

4th Annual International Meeting on Medical Simulation
January 17, 2004

**Workshop on Feasibility of Offering A Regional Standardized Simulation
Curriculum**

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All registrants (about 200) to the IMMS 2004 were handed this survey. They were reminded twice, verbally to complete the survey ASAP, and to return to Dr. Olympio. Separately, the workshop was conducted on Jan. 17. 27 persons attended the workshop. These responses include all 9 written evaluations (returned during the meeting) and verbal comments from the workshop participants. Other attendees promised to return the survey later. Below is the objective report of responses, and it specifically excludes any comments from the authors at Wake Forest University. However, our responses would be within the norm of those below.

Your Institution: 9 written survey responses from Duke, Penn State, West Virginia, UCLA, Harvard, Alberta (Canada), Scotland (UK), UCSF, Herfordshire (UK); 27 persons at the Workshop responding verbally

Does your center routinely train physician/resident physician anesthesiologists?
YES, all of them do.

Charge of this workshop:

To determine the feasibility, implications and structure of a standardized simulation curriculum for the American Society of Anesthesiologists. A standard curriculum might be offered to the ASA membership within the USA. The ASA would like to know if the simulation community can create and package a meaningful program that could be reliably conducted on a regional and repetitive basis. Your thoughtful answers to the following questions will be assimilated into a response to the ASA. You will be copied on the results of this survey. (*We value the participation and response of all of our simulation colleagues. Please participate in the survey as if you would be involved in the program. We will segregate the responses later, if necessary.*)

Course Objectives:

1. **Please list the broad objectives of such a course, as you would see them, from two perspectives: that of the ASA, and that of the participants. (For instance, might it be to expose participants to simulation, to teach anesthesiologists crisis resource management, to teach specific crisis**

management scenarios, or to promote simulation as a teaching, evaluative, certification tool, or all of the above?

From the ASA Perspective: Training in practice guidelines; Eventual certification mechanism; Option for CME; Opportunity to refine behaviors that improve patient safety; To provide an awareness of and exposure to simulation; As an exploratory step toward certification through simulation; To determine the feasibility as an evaluation/certification tool; Likened to the Royal College of Anaesthetists objectives for initial tests of competency.

From the participant perspective: Opportunity for practicing and learning ACRM; Educational opportunity; To improve quality of care; To reduce liability and lower malpractice rates; To manage rare and/or serious situations; To foster professional growth; As a refresher; To learn new techniques; To use new equipment; To gain a higher CME yield per hour.

2. **What value do you see to the participants, in terms of what they can take away from the course?** As above, plus: Certification; Opportunity for teamwork and leadership skills; Non-punitive environment to learn new techniques; Opportunity to apply standard protocols to the management of rare problems.
3. **What about monetary value to the participants? How much would they pay?** Most thought that the ASA or State regulations would have to determine this because of ACCME regulations. Some suggested 50/CME hour, one person said 20-50/hour; Several said 500-1000/day; The cost would be high relative to other ASA weekend offerings.

Concrete Planning Issues:

4. **Is your simulation center interested, dedicated and capable of undertaking a responsibility such as this proposed course?** At least 15 out of 27 at the workshop said YES. One person felt they might be competing with other nearby centers. Some said, Not too frequently.
5. **What day(s) of the week could your center conduct this activity? Could you do weekends?** All could easily do so during the week. Only about half (12 from workshop) could do so on Saturday, and those would be limited to 4 per year; rarely on a Sunday.
6. **What should be the total length of these sessions?** The majority of respondents at the workshop (14) and written surveys (5/9) said ONE single day. They commented that in past experience, attendees could not handle a second day. One person suggested two half days to ease transportation issues; e.g. starting on Friday afternoon and continuing into Saturday morning.
7. **Can your facility provide appropriate food and beverage breaks within the facility?** YES-8 NO-1

8. **Would you prefer to have participants arrange their own meals and beverages?** YES-4 NO-3. One person said, It will cost more money to arrange food.
9. **How much would your simulation center want to charge (receive) for this course?** “Negotiable; Unknown; Depends on number; Depends on level of training; One person said ‘Nothing’; During the workshop, there was general consensus that centers had to receive between \$3000-\$4750/day, and could not run at a loss. One person said they need to clear \$150-200/person/day; Another suggested that a \$3000/day fee for the center could be split between the number of attendees, thus creating a fixed charge for the center and a variable charge to the attendee; \$250; \$4000-\$5000/day; \$75/person/day.
10. **Would you insist on a particular method of cash flow; direct or reimbursement from the ASA?** All would be satisfied to receive timely reimbursement from the ASA, although one said “Direct”.
11. **Would you require advance payment?** Mostly NO, if from the ASA. 2 people said YES.
12. **How would your teaching faculty be compensated for their time, especially if it were a weekend course?** Unanimous comments that faculty HAD TO receive compensation, either in the form of cash (preferred) or at least compensated time within their own departments. 2 suggested they would do it gratis; another would be satisfied with recognition from ASA; another was happy to have the opportunity for collaboration and publication; Uncertain; Optional; Cold cash; Compensated time or cash required to be sustainable; 500/day donated back to center; Money for weekend; Faculty already have time built-in for this; Hourly paid; All possible; Workshop consensus that it had to be the ‘cost’ of a clinical day’s work.
13. **How many sessions per year could your center conduct on a reliable basis?** 3-4, 6-10, 24-36, 4-6, 100, 2-4, 2-3, 250 days per year! Workshop consensus that a ‘free-market’ system would determine the number of course offerings at a particular center.
14. **Assume the ASA will handle the advertising, brochure mailings, and scheduling for all centers. Would you expect/mandate that they fill your course to your center’s expected capability and blocked-out time?** Only 6 written responses: No-2 Yes-4; At the workshop, some suggested that their own website might regulate or receive scheduling. **How far in advance must they confirm the reservation?** 2 months, 1 month, 1.5-2 months, 2-3 months, 1 month, 3 months.

15. **Must a participating center “qualify” for listing as a participating center? YES-unanimous; If so, how and in what categories? Who would do the “qualifying?”** ASA should qualify; Site visit for qualification, with observations, verification of equipment; Same criteria for all; Need to train the trainer and evaluator; Apprenticeship for teachers; Oversight committee; Need to participate in developing course; Based on content, equipment and personnel; Validation through external visit by peers of at least 2 other Institutions; Experience in certain scenarios; Refer to the German society standards for their centers: How are they doing it?; Use a checklist with peer review; How are other ASA courses accredited?

Course Personnel Issues:

16. **How many course faculty do you think you would need concurrently, excluding the simulator operator/technician?** 3, 1-2, 2-3, 2-3, 2, 2-4, 2-3, 1-2 and several qualified their answer based on course and content.
17. **Do you have a dedicated simulator operator/technician who is capable of troubleshooting and keeping a session moving, in the event of technical problems? Qualify your answer if necessary.** Yes-7 No-2 One person said, Faculty can do this.
18. **Do you think it should be mandatory for the centers to have such a technician?** YES-7 NO-2 Same person as in #16 said, Some center instructors are quite capable of doing this.

Course Participant Issues:

19. **How many students would be appropriate, per course, in your facility?** 10-15, 6-12, 4, 5-6, 4-6, variable, 8, 4, 6.
20. **Should we require a minimum or maximum number of students per scenario? How many and why?** If summative 1-2, if formative 3-5; Variable; Depends: some observe, others simulate, all debrief; 3; 2 max, and this person suggested 4/course, with 2 scenarios/participant/course in a 2-day course; at least 4; 2 minimum and 5 maximum; 1 minimum and 2 maximum; We find it useful to let non hot-seat individuals to play a role, as it broadens their view.

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21. **In how many scenarios should each participant participate per course?** 5-10, (2 days), 3 (pre-test, practice, post-test), 2 in 2 days, 2-3 in 1-2 days, 3-5 in 1 day, 4/day, at least 1-2, 2 in the hot seat.

22. **Should an ASA-sponsored program be open to all providers or only to ASA members?** EVERYONE said to ALL providers; One person said the ASA could recruit members this way; ASA could price lower for ASA members. Only person brought up the political issue of training CRNAs and that the ASA may have an opinion.

Equipment Planning:

23. **What equipment should be required of each center? METI, Laerdal, Peds?** No requirement; Only an anesthesia machine; Both platforms; High fidelity might not be needed; Different ones for different centers; Required METI adult; Require all items; At least a Laerdal; Depends on scenario, would not specify brands.
24. **What airway equipment (beyond routine) should be mandatory to have, including any proprietary-specific brands? Include disposable kits, if appropriate.** Most listed a variety of the following: routine, F/O, LMA, jet vent, combitube, exchange tube, surgical kits, F/T LMA, Bullard, light wand; One person said none; As per published guidelines for airway.
25. **Is it necessary for centers to own their own equipment, and their own simulator?** YES-4 NO-1 Others are uncertain. Why or why not? Need unfettered access; Are there legal implications?; Does company want a share of profits?; Experienced operator more important; It will minimize the number of problems; Would result in better CME and ability to script scenarios if you know what you have.
26. **Will we need to perform calibration tests to ensure fidelity between centers? (i.e. Is it necessary that all centers display very similar vital signs?)** Yes for summative, No for formative. Yes-6. Absolutely-2. Important next step for simulation certification later; No, don't bother: let sim center worry about it. They should know they need to do it; Fantastic research opportunity would be lost if we do not.

Course Curriculum:

Design

27. **How extensively should we teach the principles of crisis resource management as a separate entity?** . (ACRM emphasizes human factors/interactions, while CM emphasizes medical management of the patient) Separate or integrated; CRM as part of a tiered course; Depends; Yes, it is a cornerstone of safety; Yes, ASA champions it; Dilution of teaching points if you merge CRM with CM; 75% CRM and only 25% on CM; Not very much, because it is an integral part of hands-on training; Depends on goals of the course; Principles will come up during debriefing; If residents,

focus on technical aspects; CRM is almost naturally a part of debriefing of CM.

28. **Are you (your center) willing to be included on a group mailing list as developers of this course? All 9 said YES. If so, do you think you should receive funding from the ASA for the preparatory work?** Only one insisted, most said it would be nice. Two said funding should NOT be given at this stage;
29. **What should be done with the participants if there is a disabling technical problem just before they arrive? During the course?** Require back-up simulator; Refund or credit; Transport to another center; Video back-up; Reschedule at their convenience; Continue on as best as possible, it will still be valuable; Give a lecture, give screen-based presentation of simulation, present research data; Refund; Reschedule, but some educational activity could be carried out if faculty time is already bought; Minimum standards could insist on backup.

Scenarios:

30. **Should the scenarios be standardized? If so, how? On paper only? On computer disk? With or without on-the-fly programming?** No, do what they are good at; Basic scenario on disk, but operator should know on-the-fly programming; Stay within boundaries; Disk with on-the-fly; On paper; It is difficult to standardize on-the-fly; Yes, based on published case reports; Yes, on programmed disk; Yes, with a written script; Yes, on paper; Should participants (ASA membership) determine their own needs?; During the workshop, the participants could not agree to standardize the scenarios. They felt that each center offered its own strengths (and weaknesses). The group agreed (14/16 voters) upon a hybrid model, whereby there would be a core curriculum for all centers with optional regional differences. They felt this option could lead to creation of a scenario database.
 31. **List the 10 most important scenarios that should be taught in simulation for this course. Then, rank them 1 through 10, with 1 as most important. Assume that the principles of crisis resource management are taught throughout each scenario.** Only 4/9 listed the scenarios, and only 2 ranked them: Trauma; Massive transfusion-2; Difficult airway-4; ACLS-3; PALS; Neuro; MH-4; Chemical/Bio Warfare; High Spinal; TURP syndrome; Use ASA closed claims and APSF; Loss of pipeline supply/equipment-3; Anaphylaxis-2; Epiglottitis/Peds-2; Reactive airways; Pneumothorax; Hypotension-2; Hypoxemia-2; OB-2; Arrhythmias; Regional anesthesia pro/cons; Content should be influenced by the need to acquire technical skills in specific areas...those that promote the need for CRM.
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32. **Should any of the scenarios be deliberately repeated during the course?** Possibly, depending on the scenario or the participants focus; No-2; Yes, especially if they have not performed well.
33. **Who should create the standardized scenarios? Under what conditions? Should there be copyright protection? Must a center write scenarios in order to be a host teaching center?** Should be approved, but not standardized; Not copyright, but acknowledged; Course instructors, peer reviewed and tested; Must write scenarios to participate; Suspect that all scenarios already exist somewhere. Good to have several variations per scenario (vary gender and/or age); Not a requirement to submit scenario but submitter should be given attribution or funds; Yes to copyright and Yes for need to write; SEA or IMMS task force, peer reviewed by SimDot; No copyright; Groups of at least 2 to create scenarios. Yes to copyright; Don't need to write to participate; Those who teach in these clinical areas should write the scenarios; Copyright is counterproductive, but certainly acknowledge contributors;
34. **Who should edit, approve, and finalize the scenarios? Should the ASA have oversight of the course offerings?** Editorial board testing with end-users, then rebuild, iterative design; IMMS or SEA task force, peer reviewed via SimDot; Oversight and peer review group such as Sim-Dot editorial board; It is the ASA's product; Scenarios should be approved but not necessarily standardized. We have plenty of good ones and can develop special topic scenarios quite readily; May need central control, but need to know local flexibility within guidelines; Yes; A group of simulation and non-simulation personnel; Yes, if it is to lead to certification; Each center to edit, panel to approve.
35. **How often should the scenarios be changed? For all centers? At the same time?** Every 6 months; Yearly-3; In light of experience of subsequent practices; As procedures change and based on throughput; Participants should always receive new material; Requires pilot program to determine; Annual review for validity with q 3-year rotation; CME rules will dictate;
36. **Should there be progressive programs, e.g., Levels I, II, III, etc., offered at the same or different centers?** Absolutely; Yes-4; Nice idea; Alternate topics, not levels; Yes, good idea; Depends on course's content; Should be in all centers.
37. **Should we have backup scenarios prepared in the event that technical problems prevent the primary curriculum from proceeding?** Yes-4; Absolutely; Currently the standard at our center; Perhaps a back-up simulator; Could be useful; Perhaps.

Syllabus:

38. **How much information about the scenarios/curriculum should the participants receive ahead of time?** Broad objectives, focused reading ..., web-based didactic material; Pre-reading would improve learning, level the field and prevent participant embarrassment; Depends on whether it is formative or summative, and depends on the participants; Perhaps give curricular topics and advance reading; An outline and schedule; General curricula, but not about the scenarios; Minimal beyond that which is already in the public domain; Minimal except for ACRM issues; Minimal but depends whether the course includes specific syndromes, or broad refresher topic.
39. **What specifically should this material be? Consider the following: manuscript reprints/course syllabus/e.g., Gaba et al text Crisis Management in Anesthesiology/ briefings/debriefing sheets/simulation protocols/etc.** Program outline only; Gaba text; Evidence basis should be accessible but need not be distributed; Gaba text, basic outline; Articles on patient safety, human factors in medicine, teamwork and CRM; Case report from literature, or other pertinent literature/textbook; Anything from simple case stem to PBLD-like product with references and study questions; Syllabus, reprints;
40. **Should the course syllabus be published or distributed for purposes beyond the immediately intended use? If it is, what protected rights should the authors have?** Needs discussion; Use standard copyright; Yes; No; No, it is for the course and participants only; Link it with ASA publications in terms of competencies for major ACGME competencies; No; Not published but shared upon request by individual centers.
41. **Should the syllabus be SOLD by the ASA to nonparticipating simulation centers?** YES-5 NO-4 ASA should police courses to ensure standards; Based upon who develops them; Anyone who takes the course will have it for their Institution; Royalties to the authors?

Scoring:

42. **Should the participants be scored objectively? If so, should they be scored for technical versus behavioral actions?** Yes, for both; Score should be competency based with same criteria we use for residency; Both; Scoring should be based on median +/- 2SD response; If desired, but not necessary. We don't use our simulation center to evaluate our participants because they come to learn. We could evaluate and in some instances we do, but this is not usual; No, it is counterproductive educationally, but dependent upon training objectives; Formative assessment will be educationally of greater benefit. Some scenarios can be scored more objectively than others; Yes, technical ones; Yes to both.

43. **Should we be collecting data during these courses for research purposes? Explain: for whom? Collective or private interests?** Yes, for both interests; Yes, to evaluate as an assessment tool; Yes, feedback into key areas of training. To inform an ASA curriculum; Yes, collective; Sure, of course, for open publication; Yes, for scoring future participants. Maybe publication, but would need informed consent; Yes; Absolutely, to validate the course and to validate use of simulation, which are all needed for the next step of evaluation for accreditation; Absolutely, collective database with private projects.

What Other Questions Should We Be Asking?

Greater standardization of courses is needed.

Need peer review of cases.

Not sure monetary value will offset potential value of sharing.

How can we standardize the exposure?

Should this be set up like the ACE/SEE course?

What are the medico legal implications/risks?

Are there going to be limits on the number/location of centers?

If so, will it imply ASA endorsement of those centers?

If the manikin is specified, does it represent and endorsement of that product?

What happens if participants deviate from anticipated choices such that another crisis develops?

What about train the trainer courses before centers offer these courses?

Is there adequate evidence for a specific technique or will scenarios allow multiple equivalent paths to the same endpoint?

A pilot program using a small core group of scenarios/centers would be helpful.

It seems important to offer a limited number of curricular offerings that are standardized rather than fractionated center-specific courses.

What areas are priorities for teaching?

What can simulation do to help achieve learning outcomes?

How well is it achieving those goals?

There might be difficulties with use of different protocols (drugs, ACLS) from country to country (this person is from the UK).

Center-Specific Observations and Comments:

Harvard/Boston Center for Medical Simulation. Has occasional paying froups from Boston area for a 1-day course, usually with 3-8 participants and 2 instructors consisting of 1 MD and 1 behavioral sciences expert.

UCLA Group. Has groups from local hospitals (usually residents, but a few private physician groups). Participants must organize themselves priort to simulation course. "Critical mass" means 4-6 partipants with 3 instructors per day: 1 course director and 2 content experts, each teaching ½ day, and 1 technician. If groups are local, course

is 1 day, but if they are from out of town, then 1.5 days. ACRM and CM are incorporated within each scenario.

Standardized German Medical School Curriculum (by Stephan Moenk, MD, D.E.A.A., Vice President Production, Research and Development at the Simulation Center, Uniklinik Mainz, Anesthesie sm@aqai.de) (lecture notes):

A government mandate to train all German med students in simulation, particularly physiology.

His simulation center is near Frankfurt. Est. 1997. They have trained a large portion of the German anesthesiologists in some role or another. The German Society for Anesthesia and Intensive Care Medicine is spearheading the project. There are 10,000 German anesthesiologists in the German ASA. Quite early they formulated something that would assure quality in Simulation in Germany. Published prerequisites for simulation training in anesthesia and intensive care med (?journal: 2002; 12:828-)

Structural quality:

- Models of physiology
- Minimum quality of facilitators
- Minimum ratio of faculty/students
- Content of technical/non-technical skills in the curriculum

Simulation in undergrad training:

Only 1/5 med schools were capable of providing it. The rest were out of luck. There was very limited funding and limited integration into the existing curriculum. It depended solely upon local efforts. Then came:

“AO”: new legislation defining medical undergraduate training:

- Anesthesia becomes a must for all med students.
- Education in small groups
- Problem oriented learning
- DGAI changes: purchase a simulator for each med school, to improve the quality of education. It would be a new way to achieve the AO and to limit random simulation training of medical students.

Created a very standardized curriculum for the entire medical school community. Initially the 10 original simulation centers had their own curriculum and did things differently. When they got together there was disagreement initially about the curriculum, but after discussion they all bought-in to the concept and importance of standardizing. They then purchased a large number (35) of additional simulators (high fidelity, METI). Med schools were forced to provide maintenance. Will have 40 centers.

- Will go from 0-100 integration.
- All students will have simulation.
- Money spent will become huge
- CE certification for safety of use
- Had to standardize plugs, gas connections
- Standards for airway, monitoring pitch, and alarms
- Timeline from Oct 03 to March 2004 for installation and initiation
- It is happening right now

- Installation and one-day training for initial operation
- Next will be central trainings, then a national meeting, then evaluation
- Curriculum writing has been ongoing
- The national meeting will be their first, to begin networking, expansion.
- Contents to include: ER, Anesthesia, Human Factors, Physiology through interaction, and hands-on skills

See: **Med Education 2003;37:6-13 Suppl 1**

Evaluation will be from an ad hoc commission. They were not willing to leave out any old or new centers. All of the new centers were assigned a coach from one of the 10 existing centers. New ones were encouraged to visit the existing center. This program is changing the way all med students are trained in Germany. It is the fastest growth of national simulation in the world. Controlled by the users. It shapes the future. There is a potential for failure. The program generates numbers for evaluation and assessment testing. See: www.Simulationszentrum-Mainz.de

Standardized Australian Medical School Curriculum (by, Dr. Brenden Flanagan, Medical Director of the Southern Health Simulation and Skills Centre; b.flanagan@southernhealth.org.au):

EMAC-1. They train medical students who've passed their basic science exam and who've had at least 12 months of anesthesia experience. 5 x ½ day modules consisting of airway, cardiovascular, emergency, trauma, and human performance. Human performance is taught first, and then integrated into all the other courses. New Zealand partners, worked through the Royal College. They informed the college what simulation had to offer and suggested that it become a mandate: they did. Manuals are prepared for instructors and students. They incorporate evaluation methods, and have QA persons from another center to inspect the simulation centers, to maintain a certain degree of homogeneity. There is a "Courses Subcommittee" at the college which includes 6 representative experts, chosen from the centers, by the college. They work together to plan the curriculum. Their course is open to Consultants, who work quite well with the registrars. They received heavily-weighted CME units for doing so.