Spine-injury victims can be transferred to a long spine board using either the log-roll maneuver or the lift-and-slide technique.

Several factors can influence one’s decision on which technique to use, including victim positioning, victim size, the number of available personnel, rescuer preferences, rescuer experience level, the presence of protective equipment, and the space available to the rescuers.

To keep their options open, all primary responders should familiarize themselves with the numerous variations that are possible for each technique.

Key Words: cervical-spine immobilization, transfer techniques, log-roll maneuver, lift-and-slide technique

In order to prevent neurological injuries secondary to those produced by an initial trauma, spinal-column movements of the cervical-spine-injured victim must be restricted as much as possible. Thus, manual in-line stabilization of the head and neck must begin immediately after the injury (American Academy of Orthopaedic Surgeons [AAOS], 1999; American College of Emergency Physicians [ACEP], 1999; Copass, Gonzalez, Eisenberg, & Soper, 1998; Jones, Weigel, White, McSwain, & Breiter, 1992; Kleiner et al., 2001; Sanders, 2000). This entails holding the head and neck in alignment with the spine to prevent structural deviations from occurring (AAOS, 1999; ACEP). Then, before the victim can be transported to the hospital, manual stabilization must be replaced with mechanical stabilization or full immobilization to ensure that unwanted movements are not generated during transit. In the case of a cervical-spine injury, full immobilization is accomplished by securing the head, neck, chest, and pelvis of the victim to a long spine board (Jones et al.). Only when the victim has been properly secured to the board is the entire spine supported and the immobilization process complete (Campbell, 2000; Jones et al.).

The task of transferring a victim from the ground to a rigid spine board is accomplished using techniques that are designed to facilitate movement of the victim while still offering protection to his or her spine. Transfer techniques include the log-roll maneuver and the lift-and-slide technique.

The log-roll maneuver has traditionally been the more commonly used method of transferring spine-injured victims (ACEP, 1999; De Lorenzo, 1996; Suter, Tighe, Sartori, & Reed, 1992). This tendency might have developed because of the obscurity of alternative methods (i.e., the lift-and-slide technique). A review of textbooks, handbooks, and scientific-journal articles seems to confirm this suspicion, because most written accounts have focused on the log-roll maneuver, providing only trivial descriptions, if any, of the lift-and-slide technique (AAOS, 1999; ACEP; Arnheim & Prentice, 2000; Campbell, 2000; De Lorenzo; Magee, 1997; Sanders, 2000; Starkey & Ryan, 1996).

Although preferential use of the log-roll maneuver continues to this day, new published guidelines and recommendations (Kleiner et al., 2001) might change the way rescuers care for spine-injured victims. In addition to summarizing the numerous variations of the log-roll maneuver, this article will serve as an instructional aid on the execution of various forms of the lift-and-slide technique, to reinforce the notion that an alternative to the log-roll maneuver is indeed available for use by primary responders.
Overview

A review of written literature and pictorial demonstrations reveals variations of both the log-roll maneuver and the lift-and-slide technique, including personnel requirement, rescuer responsibilities, and spine-board positioning.

The following sections illustrate how these inconsistencies have given rise to the many variations of both types of spine-board transfer techniques.

The Log-Roll Maneuver—Supine Victim

The log-roll maneuver has long been used to transfer injured victims. It is a simple technique with minimal strength requirements. In addition, it can be used regardless of the initial position of the victim (prone or supine). Furthermore, because the victim never fully leaves the ground with this maneuver, the spine remains supported throughout the entire procedure (Cendoma, 2000).

A review of published reports reveals that three to six people might be required to complete one application of the log-roll technique (AAOS, 1999; AAOS & National Safety Council [NSC], 2001; ACEP, 1999; Campbell, 2000; De Lorenzo, 1996; Hafen, Karren, & Mistovich, 1996; Sanders, 2000; Starkey & Ryan, 1996). A three-person log roll requires one rescuer to maintain in-line stabilization and two others to assist in rolling the body (ACEP; Campbell; Hafen; Sanders; Starkey & Ryan). It is imperative that the rescuer providing in-line stabilization direct the entire procedure. With a three-person log roll, one rescuer is positioned at the midthorax region—hands located on the victim’s opposite-side shoulder and waist—and another rescuer is positioned near the victim’s knees—hands located at the opposite-side hip and ankle (Figure 1a). When all three rescuers have taken hold of the victim, he or she must be rolled 90° to the side-lying position (ACEP; Campbell; Hafen et al.; Starkey & Ryan). One rescuer is then required to reach over the victim to wedge the spine board beneath him or her at a 45° angle (Figure 1b). If available, a fourth rescuer can also perform this duty (Figure 1c; ACEP; Campbell; Hafen et al.; Sanders; Starkey & Ryan). When the spine board has been properly positioned, the victim can be rolled, carefully, into place on the spine board. If at the completion of this task the victim is not centered on the spine board, longitudinal slides can be used to make the appropriate adjustments (Figures 2a and 2b).

With a four-person log roll, one rescuer maintains in-line stabilization while three rescuers roll the body (AAOS, 1999; AAOS-NSC, 2001; DeLorenzo, 1996; Hafen et al., 1996; Starkey & Ryan, 1996). One rescuer can be located at the level of the shoulders, another at the hip and pelvis region, and still another at the knees (Figure 3). The rescuer at the level of the shoulders can place his or her hands on the victim’s opposite shoulder and over the victim’s opposite arm. The rescuer at the level of the hips can place one hand just above the opposite hip/pelvis and the other at midthigh. The remaining rescuer can place one hand behind the victim’s opposite knee and the other over the opposite lower leg. Together, in a coordinated manner, the rescuers must

Figure 1 (a) Three-person log roll. (b) Rescuer reaches over the patient to position spine board. (c) Extra rescuer wedges spine board beneath the patient.