

Human Anatomy-Based Trauma Training

An Implementation Guide

PHYSICIANS COMMITTEE FOR RESPONSIBLE MEDICINE

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Trauma training courses provide hands-on experience with emergency procedures. In recent years, course directors—most notably at the Maryland Shock Trauma Center—have explored ways to base trauma training entirely on human anatomy. The uniform satisfaction with this approach—not to mention its cost advantages—has encouraged other sites to seek information on implementing human anatomy-based training. This booklet provides course directors with practical guidance to do just that.

The use of human cadavers and anatomical simulators is fully approved by the American College of Surgeons (ACS). Trauma training courses include the procedures listed below. The reusable human anatomy simulators and human cadaveric specimens indicated here are currently in use at various course sites, and are widely available. Many of these simulators may already be in use at course sites as part of other training courses.

In fall 2001, the Committee on Trauma of the ACS approved the use of simulators meeting certain criteria to be used in place of either cadavers or live animals to teach Advanced Trauma Life Support (ATLS). The SIMULAB® TRAUMA MAN™ surgical trainer (www.simulab.com), an anatomical human simulator designed to teach surgical procedures, including open DPL, catheter DPL, chest tube insertion, pericardiocentesis, and cricothyroidotomy, is one of the first simulators to be approved to teach entire ATLS courses.

Access to Cadaveric Specimens

Human cadavers are available by arrangement with state anatomical boards or the anatomy department of major medical centers. Contact information for each state's anatomical board or major medical center(s) is listed below. If fresh cadavers are not available, semi-preserved specimens are approved for use by the ACS.

Trainees Prefer Cadaver-Based Courses

A 1995 survey indicated that three-quarters of physician respondents would prefer to enroll in a human anatomy-based course, compared to a course using animals. Thirty-eight percent said they would pay more for such a course, and 43 percent would travel further to take one.

Cost Savings

The cost of cadaveric material varies by location, but human anatomy-based courses generally offer significant cost advantages. A cost comparison at the Maryland Shock Trauma Center shows that it saves approximately \$300 per specimen as a result of changing from an animal laboratory to a human anatomy-based program. The use of cadavers also eliminates the costs for feeding, housing, anesthesia, and veterinary care for animals. Human anatomy simulators are extremely cost-effective, allowing for nearly unlimited use for many years.

PROCEDURES	TEACHING METHODS
Initial Assessment and Management	Patient volunteers
Airway and Ventilatory Management Includes oral and nasotracheal intubation and one- and two-person ventilation techniques	Armstrong Infant Intubation Model, #AA-3200 Armstrong Adult Intubation Model, #AA-3000 Laerdal Airway Management Trainer (Adult)
Percutaneous Central Venous Access	Lifeform Central Venous Cannulation Simulator, #LF1087UA from Nasco Lifeform simulated blood from Nasco Tubing for equipment from Level 1 Technologies, Inc.
Pneumatic Antishock Garment (PASG) Application and Removal	Various types of Military Antishock Trousers (or PASG) from David Clark Company, Inc. Resusci-Anne Model from Laerdal (distributed by Armstrong)
Head Trauma Assessment and Management	Mr. Hurt Head (a model of head and neck with several severe injuries) from Medical Plastics Laboratory, Inc.
Radiographic Identification of C-Spine Injuries	A review of X-rays of the cervical spine with various fractures and dislocations
Immobilization Techniques for Extremity, Neck, and Spinal Trauma	Patient Volunteers
Venous Cutdowns	Cadavers
Chest Decompression (needle and chest tube placement)	Cadavers
Pericardiocentesis	Cadavers
Diagnostic Peritoneal Lavage	Cadavers
Cricothyrotomy	Cadavers

HUMAN SIMULATOR SUPPLIERS		
<i>The simulators listed above are available from the companies below.</i>		
Armstrong Medical Industries 575 Knightsbridge Pkwy., P.O. Box 700 Lincolnshire, IL 60069 847-913-0101 or 800-323-4220	Level 1 Technologies, Inc. 160 Weymouth St. Rockland, MA 02370 800-5-Level-1	Nasco 901 Janesville Ave. Fort Atkinson, WI 53538 414-563-2446 or 800-558-9595
David Clark Company, Inc. 360 Franklin St., Box 15054 Worcester, MA 01615-0054 508-751-5800	Medical Plastics Laboratory, Inc. P.O. Box 38 Gatesville, TX 76528 800-433-5539	Simulab Corporation 1440 N.W. 53rd St. Seattle, WA 98107 206-297-1260; info@simulab.com
Laerdal Medical Corporation 11302 Sagewood Dr. Houston, TX 77089-4753 281-484-8382		

For More Information

PCRM offers assistance locating a source for cadaveric material, referring interested physicians to course sites using this innovative method, and on other related matters.

Please contact: **Physicians Committee for Responsible Medicine**
 5100 Wisconsin Ave., N.W., Suite 400
 Washington, DC 20016
 Phone: 202-686-2210, ext. 329 • Fax: 202-686-2216
 E-mail: trauma@pcrm.org

Sources for Cadaveric Specimens

Alabama

State of Alabama Anatomical Board
Department of Anatomy
University of South Alabama Medical College
Mobile, AL 36688
Contact: Dr. Glenn Wilson at 334-460-6764

Arkansas

Department of Anatomy
University of Arkansas College of Medicine
Little Rock, AR 72201
Contact: Felicia Brown at 501-686-7091

California

Department of Anatomy
University of California, Irvine—College of Medicine
252 Irvine Hall
Irvine, CA 92697-3950
Contact: Michael Godsey at 949-824-6061

Willed Body Program
University of California, Los Angeles—School of Medicine
Los Angeles, CA 90024
Contact: 310-825-9563

Office of Learning Resources/Anatomical Preparation
Body Donation Program
University of California, San Diego—School of Medicine
La Jolla, CA 92103
Contact: Rick Wilson at 858-534-4126 or 858-534-4536

Willed Body Program
University of California, San Francisco—School of
Medicine
San Francisco, CA 94122
Phone: 415-476-1981

Colorado

State of Colorado Anatomical Board
University of Colorado Health Sciences Center
4200 E. Ninth Ave.
Denver, CO 80262
Contact: Dr. Michael Carry at 303-315-8560

Connecticut

Department of Anatomy
University of Connecticut Health Center
Farmington, CT 06030-1513
Contact: Jim Casso at 860-679-2821

District of Columbia

Department of Anatomy
George Washington University Medical Center
2300 I St., N.W.
Washington, DC 20037
Contact: Dr. Raymond Walsh at 202-994-3511

Department of Anatomy
School of Medicine, Department of Cell Biology
Georgetown University
Washington, DC 20007
Contact: Laurie Lincoln at 202-687-1219

Department of Anatomy
Howard University College of Medicine
520 W St., N.W.
Washington, DC 20059
Contact: Dr. Carl Terranova at 202-806-9262 or
cterranova@howard.edu

Florida

Florida State Anatomical Board
University of Florida
P.O. Box 100235
Gainesville, FL 32610-0235
Contact: Dr. Lynn Romwell or Lisa Booher at 800-628-2594

Georgia

Department of Anatomy
Emory University
Atlanta, GA 30322
Contact: Jim Cooper at 404-727-6242

Morehouse School of Medicine
Department of Anatomy and Neurobiology
720 Westview Dr., S.W.
Atlanta, GA 30310-1495
Contact: Dr. Larry Wineski at 404-752-1560

Hawaii

Department of Anatomy
University of Hawaii
1960 East West Rd.
Honolulu, HI 96822
Contact: Willed Body Program at 808-956-5467

Sources for Cadaveric Specimens

Illinois

Anatomical Gift Association
2240 W. Fillmore
Chicago, IL 60612
Contact: Denise at 800-734-5283 or 312-733-5283

Indiana

Department of Anatomy
Indiana University School of Medicine
MS 5035
635 Barnhill Dr.
Indianapolis, IN 46202-5120
Contact: Dr. David Burr at 317-274-7496

Kansas

Department of Anatomy
College of Health Sciences and Hospital
University of Kansas Medical Center
Rainbow Blvd. at 39th St.
Kansas City, KS 66103
Contact: Dr. Charles Thomas at 913-588-2735

Department of Anatomical Sciences and Neurobiology
University of Louisville School of Medicine
Health Science Center
Louisville, KY 40292
Contact: Steve Anderson at 502-852-5744

Louisiana

Department of Anatomy
Body Bequeathal Program
Louisiana State University School of Medicine
P.O. Box 33932
Shreveport, LA 71130
Contact: Dr. Leonard Seelig at 318-675-5312

Department of Cell Biology and Anatomy
Louisiana State University
Health Science Center
1901 Perdido St.
New Orleans, LA 70112
Contact: Dr. Richard Whitworth at 504-568-4032 or
rwhitw@lsuhsc.edu

Maryland

Anatomy Board of Maryland
University of Maryland
655 W. Baltimore St.
Baltimore, MD 21201
Contact: Ron Wade at 410-547-1222

Massachusetts

Department of Anatomy
University of Massachusetts Medical School
Anatomical Gift Department
55 Lake Ave., N.
Worcester, MA 01655
Contact: Dr. Tristan McKenna at 508-856-2668

Michigan

Department of Anatomy
Michigan State University
E206 Fee Hall
E. Lansing, MI 48824
Contact: Kris Liles at 517-353-5398

Department of Anatomy and Cell Biology
University of Michigan Medical School
Ann Arbor, MI 48109-0616
Contact: Dean Mueller at 734-764-4359

Minnesota

Department of Anatomy
Stabile Building 9-38
Mayo Clinic
Rochester, MN 55905
Contact: Dean Fisher at 507-284-2201

Body Bequest Program
University of Minnesota Medical School
3005 BSBE
312 Church St.
Minneapolis, MN 55455
Contact: Dave Lee at 612-624-0616 or
david@mail.ach.umn.edu

Missouri

Department of Anatomy
St. Louis University School of Medicine
3839 Lindell Blvd.
St. Louis, MO 63108
Contact: Tamini Mooshegian at 314-535-4000

Department of Pathology and Anatomical Sciences
University of Missouri
Columbia School of Medicine
Columbia, MO 65212
Contact: Dr. Tom Scanlon at 573-882-2288

Sources for Cadaveric Specimens

Nebraska

State Anatomical Facility
42nd and Dewey Aves.
Omaha, NE 68105
Phone: 402-280-2914

Nevada

Department of Physiology and Cell Biology
Anderson Medical Science Building, #352
University of Nevada
Reno, NV 89557-0046
Contact: Bob Hammann at 775-784-6169 or
bcur@physio.unr.edu

New Jersey

Department of Anatomy and Cell Biology
University of Medicine and Dentistry of New Jersey
New Jersey Medical School
185 S. Orange Ave.
Newark, NJ 07103-2714
Contact: Dr. John Siegel at 973-972-4414 and Roger
Faison at 973-972-4647

Department of Anatomy
Body Donation Program
University of Medicine and Dentistry of New Jersey
Robert Wood Johnson Medical School
Piscataway, NJ 08854
Contact: Susan Cole at 800-443-8211 or 732-235-5600

New Mexico

Department of Anatomy
School of Medicine
Basic Science Medical Building
University of New Mexico
Albuquerque, NM 87131
Phone: 505-272-5555

New York

Department of Anatomy
Anatomical Gift Program
Albany Medical College
47 New Scotland Ave.
Albany, NY 12208
Contact: Department of Continuing Education at 518-
262-5828 or Anatomical Gift Program at 518-262-5379

New York *continued*

Department of Anatomy
Cornell University Medical College
1300 York Ave.
New York, NY 10021
Contact: Body Donation Program at 212-746-5677

Department of Anatomy
New York Medical College
Basic Science Building
Valhalla, NY 10595
Contact: Dr. Matthew Pravetz at 914-594-4631 or the
Department of Anatomy at 914-594-4025

Department of Anatomy and Cell Biology
State University of New York Health Science Center at
Brooklyn
450 Clarkson Ave.
Brooklyn, NY 11203
Contact: Dr. Martin Levine at 718-270-7427

Department of Pathology and Anatomical Sciences
State University of New York–Buffalo School of
Medicine and Biomedical Sciences
317 Farber Hall
Buffalo, NY 14214-3000
Contact: Dr. Ray Dannenhoffer at 716-829-2540 or
rpd@buffalo.edu

Department of Anatomy
State University of New York Health Science Center at
Syracuse
766 Irving Ave.
Syracuse, NY 13210
Contact: Richard Cherry at 315-464-6223

Department of Anatomy
Anatomical Gift Program
University of Rochester School of Medicine and
Dentistry
601 Elmwood Ave.
Rochester, NY 14642
Contact: Edwin Sulewski at 716-275-2589

North Carolina

Department of Biological Anthropology and Anatomy
Duke University Medical Center
Box 3170 DUMC
Durham, NC 27710
Contact: Irene Lofstom at 919-684-4250

Sources for Cadaveric Specimens

North Carolina *continued*

Department of Anatomy
East Carolina University School of Medicine
Greenville, NC 27834
Contact: John Lee Powers at 252-816-2843

Wake Forest University School of Medicine
Department of Neurobiology and Anatomy
1 Medical Center Blvd.
Winston-Salem, NC 27157-1010
Contact: Dr. Walter Bo at 336-716-4475

Ohio

Department of Anatomy
Case Western Reserve University
2119 Abington Rd.
Cleveland, OH 44106
Contact: Brian Kelly at 216-368-2255

Department of Anatomy and Neurobiology
Medical College of Ohio at Toledo
3035 Arlington Ave.
Toledo, OH 43614
Contact: Dr. Richard Lane at 419-383-4126

Human Anatomy Program
Northeastern Ohio Universities College of Medicine
Route 44
P.O. Box 95
Rootstown, OH 44272
Contact: Dr. Steve Ward at 330-325-2511, ext. 6294

Department of Anatomy
Ohio State University
333 W. Tenth Ave., Room 3184
Columbus, OH 43210
Contact: Don Kincaid at 614-292-4764

Department of Anatomy
University of Cincinnati College of Medicine
Bethesda Ave.
Cincinnati, OH 45267
Contact: Dr. Bob Drake at 513-558-5612

Donated Body Program
Department of Anatomy
Wright State University School of Medicine
Dayton, OH 45435
Contact: Dr. Nagy at 937-775-3066

Oklahoma

Department of Anatomy
Office of Willed Body Program
Basic Science Building, Room 100
University of Oklahoma College of Medicine
P.O. Box 26901
Oklahoma City, OK 73190
Contact: Pam Lawson at 405-271-2424, ext. 46283

Oregon

Body Donation Program
Oregon Health and Sciences University
3181 S.W. Sam Jackson Park Rd.
Portland, OR 97201
Contact: Margil Flores at 503-494-8302

Pennsylvania

Humanity Gifts Registry
130 S. Ninth St.
Philadelphia, PA 19107
Phone: 215-922-4440

Puerto Rico

Anatomical Board
University of Puerto Rico School of Medicine
Medical Sciences Campus
P.O. Box 365067
San Juan, PR 00936-5067
Contact: Petrona Benitez at 787-758-2525, ext. 1510,
(fax) 787-282-6259, or pbenitez@rcm.upr.edu

Rhode Island

Department of Ecology and Evolutionary Biology
Brown University School of Medicine
97 Waterman St.
Providence, RI 02912
Contact: Dr. Ted Goslow at 401-863-1369 or 401-863-1077

South Carolina

Department of Developmental Biology and Anatomy
University of South Carolina School of Medicine
6439 Garnes Ferry S.
Columbia, SC 29208
Contact: Lance Paulman at 803-733-1563

Sources for Cadaveric Specimens

South Dakota

Department of Anatomy and Structural Biology
University of South Dakota School of Medicine
1400 W. 22nd
Sioux Falls, SD 57105-1570
Contact: Paul Bliss at 605-677-5141

Tennessee

Department of Anatomy and Neurobiology
University of Tennessee, Memphis, College of Medicine
875 Monroe Ave.
Memphis, TN 38163
Contact: Dr. Randall Nelson at 901-448-5979

Texas

Texas State Anatomical Board
Department of Anatomy and Neurosciences
University of Texas Medical Branch
Galveston, TX 77550
Contact: Dr. Andrew Payer at 409-772-6433

Utah

Department of Neurobiology and Anatomy
Willed Body Program
University of Utah School of Medicine
50 N. Medical Dr., Room 401
Salt Lake City, UT 84132
Contact: Kerry Peterson at 801-581-6728

Virginia

State Anatomy Department
Contact: Sam Kerry at 804-786-2479

Washington

Department of Anatomy and Physiology
University of Washington School of Medicine
Box 356340
Seattle, WA 98195
Contact: Dr. Dan Graney at 206-543-1861

West Virginia

Department of Anatomy
West Virginia University School of Medicine
Box 9128
Morgantown, WV 26506
Contact: Susie Martin at 304-293-2212 or (fax) 304-293-8159

Wisconsin

Department of Cellular Biology, Neurobiology and
Anatomy
Medical College of Wisconsin
8701 Watertown Plank Rd.
Milwaukee, WI 53226
Contact: Dr. David Bolender at 414-456-8261

Department of Anatomy
University of Wisconsin Medical School
1300 University Ave.
Madison, WI 53706
Contact: Ed Schultz at 608-263-2894