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# The Southern Region Burn Disaster Plan

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A regional burn disaster plan for 24 burn centers located in 11 states comprising the Southern Region of the American Burn Association was developed using online and in-person collaboration between burn center directors during a 2-year period. The capabilities and preferences of burn centers in the Southern Region were queried. A website with disaster information, including a map of regional burn centers and spreadsheet of driving distances between centers, was developed. Standard terminology for burn center capabilities during disasters was defined as open, full, diverting, offloading, or returning. A simple, scalable, and flexible disaster plan was designed. Activation and escalation of the plan revolves around the requirements of the end user, the individual burn center director. A key provision is the designation of a central communications point colocated at a burn center with several experienced burn surgeons. In a burn disaster, the burn center director can make a single phone call to the communications center, where a senior burn surgeon remote from the disaster can contact other burn centers and emergency agencies to arrange assistance. Available options include diversion of new admissions to the next closest center, transfer of patients to other regional centers, or facilitation of activation of federal plans to bring burn care providers to the affected burn center. Cooperation between regional burn center directors has produced a simple and flexible regional disaster plan at minimal cost to institute or operate. (J Burn Care Res 2006;27:589–595)

Before the terrorist acts of September 11, 2001,<sup>1,2</sup> few burn care providers saw a need for disaster planning. Since then, we have witnessed terrorist attacks in Madrid, Spain,<sup>3</sup> London, England,<sup>4</sup> and Bali, Indonesia<sup>5</sup>; the development of civilian burn contingency plans to support military action in Iraq<sup>6</sup>; and fires in the Station Nightclub (Rhode Island)<sup>7</sup> and the West Pharmaceutical Plant (North Carolina).<sup>8</sup> It is apparent that burn mass casualty incidents can oc-

cur and that burn center planning for such incidents would be prudent.

Simultaneously, the economics of contemporary hospital practice have limited our ability to provide burn care. Since 2002, two burn centers in the Southeast have closed, leaving the States of Mississippi and South Carolina without burn centers. The remaining regional burn centers frequently operate at or over capacity on a daily basis, leaving little surge capability in the event of a regional disaster.<sup>9</sup>

In 2003, the burn center directors of the American Burn Association Southern Region (at that time known as ABA Region IV) decided that a burn center mutual aid plan needed to be developed, and a disaster committee was formed. Cooperation between burn centers in the Southeast has always been strong, and the intent of the plan was to commit to paper the exceptional network of communication and collaboration that already existed. The disaster committee was given the task of determining how the regional centers could best help each other when a disaster occurs within the region and when one or more burn centers are overwhelmed.

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The disaster committee quickly agreed that any regional plan should be simple, scalable, flexible, and designed for the end user, the individual burn center director closest to the mass casualty incident. With the current emphasis on Incident Command and National Incident Management systems (NIMS) by federal, state, and local emergency agencies, it was determined that the plan should follow Incident Command/NIMS guidelines. At the lowest level, the plan should function as a hospital-wide plan for dealing with a surge in burn patients. At the next level, it should become a local plan with prearranged agreements with the next closest burn center. As the size of the incident increases, the plan could expand to include any or all of the burn centers in the Southern Region. Although intended primarily for regional use, the plan could also provide the framework for a unified regional response to a national disaster involving burn victims.

The final requirements were that the regional disaster plan must be inexpensive to set up and operate and that participation in the plan would be voluntary. A burn center experiencing a mass casualty incident would have the option of activating some, none, or all of the plan, depending on the situation and the needs of the local burn center director.

## METHODS

The regional disaster plan was developed by online and in-person collaboration during a 2-year period. Members of the disaster committee became familiar with Incident Command and NIMS.<sup>10,11</sup> A Web site ([www.burndisaster.com](http://www.burndisaster.com)) was established to post reference material and in-progress committee work. The website included NIMS training materials, disaster reference materials, and links to other disaster and training websites. A map of all burn centers in and around the region, as well as a spreadsheet of driving distances between each burn center was created and posted on the website. A conference call system connecting the disaster planners by simultaneous telephone conversation and Internet-linked computer display was set up. The capabilities and transfer preferences of burn centers in the Southern Region were queried, and contact information for key and essential personnel was solicited. These data were then stored in an Excel spreadsheet (Microsoft, Seattle, WA) unique for each burn center. The spreadsheet and burn center questionnaire are downloadable from the Southern Region page at [www.burndisaster.com](http://www.burndisaster.com).

Each burn center was asked to self-designate surge capability, including the number of patients that could be immediately admitted from a regional disas-

ter without causing the accepting facility to close to new local admissions, and the number of patients from a distant or national emergency that could be accommodated with and without closing to local admissions if given several days of preparation time. Burn centers also were asked to estimate their secondary triage capacity. The ABA National Burn Disaster Plan defines secondary triage as the transfer of burn patients from one burn center to another burn center upon reaching surge capacity.<sup>12</sup> Surge capacity is defined as the capacity to manage up to 50% more than the normal maximum number of burn patients.<sup>12</sup>

The regional disaster plan was then approached in three phases. Phase 1 involved the development of disaster plans for individual burn centers. It soon became apparent that the circumstances of each burn center differed sufficiently to preclude writing one common plan for use by all burn centers. Instead, the individual burn centers were encouraged to write a plan unique to their own institution, which would then reference the overall regional plan. Recommendation was made to integrate burn center disaster plans into the host hospital emergency action program.

The second phase involved development of the regional disaster plan. The key to the plan is the designation of an experienced burn surgeon at a location remote from the disaster hospital as the disaster facilitator. This step allows delegation of responsibility for phone calls, transportation arrangements, and other administrative tasks away from the burn center director at the disaster site, who is now free to concentrate on patient care. It was decided that the burn center closest to the disaster site would function on its own resources for the first 24 to 48 hours, during which time the disaster facilitator would be arranging assistance according to the wishes of the initiating burn center director. At 24 to 48 hours, assistance would then arrive in the form of transportation assets to transfer patients to other burn centers. If necessary, and if requested for large disasters, activation of the National Disaster Medical System (NDMS) could be accomplished to supply burn care personnel to the disaster area. Under NDMS plans, these experienced burn care practitioners, federalized as members of Burn Specialty Teams, could rotate in 2-week increments until no longer needed.<sup>13</sup>

The final phase involved was the designation of a central communications point, colocated at a burn center at which several experienced burn surgeons would be available to aid in disaster response. The goal of a designated communications center was to be able to provide the regional burn centers with a single phone number to call for assistance. The number re-

mains the same regardless of who is presently serving as the Southern Region Director. This communications point was termed the Southern Region Communications Center (SRCC). The SRCC would maintain the regional preplans, details of individual burn center preferences and capabilities, and a list of essential phone numbers for burn centers, burn personnel, and transport agencies. The disaster committee specified several criteria for the designation of a communications center. The center needed to be staffed and available 24 hours a day and self-sufficient in terms of emergency power, phone lines, and computer equipment. Ideally, the center would be located at an established trauma system dispatching center, regional EMS communications facility, or Emergency Operations Center, where the necessary infrastructure and staffing would already be in place. Finally, costs needed to be kept at a minimum. After examining existing regional facilities, the Birmingham, Alabama, Trauma Communications Center (TCC) appeared the ideal choice. This center, established in 1996, is the hub of the Birmingham Regional Emergency Medical Services System and links 10 trauma centers and the prehospital resources of 6 counties in a 7264-square mile area of central Alabama serving a population of 1.5 million.<sup>6,14</sup> The TCC, through a network, monitors the real-time capabilities and capacities of the trauma and stroke hospitals of the region and routes patients to the most appropriate hospital. The Birmingham location also has the advantage of having a Level I trauma center and two burn centers (pediatric and adult) on campus, as well as two additional experienced burn surgeons presently in administrative practice. The TCC management was approached and enthusiastically endorsed the regional plan and communications center concept.

The disaster committee briefed the regional burn center directors on the progress of plan twice a year at the Southern Regional meeting each November and at the annual American Burn Association meeting each spring. The completed plan was presented to the burn center directors and approved at the May 2005 American Burn Association meeting. In November, 2005, the disaster plan was presented to the entire membership at the Southern Regional Burn Symposium meeting in Nashville, Tennessee. At the same meeting, the regional burn center directors approved a startup date of January, 2006.

## RESULTS

A simple, scalable, and flexible disaster plan was designed. The plan revolves around two key personnel:

the burn center director at the center experiencing the emergency and an experienced burn surgeon located distant from the disaster site who functions as a disaster facilitator. An overview of the plan is presented in Figure 1 and Figure 2.

The regional burn disaster plan focuses on the needs, requirements, and requests of the burn center director who is “boots on the ground” at the center closest to the mass casualty incident. This person decides whether or not to activate the plan; how far to activate the plan; what response from other burn centers would be useful; and when to terminate activation of the plan. In an emergency, the burn center director performs a rapid size up of the emergency as it is unfolding in the emergency department or burn center and then makes a single phone call to the SRCC to request assistance. The SRCC will then page an on-call burn surgeon, who becomes the disaster facilitator. The facilitator quickly reviews the burn assets available within the Southern Region as well as the pre-plans and preferences of the requesting burn center, previously solicited and maintained at the SRCC. Thru the SRCC, the disaster facilitator has access to lists of critical phone numbers, predetermined regional burn center capabilities, information on regional transport capabilities, and a spreadsheet of ground transportation distances between all Southern Region burn centers.

Contact is then made with the ‘boots on the ground’ burn center director who now declares the status of the burn center and makes specific requests for assistance. These requests could include arrangement for diversion of new admissions to the next closest center, transfer of burn supplies from other regional centers, phone calls to suppliers or product representatives, transfer of patients to other regional centers, or assistance in activation of federal plans to bring burn care providers to the disaster area. The disaster facilitator can also act as a communicator to keep other regional burn centers and the national burn leadership apprised of developments, so that the disaster burn center is not further burdened by phone calls.

If patient transfer is desired, the disaster site burn director may make specific requests (for example, transfer of a specific patient to a specific burn center); may provide the disaster facilitator with a list and description of patients that will need to be transferred, (leaving the details up to the facilitator); or may simply request transfer of a given number of patients to other centers, as a starting point in making later transfer arrangements. The on-site burn center director may delegate as little or as much decision-making authority to the disaster facilitator as he or she

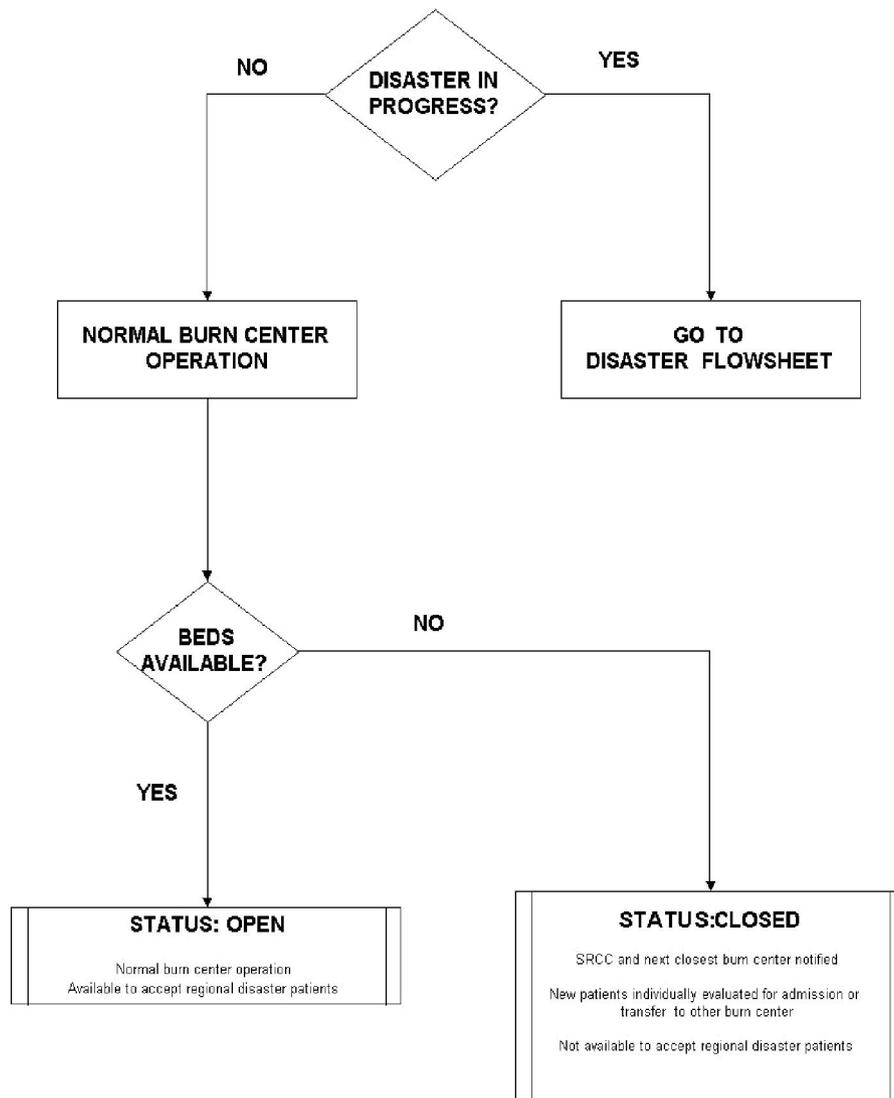


Figure 1. Burn center status.

desires. The entire plan is designed to place the assets and goodwill of the region at the disposal of the requesting burn center director.

If requests for patient transfer are made, the disaster facilitator will start contacting regional burn centers and transportation agencies to arrange patient transfers, which will occur within the next 24 hours. To simplify patient tracking and financial arrangements, whenever possible the transportation assets of the receiving burn center will be used to provide the patient transfer.

To facilitate communication, a standard set of terms describing burn center disaster conditions was created. Standard terminology for burn center status was defined as open, full, divert, offload, and return. The term “open” describes normal burn center oper-

ation. All regional burn centers are listed as open unless the SRCC is otherwise notified. A burn center described as open may or may not have open beds on any given day but has sufficient resources to create bed space for new admissions from the normal referral area or from a regional disaster.

The term “full” indicates a nondisaster situation in which the burn center is full, no additional beds can be created, no patients are ready for floor transfer, no floor beds are available, and/or no additional beds in the intensive care unit can be made available. This situation is increasingly common in contemporary burn practice, and the local and regional response to a full condition follows what is already done in these situations. The burn center director may call the next-closest burn center to advise them of a possible need

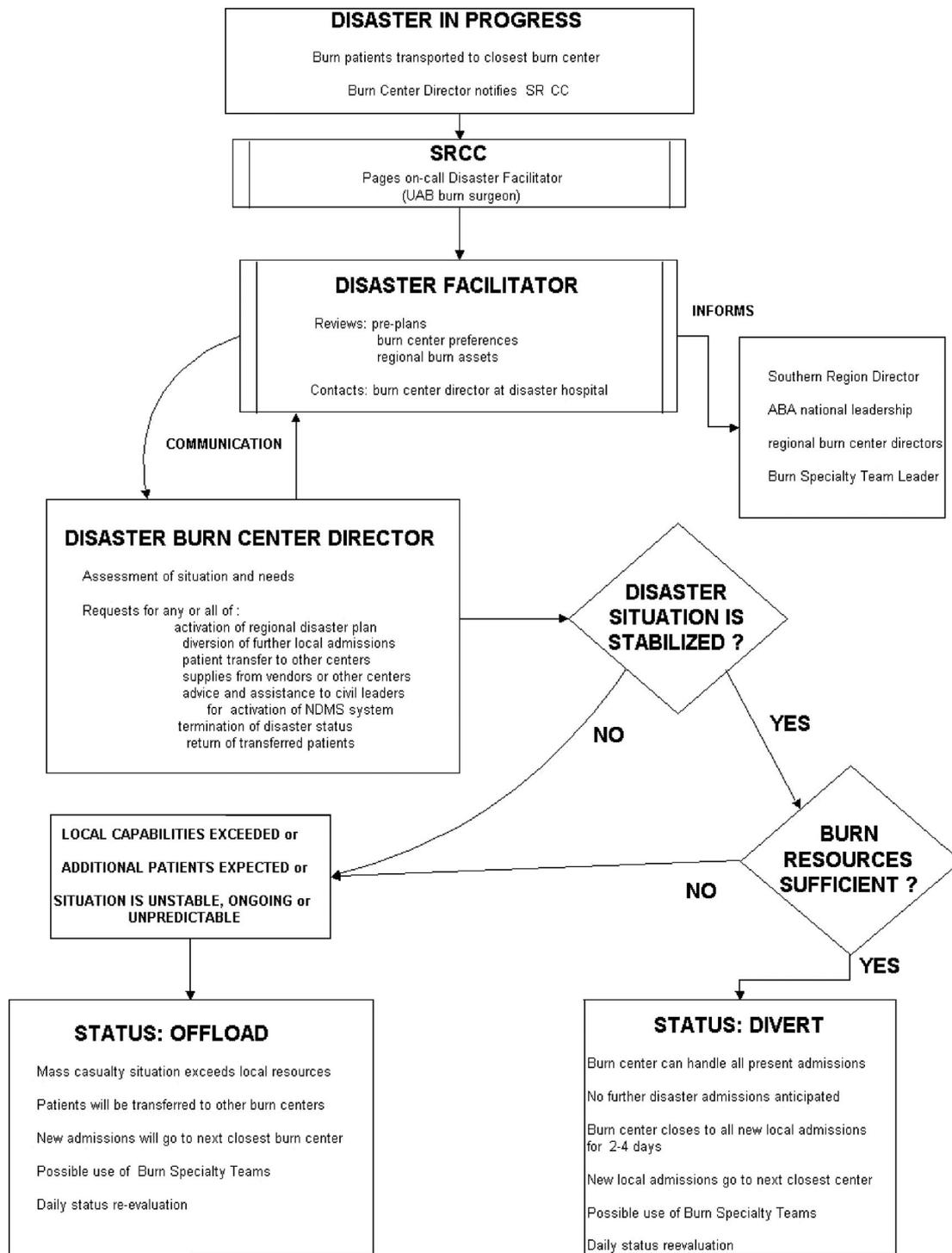


Figure 2. Burn center status.

for assistance and will evaluate each new admission on a case-by-case basis to determine whether space can be provided or if transfer to another burn center would be desirable. The burn center director may elect to notify SRCC of a full status so that the center

will not be contacted for assistance should a regional burn disaster occur.

The term “divert” indicates that there is a mass casualty incident in progress at a regional burn center. A burn center in divert status feels that it can presently

handle all patients and no further patients from the incident are expected. The burn center will automatically close to further local admissions for a predetermined period (2 to 4 days). During this time, all normal burn referrals will go to the next closest burn center. The situation will be reevaluated frequently, and the automatic closure can be extended or shortened by the burn center director as the situation develops. When SRCC is notified of a divert condition, the regional plan is activated and the disaster facilitator is contacted. The disaster facilitator notifies the next-closest burn center to prepare for subsequent admissions and then contacts the other regional burn center directors, the Southern Region director, the Burn Specialty Team commander, and the ABA Central Office to advise of the disaster condition. Further regional actions are then arranged by the disaster facilitator, based on the requests of the disaster-site burn director. Requests for information or offers of assistance from outside the Southern Region will be passed through the disaster facilitator whenever possible, to minimize phone traffic at the disaster burn center.

The next level of disaster response is termed "offload." A burn center reports status as offload to indicate that there is a mass casualty incident in progress that will likely exceed local capacities. This includes situations where the burn center is already overloaded and will not be able to handle all patients; where additional patients from the incident are expected; or where the situation is ongoing, unpredictable and unstable. The term offload denotes a need to either offload patients already at the disaster hospital, to divert any further disaster admissions or nondisaster local admissions to other centers, or both. In an offload situation, the local burn center director notifies SRCC to activate the disaster plan as discussed previously. Through the actions of the disaster facilitator, patients are accepted at other regional burn centers and transfers are arranged. Ideally, within 24 to 48 hours, transport teams and vehicles arrive to start offloading patients. If National Disaster Medical Assistance burn teams will be required, the disaster facilitator or Burn Specialty Team commander can assist local and state authorities in the steps required for NDMS activation.

When the situation is again under control, the burn center director will report status as "return." This term implies that the disaster is over, the burn center is back to normal operations and is once again accepting patients. The burn center will be listed as open by the SRCC. At this point, the status of the transferred patients will be discussed. Depending on the desires of the burn center director, the receiving burn facilities, the transferred patients or their families, deci-

sions will be made to continue care at the transferred facilities, or to selectively move patients back to the referring facility. These decisions will be made on a case-by-case basis.

Although the Birmingham TCC has the capability to track bed and trauma asset availability on an hourly basis, it was mutually agreed that a regional daily listing of open burn beds was neither necessary nor desirable. Rather, a center may voluntarily report status as open or closed on a periodic basis but will not have bed status queried until an actual disaster occurs.

## DISCUSSION

Since the events of September 11th, the attitude of the burn community toward disaster planning has shifted from benign neglect to overkill. We have gone from the thought that a disaster cannot occur in our own community to the present interest of many regional and national organizations in the planning and micromanaging of a 10,000 person burn mass casualty incident. Neither approach is useful or is likely to work in an actual emergency.

The approach taken by the Southern Region is to plan for the contingency deemed most likely. A recent review of 100 years of civilian burn mass casualty incidents revealed that large-scale burn disasters are uncommon. The typical disaster may produce hundreds of fatalities but few survivable or treatable patients.<sup>15</sup> However, any community that has a hotel, high school, railroad, interstate highway, university dormitory, chemical plant, nursing home, grain silo, or illicit methamphetamine laboratory has the potential of producing a regional burn disaster of 5, 10, 20, or even 50 patients on short notice. This is where regional disaster planning should start. Although the Southern Region burn disaster plan is not intended for national emergencies, the ability to provide mass casualty burn care on a regional basis will likely be useful as an adjunct to any national burn disaster.

One obstacle to effective disaster response planning is the eternal question of whether it is better to transfer patients out of a disaster area to other burn centers or to bring burn care expertise into the disaster area to assist. On this question, the burn disaster plans of national organizations conflict. The American Burn Association Disaster plan<sup>12</sup> advocates secondary triage of burn patients from the disaster region to other burn centers. In contradistinction, the Federal Emergency Management Agency (FEMA), through the NDMS equips burn specialty teams to respond into disaster areas to augment the capabilities of regional burn centers when a major disaster is declared.<sup>13</sup> In the Southern Region burn disaster plan,

the answer to this vexing question is simply “it depends.” On the basis of the situation and needs of the disaster burn center director, we maintain the flexibility to move patients out of a disaster area, move caregivers into a disaster area, perform both functions, or do neither as the situation dictates.

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