Responding to Natural Disasters and Geopolitical Conflicts

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Dialysis patients are at particular and added risk during natural disasters and armed conflicts. Infrastructure breakdowns, lack of clean water, and closure of dialysis centers disrupt critical treatments and jeopardize lives. The Fresenius Medical Care (FME) Global Disaster Response Team (GDRT) has developed protocols that allow them to deploy quickly in times of crisis. The team has extensive experience delivering supplies and medical personnel when and where they are needed worldwide.

For people who need safe and reliable dialysis services, situations such as natural disasters and geopolitical conflict can cause unpredictability and instability. Delivering care without access to critical services like reliable electrical power and clean water requires preparation and coordination. The FME GDRT keeps a close watch on situations where risk can escalate and is prepared to implement a comprehensive response strategy. Several Incident Command Teams staffed by volunteer leaders and managers are available to be dispatched on short notice (24–48 hours) for immediate disaster response. Their activities include arranging resources such as fuel, water, medical supplies, security, and meals to assist local management in restoring facility operations.

Critical components of emergency response efforts may include scheduling treatments outside of routine times and locations, ensuring supply chains remain intact, and maintaining proper hygiene and sanitation standards to prevent infections among people who need dialysis treatment, who are inherently more susceptible. During these crises, psychological support services are also critical, to help patients navigate associated stress and trauma.

A systematic literature review describes various effects of disasters on people undergoing dialysis treatment. Disruptions in dialysis care from loss of electricity, lack of clean water, blocked roads, lack of transportation, and closure of dialysis centers can lead to missed or shortened dialysis treatments. The clinical consequences can include increased emergency department visits, hospitalization, and mortality. Other reported effects include psychological repercussions, as disasters can cause or worsen depression and post-traumatic stress disorder. Moreover, during disasters, people who need dialysis treatment may encounter significant challenges. For example, relocation, if required, may result in prolonged periods away from family and social support networks. Supply shortages can lead to a lack of vital medical supplies and health care workers may not be available. The authors emphasize the importance of disaster preparedness for dialysis units.[1]

The role of peritoneal dialysis (PD) during natural disasters and conflicts has been highlighted in several publications.[2,3,4] The advantages of PD include simplicity, since manual PD exchanges can be done without electrical power and do not require a water supply. The ability to perform treatment at home reduces reliance on transportation to dialysis facilities. According to Auguste,[2] future disaster preparedness strategies should aim to increase the adoption of PD and consider it as an initial modality for replacement therapy for end-stage kidney disease (ESKD) patients in high-risk regions.

Children who require dialysis need specialized treatment and care, particularly in the context of natural disasters and conflict. Children with kidney conditions often have unique medical needs that must be addressed with sensitivity and expertise. During emergencies, ensuring the safety and well-being of children requiring specialized kidney care becomes even more critical due to their heightened vulnerability. Children who require hemodialysis (HD) may be at greater risk than adults on HD due to the limited availability of pediatric-sized equipment and personnel with pediatric dialysis experience. Additionally, children are usually less able to tolerate missed dialysis sessions.[5]

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FME has responded to many emergencies related to natural disasters and geopolitical conflicts in the last five years. Specific examples of FME's response are described below.

Natural Disasters and Phenomena

NORTH AMERICA

In **September 2022**, Hurricane Ian, a Category 4 storm, was predicted to make landfall in Tampa, Florida. The storm took an unexpected turn, heavily damaging and disabling power for more than two million homes and businesses in southwestern Florida. Two DRT Incident Command Teams were deployed within 48 hours along with fuel and water tankers, food, supplies, and security personnel, to assist with reopening clinics and locating those who needed care. As a precautionary measure, Fresenius Kidney Care (FKC) closed 107 clinics in Central Florida and, within three days, all but one were open and all staff and patients were accounted for.

In **August 2023**, a Category 4 hurricane in the Pacific Ocean collided with another wind event to knock down power lines in Lahaina, Maui, igniting drought-stricken sugar cane fields into a wildfire. The fire ultimately destroyed the entire Lahaina community, affecting every resident.

While the FKC Kahana clinic outside Lahaina suffered little damage, in the aftermath of the fire, people could not access the facility. Another independent dialysis facility in Lahaina was heavily damaged, resulting in service interruption for 80 residents of Lahaina who required dialysis treatment. An FKC facility in Maulana, 20 miles from Lahaina, was able to open an additional shift and accommodate everyone in Lahaina.

As a testament to the teamwork and resilience of the FKC staff in Maui, all the people who were receiving treatment at the Kahana clinic were located within three days and received their required treatments the week of the fire. Nine people on home peritoneal dialysis (PD) who were without power switched from continuous cycler peritoneal dialysis (CCPD) to continuous ambulatory peritoneal dialysis (CAPD) and performed manual exchanges until power was restored. Three people on home hemodialysis (HD) converted to self-contained training packs (Express Packs) when the local water supply in Lahaina was reported as contaminated with cobalt, lead, and other materials, making it unusable for in-center and home HD. Express Packs do not require the introduction of a local water supply to complete the process. People with Kidney Community Emergency Response (KCER) ID cards identifying them as on dialysis were permitted to travel to the clinic in Maulana for treatment and return home without restriction. Water supplies in Maulana and Kahana were not contaminated.

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When clinics in southern Brazil were without road access, helicopters delivered essential dialysis supplies.

Local FKC leadership, in cooperation with the Hawaii Emergency Healthcare Management (HEHM) coalition, were able to provide the names of all their staff and people on dialysis to the authorities, allowing them priority access through Lahaina. HEHM also allowed the technical teams access to the Kahana facility to prepare the clinic for operations. FKC's GDRT shipped 100 fleece blankets to the centers and arranged hotel rooms for staff.

On **April 8, 2024**, the Great Northern American Eclipse covered a swath of North America from Mexico to Canada. Previous experiences with solar phenomena have seen impassable road congestion caused by eclipse enthusiasts, impacting the ability of emergency responders to access FKC clinics. More than 100 clinics in the path of totality were asked to close or alter operating hours to allow those needing to dialyze to do so in advance of the eclipse.

EUROPE, MIDDLE EAST, AND AFRICA (EMEA)

In **February 2023** Turkey experienced its deadliest earthquake in modern history, at 7.8 magnitude, and the deadliest worldwide since the 2010 earthquake in Haiti. An area about the size of Germany suffered widespread damage, and about 1.5 million people were left homeless.

FME operates more than 40 dialysis clinics in Turkey, two of which did not survive the earthquake. In the first week after the earthquake, in our effort to maintain access to care under these circumstances, we contacted all people on dialysis under our care to assess their status.

Fifty-five percent of people on dialysis in the earthquake zone were actively on home HD. Many of them had to stop this therapy for a variety of reasons, including extensive damage to their homes, the need to relocate, and lack of clean water, resulting in a high number of missed treatments across these clinics. Further research is needed to determine if people on home HD have a higher probability of complications or mortality due to shortened sessions during extended periods of uncertainty.

LATIN AMERICA

In **May 2024**, the GDRT responded to flooding in Rio Grande do Sul, Brazil. When record-breaking rainfall broke flood barriers, a FME Brazil Crisis Committee was created to work with the Brazilian Association of Dialysis and Transplant Centers to discuss solutions and negotiate support for access to dialysis care.

After establishing logistical support with the city's fire department and military forces, the Crisis Committee arranged to send essential goods for people on dialysis. All vehicles carrying medicines for dialysis clinics were labeled externally with this information to allow them to pass unencumbered.

ASIA PACIFIC

The many islands in the Asia-Pacific region face heightened vulnerability to natural disasters, which can disrupt hemodialysis services and lead to adverse effects for patients, similar to those discussed above.[6] For example, in May 2023 Super Typhoon Mawar disabled the power grid to all of Guam. All six of Guam's FKC clinics are equipped with generators, but three sustained storm damage. To assist with the recovery, GDRT arranged for more than 150 volunteers to engage in two-week assignments.

Members of the Brazilian Civil Defense team received Fresenius Medical Care dialysis supplies to be helicoptered to an area completely isolated by flooding.

Geopolitical Conflicts

Armed conflicts also disrupt medical care for people on dialysis, leading to missed treatments and an increased risk of infections, hospitalization, and death. Insecure environments hinder access to healthcare, exacerbating the vulnerability of those who require care. Psychological support is essential amid the trauma of conflict. Advance preparation is needed to ensure access to care, protect patients, and provide comprehensive support in conflict zones.[3,7,8,9,10,11]

Insecure environments hinder access to healthcare, exacerbating the vulnerability of those who require care.

In Brazil, owners of private planes volunteered to deliver essential dialysis supplies to an isolated region. Members of the military unloaded the planes after a 120-minute flight.

As a recent example, on **February 24, 2022**, foreign troops entered the territory of Ukraine. Before the war, the FME dialysis network in Ukraine operated three medical centers, providing hemodialysis therapy to 349 people with ESKD.[12] In addition, FME Ukraine delivered medical and dialysis supplies to almost all regions of Ukraine. The war imposed a significant burden on these frail, high-risk patients. Now in its third year, the war in Ukraine is causing immense suffering for its dialysis population and, at times, has called for heroic efforts from clinic staff.

FME leadership in coordination with the Ukraine Army arranged to have a train available for evacuation out of Kharkiv if the safety of the patients and staff becomes untenable. Guaranteeing dialysis treatment has been and remains an enormous challenge in Ukraine, and we are confident that the generosity and the courage of our dialysis staff in Ukraine, along with international aid, will help to mitigate this suffering.

In summary, natural disasters and geopolitical conflicts may jeopardize patient safety and treatment availability. Each day presents new opportunities for FME to prioritize the health and safety of the people on dialysis who entrust them with their care. Preparation is essential to provide timely and reliable care, access to essential medications, a clean and safe treatment environment, and psychological support in highly unstable situations. Organized and effective responses to natural disasters and geopolitical conflicts can significantly improve outcomes and quality of life for people who need kidney replacement therapies.

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When flooding made it impossible to unload supplies at the warehouse, local transportation companies took over and delivered dialysis products to cities in the Brazilian state of Rio Grande do Sul.

Robert P. Loeper
Vice President, Business Continuity & Disaster Response
Care Delivery

Bob leads the National Accounts Department for FME which provides contracted services for all FME facilities. Bob also serves as FME's Incident Commander and conducts emergency response training throughout the year for facility operation managers and Medical Directors. During his more than 35 year career with FME, Bob has managed dialysis facilities as an Administrator, Area Manager, and Regional Vice President in Georgia, Alabama, Florida, and Puerto Rico. Prior to his current role, he served as President of FreseniusRx from 2009–2012.

Bob was President of the Florida Renal Association (FRA) from 2005 to 2012 and currently is Legislative Chair for FRA. His leadership resulting in increasing the Florida Medicaid ESKD reimbursement for outpatient dialysis facilities, establishing a Chronic Kidney Disease / ESKD Advisory Committee with the Florida Agency for Healthcare Administration, obtaining direct outpatient reimbursement for renal IV pharmaceuticals, and helping secure legislation to allow Medi-gap coverage for all Florida Medicare beneficiaries under age 65. Bob served on the Board of Florida's Medicare Quality Improvement Organization (Florida ESKD Network 7) and the Board of the National Kidney Foundation of Florida (NKFF) for nine years. He was awarded the NKFF President's Award in 2006 and became a NKFF Honorary Trustee in 2007.

Bob earned a Bachelor of Science in Healthcare Administration from Penn State University and an MBA from Georgia State University. He is a certified Project Management Professional.

Dr. Adrián Guinsburg
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Dr. Guinsburg is the Chief Clinical Officer for FME in EMEA, overseeing Clinical Governance and Country Medical Directors in the region. He is a nephrologist who graduated from the School of Medicine in Universidad de Buenos Aires, Argentina, with a postgraduate formation in epidemiology in the School of Public Health, University of Michigan.

Dr. Guinsburg joined FME in 1997 as Medical Director and developed and managed the first regional clinical database across Latin America (EuClid Database LatAm). Most recently he served as Chief Clinical Officer and Head of Clinical Quality and Medical Governance for FME in Latin America, leading clinical, scientific, research, and Continuous Quality Improvement programs across the region. He is involved in clinical research as a Regional Coordinator for third-party clinical trials, with more than 15 years of experience as a Principal Investigator in phase 2, 3, and 4 studies in the renal domain. He has presented at more than 50 scientific conferences and has over 20 indexed publications in journals.

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