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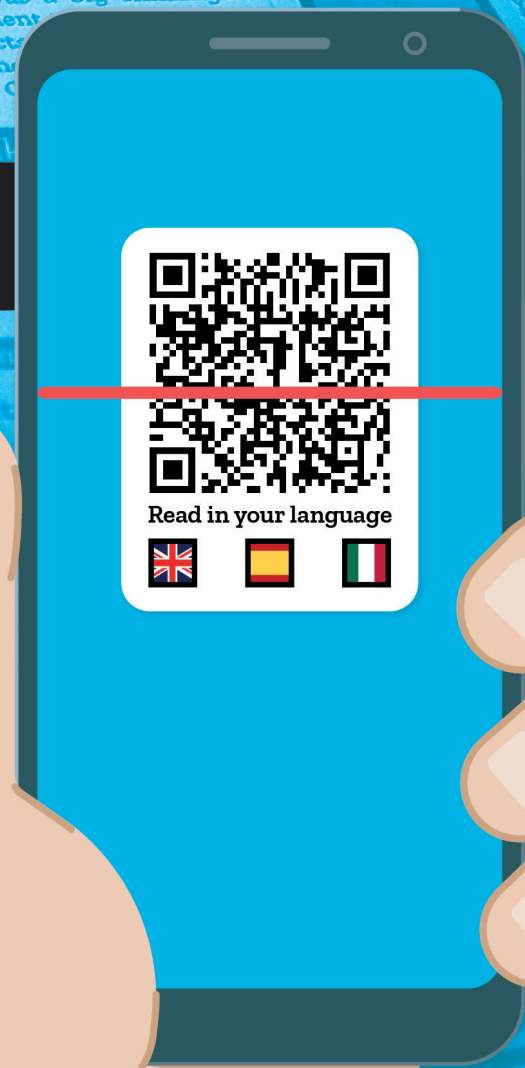
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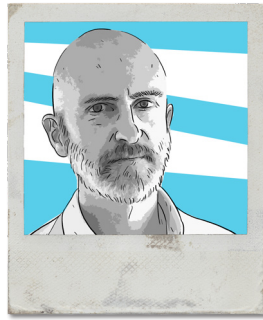


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# SUMMARY

|      |                        |  |  |
|------|------------------------|--|--|
| p.5  | <b>EDITORIAL</b>       | It's time to get ready for technology                      | <b>P.L. Ingrassia</b>                      |
| p.6  | <b>About SESSEP</b>    | SESSEP y sus planes para 2023                              | <b>V. Mendez Lopez</b>                     |
| p.7  | <b>SIMchat</b>         | From the Take Home Message to the SMART Conclusions        | <b>G. Capogna - P. L. Ingrassia</b>        |
| p.8  | <b>SIMvoices</b>       | Simulation, a paradigm shift in healthcare                 | <b>H. Azevedo - W. van Meurs</b>           |
| p.9  | <b>SIMnurse</b>        | Escape Room en enfermería                                  | <b>A. Trampal Ramos</b>                    |
| p.10 | <b>SIM talks</b>       | Personalized simulation and simulated travels to Mars      | <b>Redazione</b>                           |
| p.12 | <b>SIMvoices</b>       | Convertirse en un Influencer de simulación                 | <b>M. Galleguillos Olea</b>                |
| p.13 | <b>SIMface</b>         | Meet Haru Okuda, SSH President                             | <b>Redazione</b>                           |
| p.14 | <b>SIMcorner</b>       | Medical-X, a new standard in patient simulation            | <b>S. Tang - D. Demirtas</b>               |
| p.16 | <b>SIMspace</b>        | La Simulación entendida como servicio clínico              | <b>J. M. Quintilla Martinez</b>            |
| p.18 | <b>SIMgeek</b>         | Metaverse in Healthcare education                          | <b>T. Chang - T. Dolby</b>                 |
| p.20 | <b>SIM talks</b>       | Una entrevista con la presidenta de SASIM Carla Prudencio  | <b>Redazione</b>                           |
| p.22 | <b>SIMcorner</b>       | Simulation in reproductive medicine                        | <b>R. Marci</b>                            |
| p.24 | <b>SIMvoices</b>       | A Standardized Patient's Journey to Podcast                | <b>K. Culligan</b>                         |
| p.26 | <b>SIMspace</b>        | Misano Academy: la simulazione corre a 300 all'ora         | <b>Redazione</b>                           |
| p.27 | <b>DID you know...</b> | The successful kick-off meeting of the new EEDUSIM project | <b>S. Savino</b>                           |
| p.28 | <b>SIMreview</b>       | Simulation is for everyone: Med Sim Studio                 | <b>A. Scalogna</b>                         |
| p.29 | <b>PUB sim</b>         | Habilidades no técnicas, SimZone y debriefing              | <b>E. Capogna</b>                          |
| p.30 | <b>SIM talks</b>       | Recording and Debriefing made in Austria                   | <b>Redazione</b>                           |
| p.32 | <b>DID you know...</b> | Expertos analizan la digitalización en simulación          | <b>Redazione</b>                           |
| p.33 | <b>SIM books</b>       | The Comprehensive Textbook of Healthcare Simulation        | <b>S. Ricci</b>                            |
| p.34 | <b>SIMdebate</b>       | Are social media helpful or harmful?                       | <b>Redazione</b>                           |
| p.36 | <b>SIMcorner</b>       | Gwen, a manikin who has Down Syndrome                      | <b>D. Halliwell</b>                        |
| p.38 | <b>DID you know...</b> | EuSEM Refresher Course. When simulation counts             | <b>M. Bonsano - G. Borio - G. Mormando</b> |
|      | <b>Cover</b>           | Graphic by   | <b>P. Cordini</b>                          |





## EDITORIAL

## It's time to get ready for technology

Technology is becoming increasingly central to the educational experience. The digital landscape provides, in fact, exciting opportunities to create learning experiences that can thrill and motivate our learners, students and peers. It is our responsibility, as educators in general, and simulationists in particular, to think very differently about our current educational practices and imagine new ways of working.

Augmented and virtual reality technology will continue to advance. By now, we've certainly heard enough about the metaverse to conclude that it's on the horizon. The promise of metaverse is to enable essential human experiences in a world that is free from the constraints of time, space and physics. For example, we can easily predict that we'll have more immersive meeting environments where we can talk, brainstorm, and co-create together. Experts predict that the metaverse will add \$5 trillion to the global economy by 2030, and 2023 will be the year that defines the direction of the metaverse for the next decade. In this issue Chang and Dolby will help us to better understand what metaverse is and how it will evolve in healthcare education.

Social Media will also change. Young users increasingly push for more meaningful online interactions and a new wave of platforms is starting to gain both mindshare and market share. Between LinkedIn, Instagram, and others, we all have been forced to rethink entirely how these me-

ans can help and support us in what we do. Our SIM Debate panelists discuss how best simulationists have to adapt and utilize them.

Simulation businesses, with the technological advances and the launch of a new range of devices, will open new opportunities for healthcare simulation-based education. Thus, we entered a factory to understand better how simulators are designed and produced. We interviewed a CEO of one of the companies which is competing in the simulation market. We outlined the journey to make a new manikin, reporting the words directly from the creators and the little girl who inspired them and was used as a model. And finally we met the people who play a key role in the simulation transition and patient safety culture, **such as a technical physician who uses mathematical models to simulate and predict whether an astronaut can safely travel to Mars, and a current and a past president of international societies**, to share their view about opportunities, challenges and barriers of simulation development.

All these because here, in SIMZINE, to get ready for technology we consider important to know both the innovations themselves and what is behind them, thus the people, their experiences and their thoughts.

P.L.I.

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## ABOUTSESSEP

# SESSEP y sus planes para 2023

## SESSEP promueve la formación sanitaria mediante la simulación clínica para mejorar la seguridad y el cuidado de los pacientes

La Sociedad Española de Simulación Clínica y Seguridad del Paciente ha llevado a cabo un total de 9 Congresos que han acogido expertos y profesionales relacionados con la Simulación Clínica de todo el territorio nacional, incluso internacional. De ellos destacan sus Jornadas Científicas y de estudiantes.

En la actualidad, la Sociedad cuenta con aproximadamente 230 socios y grupos de trabajo, entre los cuales se encuentran: Grupo de Enfermería, Medicina, Obstetricia y Ginecología, Perfusión, Seguridad del Paciente, Técnicos y Multidisciplinar. Todos ellos persiguen unos mismos objetivos: recoger y canalizar las preocupaciones, demandas y aspiraciones de los asociados, la comunidad científica, los servicios sanitarios y los profesionales en ámbito del entrenamiento clínico y la evaluación basada en simulación. Con su trabajo se enriquece su perfil profesional y se contribuyen a mejorar la calidad, la formación de los profesionales en simulación y la seguridad del paciente.

SESSEP ofrece una serie de cursos acreditados, relacionados con la Simulación Clínica, tanto de metodología de

simulación para desarrollar habilidades como instructor/facilitador en cualquier ámbito, desde el diseño de un escenario hasta las técnicas de debriefing, como específicos de especialidades concretas con la Simulación Clínica como método de desarrollo de habilidades técnicas y/o no técnicas en áreas como soporte vital y cardiología. Véanse todos los programas acreditados.

Además, recientemente ha iniciado auditorías de cursos con el objetivo de asegurar la calidad metodológica de la simulación en los cursos acreditados por la SESSEP. En la actualidad, ya se ha pilotado la primera auditoría con resultados satisfactorios, por lo que ya está previsto que para 2023 arranquen formalmente nuevas verificaciones.

La última edición del Congreso de SESSEP fue celebrada en 2021 en el centro IAVANTE, Granada. Ese año se presentaron un total de 60 comunicaciones y 34 posters. El premio a la mejor comunicación presentada fue: "Ensayo clínico aleatorizado con simulación clínica en gestión de fármacos: efectividad inmediata permanencia al año" presentada por la Dra. Cristina Alfonso. Dado el premio otorga-

do, en la próxima edición del Congreso, la Dra. Alfonso realizará una ponencia exponiendo los resultados y conclusiones del estudio.

Realizando un parón en 2022 tras el último cambio de presidencia de SESSEP, su 10º Congreso se celebrará en 2023, concretamente en la Universidad Católica de Valencia, como sede. ¿Vas a perderte la 10ª edición del Congreso? Inscríbete cuanto antes. ¡Todos estaremos allí! SIMZINE incluido. Además, ¿quieres aprovechar la oportunidad de poder presentar tu comunicación, taller y/o póster para dar a conocer tus retos y logros del último año? ¡Estamos deseando conocerlos!



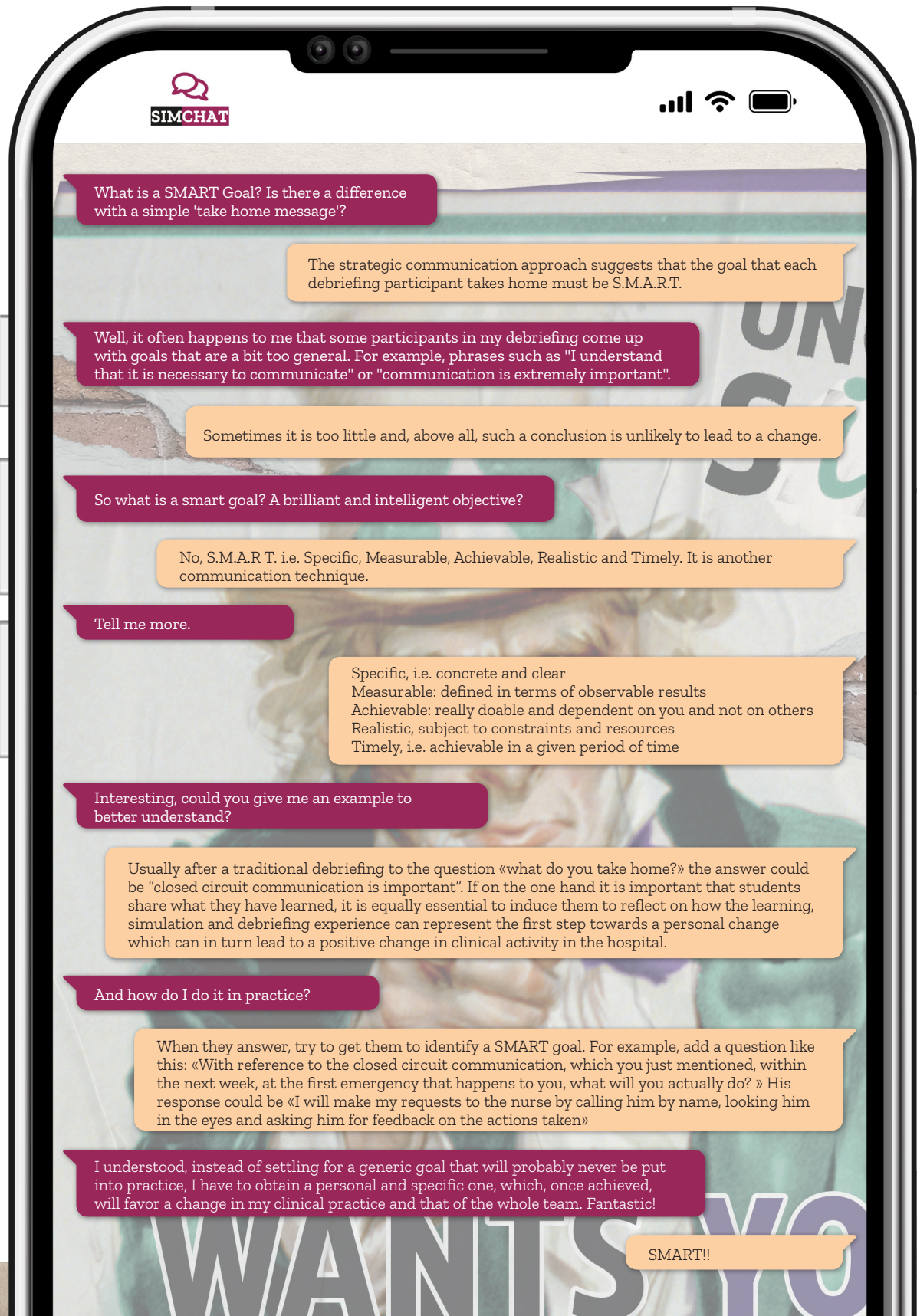


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## From the Take Home Message to the SMART Conclusions

To reflect on how simulation can represent the first step for a concrete and achievable personal change: identifying SMART goals





## Simulation, a paradigm shift in healthcare

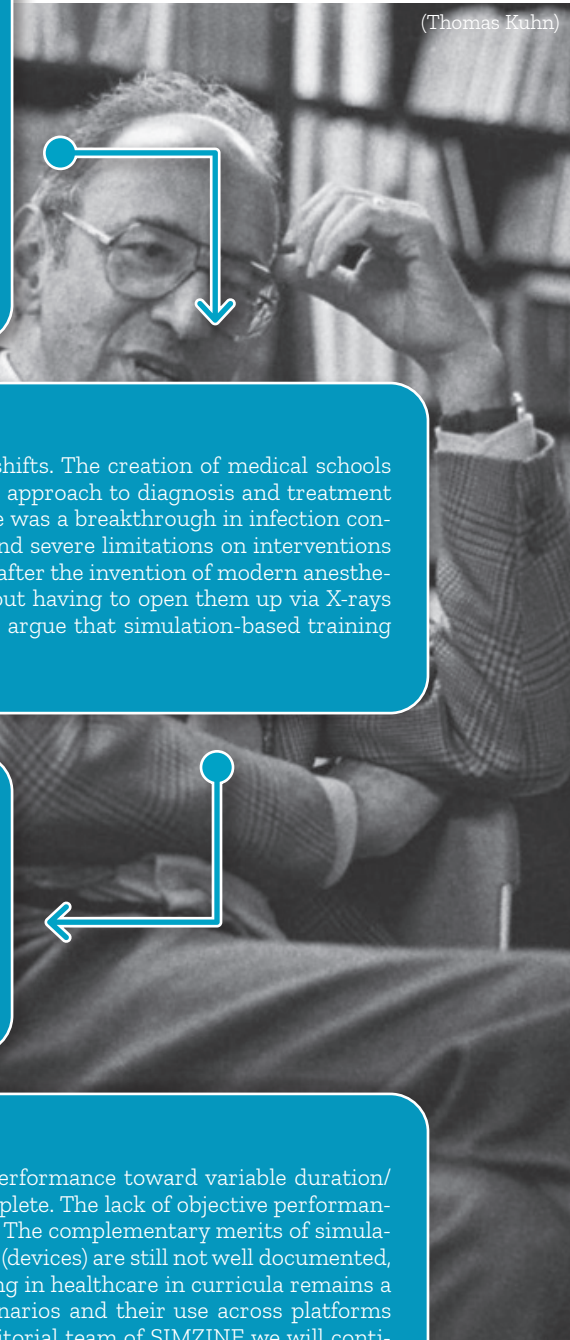
Is simulation-based training a recent paradigm shift in healthcare history?

Hugo Azevedo, president of Nasco Healthcare, and Willem van Meurs, a successful simulator designer, share their thoughts

### Of paradigms and shifts

The concept of a scientific paradigm was introduced by Thomas Kuhn in his 1962 book *The Structure of Scientific Revolutions*. Strictly speaking, a paradigm shift is made necessary when data have been accumulating that cannot be explained within the current paradigm. For example, the geocentric model, where the Sun, Moon, stars, and planets all orbit Earth, could explain the movements of these bodies, but had to use many additional assumptions, and could only do so in approximation. Copernicus' heliocentric model provided an explanation that was both simpler and more accurate, but had to wait for Galileo's observation of moons clearly circling Jupiter to become generally accepted. Over the years, the term "paradigm shift" also became used for radical changes in both perspective and practice. Even with that broader notion, true paradigm shifts are rare.

(Thomas Kuhn)



### Paradigm shifts in healthcare

Healthcare has known a few paradigm shifts. The creation of medical schools in the middle ages and a knowledge-based approach to diagnosis and treatment comes to mind. The germ theory of disease was a breakthrough in infection control. Surgery without immense suffering and severe limitations on interventions blossomed only after infection control and after the invention of modern anesthesia. Being able to look inside people without having to open them up via X-rays and other image modalities is another. We argue that simulation-based training in healthcare is one too.

### Simulation-based training in healthcare

Well into the nineties of the last century, nurses trained on lifeless dummies, medical students on dogs and sheep, and residents on real patients. In the words of Amitai Ziv et al. (2003) it now has become an "ethical imperative" to use simulation, at least for initial training. This is more than a mere change in modality; besides the ethical aspects, thanks to simulation, healthcare has now gained control over the presented content and the timing of training. For example, it is no longer necessary to wait for rare cases to occur.

### Remaining challenges

The shift from fixed duration/variable performance toward variable duration/ fixed performance training is far from complete. The lack of objective performance metrics may be a hurdle in that process. The complementary merits of simulated patients (actors) and patient simulators (devices) are still not well documented, and integration of simulation-based training in healthcare in curricula remains a challenge. Standardization of training scenarios and their use across platforms are other challenges. Together with the editorial team of SIMZINE we will continue to identify these remaining challenges, and together with our fellow simulator designers we keep looking for solutions.





## Escape Room en enfermería

Los escape room son unas excelentes actividades de aprendizaje en la formación de profesionales sanitarios, tanto en postgrado, como en pregrado. Nos lo cuenta Álvaro Trampal Ramos, alias @enfermerodesimulacion

Las actividades de escape room o salas de escapismo están en auge en los últimos años en la formación de profesionales sanitarios, tanto en postgrado, como en pregrado. En este artículo analizaremos los elementos básicos que debemos tener en cuenta a la hora de elaborar esta actividad de gamificación.

En el escape room los alumnos se encuentran "encerrados" en una habitación junto al profesor y a través de actividades, acertijos y resolviendo una serie de problemas relacionados con el objetivo de la actividad, tienen que conseguir salir de la habitación en un tiempo establecido. Las actividades de escape room son una excelente herramienta de gamificación en la que podemos conseguir un nuevo aprendizaje o afianzar conocimientos existentes.

Como todas las actividades basadas en simulación clínica, debemos planificarla bien. Es importante seguir los estándares que nos marca la International Nursing Association

for Clinical Simulation and Learning (INACSL) para diseñar la actividad, como la planificación de resultados y objetivos, facilitación, prebriefing y debriefing estructurado, evaluación, etc.

Los puntos claves en este tipo de actividades son: los materiales, el espacio y el tiempo, y el principio de confidencialidad.

Tenemos tantos **materiales** como alcance nuestra imaginación. Los principales materiales que se suelen utilizar son:

- **Candados:** en el mercado tenemos una grandísima variedad de candados. Pueden ser de combinación numérica, de llave, de movimiento y con multitud de formas, colores y diseños.
- **Cajas:** una de las herramientas más utilizadas en los escape room son las cajas. Tenemos infinidad de tipos y modelos.
- Otro elemento importante es un **reloj**. Los alumnos deben

tener muy claro el tiempo que tienen para completar la actividad.

- Podemos incorporar a nuestra actividad todo el **material** que podamos imaginar; desde una baraja de naipes, rotulador invisible de luz ultravioleta, fotos, hasta un maniquí de alta tecnología.

¿Te gustaría saber más? Encuentras más información en el artículo completo y en el vídeo de Instagram de @enfermerodesimulacion





## Personalized simulation and simulated travels to Mars

### Personalized simulation and simulated travels to Mars: the potential of mathematical models described by a Technical Physician, Lex van Loon



**Lex van Loon**

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After cutting his teeth in the University of Twente, where he obtained a Bachelor's in Technical Medicine and a master's in Medical Signaling, he studied how to predict physiological consequences of novel therapeutic strategies through mathematical models. He foresees the use of medical digital twins to create a new era of

personalized simulation. Having now his eyes set on a return to Europe and probably starting his own company, we met Lex to discuss how he will also help us land on Mars through simulation.

**Hi Lex, thanks for accepting to share some time and thoughts with us. Please tell us about your background and your work.**

I am a Technical Physician by training with a PhD in medical physiology and have previously worked as a trainer in a medical simulation center at the University of Twente, in the Netherlands. My current role is that of a research fellow and lecturer for the Medical School of the Australian National University.

**Can you tell us a bit more about your training as a technical physician?**

Technical Medicine is an academic discipline aimed at educating professionals who can improve patient care by applying medical technology. This education fills the gap between

classical medicine and complex (biomedical) technology. After 6 years of education each Technical Physician will be a new academic professional who has the knowledge, skills and problem-solving mindset to design and safely apply improved diagnostics and therapeutics for the benefit of patients.

**What skills do you need to do this job?**

My current role requires me to collaborate extensively with clinicians, computer scientists, data scientists, biologists, and students. Therefore, I would definitely say that my study curriculum of Technical Medicine did a good job in preparing me for my current role. It allowed me to comfortably speak and team up with these very different expertises.

**What are the positive and negative aspects of your work?**

The pro is the flexibility of working in an academic environment and learning something new (almost)



every day. The cons would be that it is sometimes hard to excel in one specific area because my job requires me to work on many different projects, and the uncertainty of short-term contracts.

### What would you say a mathematical model is?

In my work I view a mathematical model as a mathematical description of a physiological process. Such a description allows you to study interactions between and within models, thereby explaining complex human physiology and test the influences of changes in circumstances. However, I always keep George Box's quote in mind: "All models are wrong, but some are useful".

### How does mathematical modeling apply to healthcare simulation?

Mathematical models can be used as explanatory models. Thereby teaching (complex) physiology to medical students and professionals. They also play an important role in simulation training. Various simulators used in medical education rely on model-based simulation engines. These create realistic, real-time responses to a multitude of dynamically interacting continuous variables and avoid training to be limited to a rigid, predefined script.

### Thinking about simulation in healthcare, what do you see as the biggest challenges that we're facing today and that could and should be addressed with mathematical modeling?

Personalized medicine. Medical research is working hard in achieving personalized treatment. I feel that medical simulation should follow this path and create training that matches the trainee's needs. And also, to be able to simulate cases that match patients that are on the ward at that very moment, their digital twins, in other words. The use of mathematical

“ simulate cases that match patients that are on the ward at that very moment

models is essential in achieving personalized medical simulation.

### You recently published an article presenting an open-source mathematical model of the cardiopulmonary system that is able to simulate the short-term adaptations after being exposed to microgravity. How did you mix space flights to Mars and simulation?

Australia is investing heavily in its space capabilities. Part of this investment goes to research in space medicine. Space tourists (2020) and passengers on intercontinental flights via space (expected approx. 2025) are no longer highly selected, young, healthy, well-trained professional astronauts, but "regular" passengers, potentially with age and lifestyle-related chronic conditions. Here at the ANU, we work on organ and organ-system level modeling and simulation tools that can assist healthcare providers assess fitness to fly of prospective travelers.

### Can you explain to a non-expert what you did?

We developed a mathematical model that can be used to predict whether an astronaut can safely travel to Mars and fulfill their mission duties upon stepping foot on the Red Planet.

We simulated the impact of pro-

longed exposure to zero gravity on the cardiovascular system to determine whether the human body can tolerate Mars' gravitational forces -- which aren't as strong as on Earth -- without fainting or suffering a medical emergency when stepping out of a spacecraft. The model could be used to assess the impact of short and long duration space flight on the body and could serve as another important piece of the puzzle in helping land humans on Mars. With the rise of commercial space flight agencies like Space X and Blue Origin, there's more room for rich but not necessarily healthy people to go into space, so we want to use mathematical models to predict whether someone is fit to fly to Mars.

### How do you imagine your work in 15 years' time?

Wow, that is still far in the future. I am not even sure what I will work on in the next year. I am pretty sure I will move back to Europe, and I definitely aim to continue my work in using mathematical models of human physiology to improve patient outcomes in any form. Maybe even starting my own company in this realm.

Thank you, Lex, for such an interesting talk. And we wish you the very best of luck with your projects.



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**SIM VOICES**



## Convertirse en un Influencer de simulación

### Convertirse en un *simfluencer* para difundir la simulación y generar redes entre los simulacionistas: el propósito de Serendipio

Hola, ¿Cómo están?, mi nombre es Serendipio, nací el año 2021 en el marco del V Congreso Chileno de Simulación. Mi propósito es la difusión de la simulación y la generación de redes entre los simulacionistas en todos los espacios que se encuentren, instituciones de salud o educación.

Contarles que esta invitación me ha encantado, ya que me permite mostrar todos los hermosos lugares que he visitado y los amigos que he alcanzado a través de mi cuenta @serendipiosimfluencer en Instagram.

EL 8,9 y 10 de Septiembre, se realizó el Congreso de Simulación clínica, Simulation Using Network (SUN), en el Hospital Sirio-Libanés de Sao Paulo, Brasil.

Fue una experiencia increíble, la vuelta a la presencialidad luego de dos años separados, poder compartir en un espacio todos los aprendizajes, desafíos e innovaciones que los simulacionistas realizaron durante este duro periodo. Además, conocer equipamientos desarrollados específicamente para apoyar la educación a distancia de estudiantes de pregrado.

El inicio fue inesperado, nos llevaron a todos a vivir una experiencia inmersiva de realidad aumentada sobre el escenario en la atención clínica de un paciente. Nos permitió ver,

a todos los presentes y a quienes se encontraban conectados en línea, cómo podemos generar experiencias de aprendizaje significativas, en entornos virtuales, con toma de decisiones clínicas, en un contexto seguro de aprendizaje.

Estuvimos junto a figuras de renombre mundial conociendo por ejemplo la experiencia del Centro de Simulación e Innovación del "Gordon Center" de la Universidad de Mia-



mi, en entrenamiento de los equipos de respuesta rápida de emergencia, identificando las amenazas a la seguridad del paciente. Su experiencia fue

enriquecedora. Nos abre un espacio de reflexión desde su mensaje inicial **"saving lives through simulation technology"**. Presenta un desafío para las instituciones de salud que hoy no cuentan con espacios de entrenamiento dentro de ellas, sobre cómo podemos trasladar el aprendizaje desde el centro al siguiente nivel en la simulación in-situ y mock codes para entrenar a nuestros equipos de trabajo y seguridad del paciente.

Me encantó la posibilidad de estar en talleres, que no solo hablaron de la metodología, sino que incorporaron temas fundamentales como la administración y gestión de un centro de simulación, toda la planificación y recursos a considerar tanto para la implementación, como para el día a día de estos espacios de aprendizaje.

Pude acompañar en este reencuentro a la nueva presidenta de la Sociedad Chilena de Simulación clínica y Seguridad del Paciente, MD. Soledad Armijo, quien compartió su vasta experiencia en educación basada en simulación en Latinoamérica. En esta ocasión compartió con nosotros la experiencia del modelo de debriefing CORE, y que, a pesar de la distancia, reunió a países de toda América Latina en un entorno virtual de aprendizaje donde pudieron conocer, aprender y aplicar el modelo de debriefing en ejercicios de altas dosis y baja frecuencia.

Otra de las conferencias...





## Meet Haru Okuda, SSH President

Haru Okuda took a minute to talk about everything, from his passion for food to his plans once the journey as SSH president will be over

Accomplished violinist, he spent countless hours practicing scales and arpeggios prior to performing in competitions. When he moved to science, Yasuharu "Haru" Okuda discovered simulation as an «ideal modality to practice to perfection». Japan na-

tive, quietly driven and detail-oriented, he wants to make a difference in healthcare education. Haru's so busy, as he's leading the biggest society of simulation in healthcare, but he took a minute to talk to SIMZINE about everything, from his passion for food

to his plans once the journey as SSH president will be over.

**Read our interview with him to find out more on [simzine.it](http://simzine.it)**



## Medical-X, a new standard in patient simulation

Medical-X opened the door of its producing factory to SIMZINE to show how one of its simulation devices comes to life



**Silfon Tang**

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Medical-X is a Dutch company that specializes in the design, development, manufacturing, marketing, and distribution of healthcare simulation products for teaching and training healthcare professionals. CEO Dervis Demirtas, who graduated from aerospace engineering, developed his first laparoscopic surgery simulator in 2002. Since the beginning of his career, Dervis has been dedicated to delivering innovative and high-quality products that contribute to medical training. After consolidating his career and developing new skills and experiences, Dervis founded Medical-X in 2015. Since its founding, the company has been developing new state-of-the-art, high-tech and extremely realistic simulators. **"Behind a great company, there is always a great mission."** Through a personal experience with his 5-month-old son who almost lost his life due to the incorrect intake of a very strong medication, Dervis identified the extreme need for greater preparation of

health professionals in relation to different scenarios. He understood that as more professionals are prepared, more lives are saved. This is why he decided to revolutionize health education.

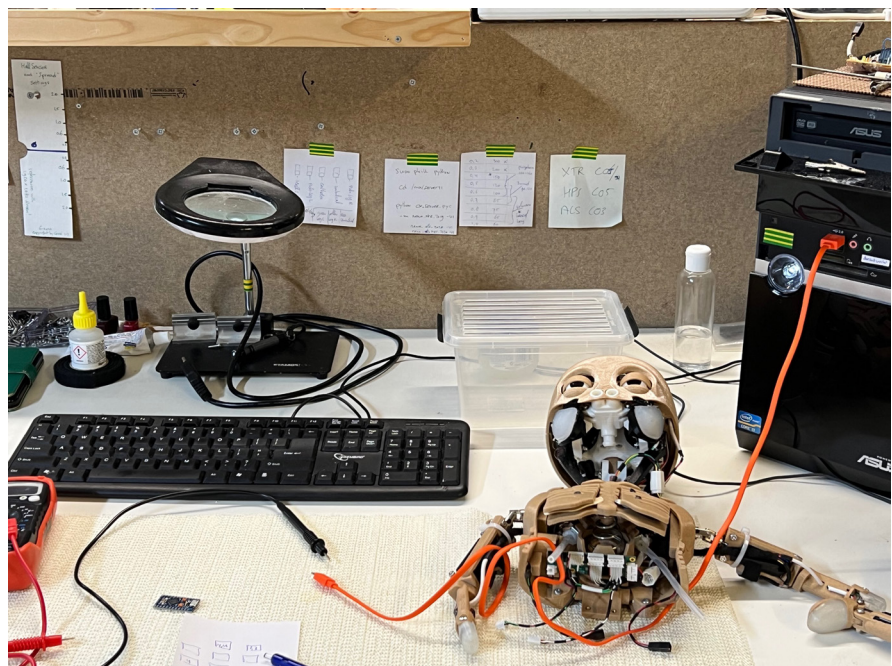
After studying the market in depth, Medical-X's team, counting more than 40 people, identified the availability of a wide variety of simulators with high operating fidelity, but with an unrealistic appearance, or simulators with a very realistic appearance, but with low functional fidelity. That's when the company developed a new concept of simulators, which involves taking care of every detail of products design. **Coming to life to save lives, this is how Medical-x simulators are born!** From silicone casting to soldering and assembly, Medical-X products are brought to life through in-house engineering at their own factory located in Arnhem, The Netherlands,



**Dervis Demirtas**

[demirtas@medical-x.com](mailto:demirtas@medical-x.com) ✉

aiming for high fidelity of form, function, and extremely realistic appearance. Medical-X factory opened the door to SIMZINE to show how one of its simulation devices is produced.





**Understanding the beauty behind the process. How does ADAM-X come to life?**

The simulator production process has several fundamental steps to meet and maintain the company's standards. ADAM-X is planned, designed, developed, polished, and every detail of his body is created for a specific purpose. During planning, the requirements and functions necessary for its proper functioning are determined. From there, designing the software and hardware begins, including the skin, frame, electronics, and embedded software. A proof of concept is carried out where all the

pros and cons of the product are verified, always seeking to contribute to its purpose in a safe and effective way. After putting all these details and ideas together, prototyping is carried out to find the best version of Adam. Therefore, several

tests are carried out, including tests with users. Leaving every design ready for production, implementation at the factory, creation of the production line, quality control, assembly manual, and test manual are carried out. On the production line, every detail is developed with great care through different departments. That's how ADAM-X starts to come to life. The first is the molding department, where rigid plastic and silicone parts are developed. Then, the electronics department takes action, adapting the embedded software on the printed circuit board, taking care of important details, such as wiring, compressor, sensors, engine parts,

and others. The next step is to assemble the parts and metal components, developing the entire structure that will support ADAM-X' body. Each of these parts is put together on the assembly line, where tests and approvals are carried out at each stage, and after testing in the final assembly, ADAM-X is finally born! Taking care of a newborn requires preparation and knowledge. Understanding this, Medical-X has a great differential: they provide all the necessary support during post-sale and send a team of professionals to the clients to instruct them in every detail of the functioning of its products. Thus, their purposes unite and more lives are saved.

**Practice provides security: the aim of the company to transform health education worldwide**



**Written with the contribution of MEDICAL-X"**

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## La Simulación entendida como servicio clínico

### La Unidad de Simulación del Hospital Sant Joan de Déu de Barcelona solucionadora de problemas reales en la asistencia a pacientes

La simulación clínica se utiliza en la formación de profesionales de la salud en ámbitos diversos como universidades, centros monográficos de simulación y también hospitales y otras instituciones asistenciales. La visión más extendida sobre la simulación clínica es la de una metodología docente efectiva, que consigue un alto grado de engagement de los participantes. Esta perspectiva tan "académica" de la simulación clínica, ¿encaja totalmente en una organización con misión asistencial? Lo más habitual a la hora de integrar la simulación en un hospital, como ejemplo de institución asistencial, es concebirla en el "rincón" de la docencia y plantearla como una capacidad: la de crear cursos y talleres más prácticos, con mayor efectividad que las clásicas sesiones magistrales de toda la vida.

Desde nuestro punto de vista, la simulación integrada en un hospital debe entenderse de forma diferen-

te y mucho más ambiciosa. Nuestra Unidad de Simulación Clínica, que cumple 10 años de andadura afiliada a Immersive Design Systems del Boston Children's Hospital, está concebida desde una visión de servicio clínico que da soporte a las necesidades del hospital, a su misión. Podemos explicar este modelo hablando de 3 aspectos: el concepto, la integración en la institución y los servicios que la unidad presta.

#### El concepto

Entender la Unidad de Simulación como un servicio clínico es plantear que su misión no es simplemente educar sino solucionar problemas reales relacionados con la asistencia de los pacientes. Las actividades de simulación que organiza nuestra unidad han evolucionado con los años y han ido pasando de ser proyectos de formación a ser cada vez más programas de mejora que siguen un ciclo vital según la secuencia necesidad – diseño

– implementación – evaluación del impacto. Estos programas responden a necesidades de cambio planteadas por áreas clínicas del hospital o por departamentos transversales como Seguridad de Paciente o Experiencia de Paciente y abarcan iniciativas mucho más allá de la formación.

#### La integración en la institución

Nuestra Unidad de Simulación es una pequeña organización dentro de la organización. Tiene un núcleo reducido de personas con dedicación exclusiva o casi exclusiva, tanto de perfil clínico como de perfil técnico o de gestión de operaciones. Este grupo "core" coordina y da soporte a referentes de simulación y facilitadores que pertenecen a la plantilla de diversos departamentos del hospital. Los responsables de la Unidad de Simulación forman parte de algunos comités transversales del hospital y están conectados con las direcciones asistenciales y con el departamento







de Seguridad Clínica y de Experiencia de Paciente.

Los recursos materiales de la unidad incluyen espacios dedicados (salas de simulación y debriefing) y equipamiento para realizar simulaciones in situ en zonas de trabajo reales o incluso en exteriores.

#### Las líneas de servicio

Podemos explicar nuestra actividad agrupada en 4 líneas de servicio, que se combinan en función de las necesidades de cada programa o proyecto:

En la línea **SIMTrain** utilizamos la simulación como estrategia de aprendizaje y crecimiento de las personas y los equipos de trabajo. Creamos programas dedicados, por ejemplo, a potenciar las habilidades técnicas, tanto básicas (profesionales en formación o de nueva incorporación) como de alta especialización (por ejemplo los programas ECMO, CART-19, depuración extrarrenal o la resucitación a tórax abierto). También trabajamos la relación y comunicación entre personas mediante la simulación con actores y actrices profesionales, con programas multidisciplinares y con programas dedicados a residentes en formación (como el MIRame para residentes de toda Cataluña). Por último, hemos creado programas para la

adquisición de habilidades de trabajo colaborativo para residentes (programa SIM4R) y para el desarrollo de equipos reales multiprofesionales (programa Sim4Teams, que combina elementos de Crisis Resource Management y TeamSTEPPS con aprendizaje de "doble bucle" de Argyris).

En la línea **SIMTest**, la simulación se convierte en una herramienta para el análisis y el diseño de los sistemas de trabajo. Preparamos e implementamos simulaciones para tomar decisiones sobre espacios todavía sin construir, materializando el plano arquitectónico con paredes de cartón a tamaño real y poniendo a trabajar a los profesionales en ese entorno simulado, o para analizar la seguridad de espacios y equipamientos ya construidos, antes de utilizarlos con pacientes reales. Probamos y refinamos procesos de trabajo mediante simulación, acercando work-as-imagined y work-as-done.

Hemos desarrollado también una línea de **SIMEngineering**, en la que construimos nuestros propios modelos de simulación, combinando impresión 3D con técnicas de fabricación digital, de modelaje de diversos materiales (silicona de grado médico, gelatina, látex, resinas...) y de hi-

realismo, con el propósito de mejorar la fidelidad de nuestras simulaciones y aumentar su potencial. Algunas piezas así creadas son para combinar con los simuladores de paciente y otras son modelos independientes para entrenar habilidades específicas. Trabajamos conjuntamente con la Unidad 3D4H en la realización de modelos para planificación quirúrgica.

Por último, mediante la línea **SIMNetwork** fomentamos el desarrollo de la simulación clínica más allá de nuestras paredes, capacitando nuevos facilitadores de simulación y dando soporte a programas de simulación de otras instituciones.

#### Conclusión

Una Unidad de Simulación Clínica integrada en una organización asistencial es un acelerador del cambio de las personas, de los equipos de trabajo y de la propia organización, para diseñar el mejor futuro. Nuestra razón de ser es nuestro lema:

**"Aprender de la vida antes de que suceda".**



**SIM GEEK**

## The Metaverse and Medical Simulation

What is the Metaverse? How will it evolve in healthcare education? Todd Chang and Tom Dolby share their point of view

The Metaverse is a difficult concept to explain, especially to people who are not in the VR workspace. And even the best programmers, venture capitalists, and simulation experts still disagree about what the Metaverse actually is, and especially how it affects healthcare. Ok: what is the Metaverse?

The definition of Metaverse is evolving rapidly, as new technologies, companies, and policies begin to enter the Metaverse space. Just like the definition of Virtual Reality has evolved since 2015, so too, will the Metaverse. Therefore, what we discuss here about the Metaverse may not be true in 2 years. The Metaverse is a universe in which the digital/virtual world and the real

world are blended. It puts together – as seamlessly as possible – your social media, your virtual world, your real world, and your digital communities all in one arena. And in healthcare, this means using technologies that

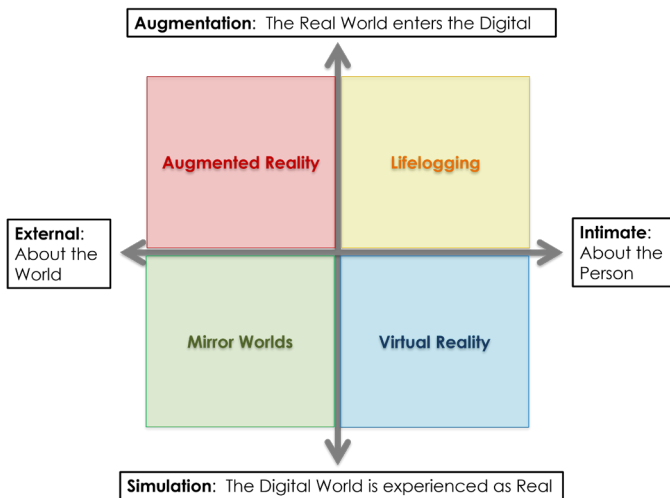
“ **universe in which the digital/virtual world and the real world are blended**

connect your real body and physiology to the virtual world. Just as you have a digital persona on social media that is similar – or maybe very different – to your real self, the Metaverse seeks to blend the two.

Kye et al. has an excellent concep-

tual model for how the Metaverse applies to healthcare and medical education (Kye 2021). The Metaverse, per Kye et al's framework, has 4 potential domains, all along a continuum of two scales. The first scale is about closeness and intimacy. There are elements of the world that are quite personal or intimate. Think about personal health or even revealing elements of your own mental health. In contrast, there are elements in this scale that are extremely global or population-based, such as the digital environment or public community health concerns. The second scale is about how the digital and real worlds relate to one another. On one hand, you can have Augmentation. This is pushing real world information into the digital world. A simple example is





From Kye B, Han N, Kim E, Park Y, Jo S. Educational applications of metaverse: possibilities and limitations. J Educ Eval Health Prof. 2021;18:32. doi: 10.3352/jeehp.2021.18.32. Epub 2021 Dec 13. PMID: 34897242; PMCID: PMC8737403.

a social media post – a video of a real event moves into the digital world for people to see. The real world can be examined in an Augmented way, in which technologies provide additional information that the human senses cannot detect, such as in Augmented Reality. Alternatively, the digital

world is experienced in a near-authentic manner. Figure 1 illustrates this conceptual model of the entire Metaverse.

The Metaverse offers the opportunity of a persistent digital world for

an organization, a place that can offer instant access and collaboration without physical boundaries. It can even be a 3D digital twin of a hospital if desired. Staff can meet, discuss and simulate from anywhere in the world. Opportunities emerge for remote and disadvantaged areas to access training in ways not previously possible. If done right, a shared digital immersive space has clear advantages over the friction of physical travel or video calls. There is a lot of potential, but the Metaverse is still very much in its infancy, and technology providers still have a long way to go in delivering to their ambition, let alone the specific needs of medical professionals. It also remains to be seen how much the healthcare sector will embrace this kind of technology, because it presents new ethical, security and legal considerations. It may present a similar adoption pathway to Virtual Reality itself, with interest, exploration and engagement seen at the individual level, leading to research projects and pilot studies, and eventually seeing uptake at the organizational level.

We as simulationists have an opportunity to get involved in how healthcare simulation integrates the Metaverse. For many of us, this means learning digital simulation methods, including serious games, VR and AR applications, and meeting talented engineers, programmers, and developers who have an interest in healthcare training. In our experience, the skillset for digital healthcare simulation within the Metaverse will only grow in importance and popularity.





## Una entrevista con la presidenta de SASIM Carla Prudencio

Presentamos a la presidenta de SASIM, Carla Prudencio, quien analiza su dirección para los próximos años, cómo la Sociedad aborda los grandes problemas y cuáles son los desafíos actuales en Argentina, junto con consejos para toda la comunidad internacional de simulacionistas



**Carla Prudencio**

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La actual complejidad de los sistemas sanitarios, sumada a los tiempos convulsos que vivimos a causa de la brusca irrupción de la pandemia por COVID-19 que ha cambiado de manera traumática el mundo que conocíamos, hacen necesaria una profunda reflexión sobre el estado de la simulación y su desarrollo para garantizar la seguridad de los pacientes. Las sociedades científicas, como organizaciones de conocimiento y experiencia, tienen en este momento, más que

nunca, deberes y compromisos ineludibles siendo los interlocutores principales de las autoridades sanitarias, educativas y científicas.

**SIMZINE quiere hacer conocer al público las ideas de quienes conducen estos organismos rectores de la divulgación científica.** Hoy hablamos con la magister Carla Prudencio, actual presidenta de la Sociedad Argentina de Simulación en Ciencias de la Salud y Seguridad de Paciente (SASIM). Licenciada y profesora en Enfermería, diplomada en Simulación Clínica, en la actualidad es coordinadora de Educación Continua de Enfermería del Hospital de Pediatría Dr. Juan P. Garrahan.

En esta entrevista nos explica sus prioridades para la SASIM, entre ellas que la simulación llegue a todo el país, crear redes, generar grupos de trabajo, convenios con sociedades científicas y las directrices para la enseñanza, los espacios de simulación, además de los perfiles de los nuevos roles y funciones en el área de la simulación clínica.

**Hola Carla. Y gracias por compartir ese tiempo con nuestros lectores.**

**Empezamos con una pregunta fácil. ¿Qué es lo que más te apasiona de la simulación?**

Lo que más me apasiona es haber encontrado un espacio de aprendizaje significativo. Crear un ambiente psicológicamente seguro antes, durante y al final de la simulación. Adaptar la simulación a las necesidades del participante, entendiendo que nuestro rol docente debe ser diferente según el objetivo y nivel de los participantes, es decir una función más de instruc-

ción o más de facilitación.

**¿Cómo definirías el estado de la simulación y dónde crees que se deben focalizar los esfuerzos de forma más prioritaria en tu país?**

El estado de la simulación en el mundo está en un continuo avance. La Argentina está en un gran momento de crecimiento y apoyo de políticas públicas para el crecimiento de los espacios de simulación y uno de los objetivos es trabajar en conjunto con las instituciones para generar una sinergia de recursos y saberes compartidos. La SASIM ha brindado colaboración en diversas actividades con foco en la formación docente y gestión de espacios de alcance nacional y gratuito para todo el país y esto es muy importante para el crecimiento de un país donde la educación, la salud y la sociedad científica se unen.

**¿Qué es la SASIM?**

Nuestra Asociación fue creada en el año 2015 gracias a la unión de la voluntad de profesionales que habían comenzado a recorrer el camino de la simulación. Es una sociedad científica sin fines de lucro, que tiene como horizonte promover y desarrollar actividades para la formación y mantenimiento de competencias del equipo de salud, a través de la práctica reflexiva mejorando así la atención, seguridad y calidad de vida del paciente, de sus familias y de los mismos profesionales del equipo de salud. Trabajamos para difundir la simulación e instalarla como práctica pedagógica en todos los ámbitos relacionados con la salud. **A pesar de las dificultades sufridas y las futuras que ahora afrontamos todos los países, tenemos ante nosotros la posibilidad extraordinaria**



@SASIMCOMUNIDAD

**de hacer reformas en profundidad. ¿Qué papel pueden jugar las sociedades científicas en general y, de manera específica, la SASIM?**

Generar espacios de conversación con las sociedades científicas puede promover una enorme contribución para incorporar la simulación en el pregrado, posgrado y educación con-

**“ Generar espacios de conversación con las sociedades científicas puede promover una enorme contribución para incorporar la simulación en el pregrado, posgrado y educación continua**

tinua. También promover la investigación multicéntrica, para demostrar la utilidad y beneficios de trabajar con simulación en las diferentes idiosincrasias regionales. La SASIM estimula la creación de grupos de especialidad, desarrolla actividades educativas como webinar, cursos de introducción a la simulación, jornadas regionales y documentos para la enseñanza y gestión de espacios, como así también creación de perfiles.

**¿Cuál es la motivación para ser presidente de una sociedad científica nacional, como SASIM?**

La gran motivación es creer en el cambio como una oportunidad, en las ganancias marginales, en inspirar al otro para compartir lo valioso de la simulación para la seguridad del profesional, del paciente y familia.

Los cambios llevan tiempo y ayudar al crecimiento de una sociedad científica es seguir pensando en el bienestar y calidad de atención de un país.

**¿Cómo afronta su presidencia de la SASIM? ¿Cuáles son tus principales objetivos para el actual mandato?**

Toda presidencia presenta desafíos, responsabilidades y compromisos hacia la sociedad y la afronto compartiendo las decisiones en conjunto con la comisión directiva y

ahí está la clave para sobrellevar este mandato. Un objetivo como sociedad es poder tener un relevamiento de todos los espacios de simulación en la Argentina: saber cuántos somos y qué hacemos nos brinda una foto para interpretar y tomar decisiones como sociedad científica.

**En general, la simulación necesita diferentes figuras profesionales con distintas habilidades. Como comunidad científica, ¿estamos prestando a todos la misma atención?**

Ahí debemos seguir trabajando en sumar a las especialidades y apoyar el uso de la simulación clínica en los programas de formación y así todos juntos propiciar la cultura de la seguridad del paciente.

Hay que prestar atención a la presencia de otros integrantes en el

equipo de simulación: un especialista en las ciencias de la educación, un psicólogo, un sociólogo, un investigador y al paciente simulado para tener una mirada integral y real en la creación de los escenarios.

**Las revistas hablan sobre el desarrollo de escenarios, la teoría del aprendizaje, el informe, el desarrollo de la facultad, etc. Pero, según tu opinión, ¿estamos olvidando algo?**

Desde mi experiencia debemos generar recomendaciones sobre la conformación del equipo en un espacio de simulación con sus perfiles y funciones, para optimizar el uso de los recursos, y la formación profesional en simulación clínica.

**Antes de terminar, ¿te gustaría añadir algo más? ¿te gustaría decir algo a toda la comunidad internacional de simulacionistas?**

Si, y gracias por esta pregunta. Nos debemos un espacio para conversar todos los líderes de la simulación clínica, donde el idioma y el lugar no sea una limitante, para que pensemos en la transformación en generar lineamientos de la simulación centrada en la seguridad del paciente a nivel mundial.

**Gracias por la agradable charla. E invitamos a nuestros lectores a conocer más sobre SASIM visitando el sitio web oficial o su canal Youtube.**

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## Simulation in reproductive medicine

Training in reproductive medicine and the new line created by Accurate for the correct insertion of intrauterine devices



**Roberto Marci**  
roberto-marci

The World Health Organization estimates that there are around 48.5 million couples with infertility problems worldwide. Reproductive Medicine treatments require the use of a series of diagnostic and surgical procedures to achieve pregnancy, ranging from transvaginal ultrasound to ultrasound-guided Ovum Pick-Up (OPU), a minimally invasive surgical technique, to embryo transfer.

For this reason, the experience of the operator is essential for the success of an assisted reproduction treatment and for the safety of the woman.

All procedures must be performed safely by gynecologists trained in reproductive medicine. For this reason, simulation in reproductive medicine is essential and appears as the initial structural part of specific training.

Proper training for OPU and embryo transfer includes basic transvaginal ultrasound training and at least 30/50 ultrasound-guided egg retrieval procedures.

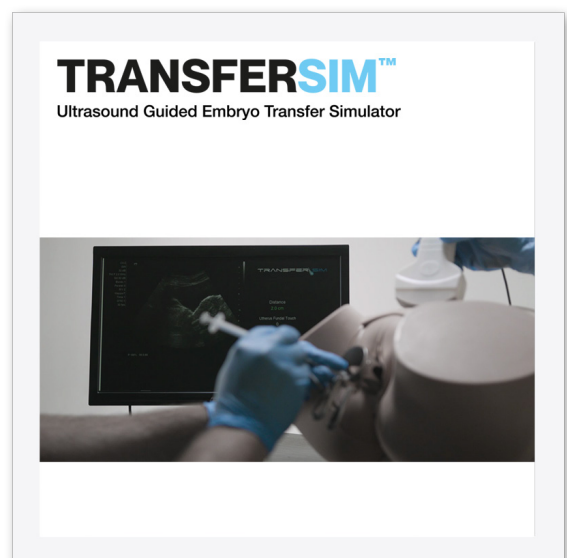
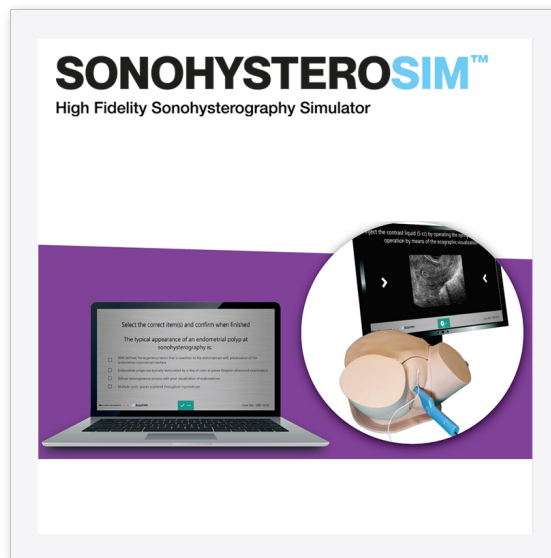
To date, simulation systems are

available that encompass ultrasound diagnosis of the infertile patient (sonohysterography), simulation for oocyte retrieval and simulation for embryo transfer.

Accurate, an Italian research and development company in the field of medical simulation, has created a

complete line of advanced simulators in this area:

**SONOHYSTEROSIM™** Advanced sonohysterography simulator, which allows the learner to perform step by step all the stages of the procedure in different physiological and pathological patients.



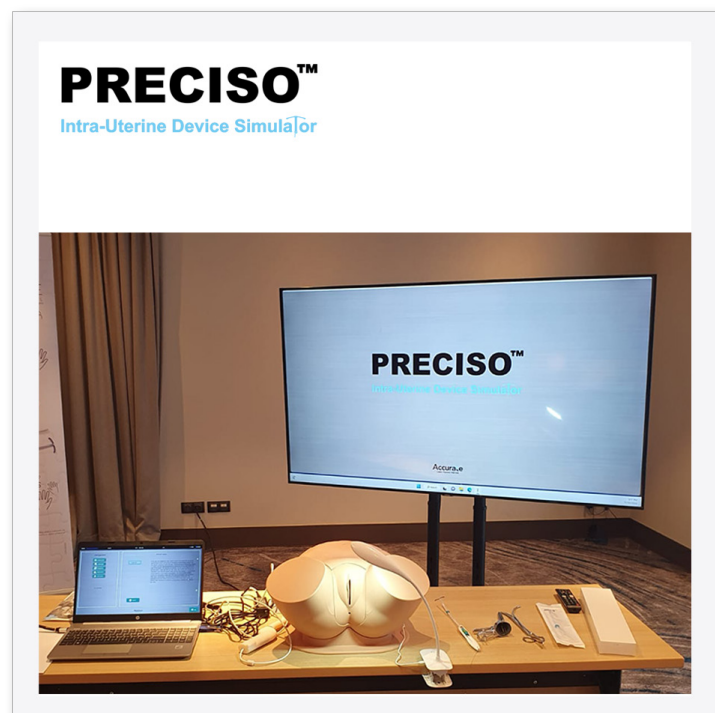


Although not being a difficult procedure, it is considered a "blind" procedure by many physicians and often we are faced with misplaced IUDs with discomfort for the woman, risk in some cases of uterine perforation and/or bleeding, and high costs associated with the wrong procedure. Therefore, the need to create a simulator for the safe positioning of the IUD has become essential. In fact, more and more doctors in training were asking for a specific simulator to acquire the necessary skills. Hence the creation of **PRECISO™**, the only simulator in the world that enables the acquisition of the necessary skills for the correct insertion of intrauterine devices normally used in clinical practice, but with total safety and using ultrasound images of real patients.

**TRANSFERSIM™** Advanced embryo transfer simulator equipped with an augmented reality module that allows the trainee to see the patient's uterus in the form of a hologram and the live movement of the catheter inside it with relative release of the embryo.

**PICKUPSIM™** Advanced Simulator for the Ovum Pick-Up Procedure (OPU), which allows ultrasound-guided procedures to be performed using real needles and is capable of transmitting precise haptic feedback to the student during the passage of the needle through the uterine wall and follicular wall.

Also in the field of gynecology and obstetrics, last November in Barcelona (Spain) it was launched the advanced simulator for the insertion of intrauterine devices (IUD): **PRECISO™**. The correct positioning of the device is, in fact, essential for safe contraception and the safety of the woman.





**SIM VOICES**

## A Standardized Patient's Journey to Podcast

**From a day job that required to simultaneously use diverse acting skills, to the only Standardized Patients Podcast that currently exists: the story of Katie Culligan**

Ever take a look around your life and wonder, "How did I get here?" Personally, if I could go back in time and tell my 18 year-old college freshman self in 2003 that my musical theatre concentration would lead me to becoming the host and co-producer of the only Standardized Patients Podcast that exists in the year 2022, I would have some questions. These questions might include:

- (1) What's a Standardized Patient?
- (2) Wait, what's a Podcast?
- (3) Hold up, you know enough about this bizarre subject to host a podcast about it?

Valid questions, past Katie. So, how did I get here? Well, in case you've never heard of the term "starving artist," you probably don't know that professional actors need "day jobs" to pay their bills while on the never-ending, constant audition circuit (and often even while they're #bookedandblessed). Back in the late aughts after graduating from James Madison University with a degree in theatre, I moved to the Washington D.C. area and entered the scrappy and tight-knit D.C. Theatre Scene.

After performing in a couple of

shows, word of mouth and new cast friendships provided me with not only contacts to multiple medical schools' Standardized Patient programs in the area, but also the coveted referrals to get my foot in the door. As one cast-mate put it, "I don't plan on ever having another normal day job again."

Cut to my first day of Standardized Patient (SP) work less than two months later, and I knew I had to find more work like it. Luckily, if you're available, flexible and have the necessary specific skills, you get asked back and put into SP-rotation. I had a day job that required me to simultaneously use my acting skills such as emotional access, memorization and improv. I mean, it may not be Broadway, but it allowed me to be a consistently working actor. On top of that, I had the enjoyment of connecting with other Standardized Patients in the area, many of whom were active in the theatre and film community. I could book SP work around my auditions and rehearsals - an actor's dream! Lastly, it felt damn good to be helping shape the future doctors of the world - what a privilege.







## TECNOLOGIA, SERVIZIO E PROFESSIONALITÀ PER LA SIMULAZIONE MEDICA DEL FUTURO



[www.simulkare.it](http://www.simulkare.it)



[info@simulkare.it](mailto:info@simulkare.it)



**SIM SPACE**

## Misano Academy: la simulazione corre a 300 all'ora

**Al Misano World Circuit si inaugura primo centro di simulazione clinica dedicato al trauma all'interno di un autodromo. Il Dott. Eraldo Berardi ci fa da pilota e ci racconta questa nuova avventura**

Vroooooom. Un'auto da corsa sfreccia sul rettilineo, un fulmine di metallo che corre più veloce del nostro sguardo. Percepriamo il muro d'aria che si sposta al passaggio della vettura, il sole che per una frazione di secondo colpisce la superficie metallica del tettino e ci ferisce gli occhi. Le luci dei freni lampeggiano per un attimo,

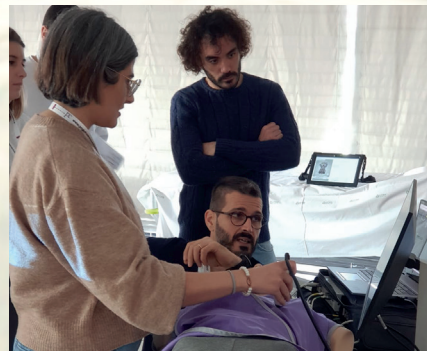


prima che l'auto imbocchi la curva verso destra a tutta velocità. «Questa curva di solito viene fatta a 302 km/h» ci dirà poi il dottor Eraldo Berardi, direttore sanitario del Misano World Circuit, nostro pilota d'eccezione mentre percorriamo il circuito a bordo dell'auto medica.

Ma cosa ci fa un magazine di simulazione medica al Misano World Circuit? Cosa hanno in comune motori e simulatori? La risposta in realtà è molto semplice: un circuito motociclistico offre delle straordinarie opportunità per allenare le skill di gestione del trauma e dell'emergenza. Grazie all'esperienza clinica acquisita sul campo, l'équipe medica del Misano World Circuit ha infatti sviluppato un insieme di competenze uniche, uno skill set che può essere utile a tanti altri professionisti in Italia e nel mondo. Proprio per questo a Misano

è appena stato inaugurato un centro di formazione medica, il quale ambisce a diventare il primo centro di simulazione clinica all'interno di un autodromo. Ovviamente non potevamo mancare alla giornata d'apertura, che si è svolta lo scorso 11 novembre. Per l'occasione, sono stati lanciati due corsi ECM in contemporanea, aperti sia al personale medico interno che a professionisti esterni: (1) il Corso teorico-pratico di gestione delle vie aeree di base ed avanzata nell'adulto, degli accessi vascolari, delle vie di somministrazione dei farmaci e del controllo delle emorragie massive; (2) il corso di Ecografia Clinica in Emergenza, POCUS.

Ne abbiamo approfittato per parlare con Eraldo Berardi del passato, del presente e del futuro del Misano Race Medical Team.



**SZ: Dott. Berardi, cosa può raccontarci dell'esperienza della sua équipe nella gestione del trauma e dell'emergenza?**

Eraldo Berardi: Beh, innanzitutto io sono qua da parecchi anni ormai e posso dire che abbiamo sviluppato una conoscenza e una competenza approfondita di questo settore, per-

ché siamo in un luogo dove il trauma è ovviamente di casa. Noi siamo un gruppo molto consolidato, anche perché lavoriamo assieme da tanti anni e questo ci ha permesso anche di migliorare e codificare tutte le procedure necessarie.

In occasione di un trauma durante grandi eventi abbiamo anche il vantaggio di avere a disposizione



un poliambulatorio accreditato con numerosi apparecchi di diagnostica all'interno, il quale ci consente di approcciare il trauma in maniera diversa rispetto a un circuito dove queste strumentazioni non sono disponibili. In situazioni critiche, ovviamente, il primo obiettivo è quello di centralizzare rapidamente il traumatizzato. In altre situazioni in cui c'è tempo per poter approfondire e studiare il paziente e si ha la necessità di fare una TC, una risonanza cerebrale o vertebro-midollare, riusciamo a fare tutto in circuito. Il nostro è un gruppo che è composto da liberi professionisti e medici che afferiscono a varie ASL limitrofe, in particolare in Romagna, ma anche in Emilia, un team di rianimatori e traumatologi, ortopedici, radiologi che hanno maturato un'esperienza sia in circuito sia nella quotidianità del loro lavoro. [...]





## DID YOU KNOW...

# The successful kick-off meeting of the new EEDUSIM project

EEDUSIM project was launched to support 5 European countries in developing simulation-based curricula

The European Project EEDUSIM had its official kick-off on November 22nd 2022 with an event hosted on-line by the University of Padua. EEDUSIM stands for training in hEalthcare EDUcation with SIMulation and its aim is to design a course to train healthcare educators in simulation. The project has been funded with the first round of the KA220 HED European Erasmus+ Programme for

Cooperation Partnerships for higher education. EEDUSIM will see the cooperation of three European higher education institutions (HEI), the University of Padua (UNIPD, Italy), the Ludwig Maximilians University of Munich (LMU, Germany), the University of Medicine, Pharmacy, Science and Technology of Targu Mures (UMFST, Romania), one industrial partner, MetamedicsVR (MM, Spain) and two associated partners, Centro di Simulazione (CeSi, Switzerland) and SESAM (Germany).

«At the department of Medicine, we strongly believe in simulation as an effective method of teaching healthcare professionals. Thanks to this project, we hope to spread the adoption of this technique.» says Prof Novalesi, coordinator of the Project from the University of Padua, who opened the meeting.

«I'm proud that our project has been selected and funded. We have designed it with some ambitious goals. With the help of our skilful partners we are confident that we will be able to achieve what we planned», adds Dr

Mormando, responsible for one of the project work groups.

Representatives from all the institutions participating in the Project have highlighted the importance of this scientific initiative, renewing their commitment and support to the Consortium of partners, and the interest toward the tangible nature of the Project.

The plan is to reach significant out-

and using many of them in the pilot course, the project will facilitate the future adoption of these technologies in Europe.

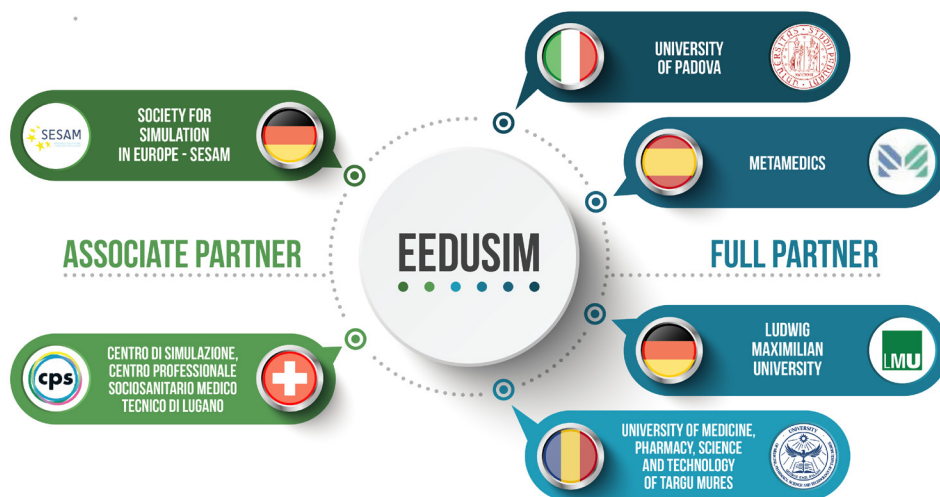
A web platform for the project contents will also be developed and serve as a virtual campus where trainers and learners will be able to access all the learning materials and engage with one another. A course handbook will be also created and be made free-

ly available on the web platform to foster the adoption of simulation in medical education curricula.

All partners will collaborate in the project and contribute to all the activities of the different work groups. More information about the specific activities can be found at the project website.

For more information

about EEDUSIM, please write to [simulazione.dimed@unipd.it](mailto:simulazione.dimed@unipd.it).



comes within 24 months, which will contribute to improvements in the simulation-based education at European level. The project goal is, in fact, to enable HEIs and educators to develop curricula involving simulation, by providing a comprehensive training course on simulation in healthcare. The course will be complete, as it will cover all the different aspects of simulation in healthcare education: in addition, it will be validated, standardized and developed connecting different European countries. The project will also be future-proof. Augmented Reality (AR) and Virtual Reality (VR) recently emerged as tools that complement traditional simulation devices and overcome some of their limits. By studying these technologies, developing some new features

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**SIMREVIEW**



## Simulation is for everyone: Med Sim Studio

Graphically modern and multiplatform, a serious game created to train communication with the patient even in the most complex situations

To put it bluntly, simulation has a considerable cost, not only related to the hardware but also to the software.

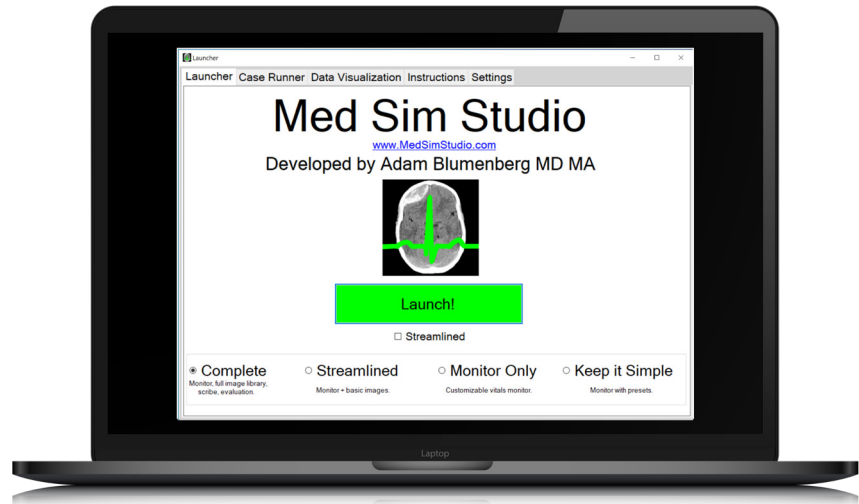
It's true, paying thousands of euros for a software brings with it several advantages, including quality and support from the developer or reseller. But it is not always possible to spend so much money, and what remains unaffected, regardless of the price, is the need to introduce simulation in clinical and academic settings.

### The background of Med Sim Studio

Adam Blumenberg is the sole creator and developer of the project. He is an instructor himself, with the skills of a simulation technician, but he wanted to create something simple that displayed dynamic vital signs and images in the most intuitive way possible, not only in a classroom but also inside the hospital, or simply in remote sessions through a Zoom call, Google Meet, etc.

### Patient Monitor and Control System not online.

The particularity of the software lies in its simplicity. Normally we would come up with two different devices for the learner-side and the instructor-side patient monitor, in this case instead Adam developed the



application by putting everything together in the same session, thus eliminating all network complications and "forcing" the end user to use two monitors in extended mode.

In addition to this, Med Sim Studio is not limited to having a classic monitor on which we can change parameters and waves to our liking, but it is possible to create a complete clinical case.



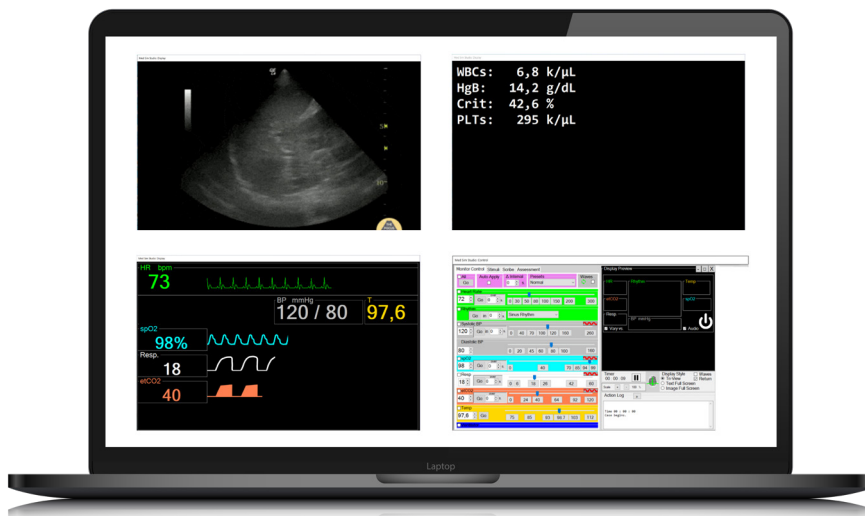
### Pros

- Conceptually and graphically very simple.
- A very comprehensive PDF guide is provided
- Totally free software
- Creator/developer always available



### Cons

The use of the Tri-View of the learner-side patient monitor is not very intuitive.





SIMZINE



PUB SIM



## Habilidades no técnicas, SimZone y debriefing

**Mientras los italianos analizan las herramientas diseñadas para evaluar habilidades no técnicas, los estadounidenses sugieren cómo adaptar el debriefing a SimZones. Disfruta de la degustación**

Bienvenido de nuevo a nuestro Pub.

Hoy comenzaremos con la degustación de una cerveza de invierno enriquecida con hierbas y especias, en promedio más alcohólica y estructurada que las cervezas que ofrecemos habitualmente. La cervecería está ubicada en uno de los puntos panorámicos más hermosos de Roma, el del Gianicolo, desde donde se puede disfrutar de una maravillosa vista de la Ciudad Eterna.

Los maestros cerveceros romanos han revisado sistemáticamente las herramientas diseñadas actualmente para evaluar las habilidades no técnicas (*non-technical skills*, NTS) de los profesionales de la salud durante la ejecución de simulaciones de alta fidelidad (*high-fidelity simulation*, HFS), describiendo las áreas, los elementos, las características y las propiedades psicométricas.

En la cervecería, conociendo bien el perfil organoléptico de la cerveza que estaban produciendo, eligieron diferentes criterios metodológicos para obtener el mejor resultado: después de examinar 3.953 tipos de levaduras y 19 herramientas de evaluación NTS para HFS, el Team Emergency Assessment Measure (TEAM) es recomendado para su uso en la evaluación de NTS. Todas las demás herramientas requieren más investigación

para evaluar la calidad y luego ser sugeridas durante la capacitación de HFS.

(Gawronski O, Thekkan KR, Genna C, Egman S, Sansone V, Erba I, Vittori A, Varano C, Dall'Oglio I, Tiozzo E, Chiusolo F. Instruments to evaluate non-technical skills during high fidelity simulation: A systematic review. *Front Med (Lausanne)*. 2022 Nov 3;9:986296. doi: 10.3389/fmed.2022.986296. PMID: 36405618; PMCID: PMC9669714.)

La segunda cerveza de hoy es una APA (American Pale Ale) de Boston, de color ámbar, baja en alcohol y con lúpulos americanos que le dan una nota afrutada. Los maestros estadounidenses han entendido que el aprendizaje basado en simulación ocurre en diferentes contextos y que un estilo de enseñanza no puede cubrir adecuadamente las necesidades de cada nivel de aprendizaje. Para alinear mejor las necesidades de los estudiantes con las estrategias de enseñanza, han decidido integrar el enfoque curricular SimZones (una estructura utilizada para aclarar los múltiples contextos de la simulación) con los elementos esenciales del método Debriefing With Good Judgment (enseñar con buen juicio, entrenar con buen juicio y hacer debriefing con buen juicio) para proporcionar una hoja de ruta para los

facilitadores de la simulación. Esta hoja de ruta está diseñada para guiar a otros cerveceros sobre qué tipo de aprendizaje se puede esperar en función del contexto, qué comportamientos y acciones se pueden esperar de los alumnos en cada contexto de aprendizaje, qué estrategias educativas son más efectivas en cada etapa de SimZones y cuáles son las implicaciones de la relación profesor-alumno.

(Fey, M.K., Roussin, C.J., Rudolph, J.W. et al. Teaching, coaching, or debriefing With Good Judgment: a roadmap for implementing "With Good Judgment" across the SimZones. *Adv Simul* 7, 39 (2022). <https://doi.org/10.1186/s41077-022-00235-y>.)

Espero que hayas disfrutado de esta degustación. Espero verte en el próximo encuentro para probar nuevas cervezas.

Hasta pronto,

el Maestro Cervecerero





## Recording and Debriefing made in Austria

We talk to Joachim Hilbrand, CEO of SIMStation, a Vienna-based company specialized in AV recording and debriefing systems. We discussed barriers, challenges and opportunities for the development and growth of healthcare simulation



**Joachim Hilbrand**  
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Green is the color of nature and health, it brings a message of freshness and hope. Thus, it is no coincidence that it was chosen as the branding color by one of the most groundbreaking players in the simulation industry. Their distinctive

green corporate design can be spotted at most international congresses, and is synonymous with high-quality technology and a forward-thinking approach. Yes, we are talking about SIMStation.

SIMStation is a Vienna-based company specialized in creating high-end recording and debriefing systems. The combination of premium hardware and innovative software supports the healthcare sector worldwide in achieving an essential goal: Better Simulation.

So, it was just a matter of time before we reached out to SIMStation to understand how they managed to develop one of the most powerful and effective AV systems on the market.

Joachim Hilbrand, one of the three founders of SIMStation and the company's CEO, accepted to be *simzined*!

**Hi Joachim, thanks for accepting to share some time and thoughts with us. Why do you work in healthcare simulation?**

I got into this industry by chance 15 years ago when I was running a web development company, and it was the best thing that could have happened to me. Developing innovative software is always fun, but as soon as I realized how meaningful and impactful it is to work in healthcare simulation, I knew that I would never want to do anything else!

**SIMStation is an Austrian company and now a global player. Looking at the AV-based simulation systems market when you started, there didn't seem to be room for new players. What made you think that there was an opportunity?**

It was immediately clear after a few conversations with end users of AV simulation systems that there was a big gap in the market. Most customers complained that their expensive systems were lacking usability, if they were working at all. The need for high-quality recording and debriefing systems was definitely there. Also, our risk was manageable because we, the founders of SIMStation, already had companies in the fields of AV hardware and software, and something like SIMStation was just the result of our combined expertise, a product that we could create with the help of our existing teams.

**In a few years, you've built a number of partnerships with high-performing simulation centers. How did you win their trust and add them to the brand's portfolio?**

We took a customer-centric development approach from day 1. We toured dozens of hospitals and simulation centers with the prototype of





the first SIMStation system, collecting feedback and continuously implementing the improvements. During this time, not only business partnerships were formed, but also many friendships. And as friends want to be helped, customer focus has become second nature at SIMStation. We are on the same side as our customers, fighting together every day to ensure that they have the best opportunities to run their training operations in the best possible way.

#### **How do you find simulation in healthcare has evolved over the past years?**

To be honest, I have mixed feelings about that. On the one hand, it is great to see how simulation is becoming more and more established. Especially in the areas of nursing and EMS, a lot has happened! On the other hand, I have the impression that not so much is developing in clinical simulation. Some years ago, I thought it would only take a short time for simulation centers to become really integrated into the quality improvement process of a hospital. But today that's still too rarely the case. In clinical quality management, there should be a cycle: if weaknesses are identified, they should be trained in simulation, and then measured again to see if the outcomes have improved.

I think one reason for this is that clinical simulation still defines itself too much as a niche specialty. In my opinion, it starts with the term "simulation". Most people outside our industry think of simulation as something very specialized and complicated, such as computer simulation of processes that are too complex to be understood without computing data models. Whereas healthcare simulation, our field of activity, is not rocket science but a very simple yet effective tool for education and training. The misleading understanding of the term "simulation" became clear to me once in a conversation with a CEO of a leading U.S. children's hospital. He told me that for many years, he walked by the door labeled "simulation center" in his building and thought to himself, «I'd rather not know what they're doing in there!» And why did he think that? Because he suspected something that was expensive and not very relevant to his day-to-day hospital operations!

In general, I would like to see the simulation industry less isolated, but under the umbrella of the much larger "medical education and training" industry, to which it actually belongs. How great would it be if there was a big convention on healthcare training and education, and simulation was showcased there in a hall as an

exciting education tool? At such a scale, even the big decision-makers and companies that have yet to give simulation the attention it deserves would become aware.

#### **What do you think are going to be the key developing issues in the simulation industry in the coming years? What are the unmet needs today?**

My core issue is that standards for interoperability must finally be established in the industry. If there is no possibility at all for data exchange between devices or applications from different manufacturers, that is a big obstacle to advancement. What if the same professional scenarios could be shared and run in every simulation center of the world? If each simulator of the different manufacturers could be controlled by common control software? If the devices log files, the checklists, the annotations and bookmarks, as well as sensor data could be collected in a common and exchangeable file format? Then it would finally be possible to compare and share relevant data across institutions and borders, to gain relevant scientific knowledge for the improvement of medicine. All this through an open and worldwide collaboration in simulation.

In the world of....



**Content written in collaboration with SIMStation**



## DID YOU KNOW...

# Expertos analizan la digitalización en simulación

La empresa española Codimg organizó el pasado 3 de noviembre el "Encuentro Internacional sobre Digitalización en Simulación Clínica". Un evento online que congregó a expertos de España, Italia, Suiza y Latinoamérica

Un panel de ponentes de primerísimo nivel a ambas orillas del Atlántico se encontró online para explorar la digitalización de la simulación clínica desde diferentes prismas. Como nexos de unión entre todos ellos -excusa perfecta para que Codimg auspiciara este encuentro-, es el uso de esta herramienta de estudio del comportamiento humano a través de vídeos en todos los centros que participaron en el encuentro. Un software que permite agilizar, dinamizar y estandarizar las sesiones al tiempo que genera una base de datos con evidencias audiovisuales.

Además, al tener todas las sesiones grabadas y documentadas, Codimg nos permite crear bases de datos y preparar trabajo de investigación, como artículos o estudios, que de otra forma no podríamos haber realizado». «El programa nos permite ver y analizar con un increíble nivel de detalles cómo actuamos y cómo manejamos diferentes situaciones» añadía Alejandro Martínez, profesor de Simulación del mismo centro.

### Facilidad, portabilidad y feedback a tiempo real

Oscar Martínez, ginecólogo y Coordinador de Simulación en Emergencias Obstétricas del Hospital Puerta de Hierro (España), destacó la sencillez de uso del programa y su capacidad para ser adaptado a cualquier centro, así como su capacidad de ofrecer feedback al instante. «Es fundamental la portabilidad del sistema, porque nos permite montarlo en cualquier

comprobación y luego hacemos un debriefing mucho más corto justo después del escenario clínico simulado», explicó el doctor Martínez.

Su compañero José Alberto Suárez del Arco, anestésista e integrante del mismo equipo de simulación,



ahondaba en el montaje sencillo del programa y la versatilidad de uso. «Nosotros teníamos un sistema que prácticamente era fijo y era un incordio. Ahora, con Codimg podemos dar un curso hoy en Mallorca, mañana en Burgos y pasado mañana en Madrid», argumentó al respecto.

### Codimg, la 'navaja suiza' de la simulación

El intensivista, docente e investigador en...



Así lo atestiguaba Paloma Rodríguez, directora de la Escuela de Enfermería de la Fundación Jiménez Díaz (España), quien catalogaba a Codimg como un «incorporación estratégica con la cual lograr el objetivo de convertirnos en la escuela sin papeles, ya que con este software conseguimos que toda las rúbricas sean digitales y, por lo tanto, podemos trabajar de forma mucho más ágil.



Escrito con la contribución de Codimg





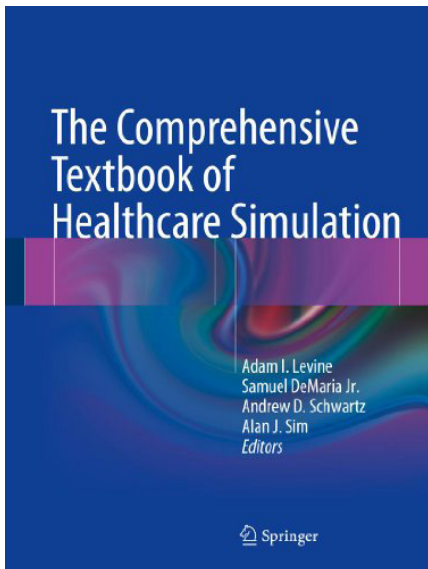


## The Comprehensive Textbook of Healthcare Simulation



Adam I. Levine, Samuel DeMaria, Andrew D. Schwartz, Alan J. Sim

Springer New York, NY, 2013 - ISBN 978-1-4614-5992-7 - <https://link.springer.com/book/10.1007/978-1-4614-5993-4>



The bible of simulation in medicine, the book that everyone should read at least once in their life, despite its not exactly pocket size.

I'm pretty sure readers will identify themselves in one of the following categories. Someone else will turn towards the bookshelf, will scroll through the manuals on display, will see it, and will think that they have always wanted to read it. And there will be those, on the other hand, who have never heard of it, and maybe were just looking for a reference text. Although this handbook is about ten years old, and considering that the last decade has been characterized by exponential growth in all fields of simulation (number of centres, scientific publications, technological innovations), it is still an excellent basis for knowing all aspects related to the world of simulation.

The book is divided into five parts:

### Introduction to simulation

An excursus is made on the history of simulation, hints at the main learning theories can be found and the topics of debriefing, Crisis Resource Management, patient safety, use of simulation to optimize processes, learner's evaluation methods and tools are analyzed.

### Simulation methods and technologies

The theme of standardized patients is addressed, starting from their recruitment, training and evaluation. We then move on to the manikins, mainly high fidelity, and their management software. One part is dedicated to computer and web-based simulators. However, it is inevitably outdated and requires updating, considering the technological progress of the last decade. The final part talks about surgical simulators, with or without haptics, and virtual environments and serious games at different levels of immersion.

### Simulation for healthcare disciplines

It is divided by specialty and contains 24 chapters. In each of these, the main simulation techniques and technologies, the manual skills and transversal components required, and suggestions for effective simulations and evaluations are illustrated.

### Professional development

We talk about educators, continuous training, and accreditation.

### Development of simulation programs

All the aspects related to the creation and organization of a program and/or a simulation center are illustrated, including the managerial and economic aspects which are the basis of a lasting programme.

This text, which boasts contributions from the major players in world simulation, fully respects the multidisciplinary nature of simulation and is therefore an interesting manual for educators, technicians and directors of simulation centers or programs.

For this reason, I decided to use it as a reference text within the forthcoming medical simulation course for biomedical engineering students at the University of Genoa.

But I will tell you about this in the next issues.





## Are social media helpful or harmful?

Social media have evolved from a fun diversion into a serious business. Our panelists discuss how best simulationists have to adapt and utilize them

### The debate

Over the past decade, social media have evolved from a fun diversion into a serious business. Whether you are a simulationist, a simulator developer, or CEO of a new start-up in this field, you are surely using some form of social media today. Between LinkedIn, Instagram, Tik-Tok, Facebook, Twitter, Snapchat, and others, we all have been forced to rethink entirely how these means can help and support us in what we do. But how do social media fit into simulation in healthcare? The question persists in debates among experts and institutions. Social media, in fact, can overcome challenges simulation educators face, by facilitating the development of a large community of individuals with common areas of interest, and by making knowledge and ideas easily accessi-

ble to a very large global audience. However, fact-checking and filtering for quality cannot be guaranteed. In terms of research, social media may serve as winged messengers for impactful and important findings, best practices and innovations. Nonetheless, the spread of non-peer-reviewed articles through social media comes with dangers as well. They can cause false beliefs to be spread or research to be misinterpreted. On the other side, there are those who argue that social media platforms have the potential to broadly raise awareness for simulation research and patient safety.

Therefore, in this increasingly digital and data-driven world, does the simulation community have to consider how best to adapt and utilize these tools? Is using social media

to disseminate high-quality simulation-based results to a very large global audience extremely valuable? It is relevant to consider and discuss these issues.



Pier Luigi Ingrassia



Amani Azizalrahman

Pediatric Emergency Consultant at King Fahad Medical City (KFMC). Chairperson of Life Support Department and anatomy lab at Center for Research Education and Simulation Enhanced Training (CRESENT) in KFMC. Vice presidents of the Saudi Society for Simulation in Healthcare SSSH and chairperson for advertisement and publicity at SSSH.



Samantha McCormack

Technical Specialist, Clinical Simulation at Brunel University London. Creator of the Award-winning Dementia Simulation. Executive Committee member for the Association of Simulated Practice in health care (ASPiH). Co-Chair ASPiH Tech SIG. Named in the top 100 individuals or groups whose work at universities is saving lives and making a life-changing difference to health and wellbeing.



Eduardo Alcaraz Mateos

Surgical pathologist and university teaching collaborator at University of Murcia. Inventor of the fine needle aspiration simulation model (FioNA©) and of the physical examination module for tumor lesions and neoplastic anatomical dissection models. Designer and founder of the nonprofit SimIn-Path© mobile app for skills assessment in Pathology. Organizer of FNA workshops and author of several scientific publications. Interested in the dissemination of scientific knowledge through social media.

The majority of us use social media personally; what would be the biggest difference when using these channels for simulation-based education or business?

**Samantha McCormack:** The more I delve into this question the more my reply changes. Personal accounts are just that: personal, entertaining and more relaxed. Business accounts

frequently use analytics to be able to target the best times of day for maximum reach. Their aim is to build an identity and share best practice to really engage their audience. With a

personal account, you are reactive, and post in the moment to share with, in the main, family and friends. Whereas business accounts are more proactive, with a little bit of reactivity, they often schedule their posts for a particular time of day, whilst also keeping an eye on the account



activity throughout the day to re-share posts, like etc. Using social media from a business account, you will either have a social media strategy to adhere to, or guidance to follow from your employer and your posts will be carefully curated and intentional, as opposed to carefree with a personal account.

**Amani Azizalrahman:** Using a personal account on social media allows the owners to speak their mind, to offer their perspective and what they



believe or what they have learned from their experiences, and it reflects their points of view on the subject. Using social media for simulation-based education or business should reflect the general guidelines instead, by

sharing the methods that are used or highlighted in the literature, without being biased toward one point of view rather than another.

**Eduardo Alcaraz Mateos:** A series of ethical considerations must be taken into account when generat-



ing and publishing educational or informative content on social media networks. Respect, rigor in the information and its transmission must be adapted to the field of healthcare literacy, with an easily understandable language and conveying at all times the concern for the preservation of patient safety in each activity we carry out. However, I believe that a personal account should maintain the same considerations and respect for the rest of the user community. We cannot forget that if the information is public, anyone can have access to this content.

#### How do social media foster patient safety culture through simulation?

**Amani:** Social media can enhance the spreading of accurate knowledge: they can be used to share simulation sessions or discuss online educational processes via simulation, and even review recorded sessions. This sharing and communicating minimize the time needed for students to learn, compared to the era preceding social media. Conferences can now be attended online and it is possible to share snapshots via different platforms: this leads to the improvement of patient care and thus of patient safety.

**Eduardo:** Simulation in the field of medical education is not a premise

considered by the entire scientific and medical community, and the Halstedian dogma of "see one, do one, teach one" still persists, a dogma that should be part of the past. The lack of resources and motivation in these sectors should only strengthen those of us who think that good medical training does not exist if tools that allow the acquisition of skills in a simulated environment are not used. That is why social media represent an appropriate channel to, on the one hand, show citizens that we are concerned about their safety and, on the other, disseminate to the rest of the medical community the tools we have developed to deal with these basic requirements in the medical sciences: medicine, nursing, physiotherapy or pharmacology.

**Samantha:** Social media play a huge role in the benefit of patient safety culture through the sharing of research with likeminded people. Social media have allowed healthcare professionals to connect from across the globe at the mere press of a button. Cutting-edge research and global collaboration save time, money and ultimately lives. We have already seen a shift in the way healthcare engages with patients using social media platforms, through healthcare campaigns and digital appointments, and in doing so builds a more transparent relationship between patient and provider and a positive reputation. As the momentum continues to build and more patients connect with social media they will engage and participate more in their own self-care, share their experiences and learn from others, all resulting in improved patient safety benefits.

**We are aware that social media are not all equal. On which social media platform should a simulationist establish his/her presence? Is it the same for a simulation center?**





## Gwen, a manikin who has Down Syndrome

The mission of Lifecast Body Simulation is to make manikins that look like real people! This outlines their journey to produce the Gwen manikin, a little girl with Down Syndrome. And we also listen to her version of the story



**David Halliwell**  
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in [david-halliwell](#)

Can you imagine sending your little girl to school knowing that the teachers, first aiders, paramedics and other healthcare providers she may need have not been adequately trained (or worse incorrectly trained) to deal with her health needs?

That is the situation faced by so many parents of children with complex health needs.

If you think about it, most manikins are very generic: they encourage a head tilt, chin lift during resuscitation, and allow for the teaching of 'generic skills.'

Yet a child with Down Syndrome is anything but generic: they have quite complex healthcare needs, they cannot

be head tilted due to neck instability issues relating to their C1 and C2 vertebrae. They can have complex congenital issues, and suffer from apnoea.

In the early part of 2022 our team at Lifecast Body Simulation were approached by Charles Everard and Lee Jagodzinski from Greenwich Learning and Simulation Centre (GLASC) in London to consider jointly collaborating and building a child manikin with Down syndrome.

We struggle to understand why it has taken until 2022 for the industry to build a manikin with Down syndrome, but we at Lifecast accepted the challenge with huge excitement.

***It has never made sense to us why we do not have manikins which look like real patients!***

We have observed that the more real the manikin, the greater the depth of the learning conversation, and more seriously the student takes the learning.

### Finding the model: Gwen

Initially we did a shout out for help through social media, hoping that one of our contacts may have a relative or friend who has Down Syndrome who wanted to be copied and turned into a manikin, but we drew a blank. So as a next step we turned to the Down Syndrome Association GB for help. Their team was amazing and sent an email asking for help amongst the thousands of parents and members of their association, and we were subsequently inundated with offers of help.

Amongst the hundreds of children who offered their time and support we received a photo of Gwen. She was photographed doing a TED talk about having Down Syndrome: Gwen is an actor, a model and importantly she has her own "modelling agent", and one of the most incredible families and stories it's been our privilege to meet.

Physically Gwen epitomises many people with Down syndrome. She is a joy and yet has had significant health issues.

### Gwen's Health

Gwen has had multiple respiratory arrests due to her sleep apnoea, and has had multiple surgeries yet is only aged 7 and we must say: "Gwen has had a far tougher health journey than most children of her age."

Though not all people with Down syndrome have the same features, some of the





more common features include: flattened face, small head, short neck, protruding tongue, poor muscle tone, relatively short fingers and small hands and feet with gapping between toes, among others. Children with Down syndrome are at an increased risk for certain health problems, such as respiratory infections, heart defects, thyroid disorders, hearing loss, sometimes severe, vision disorders, sleep disturbance, obesity, spinal problems, dementia and other health conditions.



Gwen has faced the majority of the issues mentioned above, and it was for this reason that we at Lifecast Body Sim chose to work with Gwen and her family.

### What did we do?

After a few weeks of chatting with Gwen and her acting / casting agent we settled upon a date for Gwen and her family to join us at Lifecast Body Simulation, and went through the safeguarding steps which ensured we had completed the appropriate child protection paperwork, and local education authority approvals to allow for Gwen to undertake paid work in her school time.

Gwen and her family joined us at Elstree movie studios in London, the oldest movie studios in Britain (film production having started there in 1914).

We firstly did a tour, showing Gwen where key things are filmed, 'The Crown' by Netflix, 'Strictly come Dancing' and a whole host of movies including Paddington! We then showed Gwen what our manikins look like when they are finished, spending time with our artists.

Next, we began the 3D scanning process. Our Lifecast 3D scanning tool takes thousands of photographs in a minute, which it uses to render a 3D image. The 3D scanned is incredibly accurate and sensitive allowing for tiny details to be captured with an accuracy of 1/10th of one millimeter. The 3D scanning was overseen by the famous artist Schoony, who is also one of the directors of Lifecast Body Sim. Schoony uses 3D scanning to produce pieces of collectible art which sell for tens of thousands of pounds to his often famous collectors, such as Brad Pitt, Angelina Jolie. or Benedict Cumberbatch.

Once we had a 3D scan of Gwen we undertook lifecasting of her hands and feet. Lifecasting is a process developed by John Schoonraad in the 1980s as a way of copying people for his movie manikins. John had developed a way of using plaster of Paris

and Alginate to copy physical features and make molds: this had led him to work on hundreds of movies as a prosthetic maker including 'Saving Private Ryan', 'Gladiator' and 'Kick Ass', thus he was keen to work with Gwen to copy her feet and hands. Lifecasting is a messy process, but allows us to get our limb sizes and physical features accurate and these days is intertwined with 3D scanning tech.

From a lifecast body part we can create a plasticine / clay which our artists can refine. Once Gwen had been copied, the team of sculptors and mould makers began the process of making the internal skeletal moulds and the outer skin moulds. The process involves our incredible sculptors whose backgrounds often include



time served at Madame Tussaud's museum.

The process took about 20 weeks from the initial scan to final production.

Launched at the ASPiH and Resuscitation council congress in the U.K. the manikin is now heading to America to be showcased at IMSH 2023.



Written in collaboration with Lifecast Body Simulation.



## DID YOU KNOW...



# EuSEM Refresher Course. When simulation counts

## Italy hosted the 12th EuSEM Refresher Course. A quick overview from its organizers

The Refresher Course (RC) is one of the educational activities promoted by the Young Emergency Medicine Doctors Section (YEMD) within the European Society of Emergency Medicine (EUSEM).

In order for a hosting institution to hold an edition of the RC, standards of educational quality must be ensured, including an agenda that foresees interactive and practical teaching strategies (such as realistic simulation, skill stations, case-based discussions) fostering active engagement by the participants.

After the success of the 11th edition, the Italian Emergency Medicine Trainees Association (COSMEU) supported the organization and delivery of the 12th edition too, which was hosted in Italy, and focused entirely on Resuscitation and Critical Care in the Emergency Department (ED) and Pre-Hospital Emergency Medicine (PHEM).

The 12th edition took place from November 29th to December 1st in Milan. The local organizing committee was formed by EM trainees of San Raffaele University Hospital and the training labs were hosted in San Raffaele's Simulation Centre.

The aim of the event was to expose EM trainees to theoretical foundation as well as practical and behavioural competencies required for management of the critically ill patient in the ED and PHEM.

Considering the wide heterogeneity in training of the participants, a pre-course survey was submitted to all participants to explore their background. Moreover, they were required to have completed at least one basic resuscitation course to be eligible to attend (i.e. ALS/ACLS, ATLS/ETC, APLS/PALS).

During the three days, 45 participants underwent back-to-back simulation sessions supported by 24 trainers. Overall, 11 European countries were represented.

The participants were divided into 9 groups and rotated through 10 stations lasting 120 minutes each with trainers/trainees ratio of at least 2:5.

The topics covered specific theoretical, practical, and behavioural competencies that entail numerous aspects of emergency and resuscitation medicine. The topics and the facilitators of the workshops are elicited in the box.

### Topics and Faculty

**1. Airway management in the critically ill patient.**

Faculty: Stefano Geniere Nigra (Italy), Tim Harris (United Kingdom)

**2. Basics of non-invasive and invasive respiratory support**

Faculty: Adrian Perera (United Kingdom), Stefano Sartini (Italy)

**3. Beyond ALS: post-ROSC management in cardiac arrest.**

Faculty: Federica Stella (Italy), Alessandro Coppa (Italy)

**4. Human factors and group dynamics.**

Faculty: Giulia Mormando (Italy), Marco Bonsano (United Kingdom)

**5. Major trauma management: massive haemorrhage.**

Faculty: Jim Moonie (United Kingdom), Efram Colonetti (Italy)

**6. Integrated ultrasound in the critically ill patient.**

Faculty: Cristina Sorlini (United Kingdom), Timo Kummerow (Germany)

**7. Procedural Sedation & regional anaesthesia in EM**

Faculty: Kat Baird (United Kingdom), Alessandro Lamorte (Italy), Valerio Stefanone (Italy)

**8. Procedural Boot Camp.**

Faculty: David Franklin (United Kingdom), Matteo Borselli (Italy), Nicola Baciottini (Italy)

**9. Paediatric emergencies: assessment of the critically ill child**

Faculty: Catherine Carrick-White (United Kingdom), Serena Salvadei (Italy), Francesca Figlioli (Italy)

**10. Obstetric and Neonatal Emergencies.**

Faculty: Jonathan MacKenney (United Kingdom), Sara Abraham (United Kingdom), Mario Staccioni (Italy)



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