

Visioning Simulation Conference: Preliminary report

To the Board of Directors, Thoracic Surgery Foundation for Research and Education

May 6, 2007

The Visioning simulation Conference (VSC) convened in Cambridge MA on April 19 – 20 and was attended by appointed representatives from STS, AATS, ABTS, TSDA, EACTS, ACS, NHLBI and our industry partners (Medtronic, Edwards Lifesciences and St. Jude Medical). In addition several attendees with extensive simulation experience and development were active participants.

The conference began with a simulated OR demonstration by live video feed. Over the 2-day conference speakers presented simulation use in anesthesia, the airline industry, the ACS and computer simulation of congenital heart lesions. These helped to demonstrate what is available today and to stimulate thought among the participants.

The primary working function of the conference centered on a series of roundtable discussions planned to define how simulation could be applied to Thoracic Surgery Education. A manuscript documenting the entire conference is already being prepared by the members of the VSC planning committee with a goal of providing the lengthy document to selected editors from each constituent organization for review by early summer. The final manuscript will be submitted for simultaneous publication in appropriate journals. The remainder of this very brief report will center on the generalized product of the roundtable discussions.

REASONS FOR CHANGE

“How can simulation be used to improve patient safety and transform thoracic surgery in a positive way?”

Groups discussing adult practice, Cardiac and Thoracic, focused on the use of simulation for individual learning ranging from fundamental skills to new techniques and evolving technology. Effective simulation could be particularly helpful to teach uncommon techniques. Simulation could also be useful for team training experiences to improve communication, judgment and safety.

In addition to procedural based education, the Congenital group suggested that computer based simulation could be useful to examine patient specific anatomy for operative planning. They felt that simulation would be a good way to learn pattern recognition and to train for rare but disastrous events.

“What is unique about thoracic surgery as a specialty that makes it the right venue for leading the way in simulation for surgical education?”

Thoracic surgery is a reasonably small specialty with activities that are highly algorithmic. Thoracic surgeons are uniquely team leaders performing in a high-risk environment. While many skills and activities are highly repetitive, there are also activities that are uncommon to rare. Current economic pressures, training time limitations, high visibility of outcomes and committed leadership make thoracic Surgery an ideal venue for development of simulation as an educational tool.

These facts stated; we should recognize that we are already late in coming to the simulation table. For example, general surgery has already mandated a requirement for simulation to be a part of any training program in order to obtain reaccreditation.

SIMULATION NEEDS AND WANTS

“What physiological procedures and patient care activities most need to be simulated?” Consider near term (12 – 18 months) and long term (3 – 5 years)

As expected a very extensive list of procedures and activities was discussed. Common to all three disciplines was a suggestion to develop low fidelity simulation to learn fundamental skills. Near term technology is available for some fundamental skills that have not been traditionally part of thoracic surgical training, for example catheter based skills and interventional endoscopic techniques.

Less expected was discussion of simulation to teach communication skills such as effective informed consent, managing difficult patient / family situations or delivering bad news. The congenital group suggested developing a data repository to collect examples of complex anatomic lesions for future training modules and experience with uncommon situations.

“What team challenges and competencies most need to be simulated?”

These groups focused on defining activities that are team dependent and examining the use of simulation to improve team interactions and minimize errors. The eventual goal would be to provide training exercises that would minimize learning critical steps on live patients.

IMPLEMENTING SIMULATION

“What key simulation activities and events should happen in which locations as we build and implement a comprehensive simulation system for thoracic surgery?”

These groups discussed what simulation capability should be located locally, regionally, nationally or in mobile units. It was generally agreed that local facilities should be able to simulate low fidelity, low technology activities at reasonable cost. The simulation centers could focus on teaching basic essential techniques, team building activities; post event reviews and computer based anatomic simulation.

Regional and mobile simulation activities would include higher fidelity (cost) simulations such as endovascular, endothoracic and new technology learning including robotic skills. Whether these simulators will be fixed facilities that surgeons and teams travel to or mobile facilities (18 wheeler trailer) would depend on the logistics of the region.

Very complex, high fidelity simulators should be located nationally for in single or few centers. These simulators would include the ability to simulate procedures that are uncommonly seen. Simulators for use in certification or maintenance of certification would need to be in this category to assure consistency and validation.

“What key actions are necessary to begin implementation of simulation in thoracic surgery education: certification or maintenance of certification?”

Simulation could be used in regional or national centers as part of the certification process. There was significant discussion as to the importance of gradual implementation and the need for validation. These simulators would be of high fidelity that could be useful in residency training to limit the traditional training method of a first procedure done live. They may also be useful as part of the residency completion process.

“What key actions are necessary to begin implementation of simulation in thoracic surgery education: team training and error analysis?”

Participants discussed having local simulations for teams to work through basic activities to improve communication among the team and help to better define each member’s role and responsibilities, and to better empower team members to fulfill those roles. This activity would be helpful in analyzing the cause of problems and reducing sources for error.

“What key actions are necessary to begin implementation of simulation in thoracic surgery education: emerging technology?”

The fidelity required for these simulations will be at least as high as the technology being developed. Simulation could be used not only to train surgeons and teams on new techniques, but also to contribute to the development and validation of new techniques.

FUNDING SIMULATION SUPPORT

“Whose support do we need (key decision makers with resources) to make this vision happen?”

The obvious potential funding sources include those motivated by profit (medical device and medical simulation industry), and governmental funding sources (NIH, NSF, DoD, NASA etc.). Health care payers and malpractice providers may be motivated to contribute to improve patient safety and reduce long term costs. Private investors or foundations can be solicited to participate for profit or philanthropy.

It was generally agreed among participants that the first step in gaining support would be to develop a mandate to move forward with simulation as described in this report. This will require the leadership of all the organizations represented in this conference to develop curricula and define applications.

“What are the critical resources we need to make this vision a reality?”

It is evident that we are already behind. We need to define a “catalog” of what simulation resources are currently available, how they are being used, and how they may be accessed for use by thoracic surgery. Forward movement will be driven by patient safety, industry / profit, professional societies / boards and government mandate.

VISION AND ACTION

“What action steps are we, individually or collectively,
willing to undertake in this area?”

“Who is willing to make sure this task happens?”

“How long is needed to complete this task?”

The following action plans were developed by participants from each organization

TSFRE

1. Prepare reports from the Visioning Simulation Conference - D. Kohli, A. J. Carpenter and planning committee
 - Abbreviated summary to the Board of Directors in time for the next meeting during AATS (this report)
 - Draft complete manuscript and provide to selected representatives from each participating organization for editorial review prior to submission for publication. The editors were identified during the VSC and are listed in appendix A
 - Follow through with submission for simultaneous publication. Proposed journals: ATS, JTCVS, EurJTC, CTSnet
2. Create Inventory/Registry of CT Simulation (D. Kohli & Y. Colson)
 - Technology readily available
 - Technology under development
 - Existing Centers
3. Funding Coordination (D. Kohli)
 - Identify donors
 - Matching grants
 - Fellowships ~ Training and “simulation” development

Manuscript Reviewers:

JCTSE – Bill Baumgartner, MD

STS – Ranny Chitwood, MD

TSDA – Jay Zwischenberger, MD

AATS – Eugene Grossi, MD

ABTS – Richard Shemin, MD

EACTS – Lucio Parenzan, MD

ACS - Ajit Sachdeva, MD

JCTSE

1. Create Inventory – coordinate with effort by TSFRE
 - Products – D. Meglan
 - Sites – B. Baumgartner
2. Curriculum
 - Procedures – TSDA/TSRA – 2 wks
 - Team Training (R. Feins) – 2 wks
 - Expand Pt. Safety Work Force

ABTS/TSDA

- TSDA to formulate simulator education – K. Tribble – (5/8/07)
- Identify available simulators & potential developers – J. Z (5/8/07)
- Establish professional wide task force – B. Baumgartner (5/8/07)
- TSDA simulator based curriculum – K. Tribble – (1/28/08)
- ABTS to consider use of simulation for certification & MOC – R. Feins (9/07)

STS

- Form core working group under TSFRE (2 – 3 months)
 - Represent surgical societies/industry/ACS/IMS/Nursing/Anes.
 - Define what is available
 - Determine timeline/venue/cost/format
- Reconvene CMS think tank (3 – 4 months)
 - Website/blog/white paper

What can STS do?

- 5400 members devoted to patient care/safety/advocacy
- STS News (2 months)
- National Meeting (1/08)
 - Tech Con
 - STSU (Dilemma's TS/CS Course)
- CTSnet
 - Communication updates
 - What is available
 - Survey
- Publish in Annals
- Task force on simulation (made from members)
- Use existing workforces:
 - Clinical Education
 - Safety
 - Policy
 - Annual Meeting
 - Data Base
 - Technology
- Support another meeting
 - Ad Hoc
 - ACS (10/07)

AATS/EACTS

- Presentation at upcoming Executive Council meeting
 - Convince the skeptics...
- Publish report in Journal
- Call for Joint Taskforce
 - AATS/STS/EACTS/TSFRE
 - Mandate for Taskforce:
 - Curriculum & Team Simulation (Team Training)
 - Identify targets for “High Fidelity” simulation
 - Identify industry, government and other partners
 - Foster research and education in this field
 - Facilitate development of funding

ACS

- Expand informational efforts regarding the ACS Accredited Education Institutes to ensure best use of resources and collaboration across disciplines.
- Expand information efforts regarding ACS simulation activities that are widely applicable across disciplines. i.e. communication, teamwork, team training professionalism.
- Dialog with organizations in room regarding the best methods to accomplish the above.
- Investigate possibility of establishing a mechanism for thoracic surgeons interested in simulation to convene with the leaders of the ACS – Accredited Institutes to discuss collaborative activities

Industry Representatives

- Determine generic needs for training & specific device training needs
 - Strategies for collaborative development - D. Meglan & L. Voshage-Fischer
- Develop inventory of low & high tech simulators
 - Develop strategy to implementing – B. Younkes
- Industry cost share concept – P. Kullmann

List of participants by group

Group 1 – Adult Cardiac

Eugene Grossi, MD; NYU Medical Center	AATS
George Hicks, MD; University of Rochester Medical Center	ABTS
Bruce Ferguson, MD; East Carolina Univ School of Medicine	AATS
William Baumgartner, MD; Johns Hopkins Hospital	JCTSE
Faraz Kerendi, MD; Emory University	JCTSE
John Stulak, MD; Mayo Clinic	JCTSE
John Conte, MD; Johns Hopkins Hospital	STS
Ajay Carpenter, MD; UT Health Science Center	TSFRE

Group 2 – Adult Cardiac

Lars Svensson, MD; Cleveland Clinic	AATS
Richard Shemin, MD; UCLA	ABTS
David Fullerton, MD; University of Colorado HSC	JCTSE
Walter Merrill, MD; University of Cincinnati	JCTSE
Ranny Chitwood, MD; East Carolina Univ. School of Medicine	STS
Lawrence Cohn, MD; Brigham & Women's Hospital	TSFRE
Ivan George, MD; University of Maryland Medical Center	TSFRE

Group 3 – Congenital

Pedro del Nido, MD; Children's Hospital	AATS
Tom Varghese, MD; University of Michigan	JCTSE
John Mayer, MD; Children's Hospital	STS
Kent Harman, MD; University of Florida College of Medicine	TSDA
Seenu Reddy, MD; University of Texas Health System	TSDA
Thomas Sangild-Sorensen, MS, PhD; University of Aarhus	TSFRE

Group 4 – General Thoracic

Richard Feins, MD; University of NC at Chapel Hill	ABTS
Blair Marshall, MD; Georgetown University Hospital	STS
Daniel Miller, MD; Emory University	STS
Doug Newburg, MD; University of Florida College of Medicine	TSDA
Yolonda Colson, MD; Brigham & Women's Hospital	TSFRE
Mathew Schuchert, MD; University of Pennsylvania	TSFRE

Group 5 – General Thoracic

Ajit Sachdeva, MD; American College of Surgeons	ACS
Lucio Parenzan, MD; International Heart School	EACTS
Joseph Zwischenberger, MD; University of Texas Medical Branch	TSDA
Pat Kullmann; Director of Education & Communication	Medtronic
Anthony Harrison, MD; University of Pennsylvania	TSFRE
Steve Yang, MD; John Hopkins Medical Institute	TSFRE
Giselle Hamad, MD; University of Pennsylvania	TSFRE

Group 6 – Surgeons & Simulation Experts

Patrice Blair, MPH American College of Surgeons	ACS
Richard Satava, MD; University of Washington	ACS
Damon Marquis, Director of Membership Services	STS
Jeffrey Gold, MD; Ramon H Mulford Library	TSDA
Alan Price; President, Falcon Leadership	TSFRE
Paul Uhlig, MD; University Hospital	TSFRE
Suzanne Gilmore	Edwards Lifesciences
Lori Voshage-Fischer	St. Jude Medical

Group 7 – Surgeons & Simulation Experts

Raj Lal, MD;	TSFRE
Gerald Healy, MD; CHMC, Otolaryngology	ACS
Daniel FitzGerald, CCP LP; Brigham & Women's Hospital	TSFRE
William Younkes; President, Medical Simulation Corporation	TSFRE
Keith Horvath, MD; National Heart Lung and Blood Institute	NHLBI
Nancy Puckett, Executive Director, TSDA	TSDA
Tom Nowak, Representative	Edwards Lifesciences
Dwight Meglan, PhD; Simulation Expert	TSFRE