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Natural Disasters and Dialysis Treatment

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Abstract

Following Hurricane Katrina's devastation of New Orleans in 2005, the influence of natural disasters on the supply of dialysis services has gotten more attention in the previous decade. Earthquakes, tsunamis, typhoons (also known as cyclones and hurricanes), storms, and flooding are all extremely dangerous in the Asia-Pacific region. These incidents can substantially disrupt haemodialysis services, resulting in missed dialysis, increased hospitalisation, and post-traumatic stress disorder for patients. Furthermore, haemodialysis patients may be required to relocate and may be separated from their families and social supports for extended periods of time. In contrast to haemodialysis, most research suggests that peritoneal dialysis is easier to maintain and support in a catastrophe situation. It has become clear that dialysis units and patients should be prepared for a disaster, and that proper planning would result in less uncertainty and negative effects in the event of a disaster. A variety of materials are now available to help dialysis units, patients, and staff prepare for a potential tragedy.

Keywords: Dialysis • Disaster • Earthquake

Introduction

Asia had more natural disasters than any other region in the globe between 2003 and 2012, with more victims (81.5 percent of the global total) and more damage. In the preceding decade, China, Indonesia, the Philippines, and India were among the top five countries to experience natural disasters. In the future, as Asia's population becomes more urbanised, disasters will affect more people and cause greater damage. Although some forecast increasing frequency and severity of occurrences in the East Asia region as a result of climate change, the influence on the South Asian summer monsoon and tropical cyclone intensity remains unknown. Even if climate change does not occur, future gains in income will quadruple the damage caused by tropical cyclones.

The supply of dialysis to persons with end-stage kidney disease is severely harmed by disasters. Because of rising dialysis use, a growing and older population, and possibly higher storm frequency and severity, disasters will have a greater impact. As a result, it is critical that dialysis units prepare for a crisis [1].

Literature Review

Earthquakes

Earthquakes result in immediate mortality, but they also result in severe medical and surgical situations in the aftermath, particularly when infrastructure such as hospitals and transportation routes is destroyed or damaged. Furthermore, earthquakes strike without notice, making last-minute planning impossible.

Earthquakes may result in two distinct patient populations for renal services to manage: those with crush injuries and acute kidney injury (AKI), and those on chronic dialysis who have been impacted by personal injury or damaged infrastructure. The Taiwan Chi-Chi earthquake in 1999, for example, had a significant influence on dialysis provision across the Asia-Pacific area. The Hanshin (Kobe) earthquake in 1995, and the Kashmir earthquake in Pakistan in 1995 [2]. The bulk of deaths occur shortly after an earthquake as a result of enormous trauma or asphyxiation, although confinement under collapsed structures causes crush syndrome and AKI. Following the earthquake in Kobe, an estimated 5% of hospital admissions at one facility had crush syndrome, while nearby dialysis units and emergency help centres offered acute dialysis to 180 individuals. After the Chi-Chi earthquake, a survey found 95 cases of rhabdomyolysis, 52 of which had AKI and 32 (33.7 percent) of which required dialysis. Crush injury care is covered in depth elsewhere19, and includes early aggressive fluid resuscitation and dialysis. In any disaster, haemodialysis for maintenance dialysis patients may be impacted due to loss of power, inadequate supply of clean water, staff or disposable equipment shortages and disruption of transportation [3,4]. As a result, some have suggested that PD is a better option in disaster-prone regions.

The most of deaths occur shortly after an earthquake as a result of enormous trauma or asphyxiation, however confinement under collapsed structures can lead to crush syndrome and AKI. After the Kobe earthquake, an estimated 5% of hospital admissions at one facility had crush syndrome, while nearby dialysis units and emergency help centres offered acute dialysis to 180 individuals. Following the Chi-Chi earthquake, a survey found 95 cases of rhabdomyolysis, 52 of which had AKI and 32 (33.7 percent) of which required dialysis. Crush damage treatment is covered in depth elsewhere19, and includes early aggressive fluid resuscitation and dialysis. Following a disaster, the first responsibility is to guarantee the safety of employees, patients, and the facility [5]. If a calamity strikes while patients are having haemodialysis, assess the situation first and then contact for emergency help.

Management in the disaster

Protect individuals who are in danger by performing a "clamp and cap" method to withdraw patients from haemodialysis. If no immediate risk exists and power is lost, hand cranks the blood pump before clamping and capping the lines. Following facility procedures, evacuation to a designated safe place should be followed by a head count. Staff should not return to a damaged building until it has been determined that it is structurally sound and free of risks. It is necessary to retrieve the 'emergency box,' which contains important patient and staff information.

The disaster plan for the dialysis centre should be implemented, and the most senior staff member present should be put in command. Early on, a

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situation assessment should be performed to assess patient and staff injuries, as well as dialysis unit damage. A command centre should be constructed to enable for contact with other emergency workers, infrastructure damage assessment, staff availability determination, and patient needs evaluation. News reports, weather reports, and reports from government disaster agencies must all be continuously monitored. It must be decided whether haemodialysis can continue in the facility or if patients must be evacuated to other dialysis facilities. Patients will need to be contacted and other dialysis sites will need to be set up if the machine isn't working. Patients will need to know when they will be seen, staff will need to be rostered, and supplies may need to be supplied if the dialysis unit is operational. Patients are likely to be worried, have various medical issues, and be without medication or sufficient shelter when they arrive. External help should be sought as soon as possible [6]. This could be due to nearby dialysis centres or renal networks. The International Society of Nephrology Renal Disaster Relief Task Force is ready to lead in the event of a major disaster. This organisation was founded in the aftermath of Armenia's 1988 Spitak earthquake and has since aided in several catastrophes.

Discussion

Recovery

A tragedy could have long-term ramifications for patients and workers. Following Hurricane Katrina, 23.8 percent of dialysis patients developed symptoms of Post-traumatic Stress Disorder (PTSD), while another 18.4 percent had partial PTSD. In addition, 45.5 percent of the patients surveyed had depressed symptoms. After the Asian tsunami of 2004, 14.2% of the population in India and 25.9% of bereaved survivors (not just dialysis patients) suffered from chronic grieving disorder. Social workers employed cognitive behavioural therapy after Hurricanes Katrina and Rita to enhance overall health, social functioning, and depression ratings [7].

It is critical to learn from disasters in order to improve future preparedness. The Japanese Association of Dialysis Physicians, in partnership with the Japan Association for Clinical Engineering Technologists, maintains an information-sharing system that has been used in at least 11 disasters and aids in investigation, research, education, and crisis management [8].

Conclusion

It is critical to learn from disasters in order to improve future preparedness. The Japanese Association of Dialysis Physicians, in partnership with the Japan Association for Clinical Engineering Technologists, maintains an information-sharing system that has been used in at least 11 disasters and aids in investigation, research, education, and crisis management. Natural disasters are common and unpredictably unpredictable. The Asia-Pacific region is at a higher risk than the rest of the world, and disasters will have a greater impact in the future. It is vital to plan and prepare dialysis facilities and patients, particularly taking into account dialysis modality. In times of disaster, the kidney community has proved its ability to work together for the best possible outcomes for patients.

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None.

Conflict of Interest

There are no conflicts of interest by author.

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