TO SIMULATE ... SAFELY

PRACTICAL GUIDE TO IN SITU SIMULATION

Essential tips for creating and conducting simulation scenarios in the clinical environment **during the COVID-19 epidemic**

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An initiative promoted by:

The **Centro Interdipartimentale di Didattica Innovativa e di Simulazione in Medicina e Professioni Sanitarie (SIMNOVA)** was officially established in June 2014 at the University of Eastern Piedmont to perform advanced training and research activities for the healthcare sector. Since then, SIMNOVA has advocated the use of simulations as a tool to innovate training programs, with the **goal to improve patient care quality and safety** while reducing clinical risks. We at SIMNOVA, despite not performing any type of treatment, are strongly committed to improving the well-being of patients worldwide.

The **Centro di Simulazione (CeSi)**, affiliated with the **Centro Professionale Sociosanitario** in Lugano, boasts numerous collaborators with diversified roles and responsibilities. The center is especially dedicated to those operators working in sectors with a high risk of error and social impact such as the healthcare system. The Center specializes in training not just single individuals but also teams by means of structured courses, involving the use of high-fidelity simulations and different customized scenarios depending on the training objectives in question.

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INTRODUCTION

Purpose of guide

This short guide aims to help those wishing to develop and perform simulation activities in the real clinical environment (i.e., in situ simulation) during the epidemic emergency caused by coronavirus 2 (SARS-CoV-2). This guide can easily be adapted to all other biological emergencies.

Conducting a simulation session in a healthcare setting provides a unique opportunity to not only identify system errors and latent hazards but also improve the interdisciplinary performance of the care teams much more effectively than similar training carried out in simulation centers. Nonetheless, such approach requires the adoption of prevention and mitigation measures as it exposes both staff and patients to a certain risk that should be clearly understood to prevent unwanted harmful consequences. In addition, given the deleterious impact epidemic emergencies can have on health of care providers, the implementation of appropriate behaviors and specific measures is mandatory. This comprehensive guide provides key knowledge of in situ simulation procedures.

Definition

According to the Italian version of the *Society for Simulation in Healthcare* dictionary, in situ simulations are those "taking place in the actual patient care setting/environment in an effort to achieve a high level of fidelity and realism; this training is particularly suitable for difficult work environments, due to space or noise constraints ... This training is valuable to assess, troubleshoot, or develop new system processes".[1]

Recent experiences: Simulations during COVID-19 pandemic

According to a recent paper by Wong *et al.* (2020), in situ simulations were instrumental in identifying and resolving flaws in the response plan to COVID-19 at a large tertiary hospital in Singapore.[2] Specifically, the authors designed and implemented a simulation scenario that required participants to perform resuscitation while wearing personal protection equipment (PPE) and powered air-purifying respirators (PAPR). Under these conditions, the authors then looked for latent threats and potential problems of containment procedures and assessed the workflow and staff management in the operating room. Thanks to the data gathered during these simulation sessions, the anesthesiologists and surgeons were able to identify—and subsequently correct—

[1] Lopreiato JO (Ed.), Downing D, Gammon W, Lioce L, Sittner B, Slot V, Spain AE. (Associate Eds.), and the Terminology & Concepts Working Group. (2016). Healthcare Simulation Dictionary TM. Versione Italiana a cura della Società Italiana di Simulazione in Medicina (SIMMED). http://www.simmed.it/new/index.php/2016/06/19/dizionario-simulazione-ssh/

[2] Wong J, et al. Preparing for a COVID-19 Pandemic: A Review of Operating Room Outbreak Response Measures in a Large Tertiary Hospital in Singapore. Can J Anaesth, 2020; 1-14

several unexpected problems, including lack of supervision and coordination, environmental limitations, unsatisfactory equipment set-up, communication breakdowns, lack of familiarity with PPE usage and infection control breaches.

Fregene et al. (2020)[3] have recently described their experience gained by performing in situ simulations in a 34-bed Intensive Care Unit at the Royal Free Hospital in London. The sessions, conducted in a one day period in one of the four negative pressure isolation chambers of the ward, were developed and coordinated by 2 facilitators: one expert of infectious diseases and one consultant anesthetist with a long-standing experience in simulation training. The scenarios, which involved 4 participants at a time, were designed to verify the robustness of the procedures put in place to manage COVID-19 patients and train staff on how to don and doff PPE according to national guidelines and local protocols. These simulations unveiled a number of important latent risks, such as the lack of intubation equipment trolley for COVID-19 patients, the absence of a checklist or protocol for patient pronation and the inability to read the posters with instructions for donning and doffing due to the small character size. Overall, the identification of these latent risks allowed the authors to plan corrective measures aimed to improve COVID-19 patient management.

As reported by Lockhart, et al. (2020) [4] in situ simulation of a positive COVID-19 patient being intubated proved to be powerful tool for testing and adapting PPE, thereby improving staff safety with respect to standard guidelines. Furthermore, this training not only promoted careful and meticulous use of PPE even at the early stages of the emergency but also boosted staff morale, thereby strengthening the team effort.

Carenzo et al. (2020) have recently published their results on the training and in situ simulation sessions performed before the opening of a COVID-19 Intensive Care Unit. In two days, they were able to train 28 clinicians, 39 nurses and 10 health workers on how to adopt best practices for PPE usage as well as patient intubation, supination and pronation.[5]

[3] Fregene TE,et al. Use of in situ simulation to evaluate the operational readiness of a high-consequence infectious disease intensive care unit. Anaesthesia. 2020. [Epub ahead of print]

[4] Lockhart SL, et al. Simulation as a tool for assessing and evolving your current personal protective equipment: lessons learned during the coronavirus disease (COVID-19) pandemic. Can J Anaesth. 2020. [Epub ahead of print]

[5] Carenzo L et al. Hospital surge capacity in a tertiary emergency referral centre during the COVID-19 outbreak in Italy. Anaesthesia. 2020 Apr 4. doi: 10.1111/anae.15072. [Epub ahead of print]

ORGANIZATION

Organizing team

The Team in charge of developing, organizing and conducting in situ simulation sessions should consist of the following key members:

1. Leader/Coordinator;
   - An expert with a detailed understanding of all aspects of the project and the authority to act.
2. Simulation trainer;
   - A person that can design the scenario, conduct the simulation session and facilitate critical thinking among the participants during the debriefing.
3. Simulation specialist technician;
   An individual responsible for:
   - Installing and operating the simulation equipment during the scenarios.
   - Troubleshooting any local IT, audiovisual and simulation problems.
4. Administrative technician;
   Someone that:
   - Prepares training schedules for healthcare professionals and instructors;
   - Registers the participants and collect the attendees' signatures (if necessary);
   - Manages ECM certification requirements (if necessary);
   - Collects the forms for the metrics and assessments and sends them to the competent office (if necessary).

COVID-19

- Involve the infection control team in order to gain helpful information during the design phase and invite them to attend the in situ simulation sessions;
- It would be preferable all team members not be present so as to better control the number of observers and guarantee safety distances. Based on your objectives, be specific about why (or not) you are involving some participants rather than others. Importantly, try avoiding any friction between the different working groups that may arise when there is a generalized belief that some points of view or priorities are being ignored.

Identification of participants

Decide in advance who should participate in the simulation session.

It is important to involve the clinician and the nurse in charge of the department where the session is taking place so as to ensure that the selected staff will be available. These supervisors may also offer suggestions on who should be involved in the session either because more available or because in dare need of some training. But be aware that forcing colleagues to take part in the session can ultimately backfire, thereby compromising the training outcome.

Before the simulation, you should share all the key information, such as objectives, scenario and teaching materials/resources, with the stakeholders and participants.

In order to increase the effectiveness of the event, try keeping the number of participants in the simulation as close as possible to the daily routine.

Pay close attention to all bystanders and observers as they could misunderstand or incorrectly report what they have seen or heard. Consider talking directly to those that may just be watching but not participating in the event. Since there may be many observers, use them to your advantage by providing them with specific observation sheets where they can write down key observations.

COVID-19

- For training on PPE donning and doffing, consider recruiting a trained observer and/or having the participants work in pairs. First, one practices and the other one oversees the session, giving feedback. Then, they swap roles and do the same as above (i.e., buddy system);
- Make sure that the safety distances are respected at all times. This could mean that there might not be enough space for the observers in the simulation room. Thus, consider streaming to another room where observers can watch while keeping the appropriate distances.

When to organize the session

Although it is quite difficult to find periods of relative calm in a healthcare setting, there are usually time slots when each department has on average quieter or more manageable times. Before performing the sessions, it is therefore recommended to check the number of patients in the ward and the waiting room and relative waiting times, as well the number of doctors and nurses on duty at specific times of the day. This strategy will enable you have an exact idea of the patient flow in the ward and thus identify the most suitable time of the day to perform the simulation.

The early hours of the morning generally work better for ad hoc sessions as this is the time when the morning shift takes over and there is often a relatively moderate patient flow. However, be flexible and at the same time respectful of the workload of healthcare providers. For example, it may be necessary to cancel the session when the workload becomes excessive due to the admission of new patients. Establish *a priori* cancellation criteria.

It is extremely important to plan the time required for the entire simulation session. Generally, it should last no more than 30-40 minutes to stay within the time available to the participants, who have to promptly return to their healthcare activities once the session is over. Allow enough time for the debriefing as it represents the “true learning moment”.

It is important that everybody agrees on a sort of "STOP-Simulation" protocol. That is, to establish criteria, shared with all participants and stakeholders, according to which the simulation session will be canceled. The "STOP-Simulation" criteria should be specific for each department.

Scenario design

The clearer the definition of your problem, the easier it will be to create a scenario that allows improvement of clinical team performance and healthcare system preparedness. To this end, it is recommended to perform a gap analysis. In particular, you should answer the following questions:

- What are the main features of the current approach?
  - *i) Who is doing what, when and how?*
  - *ii) Are there any resource limitations?*
  - *iii) Are the treatment pathways correct?*
  - *iv) Is a division between contaminated and clean areas guaranteed at all times?*
- What would be the ideal approach?
- Who will be doing what?; how well will he/she do it; and when will he/she do it?

In order to plan any simulation scenario, you should first define goals that are (a) specific, (b) measurable, (c) feasible, (d) relevant and (e) reasonable in terms of time.

COVID-19

It is recommended to distinguish three types of objectives:

- Technical, such as procedures, patient management, etc;
- Non-technical, aimed at developing relational skills, such as leadership, followership, communication, and
- Relative to process and system quality, which verify resources, equipment and local protocols.

The objectives should also be measurable. For this purpose, a checklist with key performance indicators and metrics will allow you to easily record and score specific skills, actions and/or behaviors displayed by the participants during the scenario execution.

Use mnemonic aids to lead you in the construction of the scenario. The following link will provide you with some useful tips on how to quickly outline a simulation scenario: Tips for writing effective simulation scenarios.

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If you have little or no experience with drafting scenario, you can use and adapt the following published cases/scenarios:

- Life in the Fast Lane: Management of the upper respiratory ways in a COVID-19 patient;
- Simulation Canada: COVID-19 scenario and guide for hospital preparedness;
- EM Sim Cases 2 COVID-19 scenarios—with manikins and in situ simulations;
- Laerdal: COVID-19 scenario—suitable for Laerdal manikins with LLEAP or SimPad system or simulated patients;
- CAE Healthcare: scenario of a suspected COVID-19 case—suitable for the following simulators: CAE Juno, CAE Ares, CAE Apollo, CAE Lucina, CAE Athena and CAE iStan;
- Centro di Simulazione SIMNOVA-UPO: CODIV-19 suspicion scenario in adult patients—in-situ simulation with simulated patients.

SESSION SET-UP

Room(s)

Identify in advance the spaces (e.g., beds, rooms, hallways, etc.) where the simulation session and the debriefing will be carried out.

Set up the transport of the simulation equipment and identify a safe space in the department where to safely store it.

Consider the possibility of using warning signs such as "Simulation in progress" that are visible, even during the transport of the manikin to the clinical area—an example of a warning sign is available in Appendix 1. This signage informs patients, their families and non-participating staff that a training event is ongoing. Hopefully, this will reduce anxiety and enhance preparedness.

Simulator

It is recommended to use a manikin equipped with a rechargeable battery and wireless connection to the laptop that controls it, together with an integrated microphone in order to avoid cables running across the room. There are several high- and medium-fidelity electronic patient simulators that can be connected to tablet PCs or SimPads.

Even though there are several commercially available high-tech simulators with multiple advanced functions, depending on the simulation objectives, they may not be necessary.

There are also a number of virtual monitoring systems—i.e., software solutions that allow the creation of highly realistic clinical scenarios even with the use of low-fidelity simulators (e.g., D.A.R.T.sim[6] or Trumonitor[7]), a few of which integrated with camera system (e.g., SimStart[8]) or with feedback and video-debriefing features (e.g., REALTi360[9]).

The installation of wireless equipment is much easier and, posing no physical barriers, it greatly facilitates the movement around the patient's bed.

All equipment and electronic devices should be set up at least one hour before the session begins to ensure that everything works as is should and that the patient admission process is not affected. Organize the tools and simulation material to allow rapid use and preparation and subsequent removal.

It is also recommended to:

- Bring with you all charging cables to ensure that you can recharge the battery of any device once it runs out of power;

[6] https://ecg-simulator.com/
[7] https://www.trucorp.com/P/125/MedicalSimulator
[8] https://www.laerdal.com/us/products/simulation-training/emergency-care--trauma/SimStart/
[9] https://www.isimulate.com/realiti360/

- Check where the nearest outlets are located;
- Bring spare batteries of any device that works with batteries only;
- Make sure you have the correct cables to connect certain types of manikins to defibrillators or real equipment.

COVID-19

- In order to clear the clinical areas as soon as possible, try to identify a separate space for debriefing;
- A large room is recommended where social distancing can be implemented;
- Carry out the debriefing wearing the appropriate PPE for the area where you are located;
- At the end of the session, clean and sanitize manikins, keyboards, touch screens and mouse devices using suitable detergents.

IMPORTANT

Cleaning and sanitizing

In accordance with the guidelines issued by the WHO, thorough cleaning and disinfection of all environmental surfaces, such as keyboards, touch screens and mouse devices, with water and detergent should be performed by applying disinfectants commonly used in the hospital. The SARS-CoV-2 virus is effectively inactivated by adequate sanitization procedures, including the use of common disinfectants for hospital use, such as sodium hypochlorite (0.1% - 0.5%), ethanol (62-71%) or hydrogen peroxide (0.5%), for an adequate contact time. For cleaning and disinfection of simulators see Appendix 2.

Materials

Label all simulation devices, equipment and consumables with stickers "**not for clinical use**" or "**simulation only**". In stressful situations, people tend not to read labels correctly. Thus, forgetting to label something can easily make one assume that it is suitable for clinical use. For such warning signs, there is no standard color, font or standard expression (Fig. 1). In Appendix 3, you will find ready-to-print labels on adhesive paper to obtain convenient stickers.

Figure 1. Example of label for simulation material.

The use of a “material checklist” is strongly recommended.

It is important to immediately establish a procedure for the immediate restocking of the real clinical material that is being used and consumed during the simulation.

COVID-19

- Ponder whether you should ask the person in charge of clinical supplies—usually the ward sister or charge nurse—to provide you with sufficient PPE so that all participants have the chance to practice donning and doffing protocols.
- Due to the possible lack of PPE, it may be necessary to think outside the box and be creative. See for example the video tutorial created by the Swedish Sim Center on how to build an N95 face mask to be used for simulation scenarios in an uncontaminated environment: "Simulated N95 Mask Video"

DEBRIEFING

Analyze what has been done throughout the simulation in an objective way by mainly focusing on the procedures. Your goal should be to review the entire session through checklist-based feedback that may suggest practical solutions to system errors and latent hazards and help improve the interdisciplinary performance of the care teams and, ultimately, the safety of both patients and operators.

Share the debriefing strategy from the beginning and agree on the points to be dealt with, paying particular attention to the system processes.

Conduct the debriefing in a structured way. Start by asking the participants to describe the emotional impact of the scenario they just took part in, with the aim of reducing stress and anxiety (i.e., **defusing**) caused by the scenario itself and the awareness of having been observed. Ask them to recount how the fulfilled their tasks and, by doing so, focus on the relevant problems and situations emerging during the simulation (i.e., **discovering**). Finally, have the participants summarize what they have learned about their simulated clinical case management and ask them to provide suggestions for improvement and/or corrective actions (i.e., **deepening**).

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In order to keep the debriefing as brief as possible and allow participants to promptly return to their healthcare activities, you can adopt the clinical debriefing tool TALK. It consists of 4 steps that ensure that the discussion is structured, concise, useful and constructive. It is an approximately 10-minute long conversation that allows identifying practical solutions, assigning tasks and monitoring their implementation. Appendix 4 contains a more detailed description of TALK. Additional info is available at www.talkdebrief.org

Create an observation sheet bearing in mind your ongoing objectives. For team performance you can use tools already validated in the literature, namely TeamSTEPPS 2.0[10] and the Italian version of the Ottawa Global Rating Scale[11]. Attach the observation sheet to the scenario.

At the end, complete a simulation summary form to be shared with all the stakeholders and the participants, in which the problems and corrective actions are clearly highlighted—an example is available in Appendix 5.

Consider the fact that those who participate in the simulation sessions can experience strong emotional reactions. Thus, pay attention to their reactions and consider the possibility of a follow-up session with the same people.

[10] https://www.ahrq.gov/teamstepps/instructor/index.html

[11] Franc JM, Verde M, Gallardo AR, Carenzo L, Ingrassia PL. An Italian version of the Ottawa Crisis Resource Management Global Rating Scale: a reliable and valid tool for assessment of simulation performance. Intern Emerg Med. 2017 Aug;12(5):651-656

COVID-19

- Choose a large room where social distancing can be maintained;
- Carry out the debriefing wearing the appropriate PPE for the area where you are located;
- At the end of the session, clean and sanitize the environment.

SAFETY CONSIDERATIONS

As there are potential risks of viral infection while performing in situ simulations, these should be clearly defined, and operators should implement appropriate containment measures. In particular, you should always be aware of the following potential risks:

- Involuntarily administration of the simulated drugs to the real patients. Indeed, the drugs used in the simulation may be expired, artificial (e.g., tap water), contaminated (e.g., with food color) or even incorrectly labeled (e.g., a real drug used with a modified label, which is strongly discouraged;
- Use of simulation equipment or materials in real clinical situations. These devices may in fact have been modified, become obsolete or even no longer functional; the staff may also not be familiar with such materials;
- The fact that some resources contemplated in the simulation may not be available at that time because needed for assisting real patients;
- The psychological impact on real patients and on their visitors in nearby clinical areas—someone, unaware of the simulation, might not understand where all the laughter is coming from;
- The potential contamination of real equipment and devices used in the simulation.

Organizing an in situ simulation session is a complex operation. It is recommended to create a simple checklist containing all the actions that are necessary for a successful outcome. An example of checklist is available in Appendix 6.

SUGGESTED READINGS

According to Petrosoniak *et al.* (2020), the implementation of in situ simulation, along with other simulation modalities, has improved the overall design and monitoring of new clinical infrastructures.[12] The authors conclude by stating that applying this approach in a timely and consistent manner—at all stages of building design—will help the creation of more efficient clinical spaces.

Kobayshi *et al.* (2013), by conducting a prospective study on the role of human factors in determining the correct diagnosis of arrhythmia in the emergency room, demonstrated that the implementation of in situ simulations among healthcare personnel improved the correct diagnosis of this condition from 5% to 55% of cases.[13]

Patterson, *et al.* (2013) analyzed 90 in situ simulations in an emergency room in an urban environment for a period of 12 months, showing that at least one latent hazard could be identified for every 1.2 simulations performed.[14] The authors then compared the results with those obtained by running the simulations in a laboratory or simulation center, showing that in this case one latent hazard was only identified every 7 simulations.

Rosen *et al.* (2012) conducted a systematic literature review of 29 studies showing that in situ simulation has a positive impact on learning and organizational performance.[15] However, in this study the methods used for design, management and evaluation were extremely uneven, with scarce levels of evidence.

An observational study by Andreatta *et al.* (2011) revealed a positive correlation between a ~50% (P = .000) increase in survival rate for cardiopulmonary arrest and the frequency of in situ simulation sessions (r = .87) in a North American pediatric hospital.[16] These values have remained stable for 3 consecutive years, even exceeding the national averages. However, due to the poor study design, the authors were unable to establish a causal link.

Finally, Kobayashi *et al.* (2006) demonstrated that a program of in situ simulations led to the identification of significant operational problems within a healthcare facility at a university hospital.

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[12] Petrosoniak A, Hicks C, Barratt L, et al. Design Thinking-Informed Simulation: An Innovative Framework to Test, Evaluate, and Modify New Clinical Infrastructure. Simul Healthc. 2020 Feb 28. [Epub ahead of print]

[13] Kobayashi L, Parchuri R, Gardiner FG. Use of in situ simulation and human factors engineering to assess and improve emergency department clinical systems for timely telemetry-based detection of life-threatening arrhythmias. BMJ quality & safety. 2013; 22(1):72-83.

[14] Patterson MD, Geis GL, Falcone RA, LeMaster T, Wears RL. In situ simulation: detection of safety threats and teamwork training in a high risk emergency department. BMJ Qual Saf. 2013 Jun;22(6):468-77

[15] Rosen MA, Hunt EA, Pronovost PJ, Federowicz MA, Weaver SJ. In situ simulation in continuing education for the health care professions: a systematic review. J Contin Educ Health Prof. 2012 Fall;32(4):243-54.

[16] Andreatta P, Saxton E, Thompson M, Annich G. Simulation-based mock codes significantly correlate with improved pediatric patient cardiopulmonary arrest survival rates. Pediatr Crit Care Med. 2011 Jan;12(1):33-8

These findings allowed the implementation of corrective measures before the opening of the new emergency room.[17]

[17] Kobayashi L, Shapiro MJ, Sucov A, et al. Portable advanced medical simulation for new emergency department testing and orientation. Academic emergency medicine. 13(6):691-5. 2006

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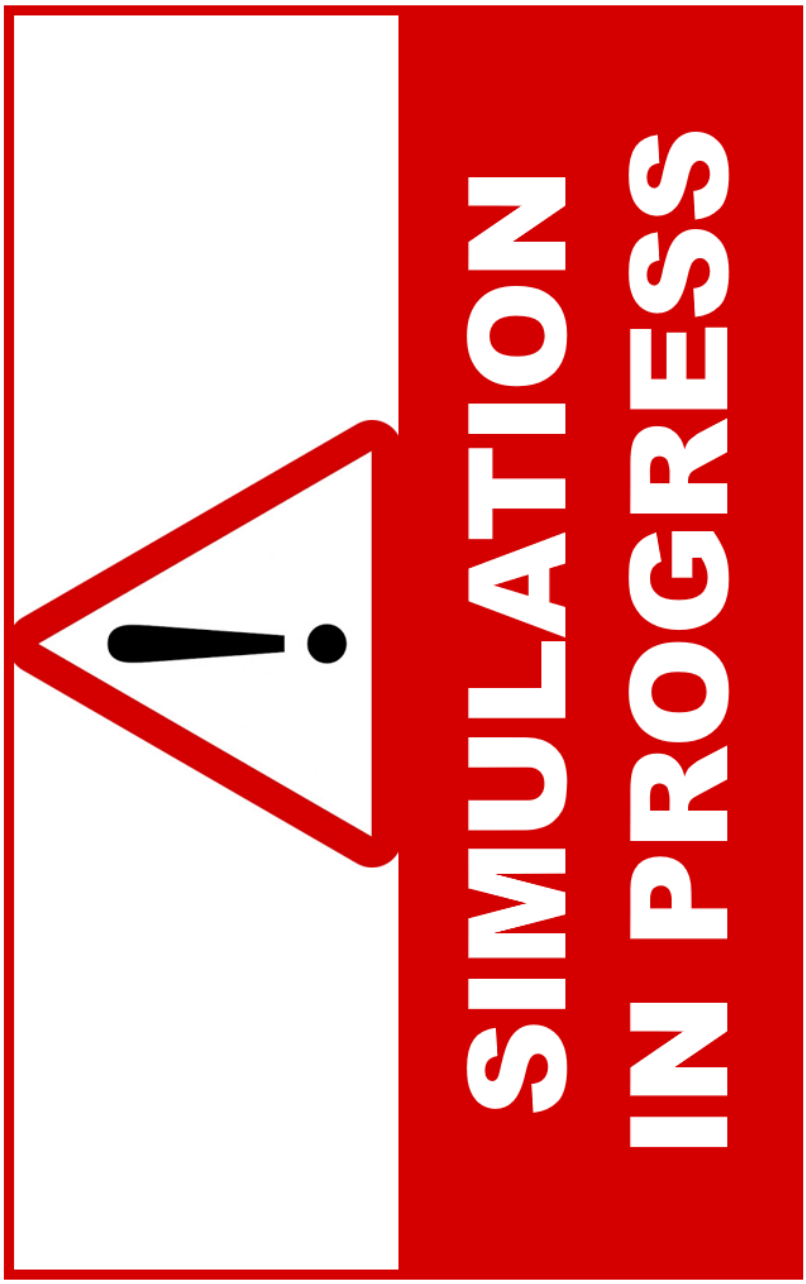
APPENDIXES

APPENDIX 1: WARNING SIGN OF SIMULATION IN PROGRESS



APPENDIX 2: INSTRUCTIONS FOR CLEANING AND DISINFECTING SIMULATORS AND TASK TRAINERS

	STANDARD CLEANING	DISINFCTION	ADDITIONAL INSTRUCTIONS
LIFECAST – BODY SIMULATION	Use a mild liquid soap solution.	Use chemical disinfectants—according to the manufacturer's instruction, these chemicals are indicated for silicone surfaces. Rinse thoroughly with clean water and leave to dry before storing it away. Alcohol wipes (based on solutions > 60% alcohol) may also be used by gently rubbing the surface.	It is highly recommend the use of gloves and other PPE during the simulation sessions. Mouth-to-mouth ventilation is not recommended.
SIMULAB CORPORATION	Use a solution of mild liquid soap and warm water. Dry with a soft cloth.	Spray isopropyl alcohol on the simulator and clean it with a soft cloth. Alcohol is also effective in removing any stains.	Do not clean with chemical solvents. Do not use abrasive sponges. If the simulator includes electronic components, make sure that these are not exposed to any moisture. Make sure the simulator is completely dry before storing it away.
GAUMARD	Use a cloth moistened with diluted liquid detergent (dish soap).		Clean any traces of adhesive with alcohol wipes. Do not use solutions containing citric acid (it can cause corrosion). Do not immerse the simulator in water.
3B SCIENTIFIC	Use a cloth moistened with a soap and water solution.	Use a cloth moistened with alcohol.	Do not use pure alcohol directly on the silicone. Do not use abrasive or corrosive detergents.

LAERDAL	Use a cloth moistened with a soap and water solution. Facial skin and other rigid plastic parts can be disassembled and immersed in water at 60 – 70 ºC containing dishwashing detergent for 20 minutes. Rinse and dry the components thoroughly	The facial mask and facial connector of the simulator can be cleaned with sodium hypochlorite solution (NaClO).	During a CPR session thoroughly disinfect the face of the manikin after each use (student) using disinfectant wipes. The airways are disposable and should be replaced after a CPR lesson if mouth-to-mouth ventilation has been performed. For more info visit: https://laerdal.force.com/HelpCenter/s/article/Hygiene-and-cleaning-procedures-for-CPR-manikins

DISCLAIMER

What is recommended in the above table derives from indications sent directly by Italian companies or distributors. The authors and the SIMNOVA Simulation Center decline any responsibility for the information provided on this page. For further information and clarifications refer to:

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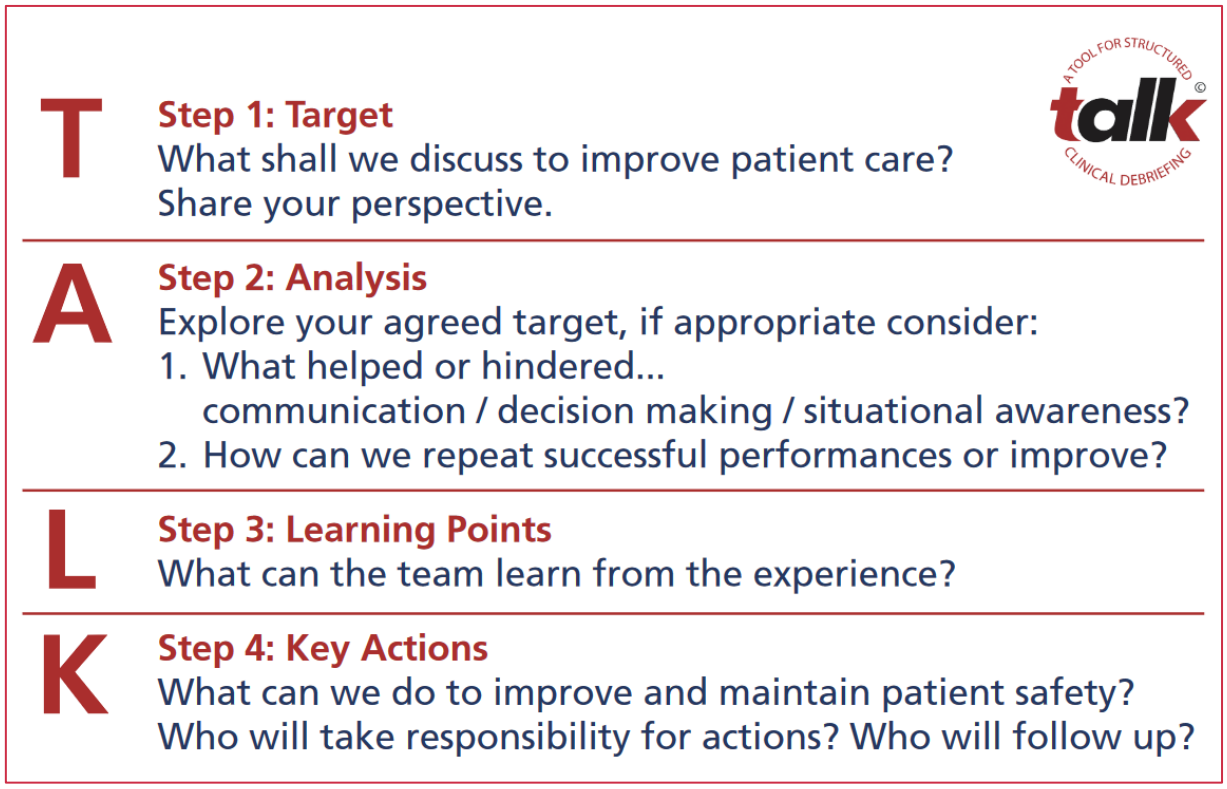
APPENDIX 3: LABELS “NOT FOR CLINICAL USE” PRINTABLE ON ADHESIVE PAPER

APPENDIX 4: TABLE DESCRIBING THE CLINICAL DEBRIEFING TOOL TALK



SOURCE: TALK Project [www.talkdebrief.org]

APPENDIX 5: SIMULATION SUMMARY

Healthcare Facility:		Date:		Session No.:	
Instructor/Facilitator					

Staff									
	Clinician		Resident		Nurse		Nursing student		Physiotherapist
	Radiology technician				Obstetrician		Nursing orderlies		Others _____

Brief case description

Learning objectives		
Technical skills *(e.g., procedures, clinical management)*	Non-technical skills *(e.g., leadership, communication)*	Processes and system *(e.g., resources, equipment, protocols)*

Learning cues and key actions		
Technical skills		
Learning cues	Key actions	Person in charge
Technical skills		
Learning cues	Key actions	Person in charge

Processes and system		
Learning cues	Key actions	Person in charge

Further recommendations and take-home messages

APPENDIX 6: SIMULATION CHECKLIST

Before the simulation

- ☐ Review the "STOP-Simulation" criteria with the department staff to confirm that it is safe to proceed with the simulation session.
- ☐ Prepare the rooms for the scenario and the debriefing.
- ☐ Prepare and set up the simulator.
- ☐ Make sure all simulated devices and drugs are labeled with "Not for clinical use" stickers.
- ☐ Warn other patients, family members and visitors that a simulation session is about to start.
- ☐ Display the "Simulation in progress" sign.
- ☐ Remember to register all the participants, especially if the in situ simulation qualifies them for ECM credits.
- ☐ All precautions for infection control have been properly taken.

Briefing before starting the simulation

- ☐ Remember to clearly state objectives, roles and expectations of participants and eventual by-standers.
- ☐ Call for mutual respect and confidentiality (psychological security).
- ☐ Define the fiction contract in order to ensure active participation in a unreal scenario that the participants believe to be realistic by putting aside their critical thinking and accepting that it instead is truly happening (suspension of disbelief).
- ☐ If you use video recording, remind participants that the goal is to increase the educational effectiveness of the debriefing.
- ☐ Provide the logistics and security details (e.g., the maximum duration of the scenario; the place where the participants will have to go to at the end of the scenario; how to safely use medical devices, etc.)
- ☐ Remind all participants and observers of infection control precautions.

During the Debriefing

- ☐ Conduct the analysis of what happened in an objective way, with no prejudice and without looking for a scapegoat. The goal is to review what happened during the simulation, listen to suggestions for improvement, and identify practical solutions to ameliorate patient and staff safety.
- ☐ Organize critical thinking in a structured way (e.g., defusing, discovering, deepening or apply TALK).
- ☐ Focus on technical, non-technical skills and all aspects of processes and system.
- ☐ Be ready to listen, respect the point of view of all participants and eventual observers.
- ☐ Use the observation sheets that you have developed or selected.

At the end of the simulation

- ☐ If you have used simulated devices or drugs, make sure you have collected all of them.
- ☐ Make sure all cleaning and disinfection procedures have been performed.
- ☐ Remember to have participants complete all documents related to any ECM credits.
- ☐ Complete the simulation summary form.

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