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CONCEPTS

Psychological First Aid for Wilderness Trauma: Interventions for Expedition or Search and Rescue Team Members CME

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When exposed to actual or threatened death or serious injury in austere settings, expedition members are at risk of acute stress reactions, as are search and rescue members involved with extricating the patient. Acute stress reactions are a normal response to significant trauma and commonly resolve on their own. If they do not, they can lead to post-traumatic stress disorder (PTSD), a set of persistent symptoms that cause significant effects on the person's life. Medication has a limited preventive role in the field for treatment of stress partly because so few are trained to administer it. Contrastingly, psychological first aid can be performed by lay team members with minimal training. Psychological first aid consists of interventions attempting to encourage feelings of safety, calm, self-efficacy, connection, and hope. These are interventions that provide guidance to not make the situation emotionally worse and might have a preventive effect on later development of PTSD. They are valuable in the field not only for the patient but also for affected team members as well as for search and rescue team members who may be indirectly affected by the trauma and experience repercussions later.

Keywords: acute stress, post-traumatic stress disorder

Actual and threatened death and serious injury can occur anywhere, resulting in mental health consequences as well as physical health consequences. When traumatic injuries or events occur in wilderness settings, care must often be continued over long time periods with few resources for support. In expedition settings, team members must become the default rescuers, medics, and emotional support for their team members. In search and rescue (SAR) settings, responders plan for emergent treatment but still are required to stay engaged in the situation for longer times and with fewer tools than their front country colleagues. Because of these challenges, wilderness response situations present an opportunity to positively influence both current and longer-term psychological consequences of the trauma. Solid psychological preparation and response, in the form of psychological first aid (PFA), can reduce stress and improve outcomes for all involved both in the field and after the mission has resolved.[1,2]

Biological stress reactions to dangerous situations are highly adaptive. They allow human bodies to adjust for maximal response to external threats, encouraging strong focus on the stressor and the energy to react defensively. Stress reactions are mediated by stress hormones, including immediate release of catecholamines, including adrenaline, through the sympathoadrenal medullary system, which results in the "fight, flight, or freeze" responses, and more delayed release of cortisol through the hypothalamic-pituitary-adrenal axis, which encourages prioritization of body resources to address the stressful situation.[3] This reduces activation of resting and healing body processes as well as mental processes that are not tightly focused on the stressor, such as memory and integration of information. Oxytocin is released further down the stress cascade, which results in a "tend and befriend" response to increase social activity to help reduce stress responses.[4]

Expected stress reaction responses are described by the Diagnostics and Statistical Manual of Mental

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Table 1. Symptoms of acute stress

Acute stress disorder symptom group	*Symptom examples*
Intrusion	• Recurrent distressing memories of the event • Distressing dreams • Feeling as though the traumatic event is recurring • Intense psychological distress to cues about the event
Negative mood	• Persistent inability to feel positive emotions
Dissociation	• An altered sense of reality—seeing yourself from a different perspective, feeling in a daze • Inability to remember important aspects of the traumatic event without a physical reason for the lack of memory
Avoidance	• Efforts to avoid distressing memories, thoughts, or feelings associated with the event • Efforts to avoid external reminders of the event
Arousal	• Sleep disturbance • Irritable behavior and angry outbursts • Hypervigilance • Problems with concentration • Exaggerated startle response

Disorders 5th ed. diagnostic system, in which they are divided into 5 symptom groups for the diagnosis of acute stress disorder (ASD): intrusion, negative mood, dissociation, avoidance, and arousal (see Table 1).[5] Although acute stress reactions can become intrusive and painful if they are extremely intense or if they do not resolve in a timely fashion, many people experience a return to normal function without any form of intervention, so no diagnosis is warranted.[6] When immediate reactions are overwhelming to the point of dysfunctionality, ASD may be diagnosed.[7] If these reactions persist for more than a month beyond the trauma experience, they can form a chronic post-traumatic stress disorder (PTSD) that merits therapeutic intervention.[8] However, many people who experience highly significant stress reactions show dramatic improvement in symptoms after trauma, demonstrating significant resilience. In 1 study, 94% of the evaluated survivors of significant trauma met the criteria for PTSD at the first assessment, whereas only 47% met the criteria after 12 weeks without intervention.[9]

Risks of developing ongoing stress reactions vary widely, and the threshold of what is sufficient trauma to develop ongoing stress reactions is variable depending on a person's history and resiliency factors.[10] In the wilderness context, trauma sufficient to cause ongoing stress reactions might be anything that causes serious injury and requires rescue and evacuation or might even be "near misses" that make risks of danger significantly more salient, even if no one is actually injured. Moreover, indirect trauma that occurs when a life-threatening event happens to someone close is also frequently sufficient to cause stress reactions. In a wilderness setting, the "it could have happened to me" mindset is very salient.[8] Cumulative traumas are much more likely to cause adverse stress reactions than isolated traumas despite the possibility of long time periods between the different traumas.[11] Because of this, among first responders, PTSD rates are elevated.[12] Prior diagnoses of borderline personality disorder, major depressive disorder, or anxiety disorder have been shown to be strong risk factors for PTSD development.[13] Conversely, horizontal cohesion or strong group identification and intragroup support, often present on an expedition or SAR team, have been shown to be strong protective factors against PTSD development.[14]

Given the likelihood of stress reaction response to wilderness trauma events, wilderness leaders and physicians must be prepared to treat it while it is present, whether it quickly resolves or becomes an ongoing concern. Medications provide some options, although their uses are specific and limited. Research has strongly demonstrated that required attendance in single-session discussions of the trauma does not reduce PTSD rates and often feels intrusive to the participants.[15,16] Realization of the limitations of these methods of treatment has focused current intervention efforts on PFA.[17]

Behavioral interventions for acute trauma began with critical incident stress debriefing (CISD).[18] It was developed to treat secondary trauma in emergency workers who are exposed repeatedly to the trauma of others. Critical incident stress debriefing interventions were largely composed of a single 1-h to 3-h session with members of an emergency worker team that had dealt with a concerning event, during which the event is discussed and emotional reactions to it are analyzed. Often, participants were told that participating was required by their employment. Despite its initial popularity, CISD was not based on empirical evidence, and further investigations showed that it did not lead to improved PTSD outcomes.[15,19] Its use has greatly declined because many groups have shifted to other more broadly applicable and less directly targeted interventions.

Currently, the primary behavioral intervention recommended for post-trauma use is PFA.[2,17] It is designed for use with all people present at a trauma-inducing incident, including the directly traumatized, rather than

Table 2. Psychological first-aid elements and actions, with suggested wilderness psychological first-aid behaviors

Hobfoll et al PFA principles	*The American Red Cross PFA actions*	*Suggested wilderness PFA behaviors*	*Suggested wilderness PFA statements*
Safety	• Helping people be safe • Meeting people's basic needs	• Move to physically safe areas • Isolation from visual and auditory aspects of the traumatic event • Verbal reassurance of safety and progress • Oversee sufficient food, water, and sleep	• "We are in a safe place now." • "Would you like food, water, or rest?"
Calm	• Being kind, calm, and compassionate	• Take the other person's perspective • Boxed breathing • Mindfulness meditation	• "Can you tell me what you are thinking about now?" • "Can we breathe slowly together?" • "Let's concentrate on physical sensations together."
Self-efficacy	• Encouraging good coping • Taking care of yourself	• Set SMART goals for everyone • Give earned praise • Treat the patient as a resource; do not call them a victim • Prioritize self-care	• "Let me tell you about the goal for this half hour." • "You are doing a really good job. I'm impressed." • "I need to take a break now."
Connectedness	• Making a connection • Listening • Helping people connect • Making a referral to a disaster mental health worker • Ending the conversation	• Prioritize group cohesion • Reach out • Listen • Appropriate human touch • Use available services to talk to distant loved ones • If concerned, discuss concerns with the leader • Accept connection boundaries	• "How are you feeling?" • "Would you like a hug?" • "I'm so grateful we are all here working together." • "Who do you want to talk to first when we get back in cell phone range?"
Hope	• Giving realistic reassurance • Giving accurate and timely information	• Limit negative discussion and humor • Regular gratitude check-ins • Have scheduled meetings for updates/goal discussion • Share important updates as soon as possible	• "Here's what's going well for us…." • I'm grateful for…. What are you grateful for right now?" • "Let's talk about plans and set new goals for the next half hour." • "I wanted to make sure you heard what happened."

PFA, psychological first aid; SMART, specific, measurable, attainable, realistic, and timely.

being directly targeted at emergency workers. Although work is beginning to support its empirical basis,[1] the criticism of poor evidence that is leveled at CISD can also be trained at PFA. Its proponents admit that although it is evidence-informed, it is just beginning to establish an evidence base.[17] Psychological first aid follows principles that are unlikely to cause harm and that are less directly confrontational of emotional concerns than CISD. The American Red Cross trains all of its volunteers in it not because there is evidence for benefit beyond expert opinion but rather because it appears safe, it can be done by lay providers, and it might be helpful.[20]

Activities combined under the umbrella term of PFA can vary substantially, but they tend to follow a core set of

principles. This modern usage of PFA dates back to the article by Hobfoll et al[17] summarizing 5 evidence-informed principles of intervention that had justification for helping and little chance of harm. The 5 elements can be implemented by lay providers in the field to assist either people affected by trauma or their rescuers: safety, calm, connection, self-efficacy, and hope.[17] The American Red Cross teaches a model with PFA represented in 12 specific actions.[21] For the present purposes, we describe PFA by combing elements from the review by Hobfoll et al[17]with American Red Cross's actions and then describe how each of the elements can be accomplished behaviorally and verbally within a wilderness setting. These interventions are appropriate for individuals and groups in the field as well as after the action (see Table 2).

Safety

HELPING PEOPLE BE SAFE

One of the most powerful interventions is decreasing the amount of ongoing trauma by getting people into physically safe areas out of perceptible harm's way. Both rescuers and patients need to be provided with physical safety and an emotional sense of safety. In the wilderness, it is important to judge safety within the known competencies of the person or team involved. Some might be terrified by exposure on a cliff, whereas others might not be frightened by it at all. The perception of danger can be as important as or more important than the danger itself; isolate the person from visual and auditory aspects of the traumatic event. Be sure to consider risks from weather exposure as well as mechanical injury when choosing the safest area to convene.

MEETING PEOPLE'S BASIC NEEDS

As people experience stress reactions, they focus on the trauma experience rather than their physical needs and are less able to notice hunger and thirst.[22] This can create a vicious cycle in which people in extended trauma care situations do not care for themselves adequately, resulting in more physiological stress and less physical capacity. Ensuring that everyone is eating, drinking, and resting adequately as similarly to their normal rhythms as possible will reduce additional stress.

Calm

BEING KIND, CALM, AND COMPASSIONATE

Kindness is defined in part as being "friendly, generous, and considerate." For many people, stress reactions turn quickly into blame and anger. As described above, intense stress reactions can be helpful in imminent danger but do not help solve longer problems, such as regrouping and leaving the wilderness. A person who is flooded with anger or fear has a difficult time meeting these kind and compassionate interaction goals. Being aware of the risk of stress reactions overwhelming usual equanimity strongly assists in recovering it. Being kind is a choice, and those who feel frightened and overwhelmed can make the choice to act with kindness even when it is not their first automatic response. Further, kindness is catching. When one person is calm and thoughtful and checking in with others, that example often serves to calm those around them. Compassion is crucial to good group interaction because everyone involved is having a very difficult day. Choose to exercise compassion by purposefully changing perspective to consider the challenges the person expressing anger is facing. This helps further group calm and defuse potential arguments.

Whether calm or not, it is important to project calmness on the traumatized person. This fosters kindness and compassion in your colleagues, which will improve the group dynamics. A technique used in therapeutic settings that can be applied in the field to induce calm is breathing regulation, which increases parasympathetic tone and helps metabolize stress-induced catecholamines.[23] Various breathing techniques have been proposed, but a simple technique that is easily remembered is "boxed breathing." This refers to a pattern of 4 counts of inhaling, 4 counts of breath holding, 4 counts of exhaling, and 4 more counts of breath holding. Boxed breathing is appropriate for the rescuer attempting to maintain a calm demeanor and for the patient attempting to attain calmness or decreased pain. Mindfulness meditation, among other techniques of meditation, also serves to dampen sympathetic tone and improve anxiety and is an appropriate practice in the post-trauma setting.[24] Although mindfulness meditation is much more effective with training and repeated practice, taking 5 min to sit still and try to let all thoughts move past, concentrating solely on the breath, will have a significant calming effect for most people.

Self-Efficacy

ENCOURAGING GOOD COPING

The perceived sense of control greatly enhances self-efficacy, and is strongly linked to active confrontation of the problem rather than passive avoidance strategies.[25] Coping self-efficacy or one's belief in their capacity to manage post-traumatic recovery has been shown to mediate the connection between acute stress responses

and later development of PTSD.[26] One of the strongest strategies to increase the sense of control is setting goals. A good way to evaluate the utility of goals is with the acronym SMART—specific, measurable, attainable, realistic, and timely.[27] By making sure that the goals are small, targeted, and attainable, progress toward the overarching goal of rescue from the wilderness can be experienced even if that overarching goal is far away. Hiking, climbing, or skiing to the trailhead is inconceivable to an injured patient, but getting 200 meters to the next switchback can be achieved. Stringing together small achievable goals leads to mission completion. Additionally, use of sincere earned praise after goal achievement can strongly reinforce self-efficacy and connection as well.[28]

Self-blame can interfere with self-efficacy. A realistic assessment of the event may be appropriate, but blaming the patient or party members will harm rather than help. "There's nothing you could have done" might be an appropriate comment if true.

Bear in mind that trauma in the wilderness setting often requires collaborating with the injured party, and their self-efficacy is also important. An important first step is calling them by their name and speaking to them directly. Calling them "the victim" leads to them losing any sense of ability to help themselves; it reduces self-efficacy. Treating the patient as a valued part of the team, who brings insight into the current problems and has specific contributions that only they can make, rather than a liability greatly increases overall group efficacy. Another important facet of encouraging good coping is creating strong support for group connectedness, as discussed later.

TAKING CARE OF YOURSELF

Care for others is central, but so is care for the self. The longer-term situations that the wilderness presents, as contrasted to the short term necessary to conduct an emergency response in the front country, require increased levels of self-awareness and self-care. People who do not meet their own physical or emotional needs are much more likely to be overwhelmed with emotion than people who are caring for themselves adequately. Not taking care of yourself endangers your contributions to the party in addition to endangering you.

Connection

MAKING A CONNECTION

Human beings are very social in the best of circumstances, and they become even more so while experiencing stress responses. As the stress response unfolds, oxytocin release contributes to increased social interaction needs.[29] Even before a traumatic event, most members of a wilderness expedition will develop a close connection with each other quickly. This is very helpful because increased group cohesion, resulting in group social support, is a significant resilience factor against developing PTSD in the future.[14,30] Further, sometimes human touch, as simple as a hand on an elbow or shoulder, can have a profoundly calming effect. As in all situations where physical touch occurs, consent to that touch is paramount. If there is any question of whether touch is desired, verbally asking before initiating touch is strongly recommended.

Pre-existing social connections often mean that in the event of an accident, party members will have a social connection advantage over a rescue team when interacting with the patient. To facilitate connection, the team should strive to involve party members if possible and to maintain consistency of personnel. Whenever possible, a consistent person caring for the patient improves eventual connection. Additionally, stability of personnel in wilderness settings facilitates the recognition of subtle mental status changes.

After an incident, an appropriate first step in creating or reinforcing a connection is reaching out verbally. Many people are overwhelmed after traumatic events, and initiating a conversation helps someone make a connection. It is very common for people to not reach out because they do not know what to say, and frequently, their friends feel the same way. Engaging them both in conversation can help them bridge their communication gap. If a person asks to be left alone, that is the best thing to do, but many people who want company are not emotionally capable of initiating the contact.

LISTENING

Contrary to the aforementioned fear of not saying the right thing, most people who are hurting simply need someone understanding to listen to them. There are no magic words that will make a trauma stop being traumatic, but feeling the presence of another person is calming and regulating, and having someone listen to what is expressed is very comforting. One must remember that supportive listening is different from problem solving: the goal of a listener is to be present and caring, not to create a specific behavioral plan for the future.

HELPING PEOPLE CONNECT

Although communication options are often limited in the wilderness, the development of satellite technology has

greatly increased the possibility of communicating with the outside world. If available, use this technology to put patients in touch with loved ones. This can boost morale a lot if at all feasible.

MAKING A REFERRAL TO A DISASTER MENTAL HEALTH WORKER

Although this is the most American Red Cross–specific of their actions, it is also applicable in a broader sense. If one observes concerning behavior, it is always appropriate to ask for help. Although there might not be a mental health specialist available in the wilderness setting, it is absolutely appropriate to gently suggest seeking further care once evacuation is completed. If the behavior is notably concerning, it should be brought to the attention of the trip leader immediately.

ENDING THE CONVERSATION

Conversations run their courses; they end either for lack of more to say, because other work needs to be done, or because the person listening has reached their emotional limit. Team members must feel free to create boundaries when they need to. Ways to signal the end of a conversation include asking if the conversational partner needs anything else or describing a task that the person ending the conversation needs to attend.

Hope

GIVING REALISTIC REASSURANCE

Although having a positive attitude and sharing it is very helpful to maintain group morale, these positive thoughts must be grounded in reality. Lies, even well-intentioned ones, are corrosive to future trust. Reassurances such as, "You are going to be fine," often ring false when there is no way to know that it will be true. Conversely, overly negative assessments can result in loss of self-efficacy, which can spiral into poor effort and failed tasks. The goal is to maintain a middle-of-the-road approach that is grounded in reality but does not dwell on the negative. Although lightweight humor can often add to this in a positive way, be very careful to not transition into darker humor that is often shared by emergency workers.[31] That type of humor works because it distances the emergency workers from the injured, and in a wilderness setting, everyone must be on the same team to be successful.

One key to keeping reassurance realistic is to focus on the current situation and reassure about immediately upcoming events. It is sure that there will be dinner in an hour; it is unclear if there will be a helicopter until it lands. Talking about dinner and that you ordered a helicopter is reassuring, but do not give arrival guesses until you feel certain they can be accurate.

A useful tool to emphasize the positive is to complete gratitude activities.[32] Gratitude can be defined as noticing and appreciating the good in the world. One way to involve gratitude in a group setting is to have each person state what they are grateful for at scheduled times, such as meal breaks. Regular focus on gratitude increases positive mood and self-efficacy in addition to being a social cohesion ritual.

GIVING ACCURATE AND TIMELY INFORMATION

Scheduled meetings are usually part of SAR standard protocols but can also be very useful additions to expeditions dealing with trauma. Using meetings to assess progress, update on previously established goals, and create new goals can help create a sense of order and routine. The SMART goals, as discussed above, strongly increase a sense of hope. Having anticipatable events reduces stress and enhances group cohesion. Meetings are also an excellent time to focus on delivering appropriate, earned praise. However, if notable information arrives through any channel before the next scheduled meeting, it is likely that sharing it immediately will be a good idea. Making sure that highly important information is shared in as timely a fashion as possible enhances group trust.

After the Return

After return from the wilderness setting, there will be many more resources available to address any lasting trauma responses. After-action reviews are commonly completed to examine the outcomes of a rescue mission. These are typically organized by the responding SAR teams and are based on function rather than psychology. As stated above, psychological debriefing, as originally envisioned, is not currently recommended because of a lack of evidence of its efficacy.[15] The current standard for addressing possible lasting trauma responses is to offer individual psychological resources in an optional way and encourage those with lasting stress reaction symptoms to seek care. Referrals for both therapeutic and medical interventions are appropriate.

Psychotherapy may have a larger effect than medication in reducing PTSD symptoms.[33] Cognitive behavioral therapy, with or without a trauma focus, has a long track record of success.[34] Solid evidence also exists for eye movement desensitization and reprocessing (EMDR) therapy.[34,35] The success of EMDR is likely related to the exposure component, which is the cornerstone of most successful anxiety therapies. Exposure therapy in various

forms has a demonstrated record of decreasing or eliminating post-traumatic symptoms.[36]

The selective serotonin uptake inhibitors (SSRIs) paroxetine, fluoxetine, and sertraline are effective in reducing PTSD symptoms.[33] Studies also support the use of venlafaxine, risperidone, and topiramate.[33] Tricyclic antidepressants, other SSRIs, other antipsychotics, and other anticonvulsants have been examined but not demonstrated to result in benefit, suggesting that effectiveness is not driven purely by drug class.[33]

On a final note, PFA principles remain as applicable after completing a traumatic mission as they were during it for patients, wilderness expedition members, and SAR team members. Lives, in general, are made better with active work to include safety, calm, self-efficacy, connectedness, and hope.

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