

1998 Joint Meeting of  
Society for Technology in Anesthesia  
& Rochester Simulator Symposium

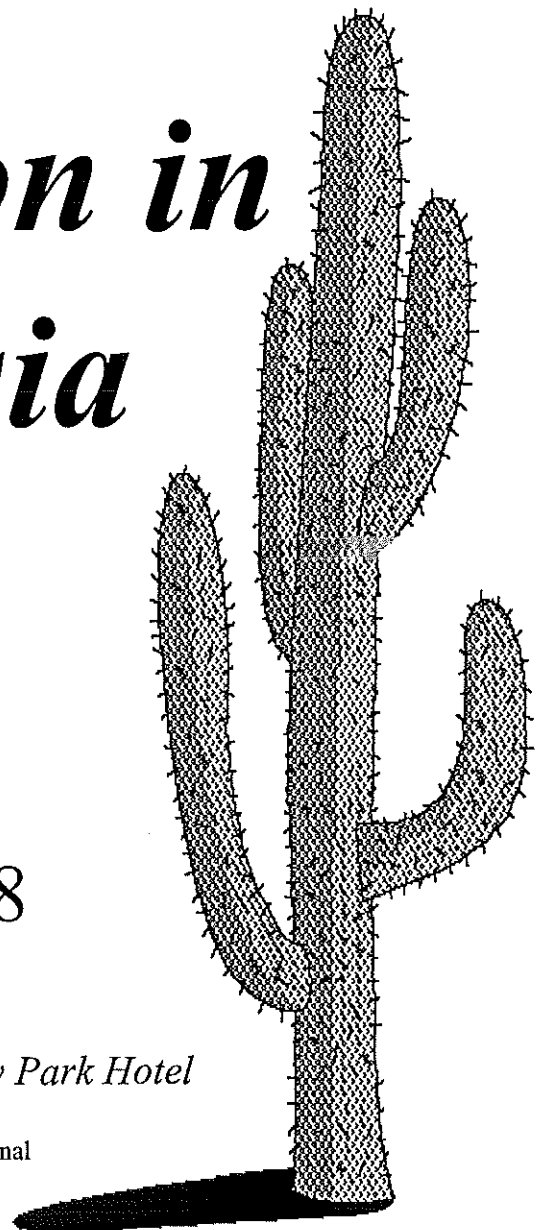
# *Simulation in Anesthesia*

January 14-17, 1998

Tucson, Arizona

*at the NEW Tucson Marriott University Park Hotel*

Sponsored by Maricopa Integrated Health System in Educational  
Partnership with the Society for Technology in Anesthesia



# SOCIETY FOR TECHNOLOGY IN ANESTHESIA

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## **STA**

BOX 5257 Phoenix, AZ 85010-5257  
(Packages only) 2601 E. Roosevelt  
Phoenix, AZ 85008

602-267-5366 FAX 602-306-2989  
banderso@mmcasamss.maricopa.gov  
<http://gasnet.med.yale.edu.sta>



# Society for Technology in Anesthesia

Beverlee F. Anderson, STA Coordinator  
Box 5257 Phoenix, AZ 85010  
2601 E. Roosevelt, Phoenix, AZ 85008  
602-267-5366 FAX 602-306-2989  
banderso@mmcaamss.maricopa.gov

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President	Jan Ehrenwerth, MD
President-Elect	Steven Barker, MD
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Secretary	J. Sandy Eames

Welcome to the 1998 Society for Technology in Anesthesia meeting. We are pleased to have this meeting a cooperative venture with the Rochester Simulator Symposium in order to provide our participants with the most up-to-date information about simulator technologies to teach, develop and investigate.

The local arrangements committee has set up a variety of field trips to stimulate your interest in both simulators and the uniqueness of the Southwest. The Friday reception to be held in the Arizona Historical Society will be an opportunity not to be missed.

If you are already a STA member, thank you for supporting this meeting. If you are not a member, we hope this experience will encourage you to become a member during the meeting. Members receive numerous benefits including meeting registration discounts, the Journal of Clinical Monitoring and STA's newsletter, Interface.

If you have any questions during the meeting, about STA or about the meeting itself, please contact someone at the registration booth. Our management team is ready to assist you.

Again, we are looking forward to an excellent meeting. I would like to personally thank my committee for their assistance and dedication to insuring that this joint effort is a success.

Dan Raemer  
1998 Program Chair

1999 Society for Technology in Anesthesia Meeting  
January 21-23, 1999  
Hotel Del Coronado, San Diego California

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<b># 1 - 43 Peer Reviewed Abstracts</b>	<b>Blue</b>	
<b>Exhibitor Information &amp; Advertising</b>	<b>White</b>	

**MEETING LOCATION:** All general sessions will be held in the Madera/Canyon Rooms. Exhibits will be next door in the Sabino/Pima rooms. Simulator Workshop rooms are listed in that section of the syllabus.

**SIMULATOR WORKSHOPS:** If you are interested in being a hands-on participant in one of the simulator workshops, please use the sign-up forms near the registration desk.

**MEAL FUNCTIONS:** All meal functions including continental breakfasts require visible name-tags and, if provided, tickets. There will be a charge for duplicate tickets issued.

**SPECIAL NOTICE & ADA:** Please refrain from smoking in the meeting and exhibit areas. If you need special assistance, for any reason, please discuss your needs with someone at the Registration Table.

**FIELD TRIPS:** If you have registered for a field trip, you will receive a pass/ticket with your registration packet. Please follow directions for each trip. Payment for admission fees must be paid prior to boarding transportation. Those attending the F-16 Flight Simulator or Cobra Helicopter Simulator may claim up to 4 additional hours on their daily CME log.

**HISTORICAL SOCIETY FRIDAY EVENT:** The AZ Historical Society is located across the street. Admission is with ticket only. A heavy cocktail buffet will be served. The Society's gift shop will also be open during the reception time. Please feel free to wear your best western attire.

**MESSAGES:** General messages will be at our conference registration table.

**CONFERENCE EVALUATION:** Please fully complete the evaluation provided. This is a requirement in order to receive your CME and assists the Education Committee in planning future programs.

### **CME CERTIFICATES:**

Certificates and cognates will be available at the end of the meeting in return for a completed evaluation form. *Certificates will not be mailed except by request and will be for the number of hours for which we have documented attendance.*

### **ACCREDITATION**

Maricopa Health System (MHS) is accredited by the Accreditation Council for Continuing Medical Education (ACCME) to sponsor continuing medical education for physicians.

MHS has designated this continuing medical education activity for 22 credit hours in Category 1 of the Physicians Recognition Award of the American Medical Association. Optional additional credits up to 4 hours for specific simulator field trips. Each physician should claim only those hours of credit that he/she actually spent in the educational activity.

## Field Trips

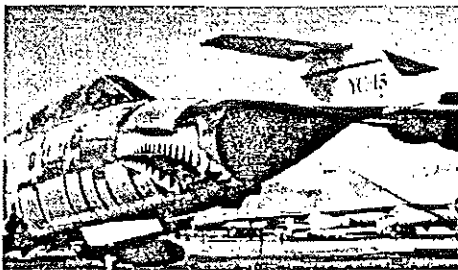
The sites for this year's tours range from an F-16 simulator to a combination zoo and botanical garden, the Sonora Desert Museum. Most have their own webpage to give you a good idea of what you will be seeing. All but the Air and Space Museum have docents to act as guides. Please mark the registration form with your selection. Transportation is provided as part of the registration fee. Entrance fees must be paid with registration. Guests and family are invited to participate. Tours with insufficient registration may be cancelled and any fees refunded. Those identified with \* are eligible for CME credit.

### University of Arizona Mirror Casting Facility

Maximum number: 40  
Transportation: walk a short distance on campus  
[medusa.as.arizona.edu/mlab/mlab.html](http://medusa.as.arizona.edu/mlab/mlab.html)

### Arizona Sonora Desert Museum

Maximum number: unlimited & families welcome  
Admission fee: \$7.50  
Transportation: Bus  
[www.desert.net/museum/](http://www.desert.net/museum/)



### Pima Air & Space Museum

Maximum number: unlimited & families welcome  
Admission fee: \$6.00  
Transportation: Bus  
[www.azstarnet.com/~pimaair](http://www.azstarnet.com/~pimaair)

### F-16 Flight Simulator\*

Maximum number: 60  
Transportation: Bus  
[www.cap.af.mil/nhq/capnews/fe01-96b.html](http://www.cap.af.mil/nhq/capnews/fe01-96b.html) (essay)

### Cobra Helicopter Simulator\* at WAATS

Maximum number: 30  
Transportation: Bus

1998 Annual Meeting Society for  
Technology in Anesthesia

## Wednesday, January 14, 1998

5:30 pm Registration  
6:00-9:00 pm Welcome Reception

## Thursday, January 15, 1998

7:00 am Registration & Continental Breakfast in Exhibit Area  
7:00 am-2:30 pm Exhibits Open  
8:00 am Opening Remarks  
Dan Raemer, Ph.D., 1998 Meeting Chair  
Jan Ehrenwerth, M.D., STA President  
Steve Barker, Ph.D., Tucson Host  
8:15-9:45 am Panel: Human Performance Aspects of Simulation  
Moderator: David Gaba, M.D.  
Panelists:  
Colin MacKenzie, M.D.  
Steve Howard, M.D.  
Kent Garman, M.D.  
9:45-10:15 am Coffee Break in Exhibit Area  
10:15 am-11:45 pm Panel: Educational Aspects of Simulation  
Moderator: Julie Tome, M.D.  
Panelists:  
Steven Small, M.D.  
Karen Steckner, M.D.  
Randy Steadman, M.D.  
12:00-12:45 pm Lunch  
12:45-1:30 pm Keynote Lecture: Human Factors in Anesthesia Mishaps  
David Woods, Ph.D.  
1:45-3:00 pm Scientific Posters & Discussion  
Moderators:  
Matt Weinger, M.D.  
Sem Lampotang, Ph.D.  
Richard Blum, M.D.  
Jeff Kleinwaks, Ph.D.  
3:00-5:00 pm Simulator Workshops  
Moderators:  
Dwayne Westenskow, Ph.D.  
Andy Lee, M.D.  
Louis Oberndorf  
Matt Kurrek, M.D.  
Workshops:  
Equipment Trouble-Shooting:  
David Stern, M.D.,  
University of Rochester  
Ovarian Cancer for Ex-Lap and Debulking:  
Adam Levine, M.D.,  
The Mount Sinai Hospital  
Critical Events in OB:  
Rita Patel, M.D.,  
University of Pittsburgh/  
Magee Women's Hospital  
Neurotrauma after a Recreational Accident:  
Chris Lussi, M.D.,  
University of Erlangen

*Teleconferencing with the Simulator:*  
Dan Raemer, Ph.D.,  
Harvard Medical School

*Interactive Regional Anesthesia Simulator  
with Tactile Feedback:*  
Christopher Wiley, M.D.,  
Dartmouth-Hitchcock Medical Center

## Friday, January 16, 1998

- 7:00 am -2:00 pm *Exhibits Open*
- 7:00-8:00 am *Continental Breakfast in Exhibit Area*
- 8:00-9:15 am *Panel: Anesthesia in Remote Locations*  
Moderator: Nik Gravenstein, Jr., M.D.  
Panelists:  
Mike Wall, M.D., George Topulos, M.D.  
Mike Good, M.D., Gordon Gibby, M.D.
- 9:15 am *Scientific Posters and Discussion*
- 10:15 am *Simulator Workshops*  
Moderators:  
Dwayne Westenskow, Ph.D.  
Andy Lee, M.D.  
David Stern, M.D.  
Louis Oberndorf  
Matt Kurrek, M.D.  
Workshops:  
*ACLS Megacode Training:*  
W. Bosseau Murray, M.D.  
Pennsylvania State College of Medicine  
*TURP Syndrome:*  
Donald Pierce, M.D.,  
Vanderbilt University  
*Blunt Trauma: Evaluation and  
Management in the ER:*  
Julie Bock, M.D.  
David Murray, M.D.  
Washington University Clinical  
Simulation Center  
*The Simulator as an Evaluative Tool:  
Test and Compare Your Skills:*  
Matt Kurrek, M.D.  
Hugh Devitt, M.D.  
University of Toronto  
*Malignant Hyperthermia:*  
Per Foge Jensen, M.D.  
University of Copenhagen  
*Differential Diagnosis of High Airway  
Pressure*  
Butch Loeb, M.D.  
University of Arizona  
Richard Botney, M.D.  
Oregon Health Science University
- 12:15-1:00 pm *Lunch*
- 1:00-1:45 pm *Keynote Lecture-Nitric Oxide, A Selective  
Pulmonary Vasodilator*  
Warren Zapol, M.D.
- 2:00-6:00 pm *Field Trips*  
Host: Butch Loeb, M.D.

6:30-10:00 pm

*Evening activity*  
Arizona Historical Society Museum  
Steven Barker, Ph.D

## Saturday, January 17, 1998

- 7:30-10:30 am *Exhibits Open*
- 7:30-8:00 am *Continental Breakfast in Exhibit Area*
- 8:00-9:30 am *Panel: Simulation in Anesthesia  
Pharmacology Development*  
Moderator: Dan Raemer, Ph.D.  
Panelists: Joseph Reves, M.D.  
Robert Butterfield  
Iain Glenn, Ph.D.  
Donald Stanski, M.D.
- 9:30-10:00 am *Coffee in Exhibit Area*
- 10:00-11:30 am *Panel: Computer Education to Teach  
Technology-The Future*  
Moderator: Julian Goldman, M.D.  
Panelists:  
Howard Schwid, M.D.  
Karl Reinig, Ph.D.
- 11:30 am-1:00 pm *Lunch "on your own"*
- 1:00-1:45 pm *STA Business Meeting*
- 1:45-3:00 pm *Anesthesia Software Exhibition*  
Moderator:  
James Philip, M.D.
- 3:00-4:30 pm *Panel: The European Simulation  
Experience*  
Moderator:  
Dr. David Wilkens  
Panelists:  
Dr. Vimal Chopra  
Dr. Per Foege Jensen  
Dr. Aidan Byrne  
Dr. Christoph Lussi  
Dr. Andrew McIndoe  
Dr. Daniel Scheidegger
- 4:30-5:00 *Course Evaluation and Close*

### 1998 Program Committee

Dan Raemer, *Chair*  
David Feinstein, *Vice Chair*  
Steve Barker, *Tucson Host*  
Butch Loeb, *Tucson Activities*  
Lindsey Hensen, Andy Lee, Dwayne Westenskow,  
David Seitman, Matt Weinger,  
Sem Lampotang, Lou Oberndorff, Jeff Kleinwaks,  
Richard Blum, Matt Kurrek, David Stern

We are especially grateful to the members of the  
Rochester Simulator group  
who have participated in the planning of  
this joint meeting.

1998 Annual Meeting Society for  
Technology in Anesthesia

# SUPPORTERS & EXHIBITORS

With special thanks to the following companies whose involvement with STA has made this annual meeting possible.

## **Aspect Medical Systems**

2 Vision Drive  
Natick, MA 02181

## **Cook Critical Care**

925 S. Curry Pike PO Box 489  
Bloomington, IN 47402

## **Datex Engstrom, Inc.**

2 Highwood Drive  
Tweksbury, MA 01876

## **Eagle Simulation, Inc.**

P.O. Box 2367  
Binghamton, NY 13902-2367

## **GlaxoWellcome**

Five Moore Drive PO Box 13398  
Research Triangle Park, NC 27709

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MS 375 3000 Minuteman Rd.  
Andover, MA 01810

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W. 8200 W. Tower Ave.  
Milwaukee, WI 53223

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Telford, PA 18969

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Wallingford, CT 06482

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Auton, CA 93510

## **PICIS**

8329 Grubb Rd. #202  
Silverspring, MD 20910

## **Siemens Medical Systems, Inc.**

14 Electronics Ave  
Danvers, MA 01923

## **Spacelabs Medical**

15220 NE 40th St. Box 97013  
Redmond, WA 98073

## **University of Arizona Health Sciences**

Department of Anesthesiology

## **VIA Medical Corp.**

11425 Sorrento Valley Rd.  
San Diego, CA 92121

## **Walrus Division of Medical Parameters Inc.**

30 E. Commerce Way  
Woburn, MA 01801

**List as of January 2, 1998**



# PEER REVIEWED ABSTRACTS

No. Formal Presentation Time	NAME PRIMARY AUTHOR	TITLE OF PAPER
1 Saturday	<b>Bekker, Alex</b> New York Univ. Med. Center	Computer simulation of cerebrovascular responses during induction of anesthesia: comparison of thiopental, propofol, and etomidate.
2 Saturday	<b>Blike, George</b> Dartmouth-Hitchcock Medical Center	Object Display Improves Performance In Recognizing Shock in a Real-time Monitoring Task Compared with a Standard Display
3 Friday	<b>Calalang, Ignatius</b> Brigham & Women's Hospital	Modeling "Rebreathing" in Semi-Closed Circle Breathing System
4 Thursday	<b>Gallagher, Martha</b> Beth Israel Deaconess Medical Center	Is the Simulator an Effective Tool for Medical Student Learning in the Clinical Clerkship?
5 Thursday	<b>Gibby, Gordon</b> Univ. of Florida, College of Medicine	Proposed architecture for national medical records access
6 Friday	<b>Gibby, Gordon</b> Univ. of Florida, College of Medicine	Availability of records in an outpatient preanesthetic evaluation clinic: the need for national electronic medical records systems
7 Thursday	<b>Gibby, Gordon</b> Univ. of Florida, College of Medicine	Scan form for estimating drug costs of anesthetics
8 Friday	<b>Grit, Marco</b> University of Florida	A Model for Educational Simulation of the Effects of Propofol on the EEG
9 Saturday	<b>Hameroff, Stuart</b> University of Arizona	Subjective Time Flow: Effects of Pre-operative Medication and General Anesthesia
10 Friday	<b>Hartmannsgruber, Maximillian</b> Yale University School of Medicine	Non-linearity of the Verbal Numerical Pain Scale with Severe Pain - a Volunteer Study
11 Thursday	<b>Haryadi, Dinesh</b> University of Utah Health Science Ctr	Measurement of Injectate Temperature at Right Atrial Port Improves Accuracy of Thermodilution Cardiac Output

No. Formal Presentation Time	NAME PRIMARY AUTHOR	TITLE OF PAPER
12 Thursday	Jaffee, Michael Novamatrix Medical Systems, Inc.	Performance of a Combined Neonatal Flow/CO <sub>2</sub> Airway Adapter Under Loaded Conditions
13 Friday	Jones, Robert David Grant Medical Center	The Interactive, Hypermedia Computer Simulator Program for Difficult Airway Algorithm
14 Thursday	Kurrek, Matt Sunnybrook Health Science Center	Simulator team training: A concept beyond anesthesia
15 Friday	Kurrek, Matt Sunnybrook Health Science Cntr.	Anaesthesia simulation for students: A cost effective recruitment strategy?
16 Thursday	Lamkin-Kenard, Kathleen Eagle Simulation, Inc.	Development of a Model for Simulating Cardiopulmonary Bypass
17 Saturday	Lampotang, Samsun University of Florida	An ICP Model for the Human Patient Simulator
18 Friday	Lampotang, Samsun University of Florida	A Plastic Optical Fiber Imaging Stylet: Preliminary Performance Data on Humans
19 Thursday	Mackenzie, Colin University of Maryland	Utilization of Personnel During Trauma Patient Resuscitation
20 Friday	Mackenzie, Colin University of Maryland	Do Surgeons, Nurses, and Anesthesiologists perceive the same medical care differently?
21 Friday	Mackenzie, Colin University of Maryland	Simulator Realism Impacts Diagnostic Abilities on Auscultation*
22 Friday	Mackenzie, Colin University of Maryland	Strengths and Weaknesses of Airway Teleconsultation
24 Saturday	Mandel, Jeff Brigham & Women's Hospital	New Approaches to Visualization of Phenomena in Inhalational Pharmacokinetics

No. Formal Presentation Time	NAME PRIMARY AUTHOR	TITLE OF PAPER
24 Thursday	Murray, W. Bosseau Penn State Univ., College of Med.	Implementation of Crisis Resource Management with a Meti Simulator
25 Thursday	Orr, Joseph University of Utah Health Sciences Center	Evaluation of Partial Rebreathing Cardiac Output Measurement in Animals
26 Friday	Orr, Joseph University of Utah Health Sciences Center	A Lung Simulator Modified to Test Fick Cardiac Output Measurements
27 Friday	Philip, Jim Brigham & Women's Hospital	Inspired Sevoflurane Remains After Switching to Desflurane with 2 L/min FGF
28 Thursday	Raemer, Dan Center for Medical Simulation	Teaching Crisis Management in Radiology Using Realistic Simulation
29 Friday	Raemer, Dan Center for Medical Simulation	Mock Codes: Using Realistic Simulation to Teach Team Resuscitation Management
30 Thursday	Ruskin, Keith Yale University	Representing Patient Vital Signs Using Facial Expressions
31 Saturday	Schiller, William Maricopa Integrated Health System	Flow Directed Pulmonary Artery Catheter Guided Resuscitation Software as Outcome Measure & Teaching Tool
32 Saturday	Schwab, Wilhelm Univ. of Florida, College of Medicine	Secured WWW Access to Computerized Preanesthetic Evaluations
33 Saturday	Schwab, Wilhelm Univ. of Florida, College of Medicine	Pen-based recordkeeper allows freehand notes
34 Friday	Shelley, Kirk Yale University	The Quantitative Evaluation of Educational CD- ROMs.
35 Thursday	Smith, Brian Standford University,	Simulation in Human Factors Research: A Progress Report

**No.**  
**Formal**  
**Presentation Time**

**NAME PRIMARY AUTHOR**

**TITLE OF PAPER**

**36**

Saturday

**Smith, N. Ty**  
University of California, San  
Diego

Windows Dynamic Link Libraries Create a New  
Interface Tool for BODY Simulation: Its Use in  
Trauma Simulation

**37**

Thursday

**Sowb, Yasser**  
Palo Alto Veterans Affairs  
Medical Center

Cognitive Performance During Simulated Ventilation-  
Related Events

**38**

Friday

**Sowb, Yasser**  
Palo Alto Veterans Affairs  
Medical Center

Competence Analysis of Intraoperative Critical Events

**39**

Friday

**Tominaga, Masamune**  
Kyushu University

Simulator Training for Medical Students

**40**

Thursday

**van Meurs, Willem**  
University of Florida

Educational Simulation of the Noxious Stimulation-  
Analgesia Balance

**41**

Friday

**Votapka, Todd**  
Eagle Simulation, Inc.

Product Evaluation Using Simulation

**42**

Thursday

**Watt, Richard**  
University of Arizona

Detecting Intra-Operative Awareness Using Facial  
Electromyographic Patterns

**43**

Saturday

**Weinger, Matthew**  
VA Medical Center (125)

Use of a PC-Based Expert System to Assist Primary  
Care Physicians in the Management of Chronic Pain

# SOFTWARE DEMONSTRATIONS

\* These projects are included in the peer-reviewed abstract section of the syllabus

## **Computer simulation of cerebrovascular responses during induction of anesthesia: comparison of thiopental, propofol, and etomidate. (\*1)**

Alex Bekker, New York

## **Object display improves performance in recognizing shock in a real-time monitoring task compared with a standard display. (\*2)**

George Blike, Lebanon NH

## **A PC-based Training Program for Evita Intensive Care Ventilators**

Bonk, R, Elferich, M. Rankenberger, H. Fachhochschule L, Institute of Biomedical Engineering

## **Gas Exchange Kinetics in Anesthesia during Non-Steady State - Ventilation/Perfusion Relationships**

Peter H. Breen, MD, FRCPC, Orange, CA

## **Stelpump - software to administer target-controlled infusions**

Prof. Johan Coetzee, Department of Anesthesiology, South Africa.

## **P-K Sim a pharmacokinetic simulation**

Richard H. Epstein and Dick Bartkowski

## **Subjective time flow: Effects of Pre-operative Medication and General Anesthesia (\*9)**

Stewart Hameroff, Tucson

## **AlgoSim presents the American Society of Anesthesiologists (ASA) difficult airway algorithm**

Robert C. Jones, M.D., David Grant Medical Center, Travis AFB, CA, George J. Sheplock, M.D., Indiana University School of Medicine, Indianapolis, IN  
Michael S. Goldstoft, M.D., Schenectady, NY

## **An ICP model for the Human Patient Simulator**

Samsun Lampotang

## **All-purpose Questionnaire Algorithm for Manual Input of General Information in Anesthesia: the QA-1**

Yoshimitsu Sanjo, Ph.D., Kazuyuki Ikeda, MD, FRCA, Hamamatsu University School of Medicine

## **Flow-directed Pulmonary Artery Catheter Guided Resuscitation Software as Outcome Measure & Teaching Tool (\*31)**

William Schiller, Phoenix

**Secured WWW Access to Computerized Preanesthetic Evaluations (\*32)**

Wilhelm K. Schwab, Ph.D. University of Florida

**Pen-based recordkeeper (\*33)**

Wilhelm K. Schwab, Ph.D., University of Florida

**Indoes Daynamic Link Libraries Create a New Interface Tool for BODY Simulation: Its use in trauma simulation (\*36)**

N. Ty Smith and Ken Starko

**Gas Man uses Exponential Integration and runs under Win 95, Mac68xx and Mac PowerPC Operating Systems and allows Weight scaling from 50 g to 500 Kg, Body composition and flow adjustment, Multiple Gases, and Multiple overlays**

James H. Philip MEE, MD, Med Man Simulations Inc. and Brigham and Women's Hospital, Harvard Medical School

**New Approaches to Visualization of Phenomena in Inhalational Pharmacokinetics Views of Inhalation Anesthesia Kinetics (\*23)**

Jeff E. Mandel MD MS, James H. Philip MEE, MD, Brigham and Women's Hospital, Harvard Medical School

**Use of a PC-Based Expert System to Assist Primary Care Physicians in the Management of Chronic pain (\*43)**

Matt Weinger, San Diego.

## **ASPECT MEDICAL SYSTEMS, Inc.**

The Aspect A-1050 monitor with the Bispectral Index™ (BIS) provides a continuous process EEG parameter that provides a measure of the state of consciousness during administration of anesthetics and sedatives. BIS is designed to correlate with hypnotic endpoints and track changes in the effects of anesthetics on the brain.

## **COOK CRITICAL CARE**

## **DATEX-ENGSTROM, Inc.**

Integrated monitoring and information management systems for the perioperative process.

**The AS/3 Anesthesia Monitor and AS/3 Compact Monitor.** New modules: Compact Airway Gas and NeuroMuscular Transmission.

**Light Monitor,** for transport

**AS/3 Anesthesia Delivery Unit (ADU)** (Pending FDA 510k clearance) integrated fresh gas delivery, agent vaporizer and ventilator. An ergonomic anesthesia workstation

**Anesthesia Information Management System.** Pre-operative assessment, electronic anesthesia record, recovery record, post operative analysis with reporting. Interfaces to share information with other hospital systems.

## **EAGLE SIMULATION, Inc.** See also full page ad

The Eagle Patient Simulator is a fully interactive, mannequin based training system capable of realistically simulating the look, symptoms and responses of a human patient.

## **HEWLETT-PACKARD CO**

Hewlett Packard will exhibit the HP Anesthesia component monitoring system with integrated anesthetic gas analysis as well as new technologies in anesthesia information management systems.

## **MARQUETTE MEDICAL SYSTEMS**

Marquette Medical Systems provides diagnostic, anesthetic agent and vital signs monitoring and clinical information solutions for the healthcare market. Marquette's Unity Network employs IEEE industry standards and TCP/IP protocols, making the Unity Network the only network that will interface with all major clinical hospital information centers.

## **MEDICAL EDUCATION TECHNOLOGIES, Inc.**

Human Patient Simulator (HPS) physically represents the patient including clinical features and monitored parameters via the use of sophisticated psychological and pharmacological models.

## **NORTH AMERICAN DRAGER**

North American Drager is a leader in design, engineering and manufacturing of Anesthesia Systems, Patient Monitors and Data Management Systems for the operating room.

## **NOVAMETRIX MEDICAL SYSTEMS Inc.**

Novamatrix is a leading manufacturer of capnographs, plus oximeters, transcutaneous and respiratory mechanics monitors. The TIDAL WAVE™ capnograph and Vent™ respiratory mechanics monitor are the latest in hand-held technology from Novamatrix. The TCO<sub>2</sub>M, transcutaneous monitor, features on-screen trending at the bedside. The VENTRAK and the CO<sub>2</sub>SMO+™ combine mainstream capnography with respiratory mechanics to provide important parameters such as CO<sub>2</sub> Production and Deadspace calculations.

## **OHMEDA**

Monitoring and delivery device for inhaled Nitric Oxide. "Ino-Vent."

Ohmeda will display the MOD FE anesthesia machine featuring the new Smart-Vent ventilator.

## **PICIS**

Picis is a world leader in the development, distribution and installation of critical care information systems which automate the point of care in very high acuity care areas of the healthcare enterprise. Picis CareSuite 97 includes: Chart+™, which uses patented technology to connect to medical devices and computing systems; Visual Care™ which automates the work flow and clinical documentation of care providers and HospiAudit™, the database query and reporting tools for quality assurance, cost-tracking and clinical research. All Picis products are native, 32-bit Windows NT applications and use Microsoft SQL Server™ and Microsoft Internet Explore.

## **SIEMENS MEDICAL SYSTEM, Inc.**

Come see the latest technology for the continuum of care at the Siemens booth. We are demonstrating our revolutionary new twist in anesthesia management. We are also showcasing our INFINITY monitoring system. Please stop by for a demonstration.

## **SPACELABS MEDICAL**

Spacelabs Medical will demonstrate monitoring and clinical information products designed to support the neurology environment. This includes modular EEG monitoring for integrating with other vital signs bedside monitoring, our new Bispectral Index (BIS) module to titrate and assess the levels of sedation/awareness in ICU patients. The EEG and BIS modules allow full bedside monitoring and network capabilities for neurological consultations.

## **VIA MEDICAL CORPORATION**

The VIA system is an ex-vivo blood chemistry monitor which measures blood gases, electrolytes and glucose at the point-of-care. A blood sample is withdrawn automatically from an arterial or venous line, a measurement is performed and the blood reinfused all within 90 seconds.

## **WALRUS DIVISION OF MEDICAL PARAMETERS, Inc.**

"Hi-Flo." Needle-Free, Latex-Free Anesthesia IV Sets and Extensions, Needleless Systems; System-72, "Hi-Flo" Central Venous Catheter and Percutaneous Sheath Introducer Kits; NEW 9.5 FR Non-Kink Percutaneous Sheath Introducer; NEW "Hi-Flo" Double-lumen Percutaneous Sheath Introducer; NEW BioZ Non-Invasive Hemodynamic Monitoring System



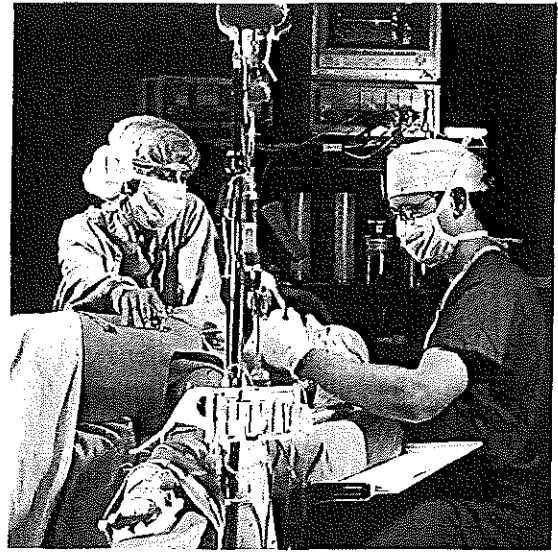
# Innovations in Medical Training

*Leading the World in Medical Simulation*

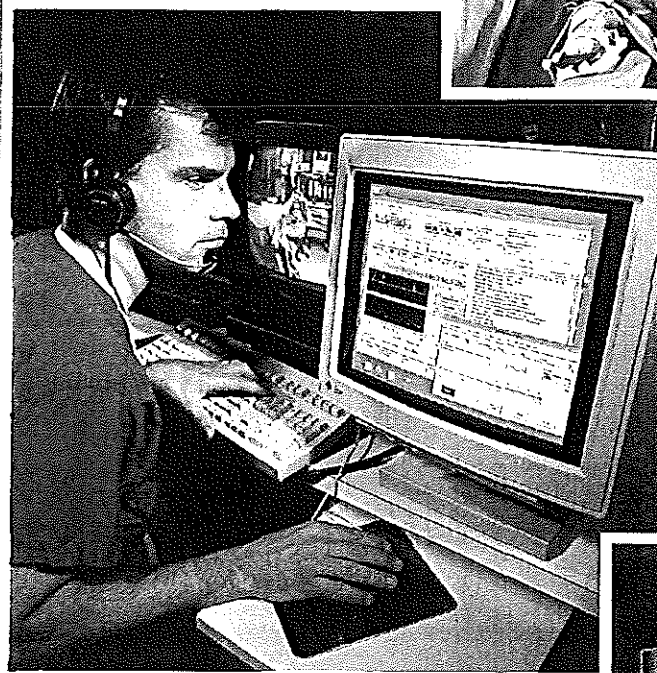


*Models Over 75 Drugs  
and  
28 Critical Events*

Teaching the full range of  
required skills - from basic  
procedures to full crisis  
management training.



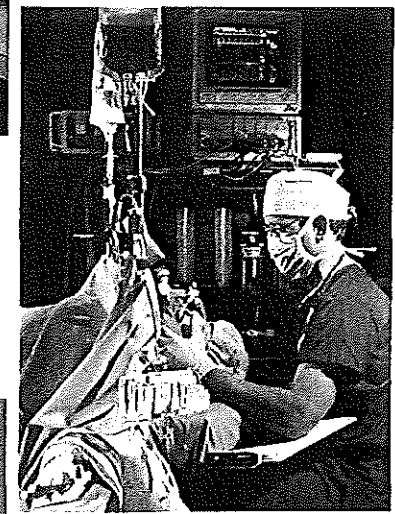
*Highly Realistic  
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## Eagle Patient Simulator





**Society for Technology in Anesthesia**

**9th Society for  
Technology in Anesthesia  
January 1/21 - 1/23, 1999  
Hotel Del Coronado,  
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