



A disaster preparedness plan for pediatricians

By

Scott Needle, MD, FAAP

American Academy
of Pediatrics



DEDICATED TO THE HEALTH OF ALL CHILDREN

Mississippi Chapter

A disaster preparedness plan for pediatricians

By Scott Needle, MD, FAAP

A work in progress

In August 2005 the American Academy of Pediatrics (AAP) published its clinical report, "Psychosocial Implications of Disaster or Terrorism on Children: A Guide for the Pediatrician."¹ This document was based on observations of responses to prior United States disasters, with the largest and most-studied being the terrorist attacks of September 11, 2001. Ironically, within days of the report's dissemination, a disaster of unprecedented scope and devastation struck the Gulf Coast in the form of Hurricane Katrina. This storm laid bare the shortcomings of existing disaster plans on community, state and federal levels. Existing agencies responsible for disaster planning, from local Emergency Operations Centers (EOCs) to the Federal Emergency Management Agency, FEMA, were caught unprepared by the size of the affected area and the widespread destruction of infrastructure. Supporters of FEMA argued that, because there had never been a storm like Katrina, there was no way to completely prepare for



it. Critics countered that disaster plans should be broad enough to anticipate almost any type of crisis. Both parties would agree that the failures during Katrina should be seen as a learning opportunity to better prepare for future disasters.

Two major deficiencies have been identified that are of special concern to pediatricians: (1) the inadequacy of existing planning in addressing the unique needs of children, and

(2) the need for individual physicians to develop or revise their own disaster plans. This document primarily addresses the latter, though this will also facilitate the former, by better enabling pediatricians to care for children during a disaster. The AAP's recent policy statement, "The Pediatrician and Disaster Preparedness"² (Feb 2006) addresses some of these concerns. The document you are now reading is intended to complement the policy statement by providing concrete recommendations for disaster planning. It draws from the experiences of pediatricians in the Gulf Coast during Hurricanes Katrina and Rita. As such, it is most immediately applicable to similar disasters (i.e., hurricanes), but hopefully can serve as the basis for planning for other incidents, whether anticipated or sudden, natural or man-made, localized or widespread.

Pediatricians will need to tailor their disaster planning to their individual practice situations and local risks. For instance, practitioners in California need to consider earthquakes, while those in the Midwest should anticipate tornadoes. Physicians can better prepare by creating an individualized “threat matrix,” delineating the most likely events, consequences, and odds of occurring. However, no pediatrician should presume to be immune from a disaster, as everyone is at risk for some kind of event. As an example, a pandemic of avian influenza would affect the entire country. Furthermore, even pediatricians outside of a disaster area will benefit from having a comprehensive disaster plan, as they will be better situated to assisting their affected colleagues.



An effective disaster plan should incorporate the following basic principles:

- Prepare in advance
- Anticipate the worst: loss of infrastructure, isolation and chaos
- Take what will be most needed
- Find the safest place for expensive or irreplaceable items
- Minimize the risk to the remaining practice structure
- Improvise with the resources on hand
- Adapt to changing conditions and demands

Preparing the Office

Many disasters may strike without warning or time for preparation: tornado, lightning, earthquake, or terrorism. However, others—most notably, floods or hurricanes—can be anticipated hours to days in advance, and thus enable and require specific steps to minimize damage and maximize post-disaster functioning. While the exact measures may depend on both the type of disaster and the pediatrician’s situation (such as if he or she will be evacuating or staying), some general principles apply. One of the first priorities is to gather the most essential and irreplaceable items to have on hand; many of these items are detailed later in this

report, and in the accompanying checklist (Appendix A). Time and space may limit what items can be taken with the pediatrician, and thus a second priority is to minimize risk to remaining equipment and files. Computer equipment, diagnostic instruments, and lab tests are usually among the most expensive items in a pediatric office, and should be placed as high or as safe as possible. Office and patient files are often irreplaceable and thus should be moved as well, to the extent practical. Most desktops are less than three feet off the ground, and therefore the tops of file cabinets, bookcases, and wall cabinets are much safer in the event of flooding or storm surge. Pediatricians are discouraged from moving equipment to another nearby location unless the original office is particularly vulnerable (such as facing a body of water, or at low elevation); this can take valuable time and effort better spent on other preparations. In addition, most predictable disasters are also large ones, and thus most buildings within an area will be at some risk for damage.

A third priority is to reduce the risk to the remaining structure and contents. Windows should be boarded up, locks secured, and computer equipment shut down in an orderly and planned manner. Preexisting vulnerabilities, such as a cracked or leaky wall, door, or window, should be addressed and nearby objects moved accordingly. The surrounding area should be cleared of loose debris which might otherwise become ballistic projectiles in high winds. Consider turning off the building's water supply, if possible.

Pediatricians should utilize a written checklist to ensure an efficient disaster preparation. With the stress and anxiety of an impending disaster, it can be all too easy to overlook important items or procedures. A sample checklist has been attached as Appendix A and can be used as a starting point. A duplicate copy of the checklist should be kept in a second location, such as the home. Office staff should be utilized to assist in preparations, if possible; however, they should not be hindered in conducting their own disaster preparedness, including evacuation.

Vaccines deserve special consideration, as they represent a significant financial investment, requiring special storage. Some regional facilities or organizations with robust generator capabilities—such as a local hospital or health department—may agree to store vaccines for pediatricians. Pediatricians evacuating the area may prefer to take the vaccines with them, in insulated shipping boxes or coolers, for refrigerated storage at their eventual destination. Alternatively, a medium or large generator at a pediatrician's home may enable transfer of vaccines from the office to the home refrigerator. With all disaster planning—but particularly for vaccines—it is important



to realize that no plan is foolproof. Any disaster involves risk of loss and destruction, no matter how good the planning, and unexpected contingencies will inevitably arise. The pediatrician must make an individual assessment and choose the measures that appear to present the least amount of risk, or at least an acceptable risk of loss.

If vaccines do spoil, pediatricians should still retain them for possible replacement or reimbursement. Vaccine manufacturers may offer credit or partial credit for spoiled vaccines after a major disaster.

Evacuation

Deciding whether to evacuate or stay in advance of an impending disaster may be one of the most difficult decisions a pediatrician will have to make. Pediatricians need to consider degree of risk, personal health and stamina, practice situation, hospital obligations, spouse, children, and effort involved, among many other factors. A young, unmarried pediatrician in a small town may feel little compulsion to leave his or her community for even the most extreme disasters. By contrast, a pediatrician with young children in a large suburb may need to place his or her family's concerns first and evacuate promptly. Pediatricians who are parents have a special obligation to ensure the safety of their children. Older children who are mature and resilient may actually be an asset and a help in the days after a disaster. Younger children and children with special needs have absolutely no place in a disaster area and arrangements should be made for evacuation; their presence places them at risk for physical and psychological trauma, and can create logistical difficulties and undue stress for their parents.³



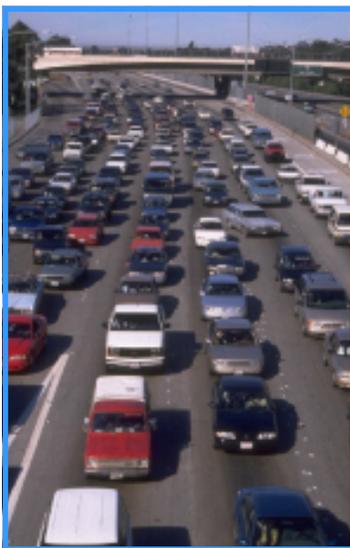
Pediatricians have a responsibility to the medical needs of the community. If the pediatrician's hospital(s) will be evacuated and closed, the pediatrician must ensure the safety of his or her patients before leaving, by arranging appropriate discharge or transfer. Hospitals that intend to remain functional through a disaster will usually need a pediatrician in-house; coverage arrangements should be worked out ahead of time. Pediatricians at liberty to leave must balance what is best for themselves, their families, and their communities. As this is ultimately a personal decision, no pediatrician should be castigated for either staying or leaving.⁴

Plans for evacuation should be established well in advance so that family members know exactly where to go, even if the pediatrician must be apart from the rest of his or her family. Relatives, friends or colleagues out of the disaster area should be contacted beforehand to serve as "safe houses" if possible. Hotel rooms should be booked days in advance as they will be sold out for hundreds of miles by the time disaster strikes. Local shelters are another option, but special provision must be made for pets, as they are not welcome in shelters. Similarly, pets must be considered in disaster planning for pediatricians who will be remaining in a disaster area, particularly for those who will be staying in a hospital. Abandoning a pet is an all too common practice in a disaster, but it is also cruel and inhumane, and should be considered only if the pet would jeopardize the rest of the family's safe evacuation.



The decision when to evacuate, similar to the decision whether to evacuate, is also not to be taken lightly. In most situations this will be based on a continuously evolving situation as more information becomes known. Since evacuation is an arduous and time-consuming process, most physicians will not want to leave unnecessarily. However, waiting too long to leave may result in gas shortages, blocked roads, or excessive traffic.

Regardless whether pediatricians stay or leave, they should have a personal disaster plan written and accessible. General disaster recommendations are widely available^{5,6}, and they include basic supplies to have on hand: clothes (or scrubs), blanket, towel, water, nonperishable food, sunscreen, insect repellent, hand sanitizer, flashlight (preferably headlamp and/or lantern), battery-powered or hand-cranked radio, spare batteries, duct tape, pocket knife, personal medications, cash, insurance papers, and essential documents. Many experts have advocated keeping a "disaster kit" packed and ready in a plastic tub, duffel bag, or similar transportable container. Diapers, wipes, ready-to-feed formula, and jarred baby food should be kept as appropriate for infants. Previous recommendations have called for supplies for 2-3 days; in light of recent experiences with Hurricane Katrina, pediatricians should reconsider having supplies to last 5-7 days instead. Some authorities also recommend a second, scaled-down "Go Kit" for the office or car.



Medical Equipment

General pediatricians can consider themselves fortunate to practice a specialty that does not require expensive, heavy equipment. In fact, the majority of a pediatrician's equipment can fit comfortably into the traditional black doctor's bag. An even more resourceful and less expensive solution is a camera bag, which can be subdivided into compartments and carried with a shoulder strap. Pediatricians should stock the bag with the essentials for most examinations: stethoscope, otoscope/ophthalmoscope (and specula), tongue blades, tape measure, alcohol wipes, gloves, calculator, and reference book. Do not forget spare bulbs, a charger and/or batteries for the otoscope/ophthalmoscope. A thermometer should be available as well. Consider having available a small mechanical or battery-powered scale. Pediatricians should also set aside syringes and needles for administering medicines and vaccines, and a sharps container for safe disposal.



Universal precautions need to be followed even after a disaster, and appropriate personal protective equipment needs to be on hand. Gloves are especially important in case of diarrhea, open wounds, and environmental hazards. Fitted respirator masks, such as a N95 mask, are also needed for airborne illnesses and mold and other biohazard exposures (not to mention their importance in case of avian influenza).

If time and space permit, consider taking small "goodies" for children, such as stickers, small books or toys.

Medical Supplies

Pediatric offices may be one of the only available sources of pediatric supplies and medicines in a disaster area. Pediatricians should therefore set aside a small stock of the most important medicines. Acetaminophen, ibuprofen, and diphenhydramine should be on hand. Antibiotic ointment (Neosporin or mupirocin) is essential. Oral antibiotics that do not require refrigeration, such as Omnicef and Zithromax, are excellent choices for children; these two antibiotics also taste good, have once-daily dosing, and provide broad-spectrum coverage. Injectable antibiotics (ceftriaxone) are desirable, with 1% lidocaine for reconstitution. Some

form of steroid should be included, whether syrup (e.g., Orapred), pills (prednisone), or injection (dexamethasone).

After Katrina, many families lost their nebulizers and aerosol medications. Pediatricians should consider having one standard nebulizer compressor available, which can be readily powered from a generator. Alternatively, portable battery-powered or DC-powered nebulizers are available; pediatricians may even want to prescribe these for interested families as part of disaster anticipation. A spare oxygen tank is an overlooked source of air flow for a nebulizer. A few tubing packs, and pre-mixed vials of albuterol or Xopenex, are also required. Of course, an MDI and a plastic spacer can also work as well as a nebulizer.



In stockpiling for a disaster, pediatricians face the conflicting demands of setting aside enough supplies for an extended time (e.g., avian flu) versus the investment of capital and potential loss in the event those supplies are destroyed (e.g., hurricane). Each pediatrician will have to reach his or her own decision with regards to how much to keep on hand. Factors to consider include the most likely hazards, other community resources and stockpiles, individual financial situation, and insurance coverage.

Communications

Within a disaster zone the traditional methods of communication may no longer work. Broadband internet (cable modem and DSL), land-line telephones, and cell phones all failed in the days after Katrina. Pediatricians should have back-up communications in place. In the immediate aftermath, word of mouth and hand-painted signs may be utilized. Papers and fliers can be posted at communal gathering places, such as DMAT centers, FEMA operations, Red Cross shelters and distribution centers. Some media outlets may be operating relatively quickly, such as radio or television stations. Amateur radio (HAM radio) also proved effective. Walkie-talkies are usable for one-on-one communications between team members or family members. Satellite phones were reportedly overloaded in the worst-hit areas for the first few days but subsequently proved to be the only reliable source of communication to and from the

disaster area. Hand-held satellite phones have come down in price in recent years; a Globalstar SAT-550 can be purchased for as little as \$250 (used). A Globalstar GSP-1600 (retail \$749, available for \$300-400 used) can even be used for data transmission, such as fax or e-mail. Satellite phones do require a service contract in order to be used, and as of this writing Globalstar's least expensive plan cost \$600 for 600 annual minutes. Pediatricians who have evacuated but will be returning may consider renting a satellite phone, though demand overwhelmed nearly all outfitters within days of Katrina.



Larger offices may want to consider a fixed satellite phone unit, which can provide satellite-based telephone using an outside antenna and any analog phone. While somewhat more expensive than a handheld satellite phone, this system also requires a backup power supply and may therefore be of limited utility in worst-case scenarios.

Traditional cellular phones began operating sporadically within one week after Katrina. Text messages were much more reliably and quickly sent and received, as they require significantly less bandwidth and do not require a constant signal. Cellular phones were carrying voice communications within 2-4 weeks after the hurricane, depending on the individual carrier and the reliability of the signal.

Of note, voicemail systems were usable as soon as telephone calls started going through. Voicemail systems do not require a physical "real-world" location and thus can be a useful way of posting oral notices for patients both in and out of the area, even when other infrastructure has been damaged or destroyed.

Transportation

After Hurricane Katrina, a staggering number of vehicles were flooded and thus unusable. For those people with working automobiles, gasoline was in critically short supply for over a week after the storm, as far north as Jackson, MS. Fuel was still scarce for the first one to two months due to continuing demand (for residents' cars, rescue and workers' vehicles, and generators) and fewer operational gas stations. Physicians may be able to receive priority in gas lines due to their status as essential personnel, but it is mandatory to know state law or

local Emergency Management Agency policy. Pediatricians are also advised to contact local law enforcement before attempting to use priority status, as laypeople will already be stressed and potentially armed and may not be sympathetic.

As a reminder, gasoline will be necessary for generators as well as cars. A spare tank of gas should thus be considered an essential part of disaster preparedness. A siphon pump can be useful for evacuating the gas tank of a flooded car, although newer cars may not allow passage of the tubing. Physicians may also want to have a bicycle available for local transportation.



Place of Service

The pediatrician's medical office may be unusable after a disaster. Even if the structure is undamaged, loss of power and ventilation may prohibit seeing patients there. Of course, structural damage or flooding may render the space unusable for significantly longer. Pediatricians should consider their alternative options for practice space, even in advance of a disaster. As of this writing, FEMA will not provide trailer space to private physicians' offices, and thus pediatricians are left to fend for themselves. After Katrina, many small businesses began operating out of RVs or similar campers, canopies, enclosed tents, semicircle Quonset huts, or a combination of these units. A small pre-fabricated office can also be purchased for less than \$10,000.

Pediatricians may also need to consider temporarily practicing in a different location than their prior offices. Consider using or partnering with any alternate space that may be operational, including private offices (medical or otherwise), hospital or emergency room space, the local health department, or volunteer clinics. Immediately after Katrina, people began congregating in parking lots of major shopping centers, turning these lots into impromptu recovery centers. Resourceful physicians found ways to establish temporary medical facilities in these centers, to provide care where it was most needed and accessible. Wherever and however they practice,



pediatricians have a responsibility to clear the surrounding area of debris and environmental hazards, including standing water. In addition, physicians should be prepared to adapt to primitive conditions. Furniture may consist solely of tables and folding chairs. Ventilation may come from open windows and box fans, and heat may be provided by portable electric or kerosene space heaters.

If the patients cannot come to the pediatrician, the pediatrician can consider going to the patients. The old-fashioned house call is yet another option for providing care after a disaster. Naturally, pediatricians need to consider their own safety, resources, comfort, and time before deciding to offer this service.

Power and Electricity

Even a relatively minor disaster can cause loss of power for days. A major event such as a Category Four Hurricane can destroy the electric grid for three months or longer. The creative pediatrician can provide rudimentary care without electricity for some time, but a generator can improve quality of life and quality of practice while potentially reducing losses after a disaster. Generators come in a wide variety of sizes, wattages, and costs, from small portable models (priced under \$300) to fixed diesel or natural gas powered industrial setups. Fixed on-site generators can be very expensive, and they become unusable if they are flooded. On the other hand, even the smallest generator can be helpful in providing light, powering fans or heaters, and charging cell phone, laptop and otoscope batteries. In evaluating a generator, consider what electrical items will be most likely used and compare to the generator's capacity in watts. If an appliance's watts are not readily apparent, calculate by multiplying volts times amps. Keep in mind that even relatively small 3000-watt generators can weigh 80-100 pounds or more.

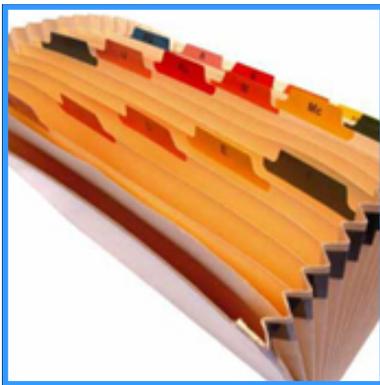


Pediatricians should also consider a generator for preserving vaccines, whether from a unit powerful enough to run a standard refrigerator, or a smaller model running a "dorm-sized" cube refrigerator. In developing a personal (home) disaster plan, pediatricians may also want to consider a home generator with sufficient capacity to provide for office operations there. As touched upon earlier, a generator is only as useful as its fuel supply, and pediatricians should be sure to stock extra fuel, and to keep the generator filled before a disaster. Also be aware of approximate fuel usage based on load to better gauge how often to fill the generator.

A DC inverter can also provide a small amount of power from a car battery. Models under 300 watts can be run directly from a cigarette lighter, while larger capacity units need to be clamped directly to the battery. Inverters generally cost below \$100, and some can be obtained for under \$40. An inverter would not be practical for a large appliance such as a refrigerator, but can be useful for operating and recharging small appliances and electronics.

Essential Documents

All families should prepare for disaster by having important documents consolidated and readily available. However, pediatricians also have some unique papers that need to be kept safe. A medical license and hospital picture ID may be necessary for establishing credentials and allowing unrestricted travel in a disaster area. A folder should be prepared with copies of DEA license, state controlled substance license, current CV, malpractice insurance face sheet, information on prior policies, CLIA papers, medical school diploma, residency certificate, board



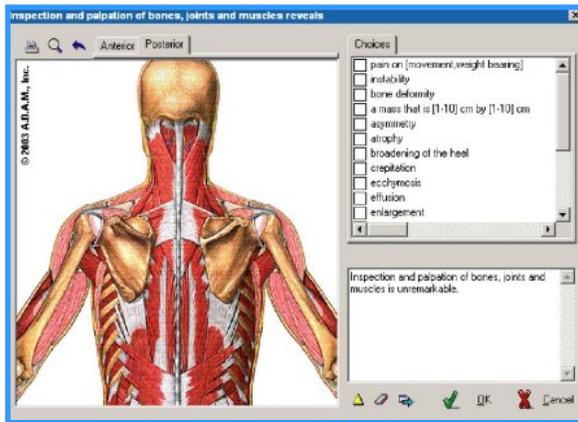
certification, and other credentialing documents. Naturally, office insurance policies (e.g., business liability, property/contents, disability, etc.) should also be available. A sheet with employee contact information is recommended, including social security numbers and computer IDs and passwords. Pediatricians should also maintain a sheet with major insurance and payor contacts, and provider numbers. Also keep family medical and immunization records, and social security numbers. Copies of all of the above should be stored off-site, such as in a bank safety deposit box, at home, and/or at a relative's house outside of the area. Alternatively, consider scanning paper documents to digital storage (such as USB Flash drive, CD-ROM, or DVD) and keeping that media safe and out of the area.

Pens and paper are mandatory, and a notebook is recommended. In addition, keep checkbooks safe, and have adequate cash on hand. Do not forget to take office petty cash and checks waiting to be deposited.

Medical Records and Data Security

Thanks to the advent of EMR systems, patient records do not have to be another casualty of disaster. Paper charts are inherently vulnerable to destruction, be it water, fire, mold, or even dispersal. In addition, it is not practical to “back-up” paper charts, or unload them off-site, in case of impending disaster. Furthermore, restoration costs for damaged charts are prohibitive for almost all pediatric practices. As an example, paper charts can be rescued from mold and water by a document recovery service, but cost can exceed \$500,000.

All pediatricians should be strongly considering the transition to EMRs, if they have not already done so. EMRs can result in cost savings and improved efficiency, but they have now proven



invaluable in their ability to preserve patient data in the face of disaster. However, an EMR by itself does not guarantee security of patient records. Backup systems need to be in place and functional, as also mandated by the HIPAA Security Rule. There are different methods of storage, and different EMR models, but some are better than others. The well-prepared pediatric office should have multiple layers of back-up and redundancy to minimize loss of data while enabling prompt restoration of access.

Physicians considering starting or changing an EMR system should think about usability in the aftermath of a disaster. Some EMR providers are internet-based, or an “ASP model.” Because these providers store data off-site, they offer an enhanced degree of security, and complete patient records are available from any computer with an internet connection. This is a clear advantage for physicians outside the disaster area, but an equal liability for those within the area, who will be unable to obtain reliable internet access for days to weeks. Office-based systems contain the risk of data loss due to physical damage, but these risks can be mitigated by good back-up plans. Physicians evaluating office-based EMR systems (such as via office servers) should strongly consider usability on a portable computer (laptop, tablet, or PDA), disconnected from the office server. This solution provides optimal accessibility to patient records from anywhere, even within a disaster area. After Katrina, one pediatrician used his tablet PC to retrieve patient data and enter new information from various locations in and out of the Gulf Coast over the next five months.

Obviously, if computerized systems fail, paper and pen will always suffice to record patient encounters.

With regards to data storage, an off-site backup (or “mirror”) clearly provides the most safety and reliability. As long as the storage facility is located out of the area, it should still be operational even when disaster strikes the physician’s locale. Costs have come down in recent months and reputable providers can offer 5 GB for as little as \$10 per month. Web-based backups can be accessed from any computer with a broadband connection.

A web-based backup is not adequate by itself, however. After all, a disaster could strike the backup service; therefore, a portable, on-site “physical” storage should also be utilized. Many IT consultants recommend tape drives, which benefit from relatively rugged cassettes, large capacity, and rewriteability. Tape drives are more expensive than other backup media, and many unique formats exist. Data recovery is fairly easy if the tape drive is preserved; if the tape drive itself is lost, a pediatrician may need to purchase a new drive, or send the tape to a recovery service, both of which can add to recovery time and cost.

Backup CD-ROMs and DVDs are simple to prepare, whether from an internal or external disc burner, and are equally easy to carry; however, these discs have limited storage space and can be prone to breakage. A CD-ROM can hold 650-700 MB, while a DVD stores approximately 4.7 GB. Discs are not impervious to environmental hazards; many writeable CDs and DVDs were found to be erased or unusable after immersion during Katrina. CDs and DVDs are probably most useful for archival copies of files, as duplicate copies can be easily and inexpensively stored off-site (such as in a safe-deposit box), or mailed out of the area for safekeeping.



External hard drives provide abundant storage capacity and have become very inexpensive. An 80 GB desktop hard drive can cost as little as \$100. Companies such as Seagate and Iomega are starting to sell smaller-sized drives, down to wallet-sized, with corresponding smaller storage space (though not necessarily lower price). Larger drives are probably the heaviest “portable” solution, and are probably the most fragile; the newer, smaller drives are beginning to represent a good compromise between storage space, convenience, portability, and price.

USB Flash drives are a new option that can potentially store more data than a CD. They are literally pocket-sized, but again are not invulnerable. A 1GB USB Flash drive can be bought for less than \$100, though units are available with less memory, or as much as 4 GB, depending on need. USB Flash drives can offer fringe benefits, as well. Victorinox makes a "Swiss Memory USB," a Swiss Army Knife with a USB Flash drive attached. Some MP3 players also double as USB Flash drives.

External hard drives, CD/DVDs and Flash drives can provide ready access to data from almost any computer after a disaster. Web-based backups can also be readily retrieved, provided broadband access is available. Data can even be stored to and available from an iPod or similar (non-USB Flash drive) MP3 player, though this is probably not an ideal solution for daily backups. Regardless of the storage method used, all back-ups should be tested periodically to ensure they are retrievable and are actually saving the desired and necessary files.

If all else fails, internal hard drives can be removed from servers and computers and sent to a data recovery service. These services are not infallible, and some hard drives may be damaged beyond recovery. Drives that have been submerged should *not* be allowed to dry out, as salts can precipitate on the drive platters and cause irreversible damage; instead, keep drives in a sealed plastic bag and ship them to a recovery service as soon as possible. Data recovery can be expensive, depending on the storage configuration and amount of data. For instance, RAID configurations, while ideal for data security on operational servers⁷, significantly increase the complexity of data recovery on removed hard drives. Data recovery of just 3 drives in a RAID 5 configuration can easily cost \$10,000 or more. While this is very reasonable compared to the cost of losing all records, a working and multiply redundant backup system is considerably more cost-effective. Of note, most data recovery services charge several hundred dollars just to attempt a recovery, even if not successful.

The internet has become an essential office tool, even for physicians not relying on an ASP-model EMR. Clinical information, state immunization registries, and now basic communications and bulletin boards (not to mention e-mails and listservs) are now available via the World Wide Web, and can be of utmost importance after a disaster. Dial-up internet is available nearly everywhere, and will most likely be the first form of internet available within a disaster area (though this may still take 2-4 weeks). Consider having a provider's application installed or available, such as an AOL disk. Broadband may be available from public wireless "hotspots" in hotels or airports. Some facilities within the disaster area may also be able to make arrangements for local broadband access, such as small-scale wireless networks. Cellular providers such as Verizon have also begun offering wireless broadband network cards which may provide access when cable broadband and DSL are not available.

As a reminder, physicians should take care to backup other essential computer files, such as office forms, personal CV, CME records, personnel and payroll files, office policies and procedures, and OSHA and HIPAA plans. Computer passwords should also be kept in a safe and accessible place.

Insurance

Most physicians expect their office insurance to cover the majority of losses from a disaster. However, most insurance policies have specific coverages and exclusions, and many people were surprised to learn the extent of uncovered losses after Katrina. Most standard policies specifically exclude water damage, which extends to most flood damage, even if associated with "wind-driven water" from a hurricane. As a result, many "business interruption" policies or riders were rendered invalid alongside staggering property losses. Pediatricians are advised to scrutinize their policies before a disaster to determine potential gaps in coverage, as well as afterwards, to maximize return on losses. Each category or type of loss may have a different deductible and maximum coverage, and these should be adjusted as appropriate to offer adequate coverage. As an example, many insurance companies can add a rider to cover spoilage, which would include vaccines. However, this spoilage rider is only as good as the amount covered: a practice with \$25,000 worth of vaccines would be ill-served by a policy limited to \$5,000 of coverage. Specific wind, mold, computer damage, documents, records, and "civil disturbance" coverages may also be applicable towards a portion of losses. As a reminder, some deductibles—such as for wind damage—may be so high that only a substantial or total loss will be covered.

Flood policies, offered through the National Flood Insurance Program (administered by the federal government, through FEMA) can be purchased from any insurance agent, for relatively low cost. Pediatricians whose offices are located in flood zones must have flood insurance coverage. Offices located out of designated flood zones are not required to have such coverage but should strongly consider purchasing it anyway. During Hurricane Katrina, many areas on the Mississippi Gulf Coast flooded for the first time in recorded history. Of note, flood coverage is capped and may not cover all losses.

Insurance claims require an office inventory, which will be easier to prepare and more accurate if compiled before a disaster. A videotape of the office and contents will suffice and requires very little time; a paper record is also acceptable. Copies of paper or videotape inventories should be kept safe and off-site with other essential documents. As a reminder, losses may be deductible by the IRS. Property losses can also include partial damage that reduces value, such as loss of trees, erosion, and damage to a foundation. Pediatricians are advised to consult an accountant in order to obtain the maximum allowable deduction.

Principles of Immediate Response

Pediatricians staying in or returning to a disaster area during the first days after the event must be prepared to adapt and expect the unexpected. Physicians typically believe they should be present in order to provide medical services, but recent disasters have shown this assumption may not be accurate. In fact, immediate medical services will probably be provided by hospital-based personnel, and this may be confined largely to patients already on-site. Medical facilities may be overwhelmed for the next few days after a disaster, as survivors begin to make their way to local hospitals. Subsequently, the established Disaster Medical Assistance Teams (DMATs) arrive, and they will typically assume responsibility for the area's health care. DMATs generally have been unreceptive towards overtures from unaffiliated providers. Pre-organized, experienced mobile health units may also be contracted to provide services or may enter the area of their own accord. Most community pediatricians are left out of formal planning for disaster response. Ideally, pediatricians should seek to rectify this before a disaster, by contacting the local Emergency Operations Center (EOC) and trying to integrate with the existing disaster plans. In practice, pediatricians trying to provide medical care will need to work independently, though preferably in coordination with, or at least not interfering with, pre-established emergency providers. To enhance their participation alongside emergency responders, pediatricians should be familiar with the JumpSTART disaster triage system⁸, and the philosophy of Incident Command Structure (ICS)⁹.

If pediatricians are not providing direct medical care in a disaster area, they can still use their training, skills, and connections in other ways to aid children and their families. Pediatricians may be the only authorities available to assess and provide for children's needs. As a result, pediatricians may find themselves coordinating delivery of diapers and infant formula to community areas, establishing emergency child care facilities, or similar. Just as pediatricians are often left out of community disaster planning, children are also overlooked. Pediatricians can and should prepare to assume a primary mission of advocating for children before, during, and after a disaster. Pediatricians should be open to fulfilling this obligation in whatever manner presents, in whatever capacity is required at the moment.

Summary

The only predictable characteristic of disasters is that they are unpredictable. Therefore physicians must always be prepared for the worst. Pediatricians have an obligation to their patients, co-workers, and families to consider the most likely disaster scenarios and take preventive measures. In particular, planning should focus on having access to the essentials for surviving and providing care, minimizing losses to remaining equipment and assets, and anticipating how to provide services in the aftermath. The well-prepared pediatrician must be ready to improvise and adapt to ever-changing conditions. Plans should also be seen as dynamic entities, refined and updated in response to new knowledge, technology and experiences. Disaster preparation will never be infallible but it can minimize disruption and loss.



Notes and References

1. Psychosocial Implications of Disaster or Terrorism on Children: A Guide for the Pediatrician. *Pediatrics*. 2005; 116(3). Available at: <http://www.pediatrics.org/cgi/doi/10.1542/peds.2005-1498>.
2. The Pediatrician and Disaster Preparedness. *Pediatrics*. 2006;117(2). Available at: <http://www.pediatrics.org/cgi/doi/10.1542/peds.2005-2751>.
3. Pediatricians should incorporate disaster planning into anticipatory guidance, and should not hesitate in recommending that families evacuate ahead of disasters. A Katrina survivor has said, "If you don't evacuate, be prepared for no help or resources for at least three weeks...If you can't do this, don't even consider staying."¹⁰
4. Provided that he or she has arranged for inpatient coverage and has no call duty or other obligation to the hospital.
5. AAP Family Readiness Kit. Available at: <http://www.aap.org/family/frk/frkit.htm>
6. FEMA for Kids: Kids Activity Survival Kit. Available at: <http://www.ready.gov> and <http://www.ready.gov/kids>.
7. RAID configurations should be considered essential on mission-critical servers for EMRs, as a defective hard drive can be "hot-swapped" and replaced even during active use, with no loss of data or downtime.
8. JumpSTART: Available at: <http://www.jumpstarttriage.com>.
9. ICS: Available at: <http://training.fema.gov/EMIWeb/IS/is100FW.asp>.
10. Burton K. What I've Learned from Katrina. Available at: www.gulfcoastnews.com/GCNSpecialReportLearnedfromKatrina.htm

Recommended Resources

AAP Family Readiness Kit (<http://www.aap.org/family/frk/frkit.htm>)
Model Disaster Plan for a Physician Practice. Kentucky Medical Association
FEMA.gov, FEMA for kids: Kids Activity Survival Kit (<http://www.ready.gov>,
<http://www.ready.gov/kids>)
Burton K. What I've Learned from Katrina. Available at: www.gulfcoastnews.com/GCNSpecialReportLearnedfromKatrina.htm.

Acknowledgements

We are grateful for the help and support of the following organizations in preparation of this plan:

Mississippi Chapter, American Academy of Pediatrics
American Academy of Pediatrics' *Friends of Children* Fund
Family and Children's Unit of the Social Science Research Center at Mississippi State University

Appendix A: *Sample Checklist*

- "GO Kit": bag or tote
- Cash
- Photo ID
- Credentials
- CV
- Insurance policies
- Licenses
- Employee contact information
- Certified birth certificate(s)
- Personal medical and shot records
- Family social security numbers and cards
- Backup computer files
- Clothes
- Raingear
- Spare pair of shoes
- Food: granola bars, cereal bars, dried fruit, nuts, beef jerky, trail mix, crackers, peanut butter, canned goods (and can opener)
- Water
- Toiletries
- Contact lenses and solution, eyeglasses
- Hand sanitizer
- Sunscreen
- Insect repellent
- Duct tape
- Toilet paper
- Pocket knife
- Plastic bags
- Blanket
- Towel
- Cell phone and charger
- Backup communication (sat phone, HAM radio?)
- Flashlight
- Radio
- Camera
- Spare batteries
- Prescriptions
- Doctor's bag
- Stethoscope
- Otoscope
- Ophthalmoscope
- Otoscope specula
- Spare bulbs
- Tongue blades
- Thermometer
- Tape measure
- Calculator
- Prescription pad
- Pen/pencil
- Paper/notebook
- Disposable gloves
- Respirator masks
- Reference book (e.g., Harriet Lane Handbook)
- Scale

- Oral antibiotics (Omnicef, Zithromax)
 - Alcohol wipes
 - Ceftriaxone
 - 1% lidocaine (for reconstitution)
 - Antibiotic ointment
 - Acetaminophen
 - Ibuprofen
 - Diphenhydramine
 - Albuterol/Xopenex
 - Oral or injectable steroids
 - Syringes and needles
 - Sharps container
 - Diapers, baby wipes, formula, baby food
 - Toys for children
 - Vaccine cold storage (cooler or refrigerator)
 - Generator
 - Spare fuel
 - Extension cords
 - Bicycle
- TO DO before a disaster***
- Fill up vehicles and spare tanks
 - Stockpile food, water, medical supplies, medicine samples, infant supplies
 - Obtain refills of prescription medicines
 - Charge cell phones, laptops, etc.
 - Print out copy of personal and practice disaster plans
 - Back up computer data
 - Secure office
 - Move office equipment to safest place
 - Store or move vaccines
 - Contact relatives or friends to inform of plans
 - Contact hospital administration and peers as needed