

5 THINGS EXPERTS THINK ABOUT WHEN BUILDING SIMULATION TRAINING PROGRAMS

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EXPERT PANEL: KEY MESSAGE

- Ross Horley, Managing Director, Medical Synergies, Australia
- Gretchen Kolb, Director, Penn Medicine Clinical Simulation Center, USA
- Sandy Green, MD, Associate Program Director, Interventional Cardiology, Geisinger Health System, USA
- Dr Kornelia Kreiser, Department of Neuroradiology, München, Germany
- Prof Dr Hideo Ino, Okayama University Hospital, Japan
- Diane Schuch-Miller, MEd, Director of Operations, Marcia & Eugene Applebaum Simulation Learning Institute, USA

INTRODUCTION

QUALITY OF CARE and patient safety remain key drivers in the consideration of healthcare educational needs. In response to this, simulation training continues to gain acceptance across a variety of disciplines.

THOSE CHARGED WITH the mission of building robust simulation training programs often find themselves in unfamiliar territory with little guidance on the best course of action. Potential healthcare stakeholders have a wide array of needs, leading to challenges in providing a “one size fits all” solution when it comes to providing guidelines on how to develop applicable training programs.

To support you in this process, we spoke to key global experts who have successfully built their own training programs and asked them to share their insights to offer the opportunity of learning from their experiences.



5 THINGS EXPERTS THINK ABOUT
WHEN BUILDING SIMULATION
TRAINING PROGRAMS

Regardless of discipline or training environment, there are a number of key stages to consider during the early planning phase when building your simulation training program.

STAGE 1: RUN A NEEDS ANALYSIS

Your audience

It is vital to understand the overall goals of your training program. To do this, a good starting point is to ask:

- What do I want to accomplish?
- What concrete skills do I want to teach?
- What level?

Ultimately, be clear on who your audience is.

How can simulation augment your existing training program?

Having completed your initial needs analysis and understood your audience requirements, it is then important to ask how simulation can augment your or their existing training program.

TO DO THIS, ASK YOURSELF:

- How is training currently dealt with and is it effective?
- If yes, how effective?
- If not, is simulation a potential solution?

IT IS IMPORTANT to have a clear idea of what simulation can do and how it will bring benefit to your program.

Further considerations

Further points to consider during this Stage 1 “needs analysis”:

- Error rates: how can we improve with simulation?
- Gestation of training – how long does it take? Can we speed this up?
- Numbers of people we are training, and how do we charge?

**“ULTIMATELY,
BE CLEAR ON
WHO YOUR
AUDIENCE IS.”**

“A clear and primary audience is essential. In simulation and with lots of dollars, you can certainly find toys to purchase. You have to be careful, though, to always stay focused on YOUR audience and YOUR mission so that all purchases serve them.”

Diane Schuch-Miller, MEd, Director of Operations, Marcia & Eugene Applebaum Simulation Learning Institute, USA

“First step is to get major stakeholders (i.e. users of the system) on board. Discuss their needs with them – training, equipment; consider space and how to utilize it. Consider not only how you will use the space today but also into the future (5 years +).”

Gretchen Kolb, Director of Operations, Penn Medicine Clinical Simulation Center, USA

“I usually begin by locating a specific target emotion, such as anxiety, fear or anger, and then endeavor to trigger this through role-play. Teaching how to manage emotions is often a neglected, but critical, area when considering training needs and simulation provides a unique solution.”

Prof Dr Hidoe Ino, Okayama University Hospital, Japan

HAVING CONDUCTED a needs analysis it is important to consider what resources are required for your program.

“Teaching problem solving is a key benefit of simulation, and learning from an expert is key”

Sandy Green, MD, Associate Program Director, Interventional Cardiology, Geisinger Health System, USA

Medical personnel and educationalists:

Ensure you have both educationalists and medical professionals on your staff. Educationalists can focus on building the structure while clinicians can provide the content.

IT IS IMPORTANT to consider from the outset how you are going to reimburse and incentivize appropriately. This requires buy-in from fundholders.

“It is important to have commitment from those holding the funding to reimburse educators.”

Sandy Green, MD, Associate Program Director, Interventional Cardiology, Geisinger Health System, USA

IT IS CRITICAL to attract high-quality trainers. Be sure to source those who already have an interest in education.

GRETCHEN KOLB, MS, Director of Operations, Penn Medicine Clinical Simulation Center, USA, highlights two fundamental points to be raised when securing buy-in:

- Most areas are now mandated to include simulation or are likely to be in the future. This was the motivation behind getting mentors involved.
- Incorporate research demonstrating reduced errors. Liability is much more costly than running simulation programs!

SANDY GREEN, MD, Associate Program Director, Interventional Cardiology at Geisinger Health System, USA argues: A mentor plays a crucial role.

“you cannot have self-directed learning on simulation for procedural training.”

Leadership support and funding

It is imperative that clear outcomes and expectations are agreed from the outset and that you have sufficient support from your management team. On-going support and investment are crucial.

“Be sure to obtain support from leadership. Running a simulation center is not a one and done deal. It’s not possible to just invest once, build the place and hope it goes on forever. Simulators need maintenance. Medical advances occur every day. The field is ever-changing and to be successful, leadership must understand this prior to the initial investment and document their intent for ongoing support, both philosophically and financially.”

Diane Schuch-Miller, Director of Operations, Marcia & Eugene Applebaum Simulation Learning Institute, USA

**“A MENTOR
PLAYS A
CRUCIAL ROLE.”**

STAGE 3: PACKAGING YOUR TRAINING PROGRAMS

YOU HAVE NOW completed your needs analysis and gained clarity around necessary resources.

Packaged modules

Having conducted a thorough needs analysis and gained clarity concerning who your target audience is, it is important to develop key learning objectives around which to scaffold and standardize your curricula. Review the practicalities of breaking your program into modules. This allows for easier packaging, editing and streamlining of your courses.

- Start with resource documents
- Consider e-learning capacity
- Create PowerPoint presentations and didactics
- Include a description of how you will bring simulation into your program (to support learning based on learning objectives)
- Allow for course flow
- Develop key assessments

WORK WITH KEY medical experts to incorporate specific metrics for skills analysis.

“It is important to ensure that your training program is not reliant on specific faculty for delivery. This will enable a far greater roll-out for the training program ...”

Ross Horley, Medical Synergies, Australia.

“No trainee should be left alone to ‘play’ on the system. This is a very important consideration when building a training program. A mentor should be present at all times.”

Dr Kreiser at Abteilung für Neuroradiologie, München, Germany

“Be an expert in education curriculum design and evaluation. It’s easy to develop a whole host of programs at the skill level and continue to throw skill practice and competency validation at a learner. The trick and the key to success are to tie those independent sessions into a cohesive curriculum that is meaningful to the learner and meets the learning objectives. Quite often, we are approached by a faculty member who wants to use a specific simulator just because they heard we have it and it could be useful. When I probe them for learning objectives, they aren’t yet ready to articulate them. Once they are able to articulate the learning objectives, the need for specific tools and resources, including simulators, reveals itself. It takes a curriculum development expert to really probe, hone and refine instructor ideas into a neat package.”

Diane Schuch-Miller, Director of Operations, Marcia & Eugene Applebaum Simulation Learning Institute, USA

Course structure example:

Dr Kreiser at Abteilung für Neuroradiologie, München, Germany expands a little on a sample course structure at her training institution:

- Start with theory (2 hours) to give foundation to simulation training.
- Separate participants into small groups (3 ideal, 4 maximum)
- Have an experienced mentor (minimum of 3 years of interventional experience) with each small group.
- All participants should be active at each workstation (not standing around).
- As an example, we recently ran a course with 12–15 participants and set up three workstations: two with VR simulation systems and one with a silicon model.
- During short courses for external participants, it is important to have an internal member of staff operating the simulation system as there is not sufficient time to teach them this during the course.

STAGE 4: SUSTAINABILITY

Sustainability goal?

Many centers have found it challenging to maintain self-sustainability and have opted instead to focus on alternative returns on investment:

- Reduced patient errors
- Better communication between staff
- Decreased mismanagement

THIS HAS REQUIRED a change in strategy from key management personnel.

IT IS IMPORTANT to be clear from the outset what your sustainability goals are. Do you plan to be self-sustainable or do you have on-going funding streams?

Self-sustainability:

For many, and certainly those in the early stages of development, it is critical to consider how to achieve self-sustainability. Commercial reality needs to be considered.

DO WHAT YOU can to make it easy and affordable to roll out your training program. Ensure courses can be accessible to a large geographic area, affordable, and easy to deploy.

“When considering budget, remember to allow for on-going costs: computers, maintenance of simulation, ‘end of life’ of various equipment that will need replacing every 3 years.”

Gretchen Kolb, Penn Medicine Clinical Simulation Center, USA

“Sustainability must be considered from the beginning and a detailed budget should be prepared including sources of funding, revenue generation from running the courses and industry assistance if applicable. Remember to consider revenue models for both internal and external customers as the costing criteria may be different. When establishing course fees, they should be realistic for the service provided and in line with commercial services. Whether there is money transacted for the course or not there would still need to be a budget entry for the services provided. We need to move away from the situation that skills training is free: it may be subsidized significantly by the health authority but it is not a ‘free’ training service.”

Ross Horley, Medical Synergies, Australia



STAGE 5: REVIEW

Continual feedback and modification

It is important to gather continual feedback on the effectiveness of your training program, both in terms of deployment and meeting learning objectives. Be sure to allow and plan for continual modification utilizing a 360 analysis (multi-source feedback).

BY DESIGNING YOUR program as a package from the outset, it is easier for the reviewer to pinpoint specific areas for alteration.

IN ADDITION, CONSIDER current practice, technology, and cultural applicability in different regions. For example, it is imperative to have localized knowledge-related issues such as drug use, procedural implications, diagnostic tools used, and that training is in line with these specific needs.

ADDITIONALLY, IT IS always important to remember that what you are teaching today may not be what is required tomorrow. Discontinuous change is an inevitability.

ROSS HORLEY, MANAGING Director of Medical Synergies, Australia, emphasizes this point by citing a quote from comedian Bill Connolly:

“We want this! And that...and tomorrow the demands will all be changed so stay awake!”

Billy Connolly

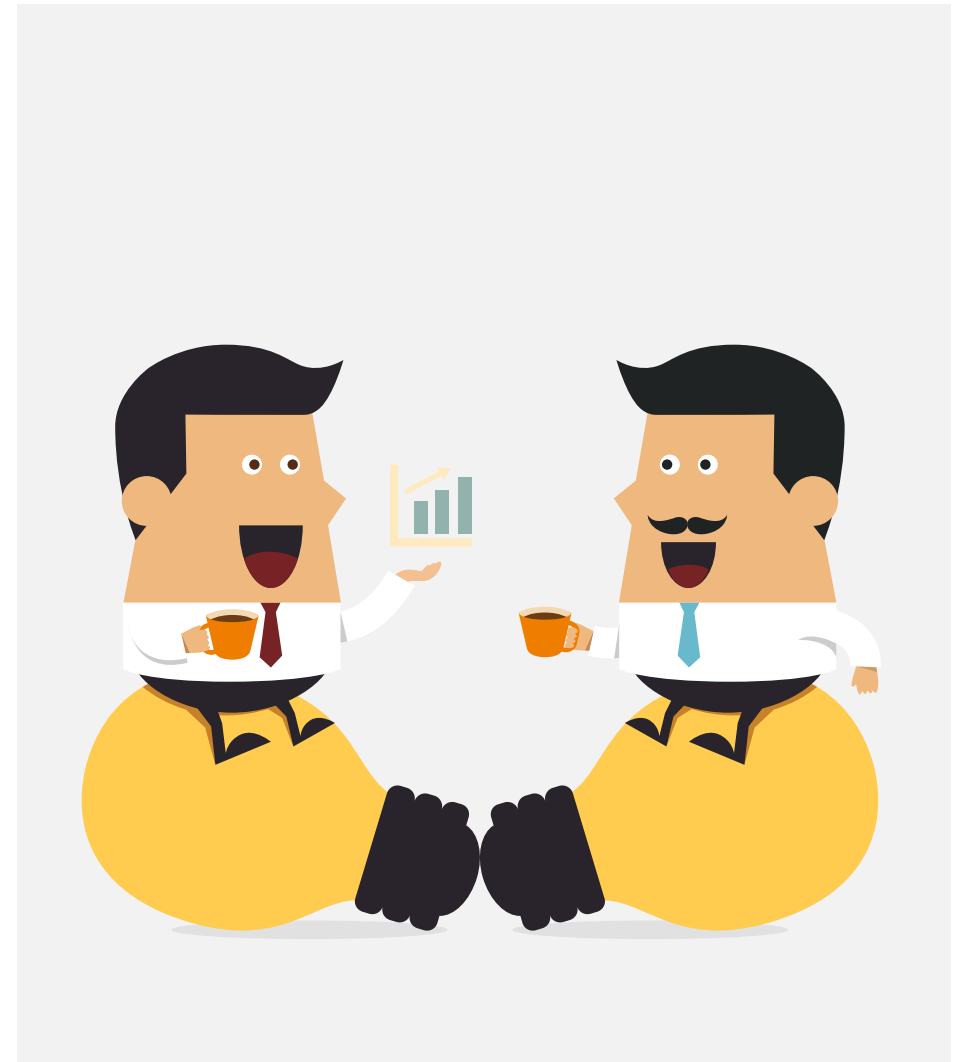
Research

According to Ross Horley of Medical Synergies, Australia:

“All training centers should have a research component for two reasons:

1) Continual research into identifying the training gaps, developing training programs for new procedures, technology and devices as well as developing new training techniques or utilizing new technology ensure training program currency, relevance and competitiveness.

2) Research validating the transfer of skills learned in the training program into the real environment significantly assists in obtaining ongoing funding and therefore sustainability; ultimately, this leads to validation of your program.”



EXPERT PANEL

EXPERT PANEL

We asked six leading experts to give us their three key “take-home messages” for you to consider before building your training program.



SANDY GREEN, MD,
Associate Program Director,
Interventional Cardiology,
Geisinger Health System, USA

1. Be clear on how and why you are using simulation.
2. Ensure you have experts with sufficient time and availability.
3. Generate on-going support to sustain use of simulation (self-funding or faculty with commitment to use it) or there is no point in making initial investment. Remember to cost in the time of people who staff and teach it.

DR. GREEN is an Associate staff physician in the Department of Cardiology at Geisinger Medical Center and the Assistant Program Director for the Interventional Cardiology Fellowship. He is an Adjunct Clinical Assistant Professor at Temple University and a Core Clinical Teaching Faculty for the general cardiovascular fellowship at Geisinger Medical Center. Dr. Green is heavily involved in the education of General and Interventional cardiovascular fellows. He received a Master of Science in Medical Education from the University of Pittsburgh in 2012, and his master’s thesis was based around the use of simulation in cardiovascular education. He currently sits co-chair of The Society for Cardiovascular Angiography and Interventions (SCAI) simulation committee and as a voting member of the fellows education committee, which work closely with ACC, ACGME and ABMI to determine the educational policies governing the use of simulation in all aspects of cardiology. Dr. Green worked as the director of cardiovascular simulation at the University of Pittsburgh and taught the fundamentals of cardiovascular catheterization course and the central venous cannulation course, both of which involved the use of simulation.

1. How do you make your course sustainable?
2. Conduct good market analysis:
 - a. What is the critical need you can address?
 - b. Where should you start focusing your training?
 - c. Where are the current gaps that you can support?
3. Remain adaptable and flexible:
 - a. Prepare for change
 - b. Don’t bite off more than you can chew.Develop courses within your current resources but remain aware and on the look-out for potential needs you can provide for in the future.



ROSS HORLEY,
Managing Director,
Medical Synergies,
Australia

ROSS HORLEY has been involved with the development and deployment of simulation based training for medical and surgical skills for over 15 years. A pioneer in many areas, Ross has consulted on the design of over 30 advanced clinical skills and simulation training facilities around the world including for the Royal College of Surgeons of England, Royal Australasian College of Surgeons, the NHS in the UK, the Chinese University of Hong Kong, the Third Military Medical University Hospital Chongqing to name a few. Ross has developed award winning virtual reality simulators for medical procedures and created an innovated process of training course development which forms the structure enabling benchmarking of skills for ongoing accreditation. Ross is also an adjunct lecturer for the University of Notre Dame Australia, School of Medicine.

EXPERT PANEL



PROF DR HIDEOE INO,
Okayama University Hospital,
Japan

1. For us, a good program always aims to support the trainee in becoming his or her own instructor.
2. In our programs, we give specific attention to training the skill of managing emotions during difficult situations, such as effective breathing techniques.
3. It is important to always remain open to learning something new when conducting our training programs.

PROF. DR. HIDEOE INO, Okayama University Hospital, actively engages in the work of Professor of Center for the Development of Medical and Health Care Education, Okayama

University. He has over 20 years of experience as a surgeon and over 40 years of training as an earnest seeker in Japanese martial arts.



**DR KORNELIA
KREISER,** Depart-
ment of Neuroradiology,
München, Germany

1. In the early planning stages, be sure you can schedule courses sufficiently to avoid the center sitting idle. This is an issue with many centers.
2. Budget for and recruit enough staff (teachers and administration) in advance.
3. Try not to use the simulation center just as “better or more rooms”, instead, utilize it as an opportunity for different specialties and professional categories (medicines, nurses etc.) to collaborate.

DR KORNELIA KREISER, graduated in 2005 and has worked in radiology departments in Zwickau (Sachsen) and München (Bayern) with strong affinity to radiological interventions from the very beginning. Currently, she works at Rechts der Isar /TU München as a

consultant and lecturer. Her research covers endovascular stroke therapy and educational research, particularly simulation and training in neuroradiological interventions with regard to patient safety and radiological protection of the examiners.



GRETCHEN KOLB,
Director of Operations, Penn
Medicine Clinical Simulation
Center, USA

1. Anticipate future needs at the planning stage, i.e. plan 0, 2, 5, and 10 years out. Ask yourself, “How will users change? How will their curriculum and space needs change over time?”
2. Anticipate future costs. Keep the life span of equipment in mind when considering on-going funding of the center. Consider purchasing extended warranties and preventative maintenance to include these costs in the initial capital expenditure.
3. Align the mission and vision of your center to support those of your organization in order to ensure long-term sustainability and maintain relevance.

GRETCHEN KOLB has been the Director of Operations at the Penn Medicine Clinical Simulation Center since 2008. This 22,000 square foot simulation-based training facility provides instruction to physicians, students, and healthcare professionals from the University of Pennsylvania Health System, the Penn School of Medicine and external institutions with the goal of improving patient safety. Prior to holding this position she was the Director of Professional Medical Education for the Department of Surgery at the Health System where she has been employed since 2003. She has a Master of Science from the University of Pittsburgh School of Public Health and worked clinically as a certified pediatric and cancer genetic counselor from 1997 to 2008.



DIANE SCHUCH-MILLER,
MEd, Director of Operations, Marcia
& Eugene Applebaum Simulation
Learning Institute, USA

- 1. Stay focused on your audience.** This will help make sure all decisions regarding space, budget, new equipment, etc. are made in the best interests of your learners.
- 2. Be open to feedback and nimble to meeting needs.** Needs change! A good simulation center will adapt as needs change.
- 3. Get/stay connected with the simulation community.** There are many similarities among simulation centers, i.e., budget constraints, variety of learner groups, product issues, and learning from others or sounding off with others can be very helpful. Leverage the collective experience of those who have been in the simulation environment for a length of time.

DIANE SCHUCH-MILLER, M.Ed., Director of Operations for the Marcia and Eugene Applebaum Simulation Learning Institute, oversees the operations of the American College of Surgeons (ACS) Accredited Education Institute, inclusive of quality standards for curriculum and simulation design, execution and evaluation, audience expectations, contract negotiation, staffing, resource utilization and budget. She has more than 15 years' experience in the field of instructional and simulation design and during that time has managed competency validation for more than 16,000 learners collectively. She has led a \$ 5mil construction project of new simulation spaces, from vision to reality, and regularly consults with others

on future plans for growth. Diane has consulted with domestic and international partners regarding adult learning theory, curriculum design, instructional strategies, the use of technology, authentic assessments, comprehensive learning solutions, human performance dynamics, interface design and intellectual property. As a result of discovering challenge areas, she has recommended faculty development opportunities. Diane helped principle investigators to hone research questions into valid research hypotheses and resulting investigations, and contributed discussion of significant findings and impact to the greater medical education research community.



THE AUTHOR SHEILA WHERRY
has worked in the field of surgical simulation for twelve years in Australia and Asia. She also works in the educational field, writing and delivering curriculum at the Australian College of Applied Psychology and APM College of Business and Communication in Sydney, Australia. She holds a Masters in Management.

THANK YOU! DANKE SCHÖN! ARIGATŌ! TACK!

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ABOUT MENTICE

WE BELIEVE IN CHANGING THE PARADIGM FOR IMPROVEMENT IN HEALTHCARE

FOUNDED IN 1999, Mentice is the world leader in endovascular medical simulation, providing qualified solutions for training and assessment of medical professionals. With a focus on minimally invasive techniques and procedures, Mentice enables training in a realistic, risk-free environment.

MENTICE INTRODUCED the world's first endovascular simulator in 2001 – the VIST® – and has since been the market leader with the world's largest install base of simulators for endovascular intervention.

MENTICE SIMULATORS ARE the most validated endovascular training systems. The advantages are well documented and include, enhancing clinical performance, reducing cost, and, ultimately, improving patient safety.



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Due to their flexibility Mentice VIST® simulators provide an ideal simulation solution which covers mobile and stationary setups, individual and team training, from learning to assessment and from basic motor skills to procedural competence – all in an individually customizable set of procedural modules.

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The VIST®-Lab and the VIST®-C systems share unique advantages in terms of the highest fidelity, clinical realism and use of actual clinical devices.



Full body mannequin, with two removable virtual reality simulators, adjustable table, one 4K-UHD screen and a HD touch — **VIST®-LAB**.



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MOBILITY: Mentice simulators are available in a stationary (VIST®-Lab) and a portable (VIST® G5 setup). This provides an unmatched versatility covering any kind of training setup (see next page).

MODULE CHOICES: Customers can choose from a large number of endovascular modules covering all endovascular specialties: radiology, cardiology, vascular surgery, cardiovascular surgery, neuroradiology, electrophysiology, oncology - with new modules being added all the time.

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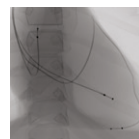
Neuro Intervention



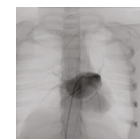
Carotid Intervention



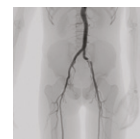
Coronary PRO



Cardiac Rhythm Management



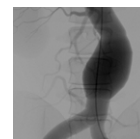
Transseptal Puncture



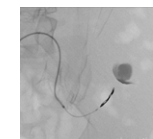
Peripheral Angiography



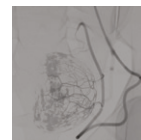
Renal Intervention



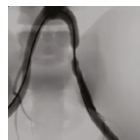
Endovascular Aortic Repair



Vascular Trauma Management



Uterine Artery Embolization



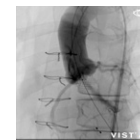
Iliac/SFA Intervention



BTK Intervention



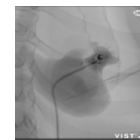
Acute Stroke Intervention



Aortic Valve Implantation



Thoracic Endovascular Aortic Repair



Left Atrial Appendage Occlusion



Renal Denervation



Radiation Safety

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