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WORKING GROUP

"Do not do" recommendations for clinical simulation in pediatric emergency care: a Delphi consensus

Xoan González Rioja[1*], Anna Pizà Oliveras[2], Anna Orejuela Ribera[3], Vanesa Arias Constanti[4], David Muñoz Santanach[4]

[1] *Hospital de la Santa Creu i Sant Pau, Department of Pediatrics, Pediatric Emergency Department, Barcelona, Spain* [2] *Hospital Universitari Mútua Terrassa, Department of Pediatrics, Pediatric Emergency Department, Terrassa, Barcelona, Spain* [3] *Hospital Universitari Joan XXIII, Department of Pediatrics, Pediatric Emergency Department, Tarragona, Spain* [4] *Hospital Sant Joan de Déu de Barcelona, Emergency Department, Esplugues de Llobregat, Spain*

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Abstract

Introduction: Clinical simulation is a useful tool for training in pediatric emergency medicine. However, inappropriate practices may reduce its educational effectiveness and compromise participants' psychological safety. This study aimed to identify and reach consensus on the main "do nots" in pediatric emergency simulation using a Delphi method involving national experts.

Material and methods: We conducted a modified Delphi study comprising three rounds of anonymous consultation with members of the Simulation Working Group of the Spanish Society of Pediatric Emergency Medicine (GTSim-SEUP). In the first round, participants proposed inappropriate practices; in subsequent rounds, they rated their relevance and level of agreement using a Likert scale (1–9). Proposals were accepted if they achieved a mean score of ≥8 and a rating of ≥7 from at least two thirds of participants. The coordinating group then reviewed the final wording of the selected recommendations.

Results: Forty-two pediatric simulation experts from hospitals across Spain participated. The Delphi process reached consensus on eight "do not" recommendations, grouped into four domains: simulation planning, scenario facilitation, debriefing, and organizational aspects. The areas with the highest levels of agreement were avoiding unrealistic scenarios, ensuring psychological safety, and adapting objectives to participants' level.

Conclusions: This GTSim-SEUP Delphi consensus defines eight recommendations on what not to do in pediatric emergency simulation. Implementing these recommendations is intended to improve educational quality, team safety, and the effectiveness of simulation in pediatric clinical settings.

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RECOMENDACIONES "NO HACER" EN SIMULACIÓN CLÍNICA EN URGENCIAS PEDIÁTRICAS: CONSENSO DELPHI

Resumen

Introducción: La simulación clínica es una herramienta útil para la formación en urgencias pediátricas. Sin embargo, existen prácticas inadecuadas que pueden disminuir su efectividad educativa y comprometer la seguridad psicológica de los participantes. El objetivo de este estudio fue identificar y consensuar los principales "no hacer" en simulación en urgencias pediátricas mediante un método Delphi con expertos nacionales.

Material y métodos: Se desarrolló un estudio Delphi modificado con tres rondas de consulta anónima a miembros del Grupo de Trabajo de Simulación de la Sociedad Española de Urgencias de Pediatría (GTSim-SEUP). En la primera ronda se recopilaron propuestas de prácticas inadecuadas; en las sucesivas, se valoró su relevancia y acuerdo mediante escala Likert (1-9). Se aceptaron las propuestas que alcanzaron una puntuación media ≥8 y una valoración ≥7 por, al menos, dos tercios de los participantes. Posteriormente, el grupo coordinador revisó la redacción final de las recomendaciones seleccionadas.

Resultados: Participaron 42 expertos en simulación pediátrica pertenecientes a diferentes hospitales españoles. Tras el proceso Delphi se alcanzó consenso en ocho recomendaciones de "no hacer", agrupadas en cuatro dominios: planificación de la simulación, conducción del escenario, debriefing y aspectos organizativos. Las áreas con mayor acuerdo fueron no evitar escenarios no realistas, no garantizar la seguridad psicológica y no ajustar los objetivos al nivel de los participantes.

Conclusiones: El presente consenso Delphi del GTSim-SEUP define ocho recomendaciones sobre qué no hacer en simulación en urgencias pediátricas. Su aplicación pretende mejorar la calidad educativa, la seguridad de los equipos y la eficacia de la simulación en entornos clínicos pediátricos.

*Corresponding author:
Xoan González Rioja
Email:
xgonzalezr@santpau.cat

INTRODUCTION

The care of critically ill pediatric patients is a highly complex clinical challenge in which rapid response, coordination, and evidence-based decision-making are determinants of prognosis. However, healthcare professionals' exposure to emergency situations has declined markedly in recent decades, partly thanks to advances in prevention and the control of previously common conditions[1].

In this context, simulation-based activities (SBAs) have become an essential tool for training healthcare professionals and care teams. These activities enable the practice of technical and non-technical skills (such as communication, leadership, and crisis decision-making) in a safe environment, fostering the development of clinical competencies, increasing professional confidence, and ensuring safe, high-quality care[2–4].

The specific characteristics of pediatric emergency medicine (the diversity of conditions and age groups treated, the frequently procedural nature of care, and the high sensitivity of the setting to patient safety risks) make simulation a particularly valuable proactive training strategy in this field[1,7]. In addition, a wealth of evidence shows that simulation-based activities (SBAs) significantly improve professionals' technical and non-technical competencies when designed according to sound pedagogical principles[5–7]. These principles include ensuring psychological safety, providing structured feedback, and defining learning objectives based on an appropriate needs assessment, ideally in the usual clinical setting[8,9].

In 2017, the Simulation Working Group of the Spanish Society of Pediatric Emergency Medicine (GTSim-SEUP) was established to foster and promote the standards needed to develop simulation-based activities (SBAs) that facilitate learning in pediatric emergency department (PED) settings. GTSim-SEUP comprises 42 pediatric emergency physicians from centers with varying levels of complexity and from different geographic regions of Spain, with diverse experience and training in clinical simulation.

In 2022, the group conducted a national survey that demonstrated the widespread adoption of simulation in pediatric emergency departments (PEDs) in Spain and identified areas for improvement in professional training and the structure of educational sessions. Based on these findings and in keeping with the principles of the *Choosing Wisely* movement[10–11], in 2023 the GTSim-SEUP initiated the development of a set of "do not do" recommendations (DNDRs) aimed at preventing recurring errors in the design and implementation of simulation-based activities in pediatric emergency care.

The aim of this study is to present the DNDRs in clinical simulation in pediatric emergency medicine, resulting from an expert consensus process using a modified Delphi methodology.

MATERIALS AND METHODS

An expert consensus study was conducted using a modified Delphi methodology, widely recognized for developing recommendations and clinical practice guidelines[12]. The methodological process was based on the procedures used to develop "do not do" lists within the Spanish Society of Pediatric Emergency Medicine (SEUP) and on similar projects in other pediatric fields[13–15].

The initiative originated during the 27th Annual Meeting of SEUP (2023), where GTSim-SEUP undertook to develop a set of DNDRs applicable to the design and implementation of SBA in our setting.

The development process was structured into three main phases:

Phase 1: Generation of proposals (November 2023 – January 2024): A coordinating group of four experts with extensive experience in training through pediatric clinical simulation was established. Using a *brainstorming* session, this panel developed a preliminary list of potential recommendations on practices to avoid when preparing or conducting SBA in pediatric emergency medicine. The proposals were based on the experts' professional experience, documents issued by scientific societies, and the evidence available in the literature.

Phase 2: Evaluation and consensus (January – November 2024): All GTSim-SEUP members were invited to evaluate each proposal using a 9-point Likert scale (1 = complete disagreement; 9 = complete agreement). Recommendations were considered accepted if they received a mean score ≥ 8 and at least two-thirds of participants rated them ≥ 7. Proposals with a mean score < 6 were discarded, while those with mean scores between 6 and 8 were submitted to a second voting round, applying the same consensus criteria for their acceptance or definitive exclusion.

Phase 3: Review and final drafting (December 2024): The coordinating group compiled the selected recommendations and reviewed their wording to ensure consistency, avoid redundancies, and maintain a uniform format. The final versions were subsequently validated by unanimous consensus of the group, forming the definitive document of DNDRs in SBA in pediatric emergency medicine.

RESULTS

During the proposal generation phase (Phase 1), 20 DNDRs suggested by the expert coordinating group were collected. After applying the consensus process using a modified Delphi methodology, eight DNDRs made up the final list of recommendations (Figure 1).

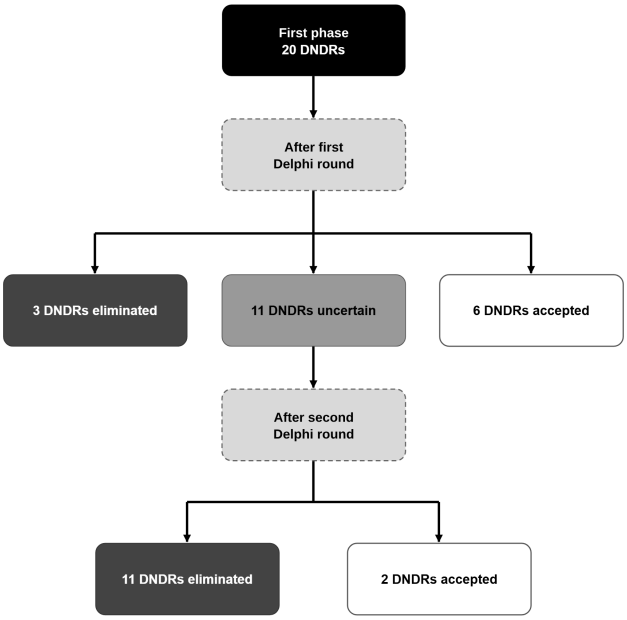


FIGURE 1. Flowchart of the modified Delphi process (DNDRs: recommendations of practices to avoid)

Subsequently, the coordinating group reviewed and harmonized the wording to ensure conceptual coherence and avoid potential overlap. No recommendations had to be discarded as redundant. The eight final DNDRs and their summarized rationale are presented in Table 1. The recommendations were distributed across the following thematic domains: *Learning environment and culture* (n = 2), *Design and planning* (n = 3), *Team and context* (n = 1), and *Debriefing* (n = 2).

TABLE 1. Eight "do not do" recommendations in pediatric emergency simulation, with their assigned domain and a summary rationale.

No.	Statement of the DNDR	Domain	Rationale
1	Make participants feel judged, ignoring their intention to learn.	Environment and culture	Perceiving judgment increases anxiety and reduces participation. In contrast, "good judgment" *debriefing* promotes psychological safety and participants' reflective learning
2	Conduct SBA without establishing a safe environment that fosters curiosity and respect.	Environment and culture	A clear *prebriefing* on objectives, roles, and rules reduces participant stress and encourages active participation by creating an atmosphere of trust and respect.

No.	Statement of the DNDR	Domain	Rationale
3	Design SBA without considering participants' needs and competencies.	Design and planning	Needs assessment aligns simulation objectives with actual training gaps. This increases the activity's clinical relevance and improves learning and retention.
4	Consider simulation only for clinical skills, omitting non-technical skills (e.g., communication, leadership).	Design and planning	Non-technical skills are proven determinants of patient safety. Integrating them into simulation objectives and assessment increases training effectiveness.
5	Design scenarios without adjusting their complexity to participants' level.	Design and planning	Gradually increasing difficulty allows for better learning progression and prevents cognitive overload, optimizing skill acquisition
6	Conduct SBA without including diverse professional profiles when feasible.	Team and context	Interdisciplinary participation replicates the real emergency department work environment, improving team coordination and competencies
7	Run scenarios without a structured subsequent *debriefing*.	*Debriefing*	*Debriefing* guides critical reflection on performance, identifies knowledge gaps, and consolidates learning for transfer to practice. Omitting it drastically limits the educational impact of simulation.
8	Conduct *debriefing* as one-way feedback (without facilitating a learning conversation).	*Debriefing*	*Debriefing* requires intentional facilitation (active listening, inquiry, and structure). If conducted as simple one-way criticism, its educational value and participants' reflection are diminished.

DNDRs: recommendations of practices to avoid; SBA: simulation-based activities

Finally, the eight DNDRs were grouped and presented in the document "Recommendations on what NOT TO DO in simulation activities in Pediatric Emergency Medicine," which was endorsed by SEUP and is available on the society's website[16].

DISCUSSION

The final document offers a comprehensive framework encompassing all phases of the simulation process, from creating a safe learning environment to rigorous scenario planning and conducting a structured *debriefing*, applicable to the development of both technical and non-technical skills.

These recommendations reflect the essential elements that determine the quality and safety of SBA in pediatric emergency departments, underscoring the need for a systematic and structured approach to simulation-based education.

Psychological safety is an essential prerequisite for effective learning in simulation[17,18]. Several studies have shown that merely perceiving judgment or criticism limits learners' active participation and reduces knowledge retention, whereas an environment of respect and openness fosters reflection and participants' self-confidence[17,19]. In this regard, adopting *debriefing* models based on good judgment or advocacy-inquiry techniques makes it possible to address errors made during simulation constructively, turning them into educational opportunities to improve performance[20,21].

Regarding scenario design and planning, the consensus reached reinforces the importance of tailoring activities to participants' learning needs and competency levels. Prior needs assessment and the progressive dosing of complexity are recognized strategies for improving learning transfer and learners' intrinsic motivation [6,8]. Furthermore, incorporating interprofessional teams into simulations is consistent with evidence supporting collaborative training as a means of strengthening communication and coordination in critical situations [22,23].

Furthermore, structured *debriefing* is established as the core of learning in simulation. Beyond its formal implementation, it should be understood as a facilitated conversation that stimulates critical reflection, performance analysis, and the consolidation of experience for application in clinical practice [24]. A certain structure is generally considered necessary for *debriefing*: it should include a reactions phase immediately after the scenario to facilitate emotional expression, followed by a phase focused on understanding the events that occurred during the scenario, and a third phase involving analysis and generalization. A summary and a proposal for improvement after the scenario facilitate the transfer of knowledge and skills to the real work environment [25]. The absence of an appropriate structure or the use of unsuitable techniques can significantly reduce the educational impact of simulation-based activities [26].

Likewise, simulation should be conceived as a comprehensive tool that encompasses both clinical and nontechnical skills, competencies widely recognized as determinants of patient safety [27]. Limiting simulation exclusively to technical training diminishes its potential as an educational strategy and reduces its contribution to the development of resilient and effective clinical teams.

This study provides a consensus framework that may serve as a reference for standardizing and continuously improving simulation activities in pediatric emergency medicine. One limitation is that the findings derive from an expert consensus process rather than a direct empirical evaluation of the impact of the proposed recommendations. Future studies should explore the implementation of these recommendations in practice, as well as their effects on educational and clinical outcomes, in order to

validate and strengthen their applicability in real-world clinical settings.

CONCLUSIONS

The application of the modified Delphi methodology made it possible to reach consensus on eight actions to avoid in pediatric emergency simulation. These recommendations highlight that the effectiveness of simulation depends on its alignment with training needs, participants' level of competence, integration of interprofessional learning, and balance between technical and non-technical skills. The absence of these elements may compromise both the educational experience and its impact on clinical practice.

Implementing the proposed recommendations may help standardize and improve the quality of simulation activities in pediatric emergency departments, strengthening the preparedness of multidisciplinary teams and promoting patient safety through ongoing training, periodic evaluation, and rigorous scenario design [28,29].

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Conflict of interest

I declare that there are no commercial or financial conflicts of interest related to this research.

Author Contributions

Xoan González Rioja: conceptualization, formal analysis, data collection, writing – original draft, writing – review and editing. Anna Pizà Oliveras, Anna Orejuela Ribera, Vanesa Arias Constanti, and David Muñoz Santanach: conceptualization, writing – original draft, writing – review and editing.

Use of AI

Gemini 2.5 and ChatGPT 5 to improve readability during the writing process.

Data availability

The data supporting the findings of this study are available upon request from the corresponding author.

REFERENCES

1. Muñoz-Santanach D. Simulación en los servicios de emergencias. Emerg Pediatr. 2022;1(3):171–177.
2. Ziv A, Small SD, Wolpe PR. Patient safety and simulation-based medical education. Medical Teacher. 2000;22(5):489–495.
3. Alrashidi N, Pasay an E, Alrashedi MS, Alqarni AS, Gonzales F, Bassuni EM, et al. Effects of simulation in improving the self-confidence of student nurses in clinical practice: a systematic review. BMC Medical Education. 2023;23(1). Available at: https://doi.org/10.1186/s12909-023-04793-1.
4. Escribano S, Sánchez-Marco M, Espinosa-Ramírez S, Rodríguez AM, Fernández-Lebrusán L, Caballero-Martínez MJ. Emergency crisis resource management: a simulation-based course developed by the Spanish Society of Emergency Medicine (SEMES) for health sciences students. Emergencias. 2024;36(1):41–47. Available at: https://doi.org/10.55633/s3me/010.2023.
5. Ojha R, Liu A, Rai D, Nanan R. Review of Simulation in Pediatrics: The Evolution of a Revolution. Frontiers in Pediatrics. 2015;3. Available at: https://doi.org/10.3389/fped.2015.00106.
6. Cook DA, Hamstra SJ, Brydges R, Zendejas B, Szostek JH, Wang AT, et al. Comparative effectiveness of instructional design features in simulation-based education: systematic review and meta-analysis. Med Teach. 2013;35(1):e867–e898.
7. Motola I, Devine LA, Chung HS, Sullivan JE, Issenberg SB. Simulation in healthcare education: A best evidence practical guide. AMEE Guide No. 82. Medical Teacher. 2013;35(10):e1511–e1530. Available at: https://doi.org/10.3109/0142159x.2013.818632.
8. INACSL Standards Committee. INACSL Standards of Best Practice: SimulationSM Debriefing. Clinical Simulation in Nursing. 2016;12 (S):S21–S25. Available at: https://doi.org/10.1016/j.ecns.2016.09.008.
9. Rudolph J, Raemer D, Simon R. Establishing a safe container for learning in simulation: the role of the presimulation briefing. Simul Healthc. 2014;9(6):339–349.
10. Morden NE, Colla CH, Sequist TD, Rosenthal MB. Choosing Wisely — The Politics and Economics of Labeling Low-Value Services. New England Journal of Medicine. 2014;370(7):589–592. Available at: https://doi.org/10.1056/nejmp1314965.
11. European Academy of Pediatrics. Choosing Wisely [Internet]. 2022 [cited 2025 Sep 4]. Available at: https://www.eapaediatrics.eu/advisory-groups/choose-wisely/.
12. Boulkedid R, Abdoul H, Loustau M, Sibony O, Alberti C. Using and Reporting the Delphi Method for Selecting Healthcare Quality Indicators: A Systematic Review. PLoS ONE. 2011;6(6):e20476. Available at: https://doi.org/10.1371/journal.pone.0020476.
13. Martínez-Sánchez L, López-Ávila J, Barasoain-Millán A, Angelats-Romero CM, Azkunaga-Santibañez B, Molina-Cabañero JC, et al. Actions that should not be taken with a paediatric patient who has been exposed to a potentially toxic substance. Anales de Pediatría (English Edition). 2021;94(5):285–292. Available at: https://doi.org/10.1016/j.anpede.2020.07.016.
14. Arias Constanti V, Domingo Garau A, Rodríguez Marrodán B, Villalobos Pinto E, Riaza Gómez M, García Soto L, et al. Do not do recommendations in different paediatric care set-

tings. Anales de Pediatría (English Edition). 2023;98(4):291–300. Available at: https://doi.org/10.1016/j.anpede.2023.02.019.

15. Löllgen RM, Heimberg E, Wagner M, Bibl K, Paulun A, Rupp J, et al. Recommendations of the Netzwerk Kindersimulation for the Implementation of Simulation-Based Pediatric Team Trainings: A Delphi Process. Children. 2023;10(6):1068. Available at: https://doi.org/10.3390/children10061068.
16. Grupo de trabajo de Simulación de la Sociedad Española de Urgencias de Pediatría. Recomendaciones de NO HACER en actividades de simulación en Urgencias Pediátricas [Internet]. Madrid: Sociedad Española de Urgencias de Pediatría (SEUP); 2025 [cited 2025 Oct 11]. Available at: https://seup.org/wp-content/uploads/2025/06/RECOMENDACIONES-NO-HACER-EN-SIMULACION_DOCUMENTO-2.pdf.
17. Kolbe M, Eppich W, Rudolph JW, Meguerdichian MJ, Catena H, Cripps A, et al. Managing psychological safety in debriefings: a dynamic balancing act. BMJ Simul Technol Enhanc Learn. 2020;6(3):164–171.
18. León-Castellano E, Maestre JM. Prebriefing en simulación clínica: análisis del concepto y terminología en castellano. Educ Med. 2018;19:385–391. Available at: https://doi.org/10.1016/j.edumed.2018.12.011.
19. Rudolph JW, Foldy EG, Robinson T, Kendall S, Taylor SS, Simon R. Helping Without Harming: The Instructor's Feedback Dilemma in Debriefing—A Case Study. Simulation in Healthcare: The Journal of the Society for Simulation in Healthcare. 2013;8(5):304–316. Available at: https://doi.org/10.1097/sih.0b013e318294854e.
20. Rudolph JW, Simon R, Dufresne RL, Raemer DB. There's No Such Thing as "Nonjudgmental" Debriefing: A Theory and Method for Debriefing with Good Judgment. Simulation in Healthcare: The Journal of the Society for Simulation in Healthcare. 2006;1(1):49–55. Available at: https://doi.org/10.1097/01266021-200600110-00006.
21. Fey MK, Roussin CJ, Rudolph JW, Morse KJ, Palaganas JC, Szyld D. Teaching, coaching, or debriefing With Good Judgment: a roadmap for implementing "With Good Judgment" across the SimZones. Advances in Simulation. 2022;7(1). Available at: https://doi.org/10.1186/s41077-022-00235-y.
22. Weaver SJ, Dy SM, Rosen MA. Team-training in healthcare: a narrative synthesis of the literature. BMJ Quality & Safety. 2014;23(5):359–372. Available at: https://doi.org/10.1136/bmjqs-2013-001848.
23. Salik I, Paige JT. Debriefing the Interprofessional Team in Medical Simulation [Internet]. Treasure Island, FL: StatPearls Publishing; 2023 [cited 2025 Oct 11]. Available at: https://www.ncbi.nlm.nih.gov/books/NBK554526/.
24. Fanning RM, Gaba DM. The Role of Debriefing in Simulation-Based Learning. Simulation in Healthcare: The Journal of the Society for Simulation in Healthcare. 2007;2(2):115–125. Available at: https://doi.org/10.1097/sih.0b013e3180315539.
25. Eppich W, Cheng A. Promoting Excellence and Reflective Learning in Simulation (PEARLS): Development and Rationale for a Blended Approach to Health Care Simulation Debriefing. Simulation in Healthcare: The Journal of the Society for Simulation in Healthcare. 2015;10(2):106–115. Available at: https://doi.org/10.1097/sih.0000000000000072.
26. Sawyer T, Eppich W, Brett-Fleegler M, Grant V, Cheng A. More Than One Way to Debrief: A Critical Review of Healthcare Simulation Debriefing Methods. Simulation in Healthcare: The Journal of the Society for Simulation in Healthcare. 2016;11(3):209–217. Available at: https://doi.org/10.1097/sih.0000000000000148.
27. Flin R, Patey R. Improving patient safety through training in non-technical skills. BMJ. 2009;339 (sep23 2):b3595–b3595. Available at: https://doi.org/10.1136/bmj.b3595.
28. Cheng A, Palaganas J, Eppich W, Rudolph J, Robinson T, Grant V. Co-debriefing for Simulation-based Education: A Primer for Facilitators. Simulation in Healthcare: The Journal of the Society for Simulation in Healthcare. 2015;10(2):69–75. Available at: https://doi.org/10.1097/sih.0000000000000077.
29. Roussin CJ, Weinstock P. SimZones: An Organizational Innovation for Simulation Programs and Centers. Academic Medicine. 2017;92(8):1114–1120. Available at: https://doi.org/10.1097/acm.0000000000001746.