



Appalachian Search and Rescue Conference
Center for Emergency Medicine of Western Pennsylvania

Wilderness EMT Lesson Plan

Part XVII: Introduction to/ Review of Advanced Skills

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Comments to:

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This Draft contains material proprietary to the ASRC-CEM Wilderness EMS Institute; it is preliminary and may contain significant errors, so it should **not** serve as a reference. It may not be reproduced whole or in part without written permission. It is not to be circulated except to Staff and Consultants to the WEMSI, and students at our classes. However, a future draft version of this material **will** be made public.

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Verbose Outlines

We develop our WEMT Lesson Plans in a **verbose outline format** (what you see here). Why? Because the material is new to enough reviewers that the usual terse (“telegraphic”) lesson plan format might be incomprehensible or misleading.

Our Task Groups use these “verbose” outlines. Each part of the WEMT curriculum (about twenty in all) has a Task Group of five to twenty selected consultants. A Coordinator guides the Task Group in revising the section.

Each Task Group provides references to support its statements and for further reading. They also provide glossary entries for any new terms they introduce. (New, that is, to a reader with basic EMT and SAR training.)

Background material that should appear in the Textbook (see below), but instructors need not present in class, will appear *in a small, italic font*.

Splitting the Outlines

When the outline satisfies the Task Group, it goes to our **Editorial Board**. This Board includes officers of the Appalachian Search and Rescue Conference and Center for Emergency Medicine of Western Pennsylvania, our two sponsors. It also includes experts in emergency medicine, search and rescue, and education. The Editorial Board reviews the verbose outline, and requests any necessary revisions. Once it is acceptable to the Board, we reformat the outline, into two distinct new versions.

We rewrite the material in the standard lesson plan format, which becomes a terse “telegraphic” outline. This version will be briefly reviewed by the Project Coordinator and then released to the public. It is the result of extensive review and testing, and will be used in all our classes. But, we still publish it as a draft, because we expect many good suggestions from the public. We distribute these drafts as widely as possible. After each year of public review, the Task Groups reviews comments, and submits revisions to the Editorial Board. Once all outlines have withstood a year of public scrutiny, we will prepare a single comprehensive curriculum with a Course Guide. We will continue to review and revise the curriculum regularly.

On to a Textbook

As explained above, once the Editorial Board approves the verbose outline, we split it into two versions. Besides the terse teaching outline, it will also become the basis for a textbook chapter. The

Project Coordinator is the textbook Editor-in-Chief, and works closely with the Task Groups to consolidate and revise the verbose outlines into a comprehensive textbook. All who have contributed to the curriculum will be acknowledged as contributors. The textbook will be commercially published when completed. Until the textbook is available, we will distribute the verbose outlines or drafts of the textbook at classes.

Notes: Advanced Skills

Wilderness rescue is very much a team sport, and EMT-Basics must be ready and able to assist advanced providers (EMT-Paramedics, nurses, and doctors) with advanced skills. Thus, this section orients the EMT-Basic to assisting with advanced procedures in the wilderness, and to managing patients when the advanced provider is disabled or not immediately available. For instance, the EMT-Basic must be able to manage IV lines, to check for IV patency, and to remove infiltrated IV catheters.

Almost all advanced skills needed by an advanced wilderness provider can be found in the standard EMT-Paramedic training curriculum. Therefore, this section teaches EMT-Paramedics no new skills. (Possible exceptions might be adding escharotomy and fasciotomy for EMT-Paramedics, or adding IV therapy for EMT-Basics. We leave it up to those who implement a course based on this Curriculum, and wish to add such skills, to use available resources such as the D.O.T. IV Technician module.)

Applying advanced skills in the wilderness takes ingenuity. This section of the curriculum prepares EMT-Paramedics to adapt their advanced skills appropriately to the wilderness environment

This version (1.00) contains only the educational objectives; Mr. Yee will fill out the remain-

XVII. Introduction to and Review of Advanced Skills

A. Educational Objectives*

1. Identify ways to help verify endotracheal tube placement, including:
 - a. lung and abdominal auscultation;
 - b. checking tube length at the teeth or gums;
 - c. end-tidal CO₂ monitors; and
 - d. syringe aspiration.
2. Demonstrate proper technique to pull back an endotracheal tube that may have become lodged in a mainstem bronchus, including:
 - a. deflating the balloon;
 - b. repositioning the tube;
 - c. re-inflating the tube; and
 - d. securing the endotracheal tube again.
3. Identify the roles and usefulness of intravenous therapy, including:
 - a. hydration;
 - b. electrolyte supplementation;
 - c. drug administration;
 - d. blood administration; and
 - e. obtaining blood samples.
4. Identify dangers of IV therapy for patient and EMT, including:
 - a. catheter shear;
 - b. air embolism;
 - c. infection;
 - d. local irritation (phlebitis);
 - e. clotting (thrombophlebitis); and
 - f. needlesticks and other blood exposure.
5. Identify equipment used for IV therapy and its function, including:
 - a. peripheral over-the-needle catheters;
 - b. central through-the-needle catheters;
 - c. central over-the-wire ("Seldinger") catheter kits;
 - d. macrodrip and microdrip tubing;
 - e. blood warming tubing extension sets;
 - f. three-way stopcocks; and
 - g. solution bags.
6. Identify common sites for peripheral IVs, including:
 - a. dorsal hand veins;
 - b. veins of the forearm;
 - c. veins of the antecubital fossa;
 - d. saphenous vein of medial ankle; and
 - e. external jugular vein.
7. Identify common sites for central IVs, including:
 - a. internal jugular vein;
 - b. subclavian vein; and
 - c. femoral vein.
8. Identify proper technique for starting a peripheral IV, including:
 - a. site choice and preparation;
 - b. venipuncture and threading the catheter;
 - c. securing intravenous catheters for the wilderness context;
 - d. aseptic technique, site rotation, and site care.
9. Outline the Seldinger Wire Technique for central lines, and describe how to assist in such a procedure.

* These items will, for the most part, be familiar to paramedics and EMTs with advanced training. However, EMT-Basics must be able to perform these skills in case the team's advanced provider is disabled or absent.

10. Demonstrate how to assess the patency of an intravenous catheter, including:
 - a. inspection for swelling;
 - b. checking for backflow of blood; and
 - c. observing continued flow of intravenous solution.
11. Demonstrate proper technique for discontinuing an intravenous infusion when the catheter has become dislodged or is infiltrating, including:
 - a. proper care to prevent contamination with blood;
 - b. proper disposal of contaminated materials in the backcountry setting; and
 - c. shutting off the intravenous infusion and pulling the catheter.
12. Demonstrate how to adapt intravenous infusions for the wilderness environment, including:
 - a. how to attach heat packs and insulation to provide a warm infusion;
 - b. how to secure intravenous lines against inadvertent dislodging;
 - c. how to use a blood pressure cuff as an infusion pump;
 - d. how to place an intravenous bag under the patient and use the patient's own weight for pressure infusion, including clearing the line of air;
 - e. how to carry an intravenous bag on a single-length runner in the armpit, and run the intravenous line down one's parka sleeve to protect from cold.
13. For nasogastric intubation:
 - a. discuss indications, contraindications, limitations, and the role of orogastric intubation as an alternative, as applied to the wilderness context;
 - b. describe equipment used for gastric intubation in the wilderness context, and modifications needed for wilderness use;
 - c. describe patient positioning and the general technique of gastric intubation;
 - d. discuss securing gastric tubes and site care;
 - e. discuss considerations of clogging when administering food via a gastric tube; and
 - f. the method to check for residual volumes and their significance.
14. For urinary catheterization:
 - a. discuss indications and contraindications;
 - b. describe the standard equipment used;
 - c. describe how to choose an appropriate size catheter;
 - d. explain the need for aseptic technique;
 - e. describe standard site preparation;
 - f. describe the technique for catheter insertion;
 - g. describe securing the catheter;
 - h. discuss site maintenance and urine output monitoring for litter patients;
 - i. discuss the role of urinary catheterization in patients with suspected pelvic fracture or genital trauma; and
 - j. discuss the use of a "Texas" (condom) catheter as an alternative to standard urinary catheterization, and its advantages and disadvantages.
15. Describe the purpose, indications, general technique, complications, and equipment needed for:
 - a. escharotomy;
 - b. fasciotomy;
 - c. surgical cricothyroid membrane airways; and
 - d. needle thoracentesis and chest tubes, including the use of flutter ("Heimlich") valves in the wilderness context.

Glossary

(reserved)

References

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