before using, the tank or truck container, along with all hoses, pumps, and other equipment, must be cleaned and then sanitized. Sanitizing solutions must be used in accordance with the EPA-approved manufacturer's label use instructions. Normally, these sanitizers will be chlorine, iodine, quaternary ammonium, or acid-

based aqueous solutions. If a disinfectant other than a chlorine-based chemical is used, the supplier should ensure that the tank is thoroughly rinsed to remove residual disinfectant. A test should be done by the contractor to ensure minimal residual levels of the disinfectant.

- Water to be transported by tanker trucks should contain a free chlorine residual of about one part per million (1ppm) and not more than 4ppm at the beginning of the haul. This is done by adding 5 – 6 tablespoons (2.5 – 3 ounces) of common household bleach to each 1,000 gallons.

At the Dialysis Facility

- An additional pressure pump may be needed. Sometimes the tanker truck or "water buffalo" will have a pump, but if not, the local system may not be able to push water through the pre-treatment chain with enough pressure and volume to run the RO.
- Connect the tanker supply line to the local pre-treatment chain. Minimum requirements for pre-treatment include carbon filtration and monitoring for chlorine or chloramine breakthrough. An optional step is to add a multimedia sediment filter on the input to the water treatment system, in case the tanker was not adequately flushed of all particulates.
- Water will be at ambient temperature. If the water is cooler than 76 – 78 degrees (F), carbon may not remove chlorine/chloramine as efficiently. Additional carbon filtration may be needed during this time.
- Determine the chemical contaminants in the supply water. If possible, get at least a minimum chemical analysis of the tanker supply water. Focus on those contaminants which have a direct effect on patients (e.g., aluminum, fluoride, copper, chlorine, and chloramine). Many of these can be tested on-site with test kits (e.g., HACH Company, LaMotte Company, and Orion) or samples can be sent to a state water quality lab or an approved renal lab. The samples that are sent to a water quality lab should be stored as directed and analyzed within 24 hours.
- If using untempered water, the RO may not function optimally. You may note a drop in percent rejection and permeate flow rate and product water flow may be lessened.
- Using a lower dialysate flow rate may be necessary while the water supply is reduced. Compare product water quality readings to any historical data. A significant difference could mean that RO membranes are damaged, or the quality of the incoming water has drastically decreased. If the TDS are more than 20% higher than the historical readings, DI tanks may be needed as a polisher on the product water, followed by an ultrafilter to minimize microbial contamination.
- If only DI tanks are being used, the water should be treated with an ultrafilter to remove bacteria and endotoxins. The use of a U.V. irradiator would provide additional protection. Make sure the DI product water is continuously monitored and producing water that has >1 megohm-cm specific resistivity (or conductivity of < 1 microsiemen/cm). An automatic divert to drain valve and audible and visual alarms in the treatment area are also required to ensure patient safety in the event that DI tanks exhaust while being used for treatment.
- Monitor carefully the water levels in the tanker to ensure an adequate supply of water for all dialysis treatments. As the water level in the tanker drops, try to secure a replacement tanker and get an analysis of that water, to prevent further disruption of service.

1. Increase your frequency of monitoring:
2. Check chlorine/chloramine with each new delivery of water.
3. Verify hourly that product water quality is acceptable.
4. Monitor water cultures and endotoxin at least weekly. If possible, test for endotoxin on-site daily.

The Medical Director is ultimately responsible for the quality of the water the facility uses for dialysis. Involve the Medical Director early; it may be better to dialyze patients for a few treatments with water that may not quite meet the usual AAMI standards than not to dialyze, as hyperkalemia and fluid overload can be life-threatening, whereas a low level of aluminum exposure can probably be tolerated for a short period. The Medical Director must be involved in making these types of decisions.*

*Prepared in collaboration with the Centers for Medicare & Medicaid Services, the Food and Drug Administration, and the University of Louisville Kidney Disease Program, with input from the Environmental Protection Agency.

Maintaining a Safe Water Supply for Hemodialysis

When the water supply to a dialysis unit is interrupted, dialysis treatments cannot be performed. It is important that you plan in advance for what your facility would do if the water supply is lost. In some disasters, such as flooding, there can be an adequate amount of water coming in to the facility, but the water is contaminated. In other disasters, such as an earthquake, the water supply line may be damaged and no water is available from the municipal water delivery system. Of course, in a dialysis facility, simply having a part of the water system fail is a disaster unto itself.

Often, the easiest and safest thing to do when there is a water supply or quality issue is to transfer your patients to a nearby facility that does not share the problem. There will be some circumstances, such as a single dialysis facility in a small community, where patient transfers would not be a viable option. Whatever your situation, you need to develop a back up water plan.

There are some things you can do before a water problem happens to minimize the potential affect on your patients.

- Establish a good working relationship with the municipal water supplier. Educate them about the importance of water to your patients. Teach them about your water treatment system and its limitations.
- Learn about how the supplier treats your source water. Ask them to notify you in advance if they are going to make changes, such as increasing the chlorine level or switching from surface water to ground water.
- Learn what circumstances may cause an interrupted water supply in your area; i.e., a flood or an earthquake.
- Get your facility placed on a "high priority" list. This will help to ensure that if a water main breaks, the municipality will work towards restoring your service before lower priority users.

Backup Water Planning

Education and shared information are the most critical steps to ensuring that water will be available. Contact your local water supplier and provide education about dialysis and the necessity of ensuring a constant, safe water supply – especially during a time of disaster. If agreeable to your supplier, sign a written agreement with the water supplier. Water volume will be critical, and implementing a DI system would decrease the total volume of water needed. With a DI system, the water volume required for dialysis is less because you only have to have the volume used by the dialysis machine at the prescribed dialysate flow (e.g., if the prescribed dialysate flow is 500 cc per minute per machine, the DI demand is only 500 cc per minute per machine) as there

is no "reject water." With a RO system, the volume of water needed for treatment is greater as the total volume must include the water that will be rejected by the RO membrane in the water treatment process.

Natural disasters such as hurricanes, floods, earthquakes, and tornadoes can affect the quality of potable water delivered for dialysis as these events may add contaminants to the supply water. Additionally, municipalities that supply drinking water may treat the unknown water with more chemicals, such as aluminum sulfate (alum) and chlorine/chloramine to counteract the effects of the event. Alum is one of the many types of flocculants added when colloidal matter, such as silt and dirt, in water is high. Flocculants will aggregate these suspended materials and force them to separate from the water and sink to the bottom of the holding tanks. During a natural disaster it is likely more alum will be used to treat the contaminant overload. Because microbial contamination is also a concern during a disaster, water suppliers would be inclined to add more disinfectants, such as chlorine or chloramine.

In an emergency, it may be possible to perform hemodialysis treatments using water that has only been pre-treated with softening, carbon, and ultra filtration. To determine if this is a viable option for your facility, you must perform an AAMI analysis on the water from the pre-treatment tanks. Draw a water sample from the valve just before the RO or DI treatment component prior to implementing emergency use of water that has only been pre-treated with softening, carbon, and ultra filtration. Use the AAMI chemical analysis test to determine the level of contaminants (e.g., calcium, magnesium, potassium, lead, mercury, arsenic). Bacteriological assay is also required and must demonstrate results of less than 200 CFU/ml or endotoxins at less than 2 endotoxin units (EU). In some regions and in certain seasonal conditions, untreated water has been found to meet the AAMI chemical contaminant standards. Ultra filtration is required for removal of bacteria and endotoxins. Remember that water can change as a result of a natural disaster. It is the Medical Director's ultimate responsibility to decide whether the final quality of the water is suitable for hemodialysis, and this decision must be based on objective measures.

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

1. If there has been a change in the municipal water supply, check total levels of 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/chloramine levels in the source water, and testing after will indicate whether these contaminants exceed the allowable limits in the water to be used for treatment.
2. Check the conductivity pre and post RO/DI.
3. Check bacteria and endotoxin levels pre and post the RO/DI. Based on the results, consider increasing disinfection frequency.
4. Compare all gauges, readings, pressure gauges, water quality and testing to historical values prior to the event.
5. Do not delay preventative maintenance. Keep the system as "fresh" as possible to handle contaminant loads, which may be higher than usual.
6. Re-bed or replace the carbon tanks when chlorine/chloramine levels indicate breakthrough.
7. Change the pre-filters routinely; monitor for changes in pre and post filter pressures and recognize more frequent filter changes may be necessary. It may be a good idea to increase disinfection frequency when using a compromised incoming water source.

8. Clean the RO membrane(s) and disinfect the system simultaneously including the distribution loop, any RO storage tanks, dialysis machines, and reuse equipment. Perform this process after an incident and before the system is used for patient treatment.
9. Do not reprocess dialyzers or use the dialyzer reprocessing system until the water supply returns to pre-disaster conditions. The facility disaster plan should include plans for obtaining sufficient single use dialyzers to provide care without reprocessing.

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

Alternate Water Sources

It may be necessary to use alternate sources of water. If so, the quality of water must be evaluated for suitability. Ensure that you have the proper plumbing hoses, pipes, and fittings for dialysis to make connections to the alternate sources, such as a tanker truck or a fire hydrant. In many cities the fire hydrants are on a separate water line from the regular water line. It would also be important to know about the quality of the water in the fire hydrant system, as it may not be potable water. You should investigate in advance to find out if using the water from this system is an option for your facility. Plumbing modifications must be made to accommodate alternate water sources. Remember, if you use another source for water, be aware of water quality issues. Your water district's disaster plan should be available for public review. Talk to your utility providers in order to incorporate your facility into their plans.

Calculating Water Requirements

To calculate the water requirements for a 500 cc dialysate flow rate (DFR) per hour run time, estimate eight gallons of water per machine. Extra water is required if your facility mixes bicarbonate or acid concentrates from powders.

3,785 cc = 1 U.S. gallon

To calculate the water volume demand for an RO system: Product flow in gallons/minute + Reject flow in gallons/minute = volume processed in gallons/minute.

Dialysis machine specifications for water pressure and electrical needs are provided by the manufacturer; refer to operator's manual.

Example – Water volume usage based on 10 stations

DI System: 10 stations at 500 cc/minute = 5,000 cc/minute = 1.32 gallons/minute

Demand RO: 10 stations at 800 cc/minute (RO is usually calculated at maximum flow rate) = 8,000 cc/minute = 2.1 gallons/minute

Reject volume (approximately 30% of product): 8,000 x0.30 = 2, 400 cc/minute = 0.63 gallons/minute

Total: 2.1 + 0.63 = 2.73 gallons/minute

RO with reservoir: Flow for 10 stations (2.1 gallons/minute) + reject volume (0.63 gallons/minute) = 2.73 gallons/minute

6 Recovery

During the recovery phase, an organization resumes its normal activities and operations.

Recovery involves incorporation of new mitigation strategies, to ensure that the rebuilt community will be more resilient to disaster in the future. In this section you will find guidelines for beginning the recovery effort.

Recovery Operations

The goal of recovery is to return systems and activities to normal. Recovery begins right after the disaster. Some recovery activities may be concurrent with response efforts.

Recovery consists of the development, coordination, and execution of service and site restoration plans for impacted communities. It also encompasses the reconstitution of government operations and services through individual, private-sector, nongovernmental, and public assistance programs that:

- Identify needs and define resources.
- Provide housing and promote restoration.
- Address the long-term care and treatment of affected persons.
- Implement additional measures for community restoration.
- Incorporate mitigation measures and techniques, as feasible.
- Evaluate the incident to identify lessons learned.
- Develop initiatives to mitigate effects of future incidents, including a quality improvement plan (QIP).

Although recovery is primarily a responsibility of local government, if the emergency or disaster received a Presidential Declaration, a number of assistance programs may be available under the Stafford Act. There are two major categories of Federal aid: Public Assistance and Individual Assistance.

Public Assistance

This type of assistance addresses the repair of infrastructure, public facilities and debris removal. It may include:

- Repair or replacement of non-Federal roads, public buildings, and bridges.
- Implementation of mitigation measures.

Individual Assistance

This type of assistance addresses damage to residences and businesses or for personal property losses, and may include:

- Grants to individuals and families for temporary housing; repairs; replacement of possessions and medical and funeral expenses.
- Small Business Administration (SBA) loans to individuals and businesses.
- Crisis counseling for survivors and responders; legal services; and disaster unemployment benefits.

Recovery from disaster is unique to each dialysis facility and depends on the amount and kind of damage caused by the disaster, as well as available resources. In the short term, recovery is an extension of the response phase that restores basic services and functions. Long term, recovery is a restoration of both the personal lives of individuals and the livelihood of the community. Websites such as www.DisasterAssistance.org serve as helpful resources for the recovery phase and accessing important information regarding available federal resources. When seeking assistance, be sure response and recovery organizations are aware of the special needs of ESRD patients so that appropriate help can be made available.

Long-Term Community Leadership/Planning

Considerations surrounding long-term community leadership and planning include the following:

- Keeping people informed and preventing unrealistic expectations
- Donations for disaster relief
- Partnerships with business and industry for resources
- Competing interests of groups involved in the planning process
- Environmental issues
- The unmet needs of survivors
- Rebuilding bridges, roads, public works, and other parts of the infrastructure
- Public health measures to take against the risks of diseases, contamination, and other cascading effects from a disaster.

Mental Health Resources

Disaster impacts are not completely physical.

A disaster can damage and destroy property but they also cause stress and anxiety. Reacting to a disaster can be stressful for both victims and responders. It is important to be aware of stress and its impact on patients and staff.

Dealing with feelings that occur after a disaster is critical for recovery. The earlier issues are addressed; the sooner there can be recovery. Post-traumatic stress affects everybody.

The events associated with September 11, 2001 and Hurricane Katrina offer strong examples of traumatic events that seriously affected large numbers of people. Now is the time to plan 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.

Common Reactions to Stress

The following list provides common human reactions when encountered with stressful situations:

- Anger
- Anger at Supervisors
- Anxiety
- Confusion
- Criticism
- Decreased Libido
- Denial
- Depression
- Difficulty Concentrating
- Difficulty Making Decisions
- Disorientation
- Distortions in Time Perspective
- Emotional Numbing
- Fatigue
- Fear
- Feelings of Being Unappreciated
- Feelings of Loss
- Feelings of Inadequacy
- Forgetfulness
- Frustration
- Grief
- Guilt
- Headaches
- Helplessness
- Increased Alcohol Use or Substance Abuse
- Intense Concern for Family Members
- Irritability
- Letdown
- Loss of Appetite
- Memory Problems
- Muffled Hearing
- Muscle Tremors
- Nausea
- Nightmares
- Persistent Interest in the Event
- Persistent Thoughts
- Sense of Being in a Bad Dream
- Sense of Unreality “Like Being in a Movie”
- Shock
- Sleep Disturbance
- Stomach Cramps
- Sweating
- Visual Flashbacks
- Withdrawal

Reference Websites

The sites below are additional resources for your facility when preparing your disaster plan:

Dialysis Emergency Sites

Centers for Medicare & Medicaid Services	www.medicare.gov
Forum of ESRD Networks	www.esrdnetworks.org
Network Coordinating Center	www.esrdncc.org/
Kidney Community Emergency Response Coalition	www.kcercoalition.com
National Kidney Foundation	www.kidney.org/help

Emergency Management Sites

Federal Emergency Management Agency (FEMA)	www.fema.gov
American Red Cross	www.redcross.org
Centers for Disease Control and Prevention (CDC)	www.bt.cdc.gov/
Ready	www.ready.gov
Ready (Spanish)	www.listo.gov (Spanish)

Weather and Hazards Sites

National Weather Service	www.weather.gov
National Hurricane Center	www.hurricanes.gov
U.S. Geological Survey Earthquake Hazards	www.earthquake.usgs.gov/
Pacific Tsunami Warning Center	www.prh.noaa.gov/
Hydro Meteorological Prediction Center	www.hpc.ncep.noaa.gov/
Floods and River Conditions	www.noaawatch.gov/floods.php
FloodSmart	www.floodsmart.gov/floodsmart/

Other Sites

Occupational Safety and Health Administration	www.osha.gov
Pandemic Flu Information	www.flu.gov

Appendices

Appendix A - Emergency Management Contact Form

The purpose of the Emergency Management Contact Form is to document the facility's annual contact with the local emergency management agency. Communication with the local emergency management agency can ensure that local disaster aid agencies are aware of the dialysis facility's patients' needs in the event of an emergency and ensure that the agency is aware of the dialysis facility's needs in the event of an emergency. This pre-emptive contact could facilitate the meeting of dialysis patient needs during a disaster. Dialysis facilities should provide education and data about their facility (location, number of patients, emergency contact information). Remember, using this form is only a recommended practice and just a "first step." The facility will need to build and maintain a relationship with the local emergency management agency and develop and practice your disaster plans in order to provide the highest quality patient care and safe working environment for staff.

Contact with Local Emergency Management: **Date:** _____

Facility Name: _____

CMS Certification Number: _____

Name Of Person Completing This Form: _____

List of resources and information sent to the local emergency management office:

- ☐ _____
- ☐ _____
- ☐ _____

Date the information was sent: _____

Information was sent to:

Name/Title: _____

Agency: _____

Address: _____

Phone/Fax: _____

E-Mail: _____

Other contact with the emergency management agency or emergency operations center (EOC) (e.g., phone calls/emails, including dates and who was involved):

_____

Follow-up indicating information was received (e.g., returned fax verification, email responses, etc):

_____

Facility's plan for annual communication:

_____

Attach copies of letters, faxes, emails, or other documentation to this form.

Appendix B - County Emergency Management Support Form

The purpose of the County Emergency Management Support Form is to communicate your facility's status to the county Emergency Operations Center (EOC) serving your area. This information will enable emergency management to determine available resources and services that might be needed in the event of a disaster affecting the facility. It is recommended that facility's forward this information to the county EOC on at least an annual basis and any time there is a change in the information.

Form Instructions:

If you are responsible for multiple clinics, you must complete a separate form for each clinic.

1. Complete the facility demographic information. Indicate whether the facility is deemed a "hub" or "critical facility" for emergencies.
2. Provide the name and contact information for the administrator, corporate contact, and Medical Director. Provide a minimum of two (main and alternate) contacts for each. Be sure to include **all** available emergency phone numbers and e-mail addresses.
3. List power utility providers and the number of the facility's electric meter. This number can be found on the utility bill and will expedite the diagnostic process if the facility loses power.
4. Provide information regarding alternate power sources/generators available at the facility, including the type of fuel used to power the generator. If the facility does not have a permanent generator, indicate whether a transfer switch is installed for use of a temporary generator.
5. Complete information regarding water storage and hookup capabilities in the facility.
6. Provide the number of stations and total number of patients served in your facility.
7. Describe any other emergency protection the facility has (e.g., hurricane shutters).
8. Indicate all special instructions that may be helpful to the county EOC in facilitating services.
9. Indicate person completing the form and the date completed.
10. Include educational information regarding the needs of dialysis patients, such as the *Save a Life* brochure, which is available on www.kcercoalition.com.
11. Forward to the county EOC.
12. Retain a copy of this form and document any follow-up actions or responses.

Dialysis Facility Name: _____

This Facility is a: ☐ Critical Facility ☐ Hub

Facility Address: _____

Facility Phone/Fax: Phone ( ) _____ Fax ( ) _____

Alternate Emergency Numbers: _____

Administrator Name/Contact Number: _____

Corporate Contact Name/Number: _____

Medical Director Name/Contact Number: _____

Name of Power Company: _____

Meter Number: _____

Permanent Generator? ☐Y ☐N **If NO, is Transfer Switch Installed/Available?** ☐Y ☐N

Type of Fuel: _____ **Water Storage?** ☐Y ☐N **Gallons:** _____ **Water Hookup?** ☐Y ☐N

Number of Dialysis Stations: _____ **Number of Isolation Stations:** _____

Total Patients Served: _____ **Any Special Disaster Protections:** _____ _____ _____ _____

Comments/Special Instructions:

_____

_____

Form Completed By: _____ **Date:** _____

Appendix C - Emergency Contact Information Forms

Update these forms annually and with any changes.

Community – Emergency Contact Information

Organization	Contact Name	Phone Number
Ambulance		
Fire Department		
Fire Department: Non-Emergency		
Police Department		
Police Department: Non-Emergency		
County Emergency Operations Center		
State Emergency Management Agency		
Hazardous Materials Handling/Information		
Local Electric Company		
Local Gas Company		
Local Water Department		
Nearest Hospital		
Nearest Trauma Center		
Poison Control		
Public Health Department		
Telephone Repair		
Transportation Company		

Date of Last Form Update: _____

Facility – Emergency Contact Information

Department/Individual	Contact Name	Phone Number
Management/After Hours		
Facility Administrator (Home)		
Facility Administrator (Cell)		
Charge Nurse (Home)		
Charge Nurse (Cell)		
Alternative Dialysis Center		
Building Inspector		
Chief Technician (Home)		
Chief Technician (Cell)		
Medical Director (Home)		
Medical Director (Cell)		
Water Treatment Contractor		

Date of Last Form Update: _____

Appendix D - Hazard Vulnerability Analysis Tool

A hazard vulnerability analysis is usually the first step in disaster planning for an organization. The Hazard Vulnerability Analysis Tool is designed so organizations can evaluate their level of risk and preparedness for a variety of hazardous events. The following tool lists possible hazards that would require disaster planning and can be individually tailored to suit the needs of the organization.

List potential hazardous events for your organization. Evaluate and rate each event for probability, vulnerability, and preparedness using the following scales:

Ranking probability and vulnerability	Ranking preparedness
High = 3 Moderate = 2 Low = 1	High = 1 Moderate = 2 Low = 3

To calculate, multiply the ratings for each event: probability x vulnerability x preparedness = total score

Example

Probability	X	Vulnerability	X	Preparedness	= Total Score
(3) 2 1 High Low		3 (2) 1 High Low		1 (2) 3 High Low	12

The higher scores will represent the events most in need of planning. Using this method, 1 is the lowest possible score, while 27 is the highest possible score. *Remember the scale for preparedness is in reverse order from probability and vulnerability.*

- When evaluating probability, consider the frequency and likelihood an event may occur.
- When evaluating vulnerability, consider the degree with which the organization will be impacted, such as infrastructure damage, loss of life, service disruption, etc.
- When evaluating preparedness consider elements such as the strength of your preparedness plan and the organization's previous experience with the hazardous event.

Based on the results, determine which values represent an acceptable risk level and which events require additional planning and preparation.

Event	Probability			Vulnerability Level/Disruption Degree			Preparedness			Score
	High (3)	Moderate (2)	Low (1)	High (3)	Moderate (2)	Low (1)	High (1)	Moderate (2)	Low (3)	
Ice/Snow										
Flooding										
Earthquake										
Hurricane										
Hazardous Material Accident										
Fire										
Tornado										
Volcano										
Civil Disturbance										
Mass Casualty Event										
Terrorist Attack										
Pandemic/Infectious Disease Outbreak										
Electrical Failure										
Communications Failure										
Information Systems Failure										
Water Failure										
Transportation Interruption										
Environmental Pollution/ Altered Air Quality										

Appendix E - Pandemic Planning Checklist

Follow the checklist below to develop your Pandemic Plan.

Section 1

- ☐ Identify members of the facility's planning team, and set up a schedule to meet regularly

Section 2

- ☐ Discuss the roles and responsibilities of the following in pandemic planning and response:
  - ☐ Facility pandemic planning committee/staff
  - ☐ Patients
  - ☐ Caregivers
  - ☐ Local liaisons (public health, local hospital liaison, medical transporters, local emergency management agency, referring physician groups representatives)
  - ☐ Representatives from other associated dialysis facilities and dialysis patient transportation providers
  - ☐ Vendors of critical supplies

Section 3

- ☐ Review these resources for plan development
  - ☐ The CMS Manual Disaster Preparedness: A Guide for Chronic Dialysis Facilities
  - ☐ The HHS Pandemic Influenza Plan
  - ☐ State and/or local influenza plans
  - ☐ The KCER Coalition Pandemic Preparedness Team page at www.kcercoalition.com
  - ☐ Your dialysis company's pandemic plan
  - ☐ The National Strategy for Pandemic Influenza Implementation Plan

Section 4

- ☐ Consider these key elements of a plan for your facility and include them in a written plan:
  - ☐ **Communication Plan (Patients, Partners and Other Agencies)**
    - ☐ Discuss coordination with other facilities, local clinicians, and other agencies
    - ☐ Identify contacts for exchange of information such as facility status, situation in community with respect to disease rates, and resource requests
    - ☐ Outline education plan for staff, patients, and caregivers
    - ☐ Determine the education plan, and evaluate potential messages for inclusion in preparedness education, such as personal stockpiling, infection control, and caring for yourself or a family member with the flu

(Section 4 continued on next page)

(Section 4 continued from previous page)

Section 4 (Continued)

- ☐ Discuss your communication goals during a response
  - ☐ Facility operational status: Open or Closed?
  - ☐ Where to obtain reputable information on available services (transportation) and infrastructure (hospital status), physician on-call schedules, etc.
  - ☐ Where to learn what's going on in your community (local emergency management agency, department of health, media, etc.)
- ☐ **Infection Control Plan**
  - ☐ Basic prevention and infection control for staff and caregivers
  - ☐ Strategies to socially distance persons to minimize transmission of flu (consider strategies on use of isolation rooms, cohorting dialysis machines, using isolation rooms at partnering facilities and/or potential for use of home hemodialysis to facilitate isolation)
  - ☐ Proper type and use of masks and other personal protective equipment
- ☐ **Staffing Plan**
  - ☐ Acknowledge potential for employee absenteeism and/or possible patient surge
  - ☐ Determine critical number and type of staff to keep facility operational and safe
  - ☐ Work on a plan with other facilities to share staff with like duties
  - ☐ Cross-train duties as able. Provide re-training for clinical staff who may now be in management or other types of positions who may need to help with clinical duties in a
  - ☐ Identify vascular surgeons in advance to deal with fistula issues in patients with influenza and new patients
  - ☐ Develop plan for workforce support/resiliency and mental health support
  - ☐ Develop plan to contact state agency to ask for temporary exception to any applicable staffing ratio requirements
- ☐ **Supplies/Resources Plan**
  - ☐ Review current supply level of critical items (such as dialysate) and work with vendors on how to maintain
  - ☐ Identify supplies that are used outside the provision of dialysis to care for people with flu. This could include saline, syringes, gloves, masks, gauze, bleach, etc. If these items
  - ☐ Define items that can be stockpiled, including appropriate antibiotics to deal with vascular access infections or other medications
  - ☐ Determine current supply per week and estimate the need during a pandemic per week of operation
  - ☐ Maintain current and alternate list of vendors
- ☐ **Transportation Plan for Employees and Patients**
  - ☐ Identify major transportation providers and alternatives (rail, buses, medical transport, volunteers, churches, community agencies) and incorporate their plans into your own plan

(Section 4 continued on next page)

(Section 4 continued from previous page)

Section 4 (Continued)

- ☐ **Utilities Plan**
  - ☐ Meet with local utility companies and review their plan and get contact information
  - ☐ Review critical needs to operate the facility with local utility company representatives
  - ☐ Discuss prioritization for restoration or maintenance of utilities and how the utility company has incorporated dialysis facility needs into their plan
- ☐ **Treatment Plan**
  - ☐ Review with physician groups and Medical Director treatment changes that might be possible/necessary, such as decreasing from three treatments per week to two for some patients
  - ☐ Determine in advance what level of service the facility would provide at each level of staff absenteeism. Discuss how policies and procedures would change
  - ☐ Determine how to handle new or additional patients
- ☐ **Vaccine and Antiviral Use Plan**
  - ☐ Identify vendor source, first and second priority status, and corporate status on stockpiling

Section 5

- ☐ Participate in local disaster planning efforts with the local emergency management agency

Section 6

- ☐ Commit to a regular schedule of training and performing exercises or mock disaster drills and then (re)evaluating plans

Appendix F - Preparedness Assessment

	Date Completed	Date Reviewed	Name/Title of Individuals Responsible for Completion
Administrative			
Establish incident command structure – Chain of command and lines of authority			
Establish liaison with State and local Emergency Management Agencies – confirm contacts on a regular schedule (e.g., quarterly)			
Establish alternate command center			
Identify a meeting place for all personnel if facility is not accessible			
Establish Memorandum of Understanding (MOU) with other stakeholders/facilities			
Schedule/complete mock drill and performance assessment of drill			
Assign responsibility to staff member to notify the ESRD Network if the facility is impacted by a disaster (not operating normally, building damage, etc).			
Plan for building and staff security and protection			
Supplies			
Examine vendor alternatives and contacts			
Plan for office supply inventory needed to continue operations (3 – 5 days of supplies on hand)			
Determine needed stockpile of clinical supplies			
Plan for the security and protection of supplies			

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	Date Completed	Date Reviewed	Name/Title of Individuals Responsible for Completion
Utilities			
Develop plan for loss of water and power: generator/fuel, potable water			
Plan for removal of biohazards and other facility waste			
Record Protection			
Backup plan in place for electronic records			
Develop plan to protect all medical records			
Plan for off-site/distant storage			
Financial			
Mechanism to track organization costs during disaster or emergency situations			
Develop business continuity plan – Include ability to complete payroll, pay vendors			
Determine the needed cash to have on hand			
Identify funding sources if normal payment structures are interrupted			
Communication			
Determine alternate communication system for both staff and patients (cell phones, pagers, satellite phones)			
Coordinate with local and state Emergency Management policy on communicating with other health facilities			
Establish telephone tree and communicate to staff			
Coordinate with local and state Emergency Management Agencies on information dissemination (media releases, etc.)			

(Continued on next page)

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	Date Completed	Date Reviewed	Name/Title of Individuals Responsible for Completion
Surge Capacity			
Define surge capacity for your organization: maximum caseload, scope of services, length of treatment			
Identify actions to increase surge capacity, including lodging for additional staffing			
Identify which staff will be available to the facility during a disaster			
Communicate plans with local healthcare facilities regarding scope of service and facility ability to deal with surge			
Develop condensed admission requirements (state-specific requirements should be researched prior to disaster)			
Develop and maintain patient tracking system			
Staff			
Develop disaster orientation program for all staff			
Establish a continuing all-hazard education schedule			
Compile and maintain a current list of staff emergency contact numbers			
Establish protocols for communication of staff with office/supervisors			
Develop/establish altered job descriptions/duties identified for each discipline			
Instruct and assist staff to develop personal/family disaster plans			
Plan for food, lodging, transportation, fuel, and mental health resources for employees in need in the recovery phase			

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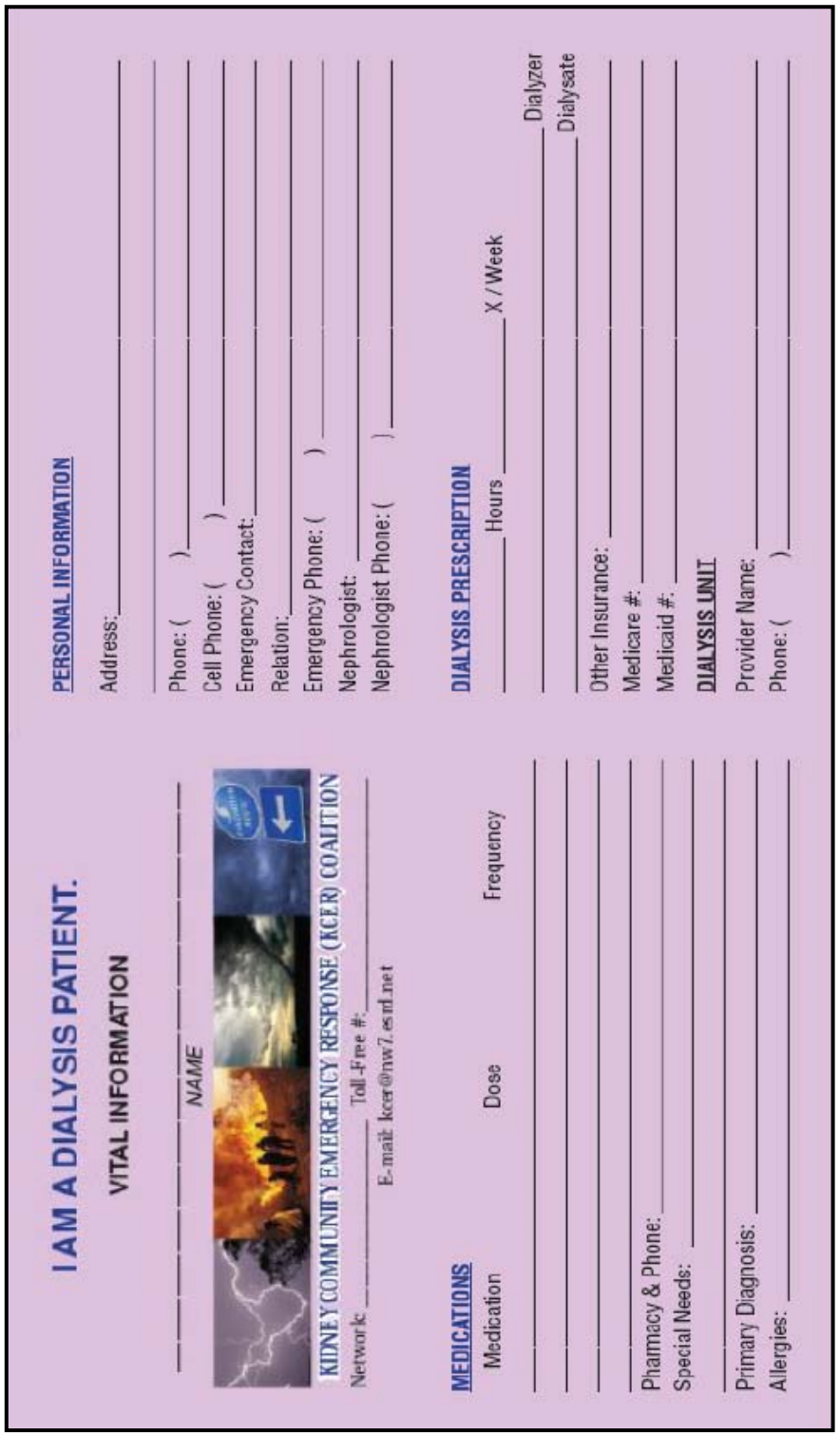
	Date Completed	Date Reviewed	Name/Title of Individuals Responsible for Completion
Patient Education			
Provide educational materials to assist patients in preparing for emergencies and to provide self-care if organization personnel are not available (where applicable)			
Ensure patients are informed of local/state evacuation plan, back-up facility and alternate facility number			
Instruct and assist patients to develop personal/family disaster plans			
Ensure patients are informed of the potential for care to be delayed or unavailable in a disaster			
Review emergency take off procedure (clamp and cap)			
Transportation			
Develop plans for transportation interruptions and road closures			
Arrange alternate transportation plan (include plans for patients and staff)			
Develop plan for gasoline allocation			
Identify gas stations that can operate during power outages			

Appendix G - Patient Identification Card

A lavender Patient Identification Card example is provided below. To download and print these cards, visit www.kcercoalition.com.



Appendix H - Sample Facility Preparedness Questionnaire

On a scale of 1 to 5 (1= not prepared, 5=very prepared), how prepared do you feel your facility and patients are for a disaster?	1 2 3 4 5
On a scale of 1 to 5 (1 = not prepared, 5=very prepared), how prepared do you think you are, personally, at home?	1 2 3 4 5
Are any of the facility staff planning to evacuate?	YES NO
If so, have their evaluation plans and location of their evacuation site been documented and shared with management?	YES NO
Does the facility have a disaster manual?	YES NO
Do you know the personal plan of each patient (e.g., evacuate to a shelter, leave the area, or remain in their home)?	YES NO
Is there a designated shelter in your area for dialysis patients?	YES NO
Do the patients have instructions regarding the emergency renal diet (3-day disaster diet)?	YES NO
Were the instructions given verbally?	YES NO
Were the instructions given in writing?	YES NO
Is there a plan in place to provide patients with a copy of their most recent treatment orders, medication lists, and care plans before a disaster?	YES NO
Have patient contact lists been recently updated?	YES NO
Have patient allergy and medication lists been recently updated?	YES NO
Does the facility have a plan for contacting patients both before and after a disaster?	YES NO
Is there a designated person in the facility responsible for contacting patients?	YES NO
Is there also a back-up person for this role?	YES NO
Does the facility have a designated backup facility?	YES NO
If so, do both patients and staff know the name of the facility's name and location?	YES NO
Do the patients know how to contact the facility/backup facility post-disaster?	YES NO
Are there plans in place for protection of both medical records and equipment/building?	YES NO
Is the facility aware that the local ESRD Network and State Survey Agency should be contacted following a disaster and provided an update on the facility status (open/closed), damage, and special needs?	YES NO
Is staff aware of how to contact the local ESRD Network and State Survey Agency?	YES NO
Does staff have appropriate identification/documentation to travel in the event of a curfew? (Don't forget about new hires.)	YES NO
Do patients have identification as dialysis recipients?	YES NO
Have arrangements been made for staff housing, fuel, or food post-disaster?	YES NO
Is there a designated staff person to assess damage post-disaster?	YES NO
Are all attending physicians aware of the facility's disaster plan?	YES NO
Does the facility have a disaster phone tree?	YES NO

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Does the Medical Director know who to contact in the event the facility's telephones are inoperable?	YES	NO
Does the local ESRD Network have your emergency contact numbers?	YES	NO
Are arrangements in place to obtain additional supplies?	YES	NO
Does the facility have written disaster standing orders for each patient?	YES	NO
Does the facility have a non-electric phone available?	YES	NO
Does the facility have a recently serviced generator?	YES	NO
Is the tank full?	YES	NO
Does the facility have an agreement to obtain a generator and know how soon it could arrive?	YES	NO
Does the facility have an agreement with a company to ensure a fuel supply for the generator after a disaster?	YES	NO
In the event that a generator is not available or is not operable, are the staff and patients familiar with the hand-cranking procedure?	YES	NO
Were the patients recently trained on this activity?	YES	NO
Does the facility have appropriate and up-to-date water testing materials?	YES	NO
Are there alternate staff at the facility who know how to do water testing?	YES	NO
In the event there is no water supply for the city, does the facility have the means to hook up a	YES	NO
Is an agreement in place for obtaining potable water after a disaster?	YES	NO
Does the facility have a plan for securing refrigerated medications?	YES	NO
Have provisions been made for infectious waste?	YES	NO

Appendix I - Sample Patient Preparedness Questionnaire

On a scale of 1 to 5 (1= not ready, 5= very ready) do you think you are ready for a disaster?	1 2 3 4 5
Has anyone from your clinic given you information about disasters? If so, what have you received?	YES NO
Do you have a disaster kit at home? If so, what is in the kit?	YES NO
Do you have a supply of medications to use in emergencies?	YES NO
Do you know about the emergency renal diet (3-day disaster diet)? What are the things you aren't supposed to eat or drink?	YES NO
Do you know how to hand crank your machine if the power goes off? Describe the process.	YES NO
In an emergency could you take yourself off the machine? Describe the process.	YES NO
If you had to evacuate from your home, would you go to a shelter?	YES NO
Do you know that shelter's location?	YES NO
Do you know if there is a shelter that is special for dialysis patients?	YES NO
Are you registered at that shelter?	YES NO
Have you thought about leaving the area? If so, where would you go?	YES NO
If you have pets, do you know what you would do with them in a disaster? If so, what is your plan?	YES NO
Do you have a way to get to treatment if the transportation you usually use isn't available? If so, what is your plan?	YES NO
Has your clinic given you phone numbers so that you can contact someone to set up treatment after a disaster?	YES NO
Do you know how to find a dialysis facility if yours is closed? How would you do this?	YES NO

Appendix J - Sample Quality Improvement Plan

Problem or Process to Improve	Measure	Baseline Result	Root Cause(s)	Action(s) and Person(s) Responsible	Goal(s)	Time Frame	Evaluation Process
Measure identified for improvement.		*Enter the baseline (current) result for measure including date and %.*	*Enter cause(s) that have been identified by your facility that contribute(s) to the facility's current performance rate. (Enter each cause on a separate line below).*	*For each identified cause, describe the action step(s) the facility will use to achieve improvement. Indicate who in your facility is responsible for each action step.*	*Enter the goal to be achieved including date (e.g., "To improve our baseline of % to ___% by ___.*	*For each action step, indicate the beginning date (date action step was started) and the end date (date action step to be completed).*	*Describe how the facility will continuously evaluate each action step taken to see if improvement is being achieved. (e.g., tracking tools, meetings, monitoring) Include who will be responsible for evaluation and compliance.*
Dialysis facility staff unaware of disaster plans for nursing home patients, and no documentation of plans in patient chart.	The percentage of nursing home patients with documented disaster plans. **Numerator:** # of nursing home patients with documented plan **Denominator:** Total # of nursing home patients	Only 3 out of 8 nursing home patients had disaster plans documented in chart (38%).	Infrequent communication with nursing homes. No assigned staff member to obtain and document information from Nursing Home.	Use Quarterly Update Tool to document nursing home plans. Social worker will be responsible for reviewing and documenting contact with Nursing Home and disaster plans.	To increase percentage of disaster plans for nursing home patients documented in patient chart to 90%.	Begin: 9/1/11 End: 12/1/11	The social worker will conduct follow-up audit of charts for nursing home patients in December to determine progress. If goal not met, the social worker will review and revise actions.

Date QIP Developed: _____

Facility: _____

Appendix K - Drill Critique Form

Date: _____ Critique Completed By: _____

Time Drill Began: _____ Time Drill Completed: _____

Communications		
Was the disaster signal heard in all areas?	YES	NO
Was the Fire Department notified (simulation)?	YES	NO
If YES, time of notification:		
Evacuation Team Personnel		
Did team members report to their assigned areas?	YES	NO
Did team members carry out all assigned duties?	YES	NO
If applicable, were the elevators brought to the main lobby and deactivated?	YES	NO
Were evacuation techniques demonstrated?	YES	NO
Containment of Fire		
Were all doors closed but not locked?	YES	NO
Were all windows closed?	YES	NO
Was a fire extinguisher taken to fire location (if applicable)?	YES	NO
Patient Education		
Was emergency take off demonstrated?	YES	NO
Was there a previous review of *Preparing for Emergencies: A Guide for People on Dialysis* and the emergency diet?	YES	NO
Communication Procedures		
Was contact information current?	YES	NO
Were key phone numbers available and distributed?	YES	NO
Evacuation/Relocation		
Were corridors and exits clear?	YES	NO
Did the evacuation proceed in a smooth and orderly manner (simulated)?	YES	NO
Did visitors to the building take part in the drill?	YES	NO
Utilities (Simulated)		
Were electric and gas appliances turned off?	YES	NO
Was the ventilation system shut down?	YES	NO
Was the oxygen valve shut off?	YES	NO
Were all water treatment machines and other ancillary equipment shut off?	YES	NO
Availability of Emergency Packs		
Were the emergency packs complete and all supplies in-date?	YES	NO
Were the emergency packs accessible to staff and patients?	YES	NO

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Contaminated Water		
Dialysate into bypass (simulated)?	YES	NO
Was the water shut off (simulated)?	YES	NO
Was ascorbic acid available for chloramine breaking through the carbon tanks?	YES	NO
Hazardous Spills		
Were spill kits available?	YES	NO
Were ANSI respirators with appropriate filters available?	YES	NO
Remarks and Recommendations		

Appendix L - Drill Attendance Roster Form

Drill Date: _____ Scenario: _____

ANNOUNCED or UNNANOUNCED (circle) Drill Conducted By: _____

Staff Participating	Title

Patients Participating	

Appendix M - Disaster Drill Evaluation and Action Form

Area for Improvement	Facility Action	Who is Responsible	By When	Others Needed	Specific Resources Needed	Status/ Outcome

Appendix N - Emergency Equipment/Supply Record

Facility: _____ Requested By: _____

Date	QTY	Items/Description/Serial #	Received By

Approved By: _____ _____ _____
(Signature) (Printed Name) (Date)

Appendix O - Emergency Dialysis Patient Record

Facility: _____	Date: _____
Name: _____	Physician: _____
Address: _____	City/State/ZIP: _____
Social Security Number: _____	Phone Number: ( )
Medicare? □ Yes □ No	Other Insurance: _____
Contact Person: _____	Relationship: _____
Address: _____	City/State/ZIP: _____
Phone Number: ( )	Usual Dialysis Facility: _____

Treatment Modality (Check One):	□ Hemo □ CAPD □ IPD □ CCPD □ Transplant

Treatment Log

Date	Services Provided	Observations/Notes	Staff Name

Appendix P - Dialysis Treatment Supply Checklist

Use the following guide to help you determine what supplies are necessary to dialyze patients.

Product	Description	Quantity
Master list of patients		
Alcohol wipes		
Basic/comprehensive first aid kits		
Blood pressure cuff		
Catheter caps		
Clamps		
Dialysate Bicarbonate Concentrate		
Dialysate Acid Concentrate		
Dialysis tubing A & V		
Dialyzers		
Fistula needles		
Gloves (latex)		
Gloves (vinyl)		
Heparin		
IV infusion lines		
Normal saline, 0.9%		
Writing pens		
Port caps		
Povidine iodine		
Power adapters		
Standard treatment packs (or supplies needed if packs not used)		
Stethoscope		
Syringes with needles		
Tape		
Thermometer		
Transducer protectors		
Treatment forms		
Xylocaine		

Appendix Q - Emergency Succession for Decisions

Use this form to designate individuals in charge during a disaster. Instruct staff that if the first person is not present or available, they should go to the next person listed. Determine the appropriate contact order for your senior staff including the Medical Director, charge nurse, technicians, social workers, and dietitians.

Name/Position	Email Address	Business Phone	Cell Phone	Home Phone	Pager

Appendix R - Sample Public Service Announcement (PSA)

Use this sample PSA as a starting point and adapt it to meet the facility and patient needs. Complete SHADED areas to customize your PSA.

Introduction

This is an announcement from FACILITY NAME , located at FACILITY STREET ADDRESS .

To Our Employees

DO/DO NOT report to work.

Our Dialysis Center is temporarily OPEN/TEMPORARILY CLOSED.

Facility Staff should report to LOCATION WHERE STAFF SHOULD REPORT .

To Our Patients

Our Dialysis Center is OPEN/CLOSED TEMPORARILY.

You SHOULD REMAIN AT HOME UNTIL WE NOTIFY YOU TO COME IN or SEEK DIALYSIS AT AN ALTERNATE CENTER.

Follow the emergency renal diet (3-day disaster diet).

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:

Appendix S - Damage Assessment Form

Use this form to list employees responsible for damage assessment.

Considerations for the damage assessment:

- Personal safety first!
- Use professional consultants (structural engineers, fire department, etc) as indicated.
- Use licensed vendors such as electrical and plumbing contractors.

Staff Person	Tasks	Telephone

Team Title	Team Member	Telephone
Structural Engineer		
Plumber		
Electrician		
Generator Vendor		
Fuel Supplier		

Appendix T - Record for Temporary Disaster Staff Members

Facility: _____ **Date**: _____

Name: _____ **Professional Title**: _____

Address: _____ **City/State/ZIP**: _____

Social Security Number: _____ **Phone Number**: _____

Professional License Number: _____ **State of Licensing**: _____

CPR Certified? YES / NO

Usual Facility of Employment: _____
(Name) (City/State)

Authorized By: _____ **Date**: _____

Date(s) Worked	Inclusive Hours Worked

Approved By: _____ **Date**: _____

Appendix U - Volunteer Management Log

Facility: _____ **Date**: _____

Volunteer Name: _____ **Affiliation**: _____

Address: _____ **City/State/ZIP**: _____

Phone Number: _____ **Skills**: _____

Date	Inclusive Hours Worked	Tasks Performed

Approved By: _____ Date: _____