



Post-Crash Care by Carolle Jewett

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Safety

A small plane crashes in a remote area, with no hope of rescue for several days. The survivors know basic survival techniques but have only rudimentary first-aid skills. How does the pilot-in-command sort, assess and treat injuries when the first-aid kit just went up in smoke? What kind of leadership qualities will that person need? What ethical dilemmas will the leader likely face during the ordeal? A pilot who crashes in a remote area must be prepared to provide pre-hospital care without support from or contact with a physician.

There are many books and training programs about survival after a small-plane crash landing ... how to find water, how to prepare a shelter, build a fire or signal for rescue. But one aspect of survival frequently overlooked is first aid in a remote and hostile environment. This type of first aid involves assessing and treating injuries to you and your passengers -- possibly for an extended period -- while awaiting rescue. While this article alone won't accomplish that goal, it will at least demonstrate the need for training and provide some ideas on how pilots can prepare and equip themselves.

Assessing Injuries

Any assessment of injuries must begin with the basics, conveniently known as the ABCs -- for airway, breathing and circulation. Using this "checklist," we assess and fix any immediate, life-threatening injury. Examples can include a closed or compromised airway, ensuring the victim is breathing and has a heartbeat, and is not hemorrhaging.

Once the three items on this checklist are complete, we move on to a more thorough assessment of the victim's injuries. Paramount in this process is being mindful of the potential for spinal injury: Keep the victim as motionless as possible throughout the examination until you are certain no spinal-cord injury exists. Try to keep the victim's head aligned with the midline of his or her body at all times.

Start at the top of the victim's head and work your way down, using both hands, looking at and feeling the body. One of the things you're doing here is looking for blood. Carefully move the flat of your hand under the neck, back, buttocks and legs, frequently checking your hand for blood. Keep in mind the old truism from emergency rooms that the worst injury will be in an area of the body least exposed.

Move all the way to the victim's toes. If your examination finds blood at any point, stop and expose the skin whenever possible, preferably by removing clothes, not cutting them. If you must cut the clothing, tape them back together after the exam to retain warmth. (You do have a roll of duct tape in your airplane's equipment, right?) Generally, I recommend leaving footwear on the feet; once removed, they will be difficult to replace due to swelling. Also, if there is a fracture, the shoe or boot will serve as a splint.



Now what? First order of business is to get out of the plane. After that? See "Pyramid Of The Seven Gets" at right.

This part of the assessment is not "stop and fix"; if you discover a fracture or laceration but it's not hemorrhaging, don't stop. Continue with the exam until you have inspected the entire body -- there may be something critical just beyond the next joint.

Now that the top-to-bottom examination is complete, it's a good time to try to get some medical history: Does the victim need any personal medications for conditions like diabetes, angina or seizures? Were the medications aboard the plane and can they be retrieved? It might be a good idea to learn about any such conditions among your passengers before taking them on a cross-country flight.

Triage And Treatment

You have three passengers. You managed to get everyone to safety, despite a severe gash on your upper leg that is bleeding heavily. Your co-pilot is unconscious and bleeding from a scalp wound. An elderly passenger is gasping for breath and rubbing his left arm. His wife is sitting on the ground, clutching her elbow and screaming, "I'm hurt, I'm hurt!" Whom do you treat first?

Triage, a French word that means "screening," has become associated with the sorting and allocating of medical care in the field, based on need and the available resources. In this case, a primary resource is the caregiver's knowledge and ability to treat others.

There are several types of sorting categories, depending on the medical facility or group performing triage. For our purposes, however, there are only three: immediate (for the life-threatening injuries); later (for broken bones and lacerations); and last (for everyone else). Remember: You cannot treat and take care of your passengers if you are suffering from life-threatening injuries yourself. So ... who gets treated first? That's right: You do. Then, you attend to the head injury, the possible heart attack and, last, the hysterical woman with a possible dislocated elbow.

One tool we can use to help decide who needs what and when is taking the victim's vital signs. These include the rate and quality of the heartbeat and respirations, the temperature and color of the skin, and the relative size of the eyes' pupils. Together, these vital signs can be thought of as the body's "engine instruments" and should be used to help us decide if the victim is going into shock, or if the airway or lungs have been compromised.

But the most important "instrument" of all is the level of consciousness, or LOC. The LOC can be evaluated by determining if the person is alert and oriented to time and place, only responds to voice, only responds to pain, or does not respond at all.

Another technique worth mentioning is "clearing" the spine. In urban first aid, we expect an ambulance to arrive within 10 to 20 minutes, and we're taught to keep the victim's head and neck immobilized and wait for the paramedics. In wilderness first aid, it may be days before rescue and you won't want to completely immobilize someone if they don't need it. So, you'll need to conduct a more formal spinal



Do you know what you need in a first-aid kit after an aircraft accident? (See "First-Aid Kits Vs. Survival Kits" at right.)

assessment, one based on evaluating neurological function, which will tell you if a victim's spinal cord has been injured.

The examination used to "clear" the spine asks questions such as: Was the injury severe? Is the victim sober? Is the victim distracted from your questions and probing by pain or emotional distress? Is there pain, tingling or numbness in the extremities? Is there pain or tenderness when you touch along the spine? Can the victim move his/her head without pain?

If they pass this exam, they can get up and move around as well as they can tolerate. If not, keep them immobilized.

In-Flight Emergencies

What constitutes an in-flight medical emergency, and what can you do to help while maintaining control of the aircraft? The answers depend on what's going on with the patient, but any situation becomes an emergency when the person becomes confused, lethargic or unconscious. Other signs of a medical emergency can include sudden and severe pain, shortness of breath, sudden weakness, difficulty in speech or a seizure.

The first thing to do should be obvious: Fly the airplane! Next, ensure the distressed passenger can't interfere with the controls. Engage the autopilot and move the passenger seat back; if necessary, manipulate the seat adjustment lever, pitch the airplane up and let gravity do the work. If the passenger is unconscious, lower the seat back no more than 45 degrees while ensuring the head is supported and there is an adequate airway. Of course, if there are other passengers who can help, let them help stabilize the patient while you concentrate on flying the airplane.

If there are no other passengers aboard who can help, do not try performing CPR, even with the autopilot engaged -- you'll be wasting precious time. Instead, concentrate on declaring an emergency and making sure ATC knows you'll need an ambulance on landing. If you beat the ambulance to the airport, don't wait for it before starting CPR.

Once on the ground, pull off the runway onto grass or a taxiway, shut down, pull the passenger out of the airplane and onto the ground, assess the ABCs discussed earlier and perform CPR as necessary. Let the ambulance come to you. While waiting on an ambulance and if the airplane is equipped with oxygen and the patient is conscious, administer O₂ to the patient until help arrives.

Ethical Dilemmas

Ethical dilemmas in medical care traditionally apply only to health care professionals. However, many of the same issues can arise in the wilderness setting for someone who is called upon to administer first aid without benefit of medical training, advice, guidance or equipment. The combination of limited skills, limited resources and the likelihood of a prolonged delay before rescue brings up several considerations.

For example, the decision of what goes into your first-aid kit, how well-trained you are to use it, and how well you can improvise with the resources available determines the limits on treatment you are willing to accept for yourself and your passengers. On the other hand, no matter what first-aid supplies you carry or how well trained you are, limits to available care still exist. So, just as you should do when making decisions when airborne, know your limitations. An untrained person's capabilities and their decision-making abilities will vary widely.

The responder must weigh the chance of performing a procedure that may benefit the patient against the possibility of doing further harm. Sometimes, the person feeling responsible for the others may take steps that will place the survivors at further risk. For example, do you abandon your passengers to go in search of food, water or rescuers, or stay, knowing that a potential rescue may be delayed? What if you

are the only one with first-aid or survival skills? Of course, there are no easy answers to these questions, only more questions.

Conclusion

This article is by no means a complete course in wilderness first aid. For that, you'll need to sign up with a local ski, climbing or hiking club, as one example. Meanwhile, think about what equipment you want to carry and play the "what-if" game on every flight.

And while the unthinkable may never happen to you, it's best to ask yourself these kinds of questions in advance and think through the consequences of your actions at least once. Then, if the unthinkable does happen, you will have desensitized yourself to the very real chaos of a life-threatening emergency. And that just might give you an edge on living through this emergency to fly again.

Wilderness survival is very much like getting to Carnegie Hall -- it takes practice.

The Pilot's Leadership Role

We usually don't think too much about what kind of leadership skills we need to manage passengers in an emergency. Thankfully, most of us flying personal aircraft seldom take more than two or three passengers along on our cross-country flights. But, if a pilot has to put down in a hostile environment with injured passengers as a result and there is no hope of rescue for several days, you can bet that some leadership skills will be needed.

Some of the passengers will look to the pilot-in-command as the the person who will get them home safely. Of course, they may instead look at the pilot as the one who got them into this mess. How you handle the various personalities, egos, fears and opinions will depend on your own leadership and interpersonal skills. Depending on the circumstances, you may want to delegate leadership to someone -- if you're "lucky" enough to have an emergency-room physician aboard when you crash, for example -- but the group should never be left leaderless.

First-Aid Kits Vs. Survival Kits

When pilots think about how to equip their aircraft for emergencies, much of the thought goes into spare parts or tools needed to get back in the air from some dark and stormy ramp. Often, little thought goes into what should be in a first-aid or survival kit -- or the differences between them.

A first-aid kit should contain items chosen to treat the kinds of injuries expected and the expertise of the user. When putting together such a kit, go through the scenarios of the first hour after a crash and play the "what-if" game: What if you have broken bones, what will you need? What if I have burns, lacerations and/or dislocations? What equipment will I need and what could I improvise?

Then, extend the what-ifs to the following six hours, and then through the several days it may take in a remote area while awaiting rescue. For example, a pre-existing medical condition, personal medication, pain control, chronic illness and dehydration are some of the factors you may wish to consider in assembling a first-aid kit. A good starting point is to list the medical supplies you would need for two weeks in the wilderness, then make your selections based on anticipated needs, how large and heavy

you can allow the kit to be, and how much you want to spend.

Some obvious items may include:

- Rubber or latex gloves
- Dressings to stop bleeding
- Cleansing agent/soap and antibiotic towelettes to disinfect
- Antibiotic/burn ointment to prevent infection
- Eyewash solution to use as a general decontaminant
- Prescription medications or supplies
- Tools (scissors, tweezers, etc.)
- Tube of petroleum jelly or other lubricant
- Pain relievers, anti-diarrhea medication, antacid and a laxative

A survival kit should be designed to consider the terrain and time of year. The bare minimums of a survival kit should be water (pack it in several small containers instead of one large one to reduce the chance of breakage during the crash), or a method of purifying or desalinating it. Other items include fire-starting materials, a metal container for drinking and to heat food/water, appropriate clothing, shelter equipment, signaling devices and marking material, a compact shovel, an all-purpose knife and packaged food. Remember: Anything you eat will require water to digest. The drier the food, the more water required during the digestive process.

Finally, be sure to keep these kits in a location where you can get to them as you evacuate the aircraft, like behind the front seats or within easy reach of your passengers.

Pyramid Of The Seven Gets

As pilots, we literally live or die by our checklists. They serve as guidelines for what to do and when to do it in both normal and emergency operations. After a crash landing, you may need a first-aid checklist to use as a guide in caring for yourself and your passengers. The Pyramid of the Seven Gets illustrates your survival priorities:



1. **Get Out:** Get yourself and your passengers out of the airplane immediately. Don't presume there won't be a fire because you don't see or smell fuel. Grab a first-aid or survival kit only if they are within easy reach -- don't waste time looking.
2. **Get Safe:** Gather passengers at least 100 feet away from the wreckage. Wait at least 30 minutes before returning. Ensure the cockpit is well-ventilated before manipulating any electrical equipment, which may be uninsulated and create a spark.
3. **Get Treatment:** A first-aid kit is only as good as the person using it; you don't have to be a medical professional to handle injuries and illnesses in a wilderness setting.
4. **Get Shelter:** As soon as injuries are assessed and treated, get ready for the first night. Build a fire and gather items that can protect you from the weather.
5. **Get Water:** You will need water before you will need food. Assess your resources and remember you can survive for weeks without food, but you'll last only a few days without water.
6. **Get Seen:** Know how to use the signaling devices you carry in the plane, how to make them and how to attract passing planes and ground-rescue parties.
7. **Get Home:** No one survives a crash uninjured. Even if you walk away without a scratch, there will always be some emotional trauma. Know what to expect in feelings and behaviors as well as physical symptoms in the coming weeks and months.

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