Figure 38-1a  Four types of ambulances: (A) Type I, (B) Type II, (C) Type III, and (D) medium duty.
Figure 38-1b  Four types of ambulances: (A) Type I, (B) Type II, (C) Type III, and (D) medium duty.
Figure 38-1c  Four types of ambulances: (A) Type I, (B) Type II, (C) Type III, and (D) medium duty.
Figure 38-1d Four types of ambulances: (A) Type I, (B) Type II, (C) Type III, and (D) medium duty.
Table 38-1 Required Equipment for Basic Life Support Ambulances

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
</table>
| A. Ventilation and Airway Equipment                                  | 1. Portable and fixed suction apparatus with a regulator (per federal specifications; see Federal Specification KKK-A-1822F reference)  
   • Wide-bore tubing, rigid pharyngeal curved suction tip; tonsillar and flexible suction catheters, 6F–16F are commercially available (have one between 6F and 10F and one between 12F and 16F)  
   2. Portable oxygen apparatus, capable of metered flow with adequate tubing  
   3. Portable and fixed oxygen supply equipment  
   • Variable flow regulator  
   4. Oxygen administration equipment  
   • Adequate length tubing; transparent mask (adult and child sizes), both nonrebreathing and valveless; nasal cannulas (adult, child)  
   5. Bag-valve mask (manual resuscitator)  
   • Hand-operated, self-reexpanding bag; adult (>1,000 mL) and child (450–750 mL) sizes, with oxygen reservoir/accumulator; valve (clear, disposable, operable in cold weather); and mask (adult, child, infant, and neonate sizes)  
   6. Airways  
   • Nasopharyngeal (16F–34F; adult and child sizes)  
   • Oropharyngeal (sizes 0–5; adult, child, and infant sizes)  
   7. Pulse oximeter with pediatric and adult probes  
   8. Saline drops and bulb suction for infants  |
| B. Monitoring and Defibrillation                                     | All ambulances should be equipped with an automated external defibrillator (AED) unless staffed by advanced life support personnel who are carrying a monitor/defibrillator. The AED should have pediatric capabilities, including child-sized pads and cables. |
### Table 38-1 (continued)  Required Equipment for Basic Life Support Ambulances

| C. Immobilization Devices | 1. Cervical collars  
|                          |   - Rigid for children ages 2 years or older; child and adult sizes (small, medium, large, and other available sizes)  
|                          | 2. Head immobilization device (not sandbags)  
|                          |   - Firm padding or commercial device  
|                          | 3. Lower extremity (femur) traction devices  
|                          |   - Lower extremity, limb-support slings, padded ankle hitch, padded pelvic support, traction strap (adult and child sizes)  
|                          | 4. Upper and lower extremity immobilization devices  
|                          |   - Joint-above and joint-below fracture (sizes appropriate for adults and children), rigid-support constructed with appropriate material (cardboard, metal, pneumatic, vacuum, wood, or plastic)  
|                          | 5. Impervious backboards (long, short; radiolucent preferred) and extrication device  
|                          |   - Short (extrication, head-to-pelvis length) and long (transport, head-to-feet length) with at least three appropriate restraint straps (chin strap alone should not be used for head immobilization) and with padding for children and handholds for moving patients  
| D. Bandages | 1. Commercially packaged or sterile burn sheets  
|            | 2. Triangular bandages  
|            |   - Minimum two safety pins each  
|            | 3. Dressings  
|            |   - Sterile multitrauma dressings (various large and small sizes)  
|            |   - ABDs, 10” x 12” or larger  
|            |   - 4” x 4” gauze sponges or suitable size  
|            | 4. Gauze rolls  
|            |   - Various sizes  
|            | 5. Occlusive dressing or equivalent  
|            |   - Sterile, 3” x 8” or larger  
|            | 6. Adhesive tape  
|            |   - Various sizes (including 1” and 2”) hypoallergenic  
|            |   - Various sizes (including 1” and 2”) adhesive  
|            | 7. Arterial tourniquet (commercial preferred)  |
### Table 38-1 (continued)  Required Equipment for Basic Life Support Ambulances

<table>
<thead>
<tr>
<th>E. Communication</th>
<th>Two-way communication device between EMS provider, dispatcher, and medical direction</th>
</tr>
</thead>
</table>
| F. Obstetrical Kit (commercially packaged is available) | 1. Kit (separate sterile kit)  
   • Towels, 4" × 4" dressing, umbilical tape, sterile scissors or other cutting utensil, bulb suction, clamps for cord, sterile gloves, blanket  
   2. Thermal absorbent blanket and head cover, aluminum foil roll, or appropriate heat-reflective material (enough to cover newborn) |
| G. Miscellaneous | 1. Sphygmomanometer (pediatric and adult regular and large size cuffs)  
   2. Adult stethoscope  
   3. Length/weight-based tape or appropriate reference material for pediatric equipment sizing and drug dosing based on estimated or known weight  
   4. Thermometer with low temperature capability  
   5. Heavy bandage or paramedic scissors for cutting clothing, belts, and boots  
   6. Cold packs  
   7. Sterile saline solution for irrigation (1-liter bottles or bags)  
   8. Flashlights (2) with extra batteries and bulbs  
   9. Blankets  
   10. Sheets (minimum 4), linen or paper, and pillows  
   11. Towels  
   12. Triage tags  
   13. Disposable emesis bags or basins  
   14. Disposable bedpan  
   15. Disposable urinal  
   16. Wheeled cot (conforming to national standard at the time of manufacture)  
   17. Folding stretcher  
   18. Stair chair or carry chair  
   19. Patient care charts/forms  
   20. Lubricating jelly (water soluble) |
Table 38-1  Required Equipment for Basic Life Support Ambulances (continued)

| H. Infection Control (latex-free equipment should be available) | 1. Eye protection (full peripheral glasses or goggles, face shield)  
2. Face protection (for example, surgical masks per applicable local or state guidance)  
3. Gloves, nonsterile (must meet NFPA 1999 requirements found at http://www.nfpa.org/)  
4. Coveralls or gowns  
5. Shoe covers  
6. Waterless hand cleanser, commercial antimicrobial (towelette, spray, liquid)  
7. Disinfectant solution for cleaning equipment  
8. Standard sharps containers, fixed and portable  
9. Disposable trash bags for disposing of biohazardous waste  
10. Respiratory protection (for example, N-95 or N-100 mask—per applicable local or state guidance) |
| I. Injury Prevention Equipment | 1. All individuals in an ambulance need to be restrained (there is currently no national standard for transport of uninjured children)  
2. Protective helmet  
3. Fire extinguisher  
4. Hazardous material reference guide  
5. Traffic signaling devices (reflective material triangles or other reflective, nonigniting devices)  
6. Reflective safety wear for each crew member (must meet or exceed ANSI/ISEA performance Class II or III if working within the right of way of any federal-aid highway. Visit http://www.reflectivevest.com/federalhighwayruling.html for more information.) |
Table 38-1 Required Equipment for Basic Life Support Ambulances

### OPTIONAL BASIC EQUIPMENT
This section is intended to assist EMS providers in choosing equipment that can be used to ensure delivery of quality prehospital care. Use should be based on local resources. The equipment in this section is not mandated or required.

<table>
<thead>
<tr>
<th>A. Optional Equipment</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Glucose meter (per state protocol)</td>
<td></td>
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<tr>
<td>2. Elastic bandages</td>
<td></td>
</tr>
<tr>
<td>• Nonsterile (various sizes)</td>
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<tr>
<td>3. Cellular phone</td>
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<tr>
<td>4. Infant oxygen mask</td>
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<tr>
<td>5. Infant self-inflating resuscitation bag</td>
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<tr>
<td>6. Airways</td>
<td></td>
</tr>
<tr>
<td>• Nasopharyngeal (12Fr, 14Fr)</td>
<td></td>
</tr>
<tr>
<td>• Oropharyngeal (size 00)</td>
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<tr>
<td>7. Alternative airway devices (for example, a rescue airway device such as the ETDLA [esophageal-tracheal double lumen airway], laryngeal tube, or laryngeal mask airway) as approved by local medical direction.</td>
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<tr>
<td>8. Alternative airway devices for children (few alternative airway devices that are FDA approved have been studied in children. Those that have been studied, such as the LMA, have not been adequately evaluated in the prehospital setting).</td>
<td></td>
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<tr>
<td>9. Neonatal blood pressure cuff</td>
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<tr>
<td>10. Infant blood pressure cuff</td>
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<tr>
<td>11. Pediatric stethoscope</td>
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<tr>
<td>12. Infant cervical immobilization device</td>
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<tr>
<td>13. Pediatric backboard and extremity splints</td>
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<tr>
<td>14. Topical hemostatic agent</td>
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<tr>
<td>15. Appropriate CBRNE PPE (chemical, biological, radiological, nuclear, explosive personal protective equipment), including respiratory and body protection</td>
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<tr>
<td>16. Applicable chemical antidote auto-injectors (at a minimum for crew members’ protection; additional for patient treatment based on local or regional protocol; appropriate for adults and children)</td>
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</tr>
</tbody>
</table>
Table 38-1 (continued)  Required Equipment for Basic Life Support Ambulances

| B. Optional Basic Life Support Medications | 1. Albuterol |
|                                          | 2. EpiPens  |
|                                          | 3. Oral glucose |
|                                          | 4. Nitroglycerin (sublingual tablet or paste) |

<table>
<thead>
<tr>
<th>C. Interfacility Transport</th>
</tr>
</thead>
<tbody>
<tr>
<td>Additional equipment may be needed by ALS and BLS prehospital care providers who transport patients between facilities. Transfers may be done to a lower or higher level of care, depending on the specific need. Specialty transport teams, including pediatric and neonatal teams, may include other personnel such as respiratory therapists, nurses, and physicians. Training and equipment needs may be different depending on the skills needed during transport of these patients. There are excellent resources available that provide detailed lists of equipment needed for interfacility transfer such as the American Academy of Pediatrics Guidelines for Air and Ground Transport of Neonatal and Pediatric Patients.</td>
</tr>
</tbody>
</table>
Table 38-1 (continued)  Required Equipment for Basic Life Support Ambulances

| A. Disassembly Tools | 1. Wrenches (adjustable)  
|                       | 2. Screwdrivers (flat and Phillips head)  
|                       | 3. Pliers  
|                       | 4. Bolt cutter  
|                       | 5. Tin snips  
|                       | 6. Hammer  
|                       | 7. Spring-loaded center punch  
|                       | 8. Axes (pry, fire)  
|                       | 9. Bars (wrecking, crow)  
|                       | 10. Ram (4 ton)  

| B. Spreading Tools | 1. Hydraulic jack/spreader/cutter combination cutting tools  
|                    | 2. Saws (hacksaw, fire, windshield, pruning, reciprocating)  
|                    | 3. Air-cutting gun kit  

| C. Pulling Tools/Devices | 1. Ropes/chains  
|                          | 2. Come-along  
|                          | 3. Hydraulic truck jack  
|                          | 4. Air bags  

APPENDIX: EXTRICATION EQUIPMENT

Adequate extrication equipment must be readily available to the emergency medical service responders, but is more often found on heavy rescue vehicles than on the primary responding ambulance. In general, the devices or tools used for extrication fall into several broad categories: disassembly, spreading, cutting, pulling, protective, and patient-related. The following is necessary equipment that should be available either on the primary response vehicle or on a heavy rescue vehicle.
### Table 38-1 Required Equipment for Basic Life Support Ambulances (continued)

<table>
<thead>
<tr>
<th>D. Protective Devices</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>1. Reflectors/flare</td>
<td></td>
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<tr>
<td>2. Hard hats</td>
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<tr>
<td>3. Safety goggles</td>
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<tr>
<td>4. Fireproof blanket</td>
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<tr>
<td>5. Leather gloves</td>
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<tr>
<td>6. Jackets/coats/boots</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>E. Miscellaneous</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Shovel</td>
<td></td>
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<tr>
<td>2. Lubricating oil</td>
<td></td>
</tr>
<tr>
<td>3. Wood/wedges</td>
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</tr>
<tr>
<td>4. Generator</td>
<td></td>
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<tr>
<td>5. Floodlights</td>
<td></td>
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</tbody>
</table>

**NOTE:** Local extrication needs may necessitate additional equipment for water, aerial, or mountain rescue.

*Source: American College of Surgeons, Committee on Trauma; American College of Emergency Physicians; National Association of EMS Physicians; American Academy of Pediatrics*
Scan 38-1  Inspecting the Ambulance  (1) Check the ambulance body, wheels, tires, and windshield wipers.
Scan 38-1 (continued)  Inspecting the Ambulance  (2) Check the windows, doors, and mirrors.
Scan 38-1 (continued)  Inspecting the Ambulance  (3) Check under the hood.
Scan 38-1 (continued) Inspecting the Ambulance  (4) Check the interior surfaces and upholstery.
Scan 38-1 (continued)  Inspecting the Ambulance  (5) Check the dash instruments and communications equipment.
Scan 38-1 (continued) Inspecting the Ambulance  (6) Check the fuel level and fill up.
Figure 38-2  Park the ambulance properly at the scene of a collision.
Figure 38-3 Use a spotter to help guide the ambulance when backing up.
Figure 38-4  This patient is packaged for cold, wet conditions.
Figure 38-5  Stretcher straps that act as a harness restrain the patient's upper body.
Scan 38-2  Transferring the Patient  
(1) Transfer the patient as soon as possible. Stay with the patient until transfer is complete.
Scan 38-2 (continued)  Transferring the Patient  (2) Assist the emergency department staff as required.
Scan 38-2 (continued)  Transferring the Patient  (3) Transfer patient information as a verbal report and in a written prehospital care report.
Scan 38-2 (continued) Transferring the Patient

(4) Transfer the patient's personal effects.
Scan 38-2 (continued) Transferring the Patient  (5) Obtain your release from the hospital.
Scan 38-3  Activities at the Hospital  (1) Clean the ambulance interior.
Scan 38-3 (continued)  Activities at the Hospital  (2) Replace disposable equipment per local protocols.
Scan 38-3 (continued)  Activities at the Hospital  (3) Replace airway equipment per local protocols.
Scan 38-3 (continued)  Activities at the Hospital  (4) Make up the ambulance stretcher.
Scan 38-4 Terminating Activities in Quarters  
(1) Place contaminated linens in a biohazard container, and noncontaminated linens in a regular hamper.
Scan 38-4 (continued)  Terminating Activities in Quarters  (2) Remove and clean patient-care equipment as required.
Scan 38-4 (continued)  Terminating Activities in Quarters  (3) Clean and sanitize respiratory equipment as required.
Scan 38-4 (continued) Terminating Activities in Quarters  (4) Clean and sanitize the ambulance interior as required. Use germicide on devices or surfaces that were in contact with blood or other body fluids.
Scan 38-4 (continued)  Terminating Activities in Quarters  (5) Wash your hands thoroughly, and change soiled clothing. Do this first if exposed to a communicable disease.
Scan 38-4 (continued)  Terminating Activities in Quarters  (6) Replace expendable items as required.
(7) Replace oxygen cylinders as necessary.
Scan 38-4 (continued)  Terminating Activities in Quarters  

(8) Replace patient-care equipment as needed.
Scan 38-4 (continued)  Terminating Activities in Quarters  (9) Maintain the ambulance as required. Report problems that will take the vehicle out of service.
(10) Clean the ambulance exterior as needed.
(11) Report the unit ready for service.
Scan 38-4 (continued)  Terminating Activities in Quarters  (12) Complete any unfinished report forms as soon as possible.
Scan 38-5  Cleaning and Disinfecting Equipment  (1) A low-level disinfectant approved by the U.S. Environmental Protection Agency (for example, a commercial product such as Lysol) will clean and kill germs on ambulance floors and walls.
Scan 38-5 (continued)  Cleaning and Disinfecting Equipment  (2) An intermediate-level disinfectant, such as a mixture of 1:100 bleach-to-water, can be used to clean and kill germs on equipment surfaces.
Scan 38-5 (continued)  Cleaning and Disinfecting Equipment  (3) A high-level disinfectant, such as Cidex Plus, will destroy all forms of microbial life except high numbers of bacterial spores.
Scan 38-5 (continued) Cleaning and Disinfecting Equipment

(4) Sterilization is required to destroy all possible sources of infection on equipment that will be used in an invasive way.
Figure 38-6  Patients are sometimes transported by air rescue helicopter.
Figure 38-7  Helicopter landing zone.
Scan 38-6  Danger Areas around Helicopters  A. The area around the tail rotor is extremely dangerous. A spinning rotor cannot be seen.
Scan 38-6 (continued) Danger Areas around Helicopters  B. A sudden gust of wind can cause the main rotor of a helicopter to dip to a point as close as 4 feet from the ground. Always approach a helicopter in a crouch when the rotor is moving.
Scan 38-6 (continued) Danger Areas around Helicopters  C. Approach the aircraft from the downhill side when a helicopter is parked on a hillside.