

Virtual teaching

learn anytime anywhere

Priv.-Doz. Dr. Michael Wagner, PhD

Department of Pediatrics, Division of Neonatology

Comprehensive Center for Pediatrics

Simulation & Innovation Lab

Medical University of Vienna, Austria



Disclosure

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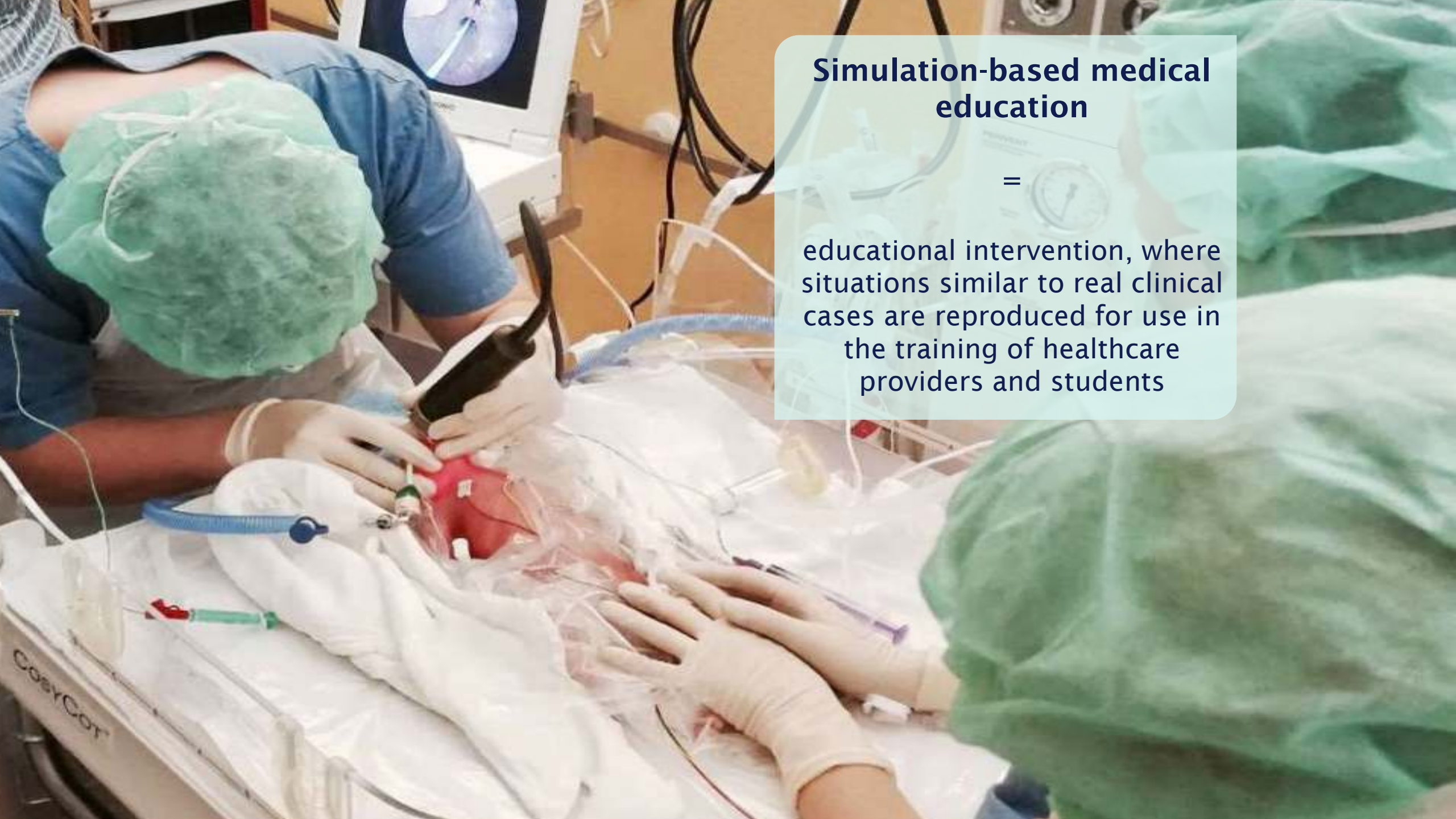
Comprehensive Center for Pediatrics (CCP) Starter Grant

GNPI Projektförderung

ESPNIC Medtronic Research Grant

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No conflict of interest



Simulation-based medical education

=

educational intervention, where situations similar to real clinical cases are reproduced for use in the training of healthcare providers and students



Vienna Pediatric Simulation and Innovation Center





In-situ Simulation





Interprofessional student training



Impact of a Multifactorial Educational Training on the Management of Preterm Infants in the Central-Eastern European Region

Philipp Steinbauer ¹, Katrin Klebermass-Schrehof ¹, Francesco Cardona ¹, Katharina Bibl ¹, Tobias Werther ¹, Monika Olischar ¹, Georg Schmörlzer ^{2 3}, Angelika Berger ¹, Michael Wagner ¹

162 participants
from 15 CEE countries



219

trainings / year

1700

participants / year

Neo-SIM

Ambulanz-SIM

CCP BLS KiChir + HNO + Radio + KiPsych

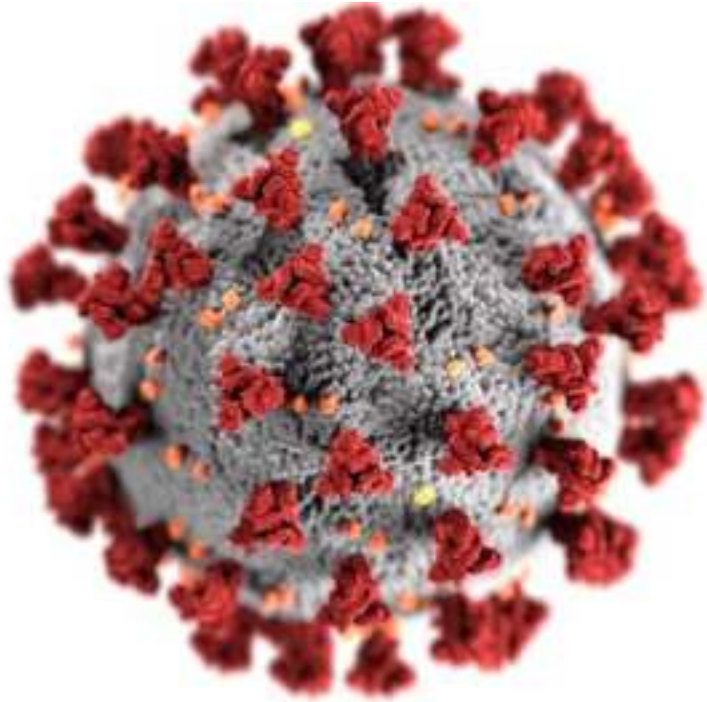
CCP NLS Geburtshilfe

LISA Training

Skills Training: IO, NVK, Drains, Airway, Defi,
BLS, NLS, ZVK, SK, PVK

Tertial Simulation

Wahlfach Interprofessionelle Simulation

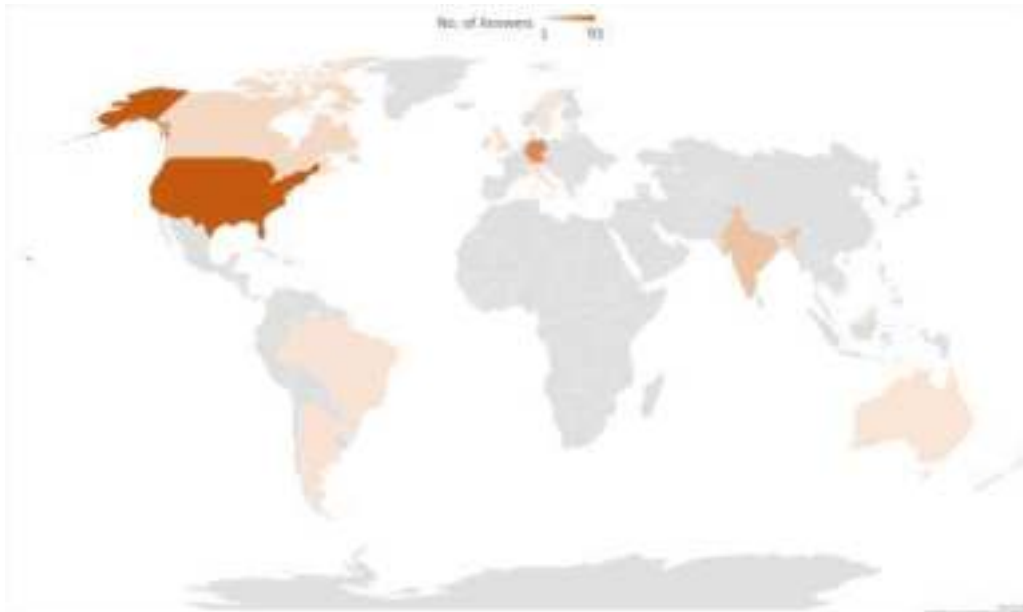


Reduced training opportunities

Reduced bedside teaching

Readiness for and Response to Coronavirus Disease 2019 Among Pediatric Healthcare Providers: The Role of Simulation for Pandemics and Other Disasters

Michael Wagner¹, Christina Jaki², Ruth M Löllgen³, Lukas Miledler⁴, Fabian Eibensteiner⁵, Valentin Ritschl⁶, Philipp Steinbauer⁷, Maximilian Gottstein⁷, Kamal Abulebda⁸, Aaron Calhoun⁹, Isabel T Gross^{10, 11}



Key Points



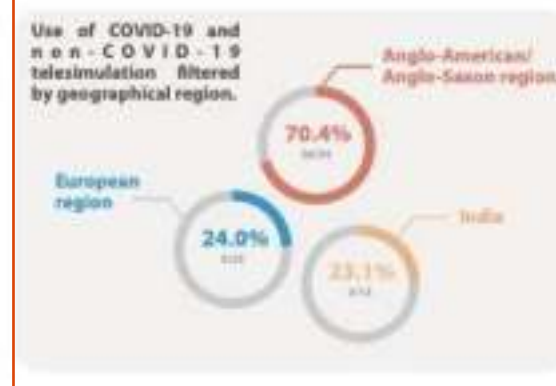
COVID-19 training



Non-COVID-19 training



Telesimulation



Telesimulation as a modality for neonatal resuscitation training

Lukas P. Mileder^{a,b}, Michael Bereiter^b and Thomas Wegscheider^{b,c}

MEDICAL EDUCATION ONLINE

2021, VOL. 26, 1892017

<https://doi.org/10.1080/10872981.2021.1892017>

- Telesimulation is feasible for neonatal resuscitation training
- Participants received simulation manikin and ventilation equipment + weblink for one-hour telesimulation session
- Positive learning effect
- Potential technical issues, training logistics were discussed as challenging



Epub 2020 Jan 6.

Comparison of Two Telemedicine Delivery Modes for Neonatal Resuscitation Support: A Simulation-Based Randomized Trial

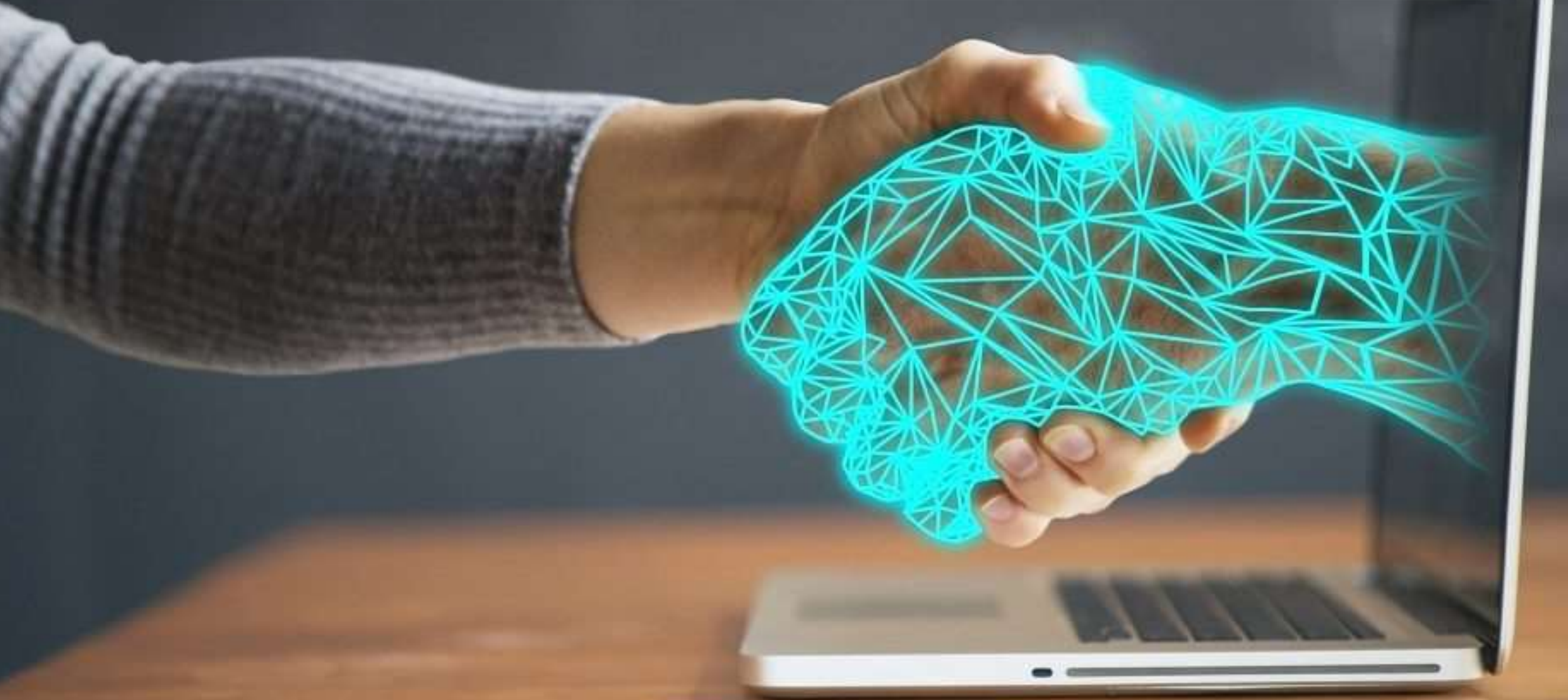
Isabel T Gross ¹, Travis Whitfill ^{2, 3}, Brooke Redmond ⁴, Katherine Couturier ³,
Ambika Bhatnagar ², Melissa Joseph ³, Daniel Joseph ³, Jessica Ray ³, Michael Wagner ⁵,
Marc Auerbach ^{2, 3}

	Group		p value
	teleleader (n = 10)	teleconsultant (n = 11)	
Median checklist % (IQR)	68 (66–69)	58 (42–63)	0.016
1. Warm	5 (50)	1 (9)	0.038
2. Dry/stimulate	9 (90)	6 (55)	0.072
3. Bulb suction to clear airway	9 (90)	4 (36)	0.011
4. Initial assessment – auscultate heart/lungs	3 (30)	5 (46)	0.466
5. Initial assessment – palpate pulses	1 (10)	3 (27)	0.314
6. Apply pulse oximetry to right hand	7 (70)	2 (18)	0.017
7. BVM with infant bag/mask	10 (100)	11 (100)	1.000
8. Oxygen at 21%	7 (70)	2 (18)	0.017
9. PPV for 30 s	10 (100)	11 (100)	1.000
10. Reassess after 30 s of PPV	11 (100)	6 (60)	0.020
11. Verbalize correct tube size (3 or 3.5)	10 (100)	8 (73)	0.074
12. Verbalize correct blade size (0 or 1)	10 (100)	10 (91)	0.329
13. Verbalize correct insertion depth (9–12)	7 (70)	4 (36)	0.123
14. Reassess after intubation – auscultate heart/lung	7 (70)	8 (73)	0.890
15. Reassess after intubation – palpate pulses	0 (0)	3 (27)	0.074
16. Increase oxygen	6 (60)	4 (40)	0.049
17. Initiate chest compressions (30 s after intubation)	8 (80)	5 (46)	0.104
18. Chest compressions in 3:1 ratio with ventilation	9 (90)	7 (64)	0.157
19. Administer Epi 0.1–0.3 mL/kg of 1:10,000 solution	3 (30)	7 (64)	0.123

Data are presented as n (%) unless otherwise indicated. The teleleader group was superior to the teleconsultant group in six subdomains, as indicated in bold.



New training modalities at Medical University of Vienna



LISA VR
WELCOME TO A NEW REALITY

How to plunge into virtual LISA? For smartphone users

Step 1 - Download the App
Download the LISA VR App for your smartphone from any of the following app stores. Scan the QR-Code, or manually go to the App-Store of your smartphone and search for "LISA VR".

Step 2 - Start the App
Scan the QR-Code below, or type www.lisa.vr.com in your browser. The LISA VR App will start. You will be asked for a password. You will get the password during the workshop.

Step 3 - Start the Video
To start a video, click on it in the LISA VR app. After the video has started, please the best quality and click on the 360° symbol in the video player.

Step 4 - Watch the Video
Put your phone inside the cardboard and close the flap. Experience the immersive feeling of being on site of our events. You are now in 360° degree.

See you virtually!

How to plunge into virtual LISA? For computer users

Step 1 - Start your web browser
Start your web browser on your computer.
For the best experience we recommend Google Chrome or Mozilla Firefox.

Step 2 - Visit our Video Platform
Type www.lisa.vr.com in your browser.
You are asked for a password. You will get the password during the workshop.

Step 3 - Start the Video
To start a video, click on a desired video on the website. After the video has started, click on the 360° symbol to choose the best quality.

Step 4 - Watch the Video
In order to be able to watch the video, you need a 360° camera.

How to best experience your workshop

- Make sure you don't have any other duties and that you can join the workshop in a quiet room.
- For an optimal workshop experience make sure to have time to attend the whole workshop.
- Test your video and microphone before the workshop.
- Participate from a computer with a stable internet connection.
- For better interaction we would ask you - especially within discussion - to switch on your webcam/video.
- This is going to be an interactive workshop, so please ask questions and let us also learn from you.

LISA Workshop Vienna - The virtual experience

Watch Video introduction

- Site Visit: SC NICU Part One
- Site Visit: SC NICU Part Two
- Site Visit: 15B NMC
- Primary Care of a Preterm-Bab



Immersive Experience



User receives VR glasses
2 weeks in advance



User opens the platform in
VR



User selects VR 360° Video



Enjoying the full immersive
experience



On-site NICU visit



Simulation Training



Real LISA experience
with audio / subtitles

360°





lenovo

Virtual Reality

Virtual Reality



Experiencing a complete virtual rebuilt environment while blinding out the real environment

Augmented Reality



Digital holograms additive to the real environment

- Stand-alone vs. high-end headset
- Functionality vs. quality
- Price
- 360° videos vs. interaction



Original



Digital twin





Virtual Reality Plattform IMED

Collaboration with SomaReality

Attach mobile VR glasses

Flexible, cost-efficient, location-independent

Multi-User

alone, with colleagues or an additional instructor

Modular training (in progress)

Create your own patient and scenario

Cognitive Load adaption (in progress)

Optimization of learning process through adaptive training



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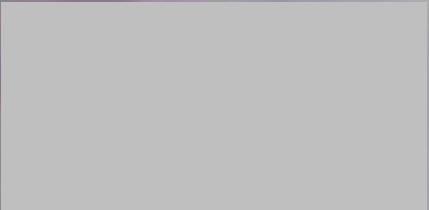




Virtual Bedside Teaching and Remote Training



recorded from a first-person perspective with real-time streaming



> Arch Dis Child Fetal Neonatal Ed. 2021 Aug 19;fetalneonatal-2021-321806.
doi: 10.1136/archdischild-2021-321806. Online ahead of print.

Video-based reflection on neonatal interventions during COVID-19 using eye-tracking glasses: an observational study

Michael Wagner¹, Maria C den Boer², Sophie Jansen², Peter Groepel³, Remco Visser²,
Ruben S G M Witlox², Vincent Bekker², Enrico Lopriore², Angelika Berger⁴, Arjan B Te Pas²

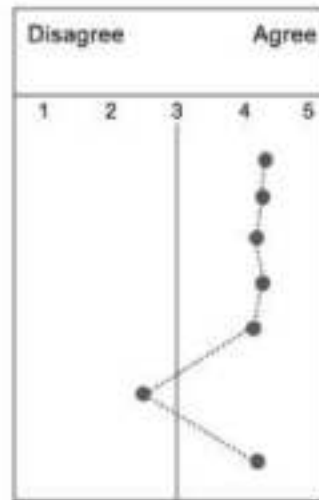


- 12 recordings, 9 reflections, 88 observers
- Intubation, MIST/LISA, lines
- Point-of-view videorecording is feasible and shows an educational benefit

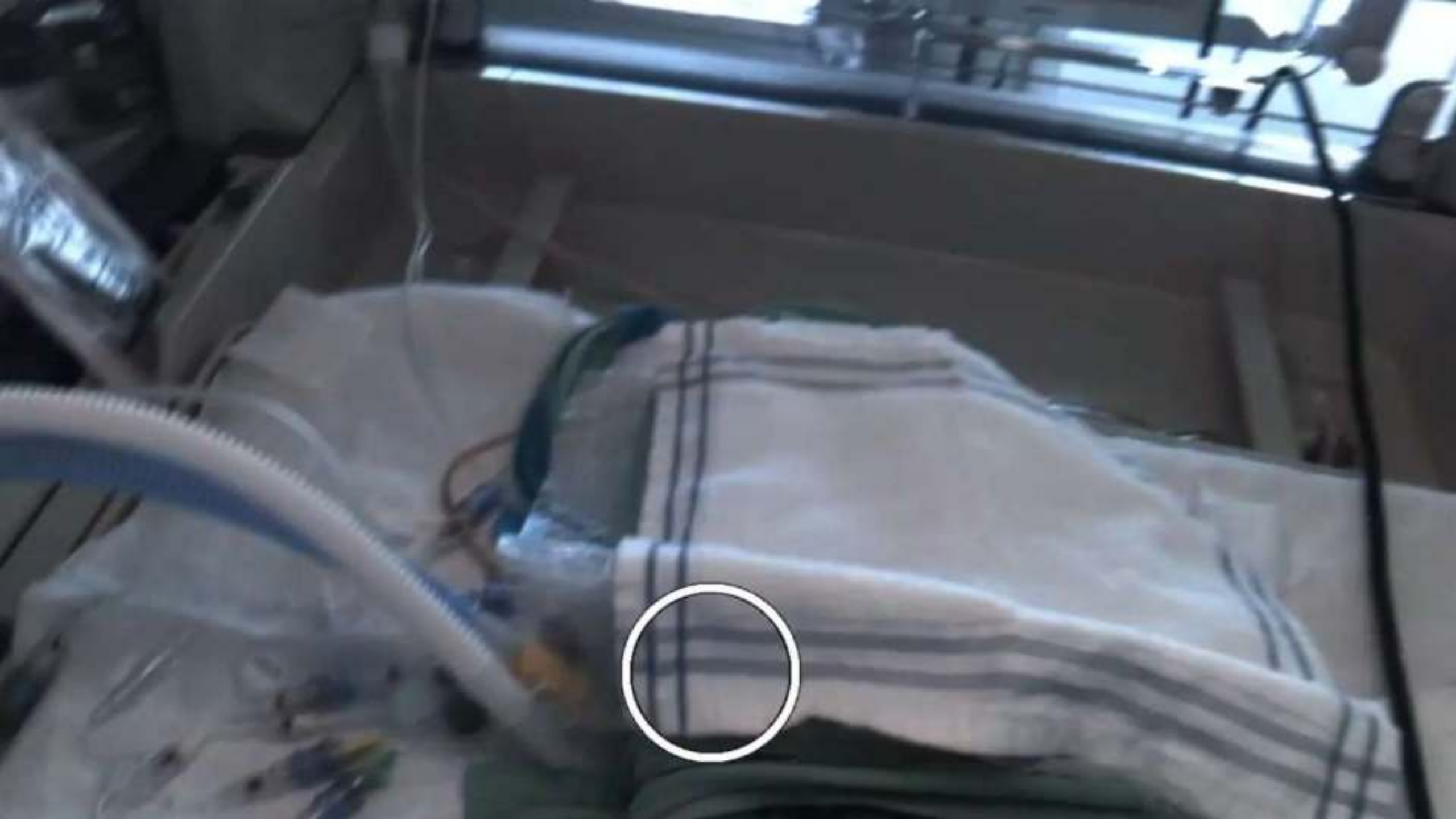


The use of point-of-view recordings...

- ...is feasible for our NICU*
- ...was an educational benefit for me*
- ...helps with (virtual bedside) education during COVID-19*
- ...was done within a safe learning environment*
- The first-person perspective was an addition to the educational experience*
- I was distracted by the first-person perspective during the audit*
- Using the first-person perspective would be beneficial for reviewing other procedures too*

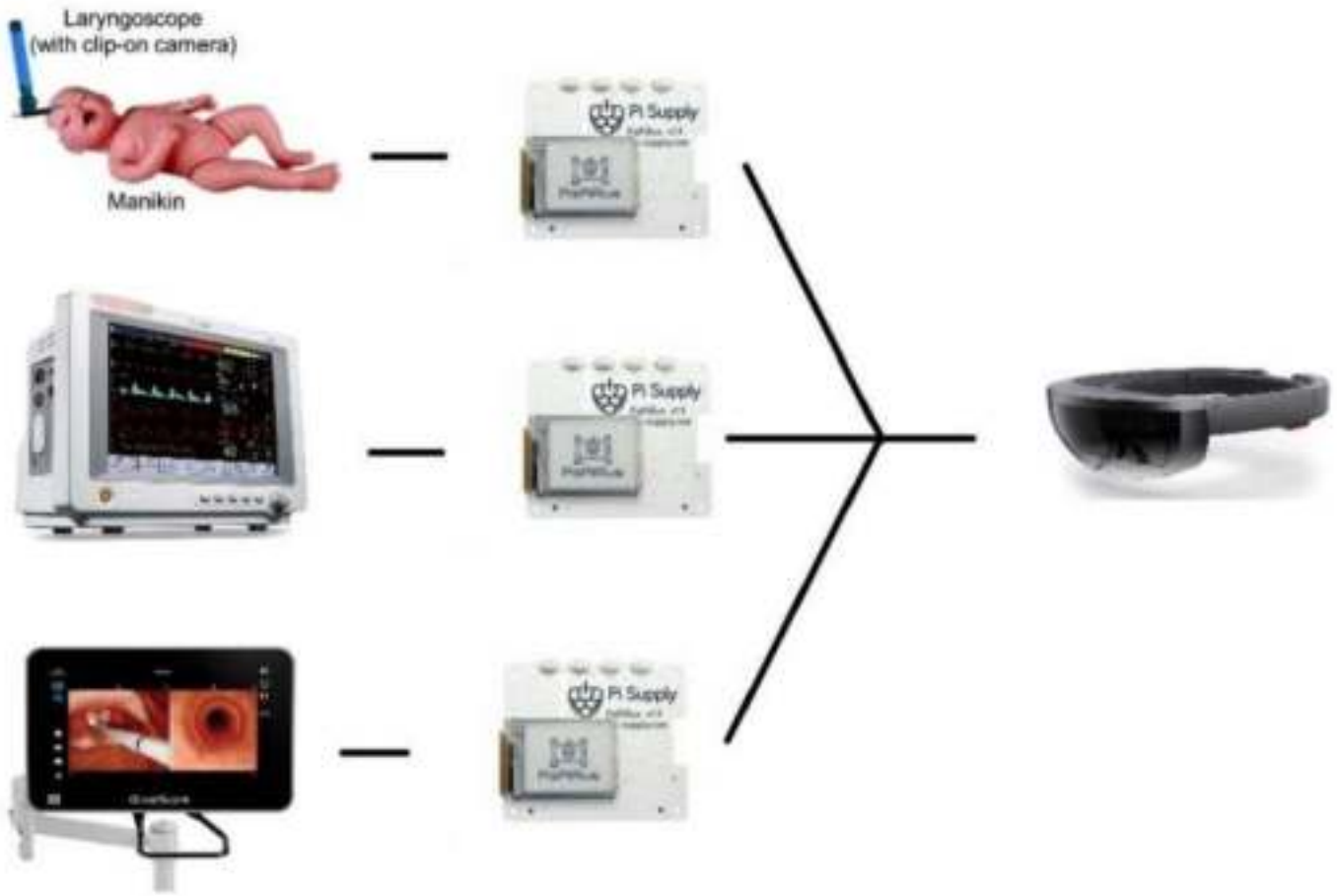


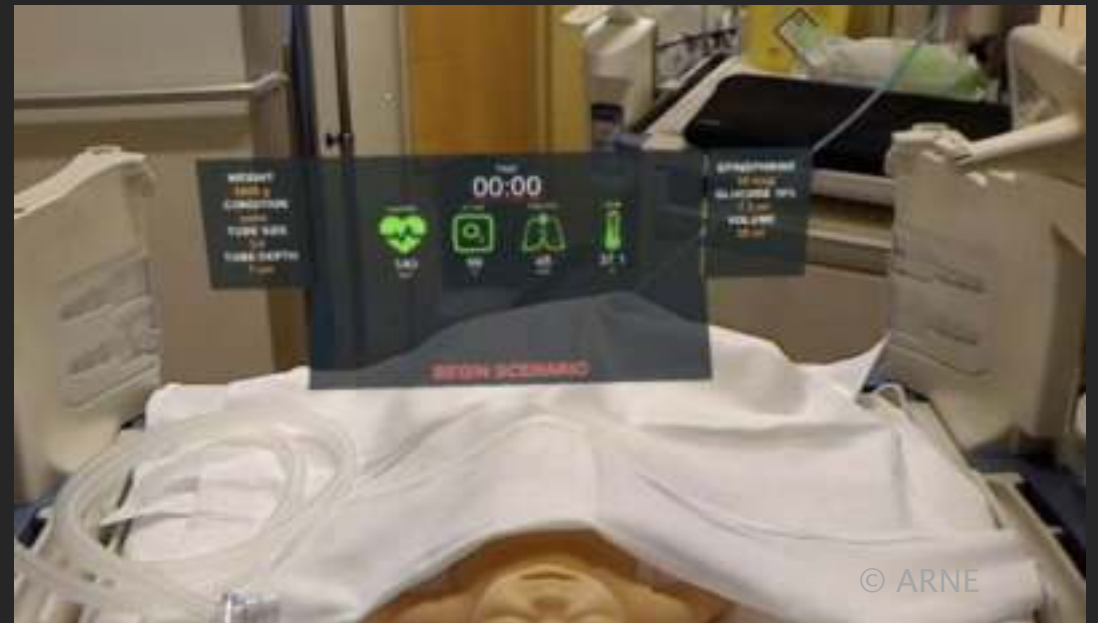
Category	Feedback
Experience	Observers mentioned "a lot of different variations in technique for placing lines."
Equipment, medication and timing	To think about "sedation balance" and "comfort of the baby", meaning the sequence of sedation, removal of CPAP, mask/t-piece application, ventilation, and the "use different catheters (for MIST)" as well as the necessity to "take more time to give MIST".
Environment and Awareness	To change "the position of the baby or the monitor for a better visual" and think about "the position of material in the room". To acknowledge to "think about the blade you use"
Sterility	Observers noticed "violations in the sterile technique". In terms of central-line insertion, one observer mentioned that it is important to "check sterility, also for those around" and to think about "how to improve sterility and increase awareness about sterility".
Point-of-view recording	Point-of-view recording was especially "worthwhile for learning umbilical catheterization and the crucial steps of the sterile technique". It helped to see the "procedure through the eyes of the neonatologist" and "how others operate".
Technique	Some observers claimed that the videolaryngoscope blade 1 "can be a problem because the light of the blade reflects on the tongue". It was further mentioned that the videolaryngoscope blade should be placed on the right side of the patient to avoid "left-handed insertion of the laryngoscope".
Education and Training	Eye-tracking technology is "good to learn" and "very nice to refresh" educational aspects. To acknowledge the "differences in performing the procedure" brings attention to changes such as "start the procedure with the left hand and not with the right hand, otherwise you have to change an extra time."
Technical Issues	In some recordings it was "difficult to see the head of the patient"

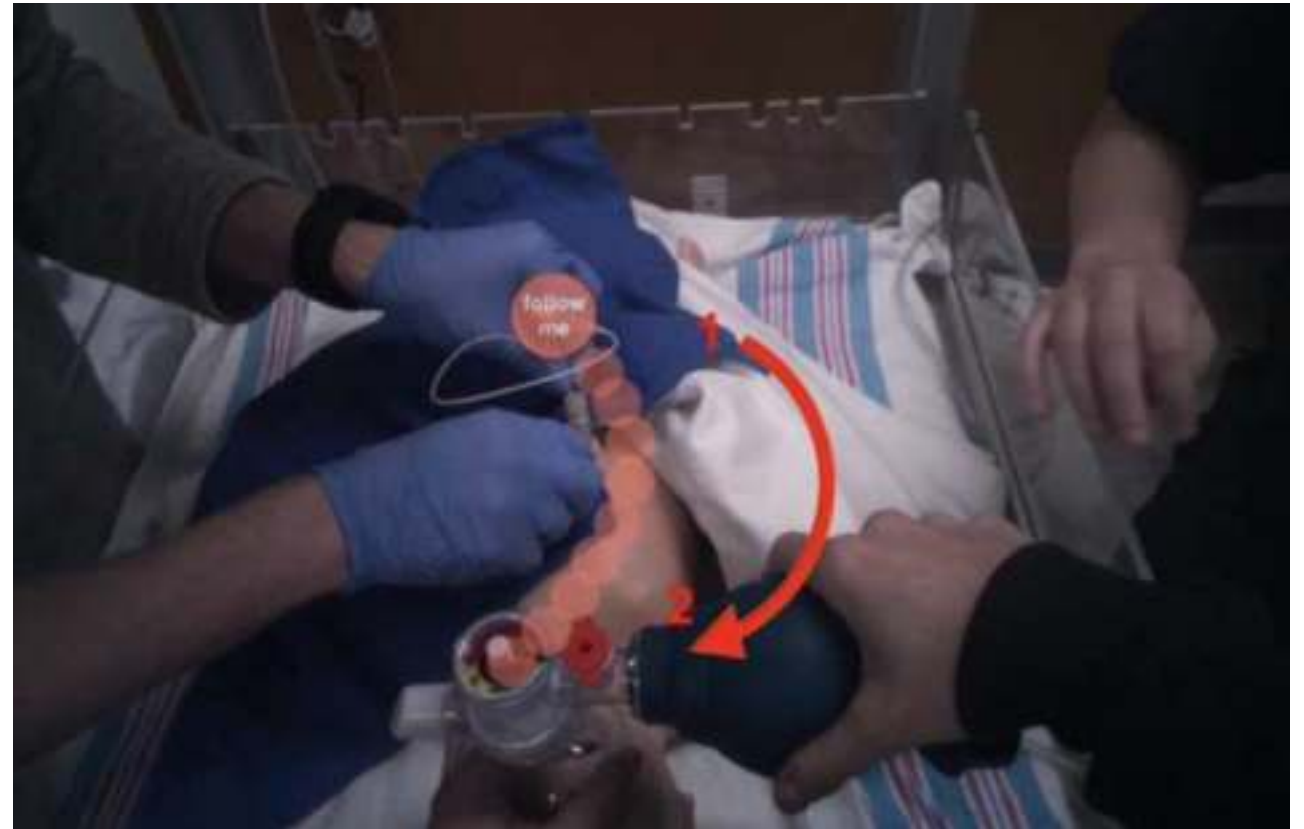




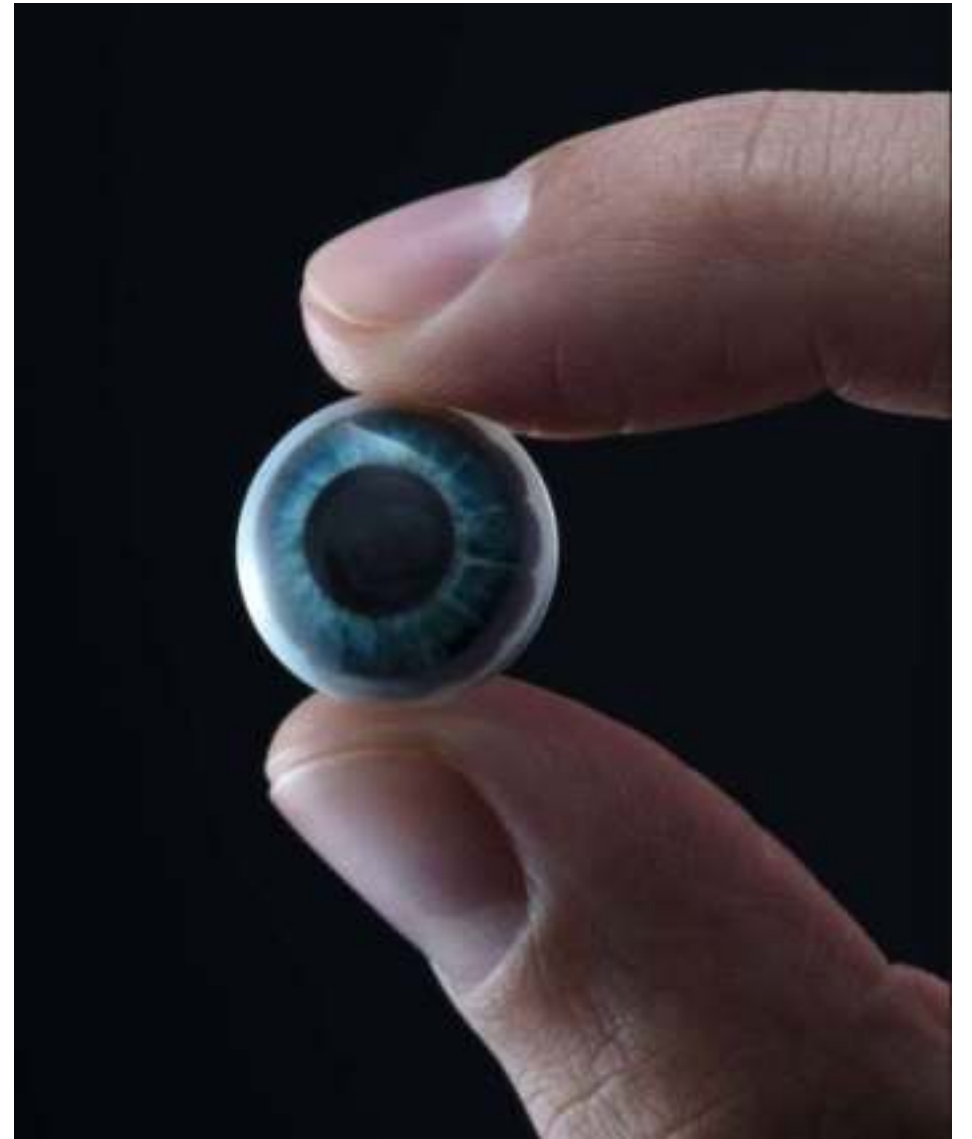
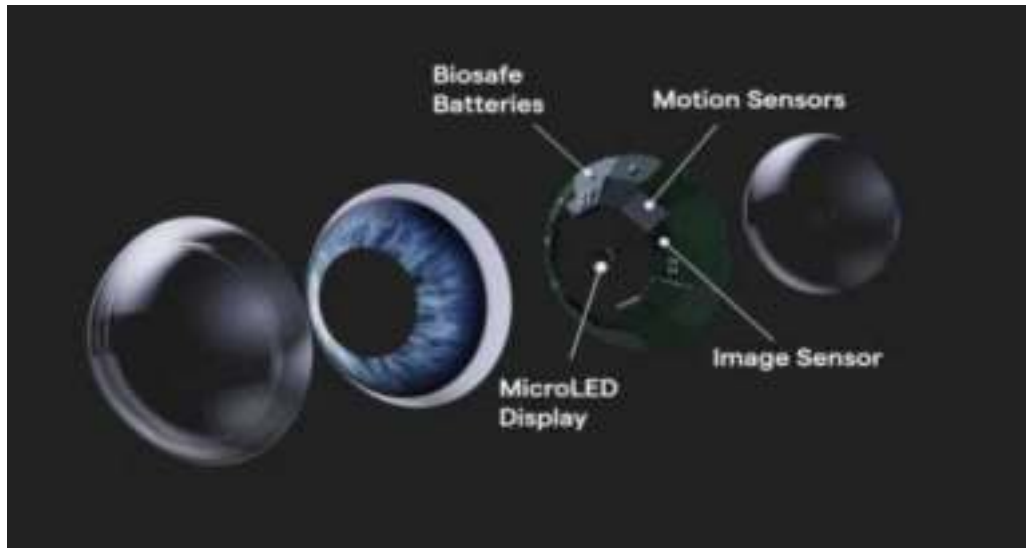
Augmented Neonatal Care







Eye-tracking knowledge combined with AR for guiding attention during training



Remote high-fidelity simulation training

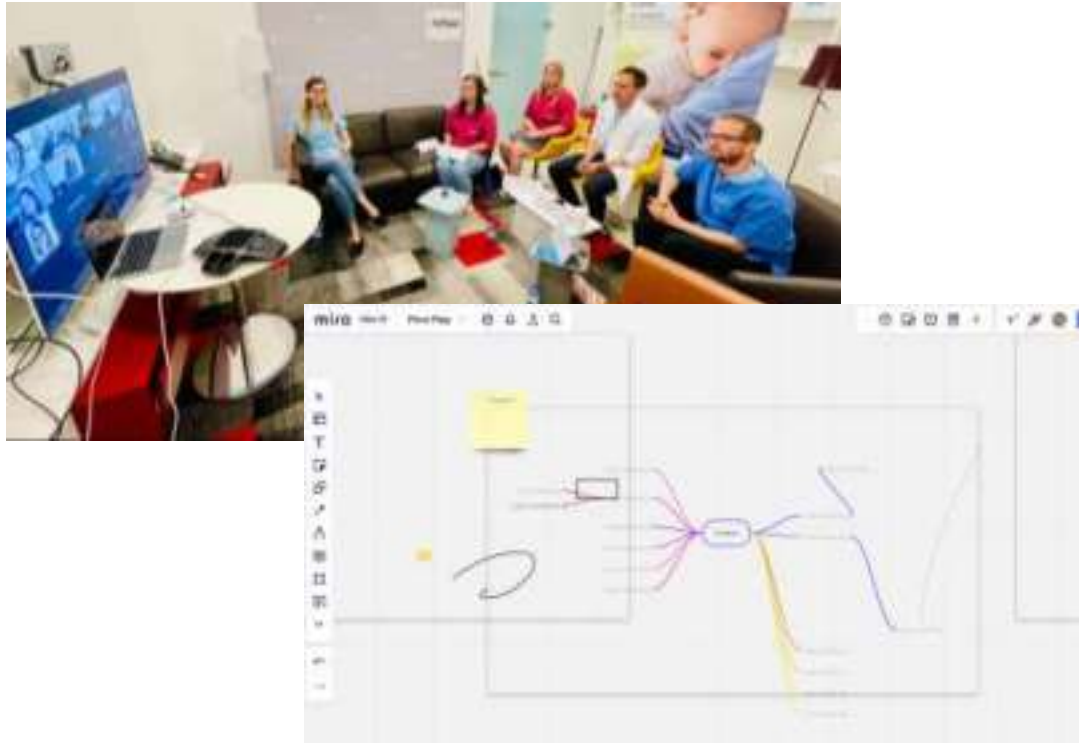
1



2



3



4



Pro/Cons

+ location-independent
+ once prepared, less resources necessary
+ more participants than usually possible

- Technical issues
- Non-verbal communication difficult
- Psychological safety



Tips for Conducting Telesimulation-Based Medical Education

Anita Thomas¹, Rebekah Burns², Elizabeth Sanseau³, Marc Auerbach⁴

DOI: 10.7759/cureus.12479

- Identify learning objectives
- Use supplemental audio and visual material to increase realism
- Pilot testing of telesimulation
- Prepare your learners (pre-brief)
- Consider limitations
- Allow for „time outs“
- Engage (quiet) participants
- Establish team roles and communication strategies
- Share additional learning resources afterwards
- Collect feedback



HEALTHCARE DISTANCE SIMULATION COLLABORATION



**immersive experiences
will transform the way
we work, learn & teach.**

