

# Case study

## More Effective and Efficient Training with Simulation



The Public Emergency Medical System of Galicia

Santiago de Compostela, Spain

By: Ellen Thomseth, Laerdal Medical

*This case study is one, in a series of seven, describing various aspects of European simulation centers. The document was developed in collaboration with and approved by Galician EMS.*

[www.laerdal.com](http://www.laerdal.com)

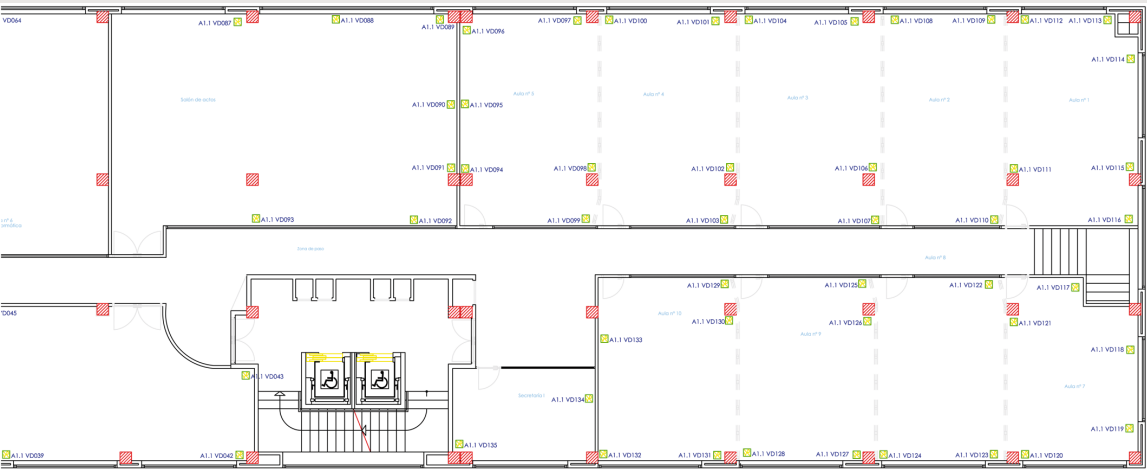
THE GALICIAN EMS IN SHORT

The Public Emergency Medical System of Galicia –The Galician EMS – is part of the local medical district of Galicia. The center was established in year 2000, and is located in Santiago de Compostela, Spain. The current facilities occupy 60 sq meters; and plans are underway to develop a new, larger center in collaboration with the Santiago University and the Santiago de Compostela General Hospital. The Galician EMS trains 4-5000 individuals on an annual basis. Most of the training is conducted outside the center, at nurse faculties, hospitals, factories, hotels etc. The primary target groups (80%) are EMS personnel, physicians and nurses in 24/7 primary care, and specialists in family medicine. More recent focus groups are nurses, physicians, and pediatricians in primary care. Chance of survival following cardiac arrest is four times higher in partly rural, partly densely populated Galicia, as compared with the rest of rural Spain, and the densely populated inner city of Madrid. The relatively high survival rate of 14% is partly attributed to the facilitated simulation training, where each and every part of the Chain of Survival is highly focused. The Galician EMS simulation center acts as a regional resource center in Spain.

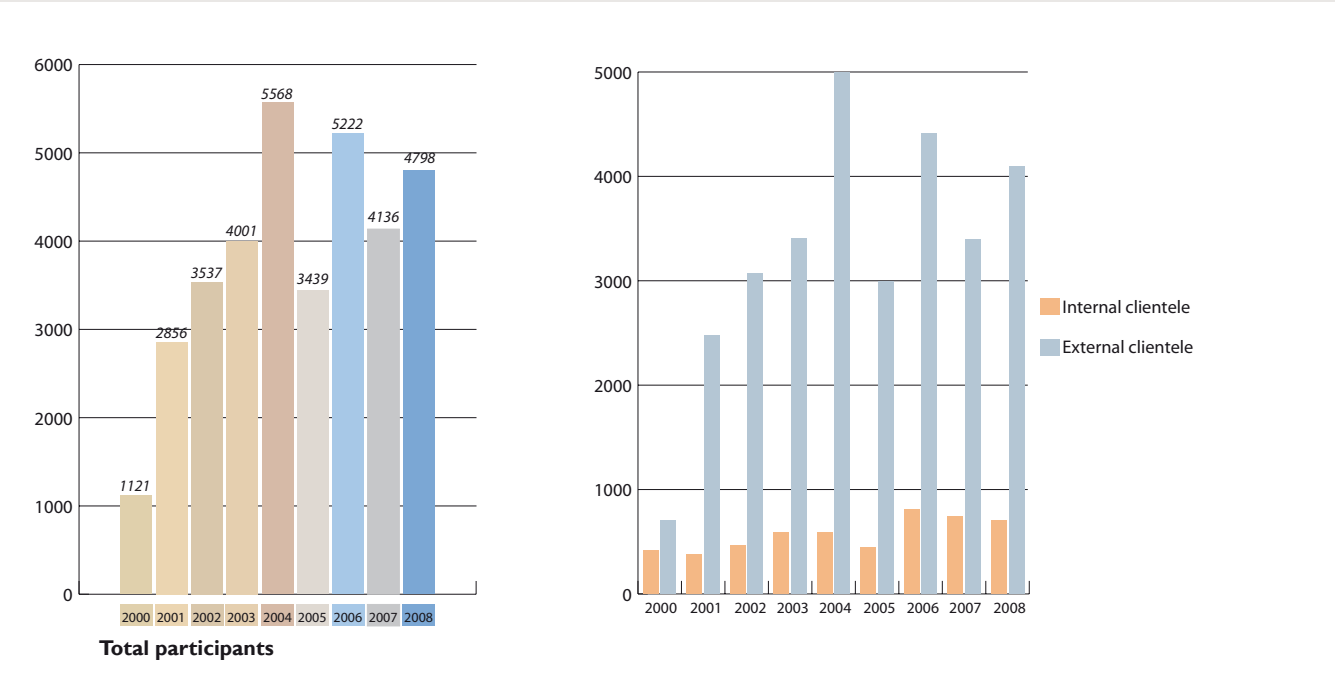
Profile

Primary target groups are EMS personnel and physicians and nurses working 24/7 in primary care.

Floor plan



Activity



## WHY SIMULATION WAS IMPLEMENTED

The main incentive for implementing medical simulation training has been to facilitate more effective and more efficient medical training, motivated by the understanding that simulation training will translate into improved quality of care and increased patient safety throughout the region of Galicia.

### Simulation as a mandatory part of EMS training:

Galician authorities have made simulations a mandatory part of the medical training for EMS personnel. Candidates for new positions must pass two scenarios on myocardial infarction to qualify as applicants. The motivation for making simulation compulsory has been to ensure higher competency levels among Galician EMS personnel.

## ORGANIZATIONAL MODEL

The simulation center is headed by a medical professor who also acts as an instructor. 20% of the director's time is allocated to the simulation center and the rest to other responsibilities in the educational department. The additional 26 associated instructors work primarily for the public emergency medical service, and part-time for the simulation center. The center answers to the Galician authorities.

### Staff competency levels

All instructors have a medical background and hold 40-hour university courses in pedagogy, with special emphasis on debriefing techniques. 75% hold formal 2.5-day ERC or AHA approved instructor courses. Novice instructors conduct simulation training under supervision, pending formal qualification.

### Staffing

Director  
1 technician  
1 secretary

**Instructors:** 14 MDs  
3 pediatricians  
9 nurses

### Facilities

The simulation center is equipped with 1 simulation room, 1 control room, and 1 separate room for briefs and debrief sessions. Plans are underway to build a simulation ambulance.

### Curriculum

The director controls the curriculum. Scenarios are developed to comply with the various learning objectives and educational needs of each participating group.

## FINANCIAL MODEL

The Galician EMS is owned and funded by the Galician Region. Funding covers daily management and investments. As private clientele pay a higher course fee than do public

clientele, simulation training for private groups generates some additional funding. The research activity receives funding from the Department of Health and other parts of the administration.

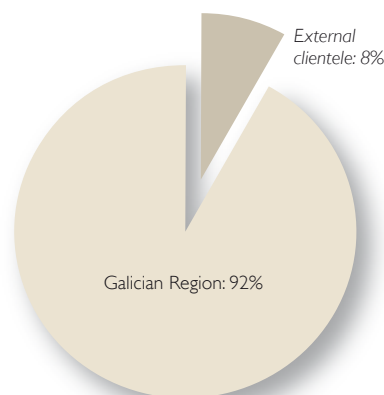


Figure 1. Funding.

## BENEFITS OF MODEL

- **Improved Survival:** The simulation training has contributed to a higher chance of survival following cardiac arrest in the region of Galicia.
- **Meeting Educational Needs:** By allocating time to clinical practice, the training staff manages to maintain a clear understanding of the core participants' educational needs.
- **External Clientele:** Simulation courses for external clientele generate some additional funding.

## CHALLENGES WITH MODEL

- **Facilities:** Having only one available simulation room limits the productive capacity.
- **Growth:** The center's ongoing attempt to establish a new simulation center in collaboration with the general hospital and the university may come to a halt, unless both partners thoroughly support the project.

## DEMOGRAPHICS OF CLIENTELE

### Professionals

#### Physicians

General practitioners  
Intensivists  
Pediatricians  
Senior residents  
Specialists in family medicine

#### Nurses

Emergency care  
Primary care  
Ward nurses

#### EMS

Ambulance personnel  
Emergency technicians

## Postgraduates

General practitioners

## Undergraduates

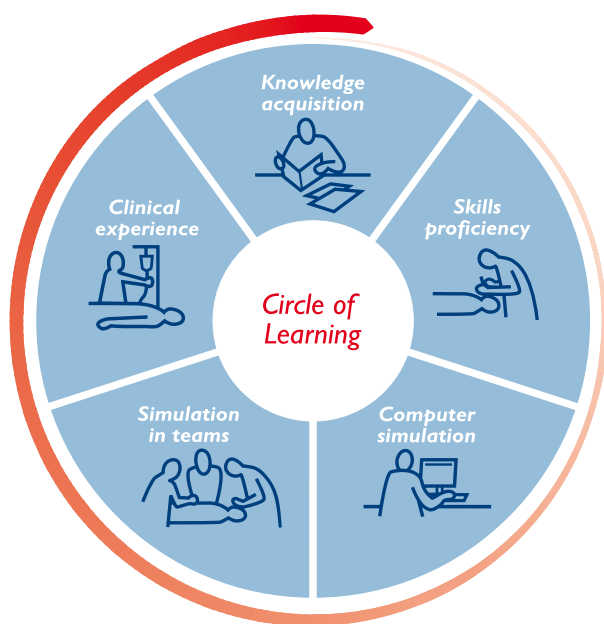
Medical students  
Nursing students

## External Clientele

|   |                  |
|---|------------------|
| Civil guard                                 | Police force     |
| External technicians<br>(ambulance drivers) | Private citizens |
|   | Radiologists     |

## EDUCATIONAL ACTIVITIES

The Circle of Learning (fig 2) reflects the continuing process of attaining, maintaining, and enhancing clinical competence. The Galician EMS facilitates knowledge acquisition, skills proficiency, and full-scale simulation in teams.



**Figure 2.** The Circle of Learning reflects the continuing process of attaining, enhancing, and maintaining clinical competencies.

## TRAINING SOLUTION

The training equipment currently includes:

- 1 SimMan 3G
- 2 SimMan
- 2 SimBaby
- 1 AVS
- 7 ALS simulators
- Skill trainers and manikins

## METHODOLOGY

### Simulation Training in Teams

**Preparation:** Lectures relevant to the selected scenarios are emailed to participants two weeks prior to the training, and ACLS manuals are shipped when the scenarios are ACLS related.

**Pre-qualification test:** Prior to the actual simulation training, participants are required to pass a written test on correct actions and sequence of actions according to selected patient cases.

**Brief:** A 30-minute brief is provided on medical simulation and debriefing methodology. Various features are demonstrated before the participants familiarize themselves with the equipment.

**Validity:** The Galician EMS emphasizes validity to a high degree. The manikins are dressed up in clothes that suit the topics of the selected scenarios. Professional clowns perform makeup on the manikins in order to enhance the sense of realism.

**Interactive approach:** Depending on how the participants perform, the instructor may choose to stop the scenario and continue in the manual mode. This way the instructor can adjust the level of difficulty according to perceived/actual competency levels.

**Scenarios:** The 27 SimMan and 6 SimBaby scenarios are all self-made. The scenarios run for approximately 45 minutes.

### Most frequently used scenarios

- Acute, critical illness
- Cardiac arrest
- Chest pain
- Hemorrhaging chock
- Myocardial infarction
- Trauma cases

### Debriefing

**Emphasis:** High.

The facilitator addresses the participants for about 45 minutes after the scenario has been completed. Video clips from the simulation training are run in parallel with an exchange of opinion, as "seeing is believing". The instructor stresses the significance of self-evaluation and re-evaluation and the value of identifying personal areas in need of improvement. When the participants are Galician EMS personnel, or applicants for open positions with the Galician EMS, the facilitator will apply a direct approach, whereas external clientele will not be criticized in this manner. Rather than confronting the latter group with mistakes and poor judgments, the Galician EMS approach for this group is to help them reach an understanding of what needs to be learned. This way the simulation training is perceived as a good experience.

### Applied Tools

- Video clips recorded during ongoing simulation
- Use of log provided by SimMan/SimBaby software
- Collaboration (technician/instructor)

The Galician EMS is motivated by the concept that more effective and more efficient medical training of healthcare personnel will translate into improved quality of care and increased patient safety. As the simulation center provides training to a wide range of healthcare personnel, the educational context will vary according to the needs and priorities of each group. Simulation training for nurses and physicians are basically nine -hour courses, during which the participants solve eight different critical care scenarios. The debrief sessions are lengthy, personalized, and instructor-led.

### Focus

- Team performance during full-scale simulation (CRM)
- Individual performance (Competency Management)
- Protocol training

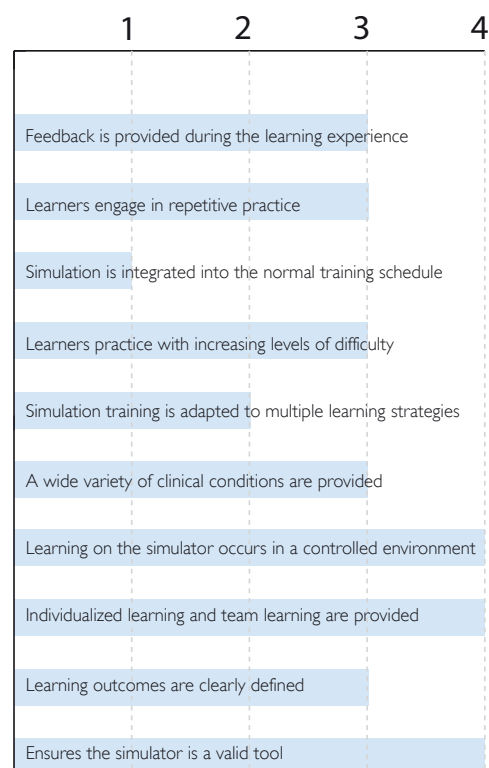
## WHAT MAKES GOOD SIMULATION PROGRAMS

Issenberg et al<sup>2</sup> reviewed and synthesized existing evidence in educational science that addressed the following question: What are the features and uses of high-fidelity medical simulations that lead to most effective learning?

Issenberg argued, that the weight of the best available evidence suggests that high-fidelity medical simulations facilitate learning, when training is conducted under the “right conditions.”

### The right conditions include

- Feedback is provided during the learning experience
- Learners engage in repetitive practice
- Simulation is integrated into the normal training schedule
- Learners practice with increasing levels of difficulty
- Simulation training is adapted to multiple learning strategies
- A wide variety of clinical conditions are provided
- Learning on the simulator occurs in a controlled environment
- Individualized learning and team learning are provided
- Learning outcomes are clearly defined
- Ensures the simulator is a valid tool



**Figure 3.** The rows indicate to what degree the Galician EMS delivers on each of the right conditions 'as assessed by the simulation center on a 4-point Likert scale (4 = highest)'.

## RESEARCH ACTIVITY

Topics for ongoing projects:

- Cost efficiency related to increased survival rates following implementation of a semi-automatic AED program
- Methods for validation of scenarios

### PUBLICATIONS:

José Antonio Iglesias-Vázquez, Antonio Rodríguez-Núñez, Mónica Penas-Penas, Luís Sánchez-Santos, Maria Cegarra-García<sup>1</sup> and Maria Victoria Barreiro-Díaz (2007).

Cost-efficiency assessment of Advanced Life Support (ALS) courses based on the comparison of advanced simulators with conventional manikins.

### REFERENCES:

1. S. Barry Issenberg, William C. McGaghie, Emil R. Petrusa, David Lee Gordon, Ross J. Scalese (2005) Features and uses of high-fidelity medical simulations that lead to effective learning: a BEME systematic review, *Medical Teacher*, Vol.27, No.1, pp. 10-28

## **LAERDAL MEDICAL**

Laerdal Medical is an international market leader in training and therapy equipment for lifesaving treatment. The company's solutions are used by voluntary organizations, educational institutions, hospitals, the military and many other organizations world wide.

For more information, visit **[www.laerdal.com](http://www.laerdal.com)**

*SimMan 3G, SimMan and SimBaby are trademarks of Laerdal Medical AS or its affiliates. Ownership and all rights reserved.*

# Case Study

For more information, please visit [www.laerdal.com](http://www.laerdal.com)



**Laerdal**  
helping save lives