

# American Diabetes Association Statement on Emergency and Disaster Preparedness

## A report of the Disaster Response Task Force

THE DISASTER RESPONSE TASK FORCE\*

Recent disasters in the U.S., such as Hurricane Katrina, have caused the American Diabetes Association (ADA) to focus on the association's preparation and response to disasters. In addition, the difficulties encountered by many people with diabetes and their health care providers in the wake of Hurricane Katrina (1) have been highlighted and serve as a reminder to patients with this condition to be prepared for unexpected events that may seriously impact their disease management. Indeed, people with diabetes should always be prepared for personal and local, state, or federal emergencies, whether natural or otherwise. Such preparedness will lessen the impact an emergency may have on their condition. It is well recognized that major disasters have a significant impact on a variety of disorders, including diabetes, both in the short and long terms (2–11).

### Lessons from Hurricane Katrina

Hurricane Katrina was one of the most destructive natural disasters to strike the U.S. The disruption of normal routines and the closure of health care facilities, with loss of medical records, was particularly difficult for those with chronic diseases, including diabetes.

Physician offices and pharmacies closed due to evacuation, and health care professionals and their staff suffered personal loss and tragedy, making it difficult for them to care for the needs of their patients. This may have led to a feeling of abandonment by patients. Furthermore, major medical centers became inaccessible—the three major teaching hospitals in Orleans parish were surrounded by flood water and remained closed several

months after the disaster. Loss of electric power, telephones, and other means of communication and closure of roads due to flooding and fallen trees added to the complexity.

Individuals who evacuated found shelter in homes of family members or friends, hotels, or, for the very unfortunate, shelters, gyms, schools, or civic centers. Most, if not all, had done very little to prepare for days away from home with adequate medical supplies, prescriptions, medical records, etc. Thus, the most immediate concern for many of these individuals in the Katrina aftermath was obtaining needed medication, including insulin and oral agents, for their daily treatment regimens.

Obtaining the required diabetes medication was particularly a problem for those in shelters. With no medical records to review, physicians assessed medical history, medication, and doses based on patient memory and knowledge. Replacement medication, at least initially, did not match their normal regimen and was related simply to availability of pharmacologic agents (see "Pharmaceutical industry support in fall 2005" for details on the responses by FDA and the pharmaceutical industry).

The high prevalence of diabetes was unanticipated by relief agencies, and in some cases the supply chain failed to mobilize stockpiles to the shelters. The pressing need for diabetes supplies in shelters, not in hospitals, combined with the size and scope of the disaster, caught the logistics chain off guard. For example, a large shelter in Louisiana, housing more than 6,000 evacuees, had only a handful of glucose meters in the first week of the

crisis. Evacuees who brought along their insulin and supplies had enough only for a few days; for many, these were quickly exhausted. Local chain and charity pharmacies filled prescriptions on an emergency basis, often a 7- to 14-day supply of medications, but did not typically provide glucose testing supplies. Fortunately, corporate generosity relieved much of the pressure on shelters and hospitals.

The abrupt change in dietary intake and/or composition, a lack of diabetes medication, and emotional stress led to significant disruption in glycemic control, putting patients at risk of both severe hyperglycemia and hypoglycemia. Thus, management of diabetes in these cases obviously did not consist of aggressively treating blood glucose but trying to prevent acute complications of diabetes, such as hyperosmolar states and severe hypoglycemia. Changes in diet are likely to affect other associated conditions, such as hypertension (12).

In the weeks following the hurricane, financial loss, loss of personal belongings, and occasionally bereavement led to severe depression, impacting diabetes in many patients. The severity of this situation was compounded by the lack of adequate counseling resources in the areas affected by Katrina.

Subsequently, additional volunteer efforts to help in diabetes care, primarily providing diabetes expertise to the affected areas, were initiated. In this regard, diabetes educators were provided to the primary care disaster relief teams to help with insulin adjustment and general diabetes education.

### ADA's response to Hurricane Katrina

The ADA contacted agencies such as the American Red Cross, various governmental agencies, and pharmaceutical and diabetes supply companies to ensure that diabetes supplies were being transported and dispersed to the devastated areas.

The Association's network of constituents was provided with ongoing and timely Hurricane alerts with information on a variety of relief, health, and safety topics. The updates were sent out regu-

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Received and accepted for publication 3 July 2007.

Published ahead of print at <http://care.diabetesjournals.org> on 10 July 2007. DOI: 10.2337/dc07-9926.

\*A list of the Disaster Response Task Force members can be found in the APPENDIX.

**Abbreviations:** ADA, American Diabetes Association.

A table elsewhere in this issue shows conventional and Système International (SI) units and conversion factors for many substances.

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Table 1—Summary of recommendations of the Disaster Response Task Force

1. ADA should be the leading information provider for people with diabetes, caregivers, and the media.
2. ADA will revise, develop, and disseminate guidelines for diabetes care in emergencies.
3. ADA will serve as an information clearinghouse related to the status of ongoing relief efforts in diabetes care.
4. The *Standards of Care and Core Educational Curriculum* will include guidelines on disaster and emergency preparedness for people with diabetes.
5. ADA cannot and will not supply medication, supplies, and direct patient medical care.
6. Plans for protection of human subjects in clinical trials must be developed by all sponsors, investigators, and institutional review boards.

larly to ADA staff and volunteers and more than 250,000 subscribers of the ADA's electronic newsletters, such as Diabetes E-News Now!, Diabetes E-News Now! Health Care Professional Edition, Advocacy E-Alerts, and Parents' E-Newsletter, among other ADA communication channels. Additionally, a special Hurricane Web page was established and prominently featured on the home page at <http://www.diabetes.org>. This location became the central area where the ADA was able to provide visitors—including the news media—with timely updates about ADA's response to Hurricane Katrina. A special Hurricane message board was also established as a vehicle for people to share their concerns and feelings about the situation. The Joslin Diabetes Center and the Juvenile Diabetes Research Foundation both referred people to the ADA Web site.

In addition, ADA worked closely with media contacts across the country to provide expert resources and information about the important health needs faced by people with diabetes. Within the first week of this crisis, messages from ADA spokespeople about the importance of providing health care services to people with diabetes were reported in news articles published by the Associated Press, *USA Today*, and the *Wall Street Journal*.

In response to specific diabetes needs identified by organizations not covered by the American Red Cross or ADA volunteers at Pennington Biomedical Research Center in Louisiana, ADA contacted its network of medical device and pharmaceutical companies to solicit donations of insulin, glucose meters, strips, and other diabetes supplies to support immediate diabetes care needs. Both LifeScan and Roche contributed substantial supplies to Pennington and the Louisiana State University Health Sciences Division, which operates nine hospitals throughout the state that are often referred to as "charity hospitals" and treat indigent and uninsured populations. Pfizer also agreed to provide an unrestricted grant to assist ADA in its Katrina relief efforts. In addition, ADA worked

with the American Red Cross to identify companies to help support their long-term disaster relief needs and enlisted Rite Aid to contribute to this effort.

One example of how the ADA has acted to support both the short-term and longer-term needs of our many constituents in the affected communities is through ADA's joint commitment with our Everyday Choices For A Healthier Life collaborators—the American Cancer Society and the American Heart Association—to contribute a combined \$1 million in aid to the Bush-Clinton Katrina Fund. This financial support is designed to restore the operations of hospitals, health care systems, and patient support services in the devastated areas. The goal is to make sure that those who have cancer, diabetes, and heart disease or who suffer strokes continue to receive quality health care throughout this crisis and in the coming weeks and months.

While this kind of financial contribution from voluntary health organizations such as ADA is out of the ordinary, the unprecedented destruction and suffering caused by Hurricane Katrina demanded an unprecedented response.

ADA also responded to specific unmet needs of people affected by diabetes through our network of constituents. In instances where other entities were better equipped to respond, such as the processing of health care volunteers by the U.S. Department of Health and Human Services to support relief efforts in the region, ADA served as a conduit of credible and timely information, which was provided to the public and health care professionals through its National Call Center (1-800-DIABETES) and Web site at <http://www.diabetes.org>. All of these efforts provided a wealth of timely, reliable, and relevant information on a variety of medical and public health issues.

On the advocacy front, ADA worked with the Senate Finance Committee in supporting its language to provide 100% Federal support of the Medicaid costs for 1 year for the affected states (as compared with the waiver on a state-by-state basis supported by the Administration and the

House). Furthermore, we monitored to determine whether there were any opportunities to add diabetes-specific provisions for coverage for the affected areas. However, the only disease-specific provision included unlimited mental health drugs for up to 1 year.

### Pharmaceutical industry support in fall 2005

When the magnitude of the disaster became apparent a couple of days after the hurricane, several pharmaceutical companies took steps to send emergency supplies to the area. The individual companies soon came to the conclusion that bulk shipments to major supply centers could only be effectively delivered through relief agencies with a supposedly already existing infrastructure.

Unfortunately, unforeseen challenges existed. For example, when a relief agency actually managed to get 10,000 vials of donated insulin to the area, a conscientious inspector impounded the shipment because the shipper could not produce proof that it had remained refrigerated during its entire transit, as according to the label. Thus, people in the affected areas were in need of a product that was in the area but in quarantine. This situation was unfortunate and represents an example of the bureaucratic misunderstanding that was very evident in the aftermath of this disaster. It is well established and approved by FDA that insulin is stable for 28 days at room temperature after it leaves the pharmacy, and this particular shipment was likely to be used within weeks, if not less.

Given the difficulties with providing—and in addition to their efforts to provide—bulk shipments for major treatment centers, several companies asked local staff in the area to determine which clinics were still open and upon request supplied them directly with medications—particularly insulin.

FDA's endocrine division director at the time, David Orloff, took a lead role in rapidly drafting a guideline for health care providers and patients to help deal with insulin therapy during emergencies. In

**Table 2—Disaster preparations for people with diabetes**

1. Obtain good diabetes education that emphasizes self-management skills and stress management.
2. Be up-to-date with all immunization, including tetanus.
3. Keep a waterproof and insulated disaster kit ready with
  - A list of items to pack during an evacuation:
    - Glucose testing strips, lancets, and a glucose testing meter
    - Medications, including insulin, etc.
    - Syringes
    - Glucose tabs or gels
    - Antibiotic ointments/creams for external use
    - Glucagon emergency kits
    - Prepackaged snacks
  - A list of contacts for national organizations, such as ADA through their help lines or the Internet.
  - Photocopies of relevant medical information, particularly recent lab tests/procedures, if available.
  - Up-to-date information on all oral medications and insulin, regarding formulation and dosing. (If possible, have the prescription number available. Many chain pharmacies throughout the country may be able to refill based on the prescription number alone. This should be reviewed and replenished at least twice yearly.)
4. Evacuate early, if possible, taking the items listed above with you.

particular, the new guideline has simple suggestions for switching between products and brands of medication, recognizing the limited availability. The three major insulin manufacturers and FDA came to an agreement on the terms of pragmatic treatment, switching in less than 4 h. The guideline was used by FDA and the companies' medical information services and was posted on Web sites the same day; it remains accessible on the Internet at the time of this publication. Unfortunately, Internet access was limited to people with diabetes and health care professionals, and this information was not provided to ADA and other relief organizations. This is a good example of how isolated successful efforts fail to translate to a major benefit for a community in need. Coordination and communication between key constituents, including hospitals and other health care facilities that remain open, are absolutely necessary for any effort to have any real impact.

It is important to recognize the good will of the pharmaceutical industry to assist during times of disaster. However, it may be unrealistic to expect pharmaceutical and medical supply companies to donate enough products for emergency use following a major disaster. Furthermore, as mentioned above, the distribution of any donated products is critical to the impact on the affected people. The effective distribution of donated products depends on coordination between volunteer organizations, such as ADA, and relief organizations, such as the Red Cross and FEMA. The problems following Katrina demonstrated that despite the good will and intentions of all involved, the largest obstacle is a logistical one. The

pharmaceutical and device industry could be more effective if the logistical problems could be anticipated and overcome.

#### **Difficulties encountered in relation to the disaster response**

1. National organizations. We are unaware of any special arrangements related to diabetes made by FEMA or the Red Cross.
2. Local health care providers. See above.
3. People with diabetes. See above.
4. Impact on research. The impact of a disaster in both basic and clinical research is not as well publicized. This is an issue for funding agencies because some research is ADA or federally funded. In particular, clinical trial protocols become severely disrupted and may put patients at risk. It is important that large clinical trials in the future should have plans for dealing with emergencies. These may include back-up computer records of patients' contact information, potential satellite sites, plans for continued supplies of medication, and support of clinical trial patients and coordinators. Institutional review boards should have clear plans for continued oversight of research protocols following a disaster, with flexibility and discretion being allowed for investigators to act rapidly in the best interest of patients.

#### **ADA volunteer and staff**

Disaster response guidelines identifying the first response team need to be developed.

#### **Industry partners**

Clear guidelines on shipping requirements for supplies and medications are needed, as well as coordination with partnerships and relief organizations for quality medical donations.

#### **Other relief organizations**

Interaction is needed with organizations such as the Red Cross, FEMA, the International Diabetes Federation, and other government agencies to obtain information, statistics, and the particular type of help that they need. Other organizations dealing with chronic disease include the American Heart Association and the American Cancer Society.

#### **Recommendations**

The recommendations of the Disaster Response Task Force are summarized in Table 1. They emphasize that ADA can be a center for information and should be the leading information provider for people with diabetes, caregivers, and the media. ADA will revise, develop, and disseminate guidelines for diabetes care in emergencies and serve as an information clearinghouse related to the status of ongoing relief efforts in diabetes care. A booklet for patient guidance has already been produced.

The *Standards of Care and Core Educational Curriculum* will include guidelines on disaster and emergency preparedness for people with diabetes.

It is important to recognize the limitations of national organizations, such as ADA. ADA cannot and will not supply medication, supplies, and direct patient medical care.

People with diabetes should receive

instructions on what to do in an emergency, how to switch insulin and medications, and how to treat high and low blood glucose levels in an emergency situation. Additional instructions may be needed on sharps disposal, carrying medical records, etc. This represents an opportunity for diabetes self-management education to emphasize disaster preparedness. Learning stress management skills, including dealing with major disasters, should be considered as part of the diabetes education curriculum. Table 2 summarizes some things people with diabetes can do to prepare for a disaster.

The Task Force is confident that lessons learned from Hurricane Katrina will lead to implementation of guidelines, which will lead to better relief of individuals with diabetes who must contend with either small emergencies or large-scale disasters.

## APPENDIX

### Disaster Response Task Force Team Members

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### References

1. Cefalu WT, Smith SR, Blonde L, Fonseca V: The Hurricane Katrina aftermath and its impact on diabetes care: observations from "ground zero": lessons in disaster preparedness of people with diabetes. *Diabetes Care* 29:158–160, 2006
2. Bland SH, O'Leary ES, Farinero E, Jossa F, Trevisan M: Long-term psychological effects of natural disasters. *Psychosom Med* 58:18–24, 1996
3. Inui A, Kitaoka H, Majima M, Takamiya S, Uemoto M, Yonenaga C, Honda M, Shirakawa K, Ueno N, Amano K, Morita S, Kawara A, Yokono K, Kasuga M, Taniguchi H: Effect of the Kobe earthquake on stress and glycemic control in patients with diabetes mellitus. *Arch Intern Med* 158:274–278, 1998
4. Kario K, McEwen BS, Pickering TG: Disasters and the heart: a review of the effects of earthquake-induced stress on cardiovascular disease. *Hypertens Res* 26:355–367, 2003
5. Kario K, Matsuo T, Shimada K, Pickering TG: Factors associated with the occurrence and magnitude of earthquake-induced increases in blood pressure. *Am J Med* 111:379–384, 2001
6. Kaufman FR, Devgan S: An increase in newly onset IDDM admissions following the Los Angeles earthquake. *Diabetes Care* 18:422, 1995
7. Kirizuka K, Nishizaki H, Kohriyama K, Nukata O, Arioka Y, Motobuchi M, Yoshiki K, Tatzumi K, Kondo T, Tsuboi S: Influences of The Great Hanshin-Awaji Earthquake on glycemic control in diabetic patients. *Diabetes Res Clin Pract* 36:193–196, 1997
8. Takakura R, Himeno S, Kanayama Y, Sonoda T, Kiriyaama K, Furubayashi T, Yabu M, Yoshida S, Nagasawa Y, Inoue S, Iwao N: Follow-up after the Hanshin-Awaji earthquake: diverse influences on pneumonia, bronchial asthma, peptic ulcer and diabetes mellitus. *Intern Med* 36:87–91, 1997
9. Minami J, Kawano Y, Ishimitsu T, Yoshimi H, Takishita S: Effect of the Hanshin-Awaji earthquake on home blood pressure in patients with essential hypertension. *Am J Hypertens* 10:222–225, 1997
10. Sengül A, Ozer E, Salman S, Salman F, Sağlam Z, Sargin M, Hatun S, Satman I, Yilmaz T: Lessons learnt from influences of the Marmara earthquake on glycemic control and quality of life in people with type 1 diabetes. *Endocr J* 51:407–414, 2004
11. Suzuki S, Sakamoto S, Koide M, Fujita H, Sakuramoto H, Kuroda T, Kintaka T, Matsuo T: Hanshin-Awaji earthquake as a trigger for acute myocardial infarction. *Am Heart J* 134:974–977, 1997
12. Takechi S, Yoneda R, Mizuno R, Machida M, Fujimoto T, Kakinoki S, Kuroshima S, Nomura A: High-sodium diets in Japanese evacuation centers increase blood pressures of evacuees. *Blood Press* 13:37–40, 2004