Physical Medicine & Rehabilitation: International Response to Disaster

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Natural and man-made disasters loom throughout the world. Hurricane Katrina reminded Americans of this in 2005, bringing death and destruction to the residents of New Orleans, Mississippi and the Gulf Region. The world had barely recovered from the tsunami in South Asia and East Africa as well as the cataclysmic earthquakes in Turkey and Pakistan when Hurricane Katrina vengefully hit American shores.

In the Philippines, the residents of Metro Manila experienced what were probably the worst floods in decades from Typhoon Ondoy in 2009. The onslaught from this typhoon submerged houses, establishments and vehicles, and caused drowning, electrocution, and other serious injuries to many people, as well as delayed evacuation and rescue. In the past, there have been other calamities – from landslides, earthquakes, volcanic eruptions, and sea mishaps, to building infernos and stampedes, terrorism and massacres displacing communities in armed conflict areas. These natural and man-made disasters that hit the Philippine archipelago were no different from disasters elsewhere in the globe.

When disaster brings death and destruction, often times disability among the survivors follows. How do we, as physical medicine and rehabilitation (PM&R) specialists, respond to disaster?

As first hand observers of the effects of disaster, PM&R professionals play a meaningful leadership role in the rehabilitation recovery effort. This paper will share the collective reflections and observations of the authors on this important topic. There are lessons to be learned about rehabilitation's vital role in international disasters and its unique opportunity as a specialty to make a difference through global team-work and collaboration.

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Hurricane Katrina and Operation Functional Recovery: Background and Timeline

Within days of Hurricane Katrina, Dr. Mark Young and Dr. Bryan O'Young (both members of the International Society of Physical and Rehabilitation Medicine (ISPRM), with Dr. Young also as chairman of the ISPRM International Exchange Committee) were personally contacted by the U.S. government to lead a national humanitarian effort to set up a unified rehabilitation response that would address the medical and therapeutic needs of Katrina's survivors. Persons with disability - especially those in wheelchairs - chronic care facilities, and nursing homes were in dire jeopardy. Working closely with Professor Mathew Lee, Chair of the Department of Rehabilitation Medicine at the Rusk Institute of Rehabilitation Medicine, New York University (NYU) Medical Center in New York, Louis Levine, Dr. Stanley Kornhauser and Howard Rusk, Jr. of the New York College of Podiatric Medicine, as well as other institutions and professional organizations, the team labored furiously to assemble a rehabilitation-focused disaster response team composed of concerned and skilled interdisciplinary rehabilitation professionals. With the encouragement of Dr. Margaret Gianinni, Director of the Office of Disability for United States Health and Human Services Department and the U.S. Surgeon General's Office, the group was able to rally the support and active participation of the rehabilitation community. Named, "Operation Functional Recovery" (OFR), its humanitarian efforts centered on addressing the unique rehabilitation needs Hurricane Katrina survivors faced in the aftermath of the destruction.

Rehabilitation volunteers were dedicated groups of men and women who pledged a willingness to serve both in the Hurricane-torn Gulf Region performing clinical relief tasks as well as in their hometowns assisting with administrative and logistical details. Recognizing the vast reach of the specialty, Dr. Young organized this gargantuan team-building effort around six fundamental "core competencies" and assigned the Operation Functional Recovery Volunteers Groups to one or more of these areas based on their declared interest and proven aptitude: 1) Skin and Wound Management, 2) Neurological Rehabilitation, 3) Geriatric Rehabilitation, 4) Pediatric Rehabilitation, 5) Pain Management, and 6) Psychological Rehabilitation. Our

initial call to action was disseminated in the journal *Advance for Directors in Rehabilitation* in September.[1]

"Operation Functional Recovery": A Retrospective Review

Since the inauguration and implementation of Operation Functional Recovery, over 915 volunteers from across the rehabilitation spectrum including physiatrists, physical therapists (PT's), occupational therapists (OT's), speech and language pathologists (SLP's), nurses, orthotists and prosthetists, nutritionists, psychologists and others have enlisted with OFR to meet the emerging functional and rehabilitation needs of Katrina survivors. Generous offers to volunteer have not been limited to the United States but have come from around the world, including Holland, Canada, Israel, Cuba, Portugal and Turkey.

Pre-Deployment Rehabilitation Planning and Ground Work

In preparation for the humanitarian ground efforts, OFR has held multiple planning and tactical meetings to assure a true team response. The inaugural meeting took place on Friday, September 15th, 2005 chaired by Dr. Young. Participants in the teleconference included ranking representatives of major rehabilitation organizations, including the American Academy of Physical Medicine and Rehabilitation (AAPM&R), the American Physical Therapy Association (APTA), the American Occupational Therapy Association (AOTA), the Association of Speech-Language Pathologists and Audiologists (ASLPA), the American Podiatric Medical Association (APMA) and the National Institute for Electromedical Information (NIEI).

On September 18, at the New York College of Podiatric Medicine, in Harlem, New York, a follow-up regional planning meeting chaired by Drs. Young and O'Young was held. Deployment plans and a blueprint for cross-disciplinary rehabilitation collaboration were drawn.

Many other OFR activities have since taken place. Individual pre-conference briefings were held with regional pain management authorities including Dr. Andrew Fischer and Dr. David Siegel on the issue of optimizing Pain Management Humanitarian Services for Katrina survivors. Discussions on the establishment of Rehabilitation and Psychology Crisis Telephone Hotlines for Katrina survivors were held with academic leaders in the psychology and disaster management trades. The feasibility of creating an online functional deficit and disability data registry was discussed with rehabilitation informatics specialists. A centralized e-mail portal was created and currently remains operational.

Offers of endorsement and moral support have been widely forthcoming for OFR from all across the rehabilitation continuum. The NYU Medical Center and the Rusk Institute of Rehabilitation Medicine committed multiple resources for Katrina survivors. Many other Commission on Accreditation of Rehabilitation Facilities (CARF) facilities have done the same. Additionally, PM&R resident training programs at the NYU Rusk Institute of Rehabilitation Medicine as well as other leading programs have explored special provisions for displaced Tulane University and Louisiana State University physicians and rehabilitationists-in-training. Offers of endorsement from the Healthy Living Forum and Rusk Without Walls - two non-profit organizations - have been received.

The November Deployment

A deployment of volunteers took place in November 2005 when several of the dedicated interdisciplinary volunteers conducted an on-site needs assessment and a fact finding mission. The advice and recommendations of several of the international colleagues were sought in order to plan an effective mission, since it had only been a few months earlier that some of the ISPRM colleagues had gained first-hand experience with the tsunami and other natural disasters. Despite the difficulty in locating areas of greatest need and obtaining rehabilitation access and clearance within New Orleans and the surrounding Hurricane Belt, the information-gathering and fact-finding mission was successfully conducted in a variety of venues including clinics, hospitals, shelters and assistive living facilities that had been hard hit by Hurricane Katrina. The needs assessment initiative conducted during the November deployment involved the input of several ISPRM members and many interdisciplinary rehabilitation team members. The physical destruction caused by Katrina was evident wherever the PM&R team went.

November Deployment: Observations and Lessons Learned

Although many patients were evacuated from New Orleans and the Gulf region in the early days after the hurricane, there are still many persons with disabilities who remain in the area. Due to the hardship and difficulty associated with the evacuation procedure for people with functional deficits associated with their disability (mobility impairments, visual impairments, communication disorders), a significant number of people elected to stay close to home, rather than relocate.

Existing rehabilitation facilities face a staff crisis due to the mass migration of core staff members out of the area. Services most profoundly affected include rehabilitation support staff such as certified rehabilitation nursing, general nursing, and therapy and physiatric services. Facilities are receptive to hiring new staff to replace lost staff.

Rehabilitation patients with diabetes, peripheral neuropathies, pain and peripheral vascular disease who suffer from chronic wounds have been hit hard by Katrina due to a variety of exacerbating factors including loss of glucometer monitoring devices and suboptimal environmental conditions. Many diabetic patients fled their homes without their protective diabetic footwear and have no shoes to protect their feet. In some circumstances,

mobility deficits have become exacerbated in patients with lower extremity wounds. People have suffered not only physical but also psychological set-backs from the hurricane. Painful chronic conditions have become magnified. People with traditional neurological conditions (stroke, spinal cord injury, multiple sclerosis) continue to face challenges after the hurricane.

Establishment of disability-specific evacuation procedures and guidelines (for future disasters) remains a priority to be addressed by the international rehabilitation community. Rehabilitation's team orientation and philosophy of sharing and caring can make a difference in this disaster and other international calamities. The need for Physical Medicine & Rehabilitation team intervention in the aftermath of the hurricane continues to exist. Continued collaboration among members of the international rehabilitation community during times of crisis will touch the lives of the patients they serve.

The Sichuan Earthquake: The International Physical Medicine and Rehabilitation Response

In May of 2008, China suffered a series of devastating earthquakes resulting in over 370,000 injuries. The Chinese government saw the urgent need for rehabilitation services. International Society of Physical and Rehabilitation Medicine members Drs. Jianan Li and Leonard Li initially advocated for a Chinese team to learn from the leading U.S. institutions and the ISPRM International Exchange Committee members. Drs. Young and O'Young coordinated the visit.

In December, the committee hosted a seven-member medical, architectural and educational planning delegation from China comprising key rehabilitation and government planning officials. Dr. O'Young accompanied the delegation to several prominent rehabilitation institutions and centers of excellence in the USA in order to: 1) gain better understanding of rehabilitation facility function and design to improve construction of treatment facilities, including a dedicated rehabilitation hospital near Chengdu, for victims of the 2008 Sichuan Earthquake and future disasters in western China, and to 2) appreciate the various rehabilitation educational models in the U.S. in order to improve existing Chinese models.

During the visit, members of the ISPRM International Exchange Committee also shared their experience with organizing the rehabilitation response to Hurricane Katrina. Planning recommendations included assembling rehabilitation disaster response teams comprising volunteer physiatrists and other rehabilitation professionals. Additional information is available through the AAPM&R medical education website.[2]

Disaster in the Philippines: PM&R Response

On September 27, 2009, the Philippine Academy of Rehabilitation Medicine in cooperation with the Mubility Amputee Support Group of the University of the Philippines-Philippine General Hospital (UP-PGH) Department of Rehabilitation Medicine and the Physicians for Peace brought food and water to the "Tahanang Walang Hagdanan" (House Without Steps), a Cheshire Home and Vocational Center for Persons with Disabilities (PWDs), which was rendered inaccessible due to neck-deep rainwater. With no mattresses to sleep on, blankets to keep them warm and toiletries to utilize for personal hygiene, urgent call for donations enabled these items to be supplied within 24 hours.

The sudden influx of raging waters left so many wheelchair-borne and prostheses-using residents with broken assistive devices, bruises and open wounds, that a mission for medical-surgical consults with assessment of assistive devices and prostheses-viability was held on October 2, 2009 in cooperation with the UP-PGH Department of Orthopedics. Seventy-five persons with disabilities and their families were provided medical service. The team administered wound-care management to twenty wheelchair-borne, prostheses and assistive device users. Fifteen lower limb amputees were measured for new prostheses and were able to return to work in the first week of November.

Reeling from the renewed physical, functional and psychosocial disabilities Typhoon Ondoy caused persons with disabilities, the Physicians for Peace, in cooperation with the National Anti-Poverty Commission and the Philippine Digital Accessible Information System (DAISY) Network initiated several fora on "Disaster Preparedness for PWDs" in Marikina City, Quezon City and Naga City from October 24 to 26, 2009. The speakers were Mr. Hiyoshi Kawamura (DAISY PWDs Communication for Disaster Prevention Head) and Mr. Martin Aguda (ABS-CBN Disaster Risk Coordinator). The fora focused on educating their audience about protocols of evacuation in a disaster area where the population includes both PWDs and the able-bodied, in order to ensure smooth and successful disaster relief. Various modes for communicating disaster prevention, risk and evacuation, depending on the type of disability a PWD has, were discussed and demonstrated so that more efficient information dissemination between PWDs and the able-bodied can be practiced.

With representatives from the Department of Health, Department of Transportation and Communications, and Public Highways, the National Council for Disability Affairs, the Japan International Cooperation Agency; Rotary Club, and local government officials in attendance, it was decided that, henceforth, fora of similar nature must be part and parcel of tri-media dissemination regarding disaster preparedness and prevention.

Disaster Response in Review

If there is one person who can share reflections and observations on disaster preparedness and response in the

Philippines, it is Dr. Antonio O. Periquet who served as Department of Health (DOH) Undersecretary of Health from 1987 to 1992 and as Secretary of Health in 1992, had witnessed the "worst of the worst" natural calamities in the early 1990's: the Mount Pinatubo eruption in 1990, which is considered the biggest volcanic eruption in 200 years; the killer earthquake in Baguio in 1991; and the Ormoc flashflood tragedy in 1991. Dr. Periquet also had first-hand accounts of man-made disasters during the Gulf War from 1990 to 1991. He led the Philippine medical team of 200 volunteer physicians a few days after the Gulf War broke out. The Philippines was the first country to extend medical support during the Gulf War.

During Dr. Periquet's term at the DOH, he established an organized system in disaster preparedness and response at the national level. He was a member of the International Board on Disaster Preparedness and Response. He served as the National Coordinator for the World Health Organization (WHO), United Nations Children's Fund (UNICEF), Red Cross and other organizations during disaster response missions within and outside the Philippines.

Dr. Periquet, being a rehabilitation medicine specialist (Physiatrist), saw the importance of functional recovery and rehabilitation medicine in the light of disaster preparedness and response. For the younger generation physiatrists, there are numerous lessons to learn from his vast clinical and disaster-related experiences, particularly: 1) Disaster as one of the causes of disability has not been given due attention as people are more concerned with fatalities and survivors, not those who have been disabled;[3] 2) The lack of data on disaster-related disabilities (e.g., loss of limb or sight) is an offshoot of the lack of awareness that disaster can cause disability;[3] and these data are vital for creating programs for disability prevention and rehabilitation;[3] 3) Disability prevention is essential, from proper on-site rescue of a victim with potential spinal cord injury to the use of measures to aid evacuation of PWDs caught in disasters (e.g., proper evacuation for wheelchair-borne paraplegics inside a burning building, use of visual fire alarms for the deaf);[3] 4) There is a need for educational campaign to increase awareness that disaster can cause disability and to stress the importance of disability prevention in times of disasters;[3] and 5) Public health surveillance is one powerful tool that should be employed when addressing disasters. A surveillance system should be "simple, i.e., easy to learn and easy and quick to operate".[4] This has been tried and tested in encounters with disasters in the Philippines including the Mount Pinatubo eruption during which surveillance saved not only lives but time and resources as well.

From a wider perspective, Dr. Periquet, as Commissioner for the National Commission Concerning Disabled Persons from 1980 to 1986, stressed the importance of involving all sectors during disaster management: health, military, labor, social security, social welfare and private sectors. People who have been disabled by disasters should be empowered to become productive members of the society once again and not have to rely on relief and other assistance from social welfare and other local and international organizations. Thus, involvement of the labor and social security sectors in disaster management should be emphasized.

Rehabilitation and Disaster: Looking Ahead

In the wake of the death and destruction wrought by natural and man-made disasters including hurricanes, tsunamis, mudslides, terrorism and oil slicks, an international effort is now underway to establish rehabilitation teams to meet the emerging disabilities and functional deficits.

Disasters attack without warning. As predictions of more calamities unfold, each country should prepare organized national strategies on disaster preparedness and response. International disaster response may come quick and early in the aftermath; the long term management of survivors and their communities, however, may be labored and unpredictable. While death and destruction are obvious consequences of disasters, disability from disasters are not readily recognized and addressed. It is not solely the responsibility of the government to seek and provide aid to victims of disasters. Every citizen, able bodied and PWDs alike, should be involved at all levels of disaster prevention, preparedness and response.

After all the acute medical and surgical care for disaster survivors have been rendered, our colossal task as PM&R specialists to reverse or minimize their physical and psychosocial disabilities and functional deficits begin. Working collaboratively with several other humanitarian organizations and professional groups, and especially with the victims and their communities, our specialty has the potential to save lives.

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