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Welcome Address

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IV Einstein International Symposium on Critical Care and the XXXI International Symposium on Mechanical Ventilation of *Hospital Israelita Albert Einstein*

August 14, 15 and 16, 2024

Organizing a scientific event requires the collaborative effort of many individuals, each playing a crucial role in developing a comprehensive, current, and robust scientific program. By hosting the "IV Einstein International Symposium on Critical Care" and the "XXXI International Symposium on Mechanical Ventilation of *Hospital Israelita Albert Einstein*," the Department of Critically Ill Patients, in collaboration with *Hospital Israelita Albert Einstein*, reaffirms its commitment to bringing together renowned experts in intensive care and critical patient care, both nationally and internationally.

The presentations and discussions during this event, along with the publication of abstracts from the selected papers will contribute to the advancement of knowledge, facilitating the dissemination of information in pursuit of optimal care practices.

With a long and proud history of publishing high-quality scientific content in several areas of medicine, we take great satisfaction in presenting the abstracts of scientific papers in this edition of the Journal **einstein** (São Paulo).

We extend our heartfelt gratitude to all participants for their invaluable contributions.

The Organizing Committee

Editorial

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Artificial intelligence in the intensive care unit

Thais Dias Midega[1], Renato Carneiro de Freitas Chaves[1,2], Ricardo Kenji Nawa[1,3], Bruno Franco Mazza[1], Leonardo José Rolim Ferraz[1], Thiago Domingos Corrêa[1]

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Artificial intelligence (AI) has great potential to improve the care of critically ill patients and enhance clinical outcomes.(1) The Intensive Care Unit (ICU) represents a complex environment in which patients frequently exhibit clinical instability and a high risk of death.(1) Timely and precise medical decisions are vital to delivering the best available treatment to patients.(1) AI has emerged as a transformative tool in several fields of medicine, and its application in critical care medicine is particularly promising.(2)

Theoretically, AI may be applied to all routines and process involved in the care of critically ill patients, including diagnosis, prediction, and support for clinical decisions.(1) Additionally, AI may optimize ICU management by improving resource utilization, supplies, and personnel, thereby enhancing ICU efficiency. (1) Therefore, AI has the potential to transform and improve patient care safety in the ICU.(1)

AI algorithms can process and analyze large volumes of patient data, identifying patterns that humans are likely to overlook by, and providing crucial insights for clinicians at the bedside. (1,2) These algorithms could support clinical decision-making by offering evidence-based recommendations.(1,2) For instance, AI has shown promising results predicting mortality in patients with traumatic brain injury,(3) clinical deterioration in step-down units,(4) myocardial infarctions,(5) sepsis,(6) and quantifying pulmonary edema.(7) However, robust prospective studies are necessary to determine the clinical applicability of these models.

One study developed a logistic regression model based on intracranial pressure, mean arterial blood pressure, cerebral perfusion pressure, and Glasgow Coma Scale to predict 30-day mortality in patients with traumatic brain injury.(3) The model discriminated between survivors and non-survivors with an accuracy up to 84%.(3) Moreover, a machine learning model (random

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forest classification) was development to analyzed admissions in a step-down unit and predict clinical deterioration, such as hypotension, tachycardia, or desaturation.[4] Remarkably, this model could detect clinical deterioration 90 minutes before its occurrence.[4]

Another significant innovation introduced is a deep learning model designed to predict myocardial infarctions from electrocardiograms.[5] By utilizing six-lead electrocardiography, this model can detect myocardial infarctions, potentially reducing the time to treatment initiation.[5] Furthermore, an algorithm has been created for early prediction of sepsis, enabling potential detection of sepsis in ICU patients up to 4 hours prior to clinical recognition.[6] Additionally, a machine learning model has been developed to quantify pulmonary edema and differentiate congestive heart failure from other lung diseases using chest radiographs.[7] These advancements in AI models showcase their potential to revolutionize medical diagnostics and improve patient outcomes.[3-7]

Beyond the promising applications already explored, AI holds immense potential for broader transformations across the healthcare perspective. Two key applications stand out: (i) personalized medicine and precision healthcare, and (ii) drug discovery and development.[8] In the first scenario, AI can revolutionize patient care by enabling a shift towards personalized medicine.[8] By analyzing a patient's unique medical history, genetic makeup, and real-time health data, AI algorithms can generate personalized treatment plans and predict individual responses to medications.[8] This approach can optimize treatment efficacy while minimizing side effects. Additionally, AI can assist in risk stratification, allowing for targeted preventive measures for individuals with a higher susceptibility to certain diseases.[8]

The traditional approach, to drug discovery is time-consuming and expensive.[8] AI can significantly accelerate this process by analyzing vast datasets of molecular structures, clinical trials, and patient data. AI algorithms can identify promising drug targets, predict potential drug interactions, and optimize drug development pipelines.[8] This has the potential to expedite the development of life-saving medications and therapies.[8]

However, incorporating AI in the ICU presents several challenges and considerations. Firstly, it raises important ethical and legal questions regarding patient privacy, data sharing, transparency of algorithms and responsibilities.[1] It is essential that patient data is handled ethically, with utmost respect for confidentiality. Healthcare professionals must consider these ethical implications while ensuring that AI-driven decisions align with patient values and preferences.[1] Additionally, strict measures must be implemented to protect patient data privacy and ensure compliance with data protection regulations.[9]

Secondly, to ensure the responsible and effective use of AI in critical care, it is crucial to verify that the data is accurate, reliable, and representative of the patient population.[2] Maintaining methodological rigor is indispensable in developing and deploying AI models to ensure their precision, reliability, and reproducibility in clinical practice.[2] The accuracy of AI systems is heavily reliant on the quality of the input data.[2] However, accuracy of medical AI should not be mistaken for efficiency.[2] While accuracy is necessary, it alone does not guarantee efficiency gains. Rigorous validation processes and continuous monitoring are essential to ensure that the data used is accurate, reliable, and representative of the patient population. These measures are crucial to maintaining the effectiveness and safety of AI algorithms in clinical practice.[2,10]

Thirdly, rigorous validation of AI systems is crucial to ensure their effectiveness and safety.[10] Similar to new drugs and medical devices, AI algorithms must undergo rigorous clinical evaluations to validate their performance and identify potential risks.[10] Regulatory bodies such as the FDA have developed specific guidelines for the validation of AI and machine learning software as medical devices.[10] Finally, integrating these systems into existing clinical practices requires careful consideration of human factors.[10] It is essential that AI systems are designed to be intuitive and user-friendly, thereby minimizing the cognitive load of healthcare professionals and fostering acceptance and confidence in these systems.[10]

In conclusion, with the ongoing advancement of AI technologies and the increasing availability of big data in healthcare, AI tools have the potential to revolutionize critical care medicine by improving diagnostic accuracy, customizing treatments and optimizing resource management. To achieve this, healthcare professionals, engineers, and data scientists must collaborate closely to ensure that AI solutions are developed and deployed ethically, safely, and effectively.

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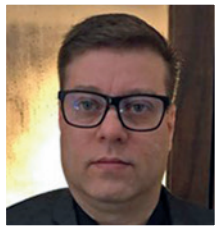

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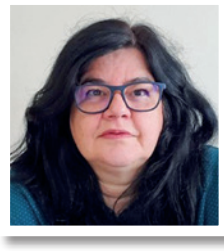

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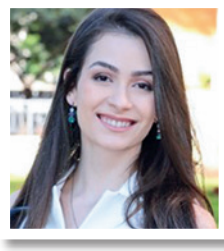

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Intensivist at the Department of Critically Ill Patients and Telemedicine at *Hospital Israelita Albert Einstein.* Specialist in Intensive Care Medicine certified by *Associação de Medicina Intensiva Brasileira* (AMIB). Also serves as a Preceptor in the Intensive Care Medical Residency Program at *Hospital Israelita Albert Einstein.*

Claudia Regina Laselva

Nurse with a Master's Degree in Nephrology - Basic Sciences from *Universidade Federal de São Paulo* (UNIFESP). Holds an MBA in Health Management from Insper with an international extension at TUFTS University in Boston. Currently serves as the Director of the Morumbi Hospital Unit and Care Practices at *Hospital Israelita Albert Einstein.*

Cristhiano Adkson Sales Lima

Holds a PhD in Pulmonology from the *Faculdade de Medicina, Universidade de São Paulo* (FMUSP). Completed residency and specialization in Adult Intensive Care Unit. Certified Intensivist Physiotherapist by *Associação Brasileira de Fisioterapia Cardiorrespiratória e Fisioterapia em Terapia Intensiva (*ASSOBRAFIR)/*Conselho Federal de Fisioterapia e Terapia Ocupacional (*COFFITO). Currently works as a Physiotherapist in the Critical Care Department at *Hospital Israelita Albert Einstein.*

Daniel Neves Forte

Intensivist and Palliative Care Physician, Doctor of Science, and Professor of Bioethics from the *Faculdade de Medicina, Universidade de São Paulo* (FMUSP). Former President of the National Academy of Palliative Care. Coordinator of the Specialization Course in Palliative Care at *SírioLibanês Ensino e Pesquisa*. Supervisor and attending physician at the Emergency Intensive Care Unit at *Instituto Central*, *Hospital das Clínicas, Faculdade de Medicina, Universidade de São Paulo* (IC-HC-FMUSP).

Daniel Joelsons

Faculdade de Ciências Médicas da Santa Casa de São Paulo. Completed Residency in Intensive Care Medicine at *Hospital das Clínicas, Faculdade de Medicina, Universidade de São Paulo* (HC-FMUSP). Holds a PhD in Medicine from the *Universidade de São Paulo* (USP). Currently serves as an Intensive Care Unit attending physician at *Hospital Israelita Albert Einstein*.

Dante Moreira Lima

Resident Physician in Intensive Care at *Hospital das Clínicas, Faculdade de Medicina, Universidade de São Paulo* (HCFMUSP). Specialist certified by the *Associação de Medicina Intensiva Brasileira (AMIB)*. Attending physician at the Intensive Care Unit of *Hospital Israelita Albert Einstein.*

Daniel Lima da Rocha

PhD student at *Universidade de São Paulo* (USP), studying Haemostasis alterations in ECMO. Intensivist in the Critical Care Department, at Hospital completed Medical Residency in Intensive Care Medicine at *Hospital Israelita Albert Einstein.* Holds a Specialist qualification in Intensive Care Medicine from the *Associação de Medicina Intensiva Brasileira (AMIB)*.

Décio Diament

Specialist in Infectology certified by the *Sociedade Brasileira de Imunologia* (SBI) and the Instituto de Infectologia Emílio Ribas. Holds a PhD in Infectology from the *Universidade Federal de São Paulo* (UNIFESP). Also certified in Intensive Care Medicine by the *Associação de Medicina Intensiva Brasileira (AMIB)* and in Hospital Nutrition by the *Sociedade Brasileira de Nutrição Parenteral e Enteral* (SBNPE). Currently practices as a physician at *Hospital Israelita Albert Einstein.*

Diogo Oliveira Toledo

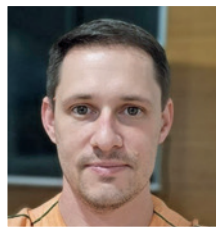
PhD in Health Sciences from the *Universidade de São Paulo* (USP). Manager of the Nutritional Therapy Department at *Hospital Israelita Albert Einstein.* Coordinator of the Postgraduate Course in Nutrology at *Hospital Israelita Albert Einstein.*

Djillali Annane

Professor in Medicine at University Paris Saclay-UVSQ. He is director of General Intensive Care Unit at Raymond Poincaré Hospital, director of FHU SEPSIS and PROMETHEUS Comprehensive Centre. He has contributed to international and multi-disciplinary guidelines, to about 660 peer–reviewed articles and about 170 book chapters. He held or currently holds high-level strategic position in the public sector, including Chief Counsellor of the French Minister of Health, Chair of the Health Ministry Task Force against Sepsis, member of the board of directors of the Curie Institute (current), member of the board of directors of APHP, member of several WHO Working Groups, President of the French Society of Intensive Care Medicine.

Eder Chaves Pacheco

PhD student in Pulmonology at the *Faculdade de Medicina, Universidade de São Paulo* (FMUSP). Researcher-Collaborator at the Experimental Pulmonology Laboratory (LIM09) at FMUSP. Physiotherapist in the Critical Care Department at Hospital Israelita Albert Einstein and Professor in the Postgraduate Physiotherapy programs at the same institution.



Eduardo Colucci

Master's Degree in Rehabilitation Sciences from *Universidade Nove de Julho* (UNINOVE). Specialist in Respiratory Physiotherapy and Exercise Physiology at the *Universidade Federal de São Paulo* (UNIFESP). Reference Physiotherapist in the Department for Critically Ill Patients at *Hospital Israelita Albert Einstein*. Also serves as a Professor in Postgraduate Courses at *Hospital Israelita Albert Einstein*.

Eduardo Correa Meyer

Pulmonologist graduated from the *Faculdade de Medicina, Universidade de São Paulo* (FMUSP), with a doctorate and post-doctorate in Pulmonology. Also specialized in Intensive Care Medicine. Currently engaged solely in clinical activities at *Hospital Israelita Albert Einstein.*

Eduardo Leite Vieira Costa

Graduated in Medicine from the Universidade Federal do Ceará. Completed Medical Residency in Internal Medicine and Pulmonology at *Hospital das Clínicas, Faculdade de Medicina, Universidade de São Paulo* (HC-FMUSP). Holds a Doctorate in Sciences in Pulmonology from *Instituto do Coração, Hospital das Clínicas, Faculdade de Medicina, Universidade de São Paulo* (InCor-HC-FMUSP) and completed a Post-doctorate at Harvard. Currently serves as a Professor of Pulmonology at *Faculdade de Medicina, Universidade de São Paulo* (FMUSP) and works as a Pulmonologist at INCOR-HC-FMUSP, overseeing the FMUSP Pulmonology Medical Research Laboratory. Additionally, serves as a Researcher at *SírioLibanês Ensino e Pesquis*a.

Eduardo Rosa Borges

PhD in Pulmonology from the *Faculdade de Medicina, Universidade de São Paulo* (FMUSP). Specialist in Intensive Care Medicine certified by the *Associação de Medicina Intensiva Brasileira (AMIB)*, and Pulmonology certified by the *Sociedade Brasileira de Pneumologia e Tisiologia* (SBPT). Currently serves as an Intensive Care Unit Attending Physician at *Hospital Sírio-Libanês*.

Elias Knobel

Associate Professor in the Department of Medicine at the *Universidade Federal de São Paulo* (UNIFESP) from 1971 to 1998. Director Emeritus and Founder of the Intensive Care Unit at *Hospital Israelita Albert Einstein.* Fellow of the American Heart Association, Fellow of the American College of Critical Care Medicine, and Master of the American College of Physicians. Honorary member of the European Society of Intensive Care Medicine.

Eliézer Silva

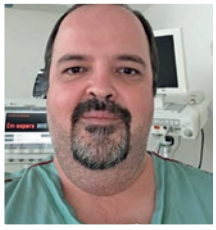
Master in Internal Medicine from the *Universidade Federal de Santa Catarina* (UFSC), PhD in Infectious Diseases from the *Universidade Federal de São Paulo* (UNIFESP). Completed post-doctoral studies at the University of Colorado. Professor at *Universidade de São Paulo* (USP). Holds an Executive MBA in Health Management from Insper, and completed Executive Development Programs at *Fundação Dom Cabral* (FDC) and Harvard Business School. Currently serves as the Superintendent Director of Diagnostic and Outpatient Medicine at *Hospital Israelita Albert Einstein*.

Ellen Pierre de Oliveira

Graduated from the *Faculdade de Medicina, Universidade de São Paulo* (FMUSP). Completed residencies in Internal Medicine and Pulmonology at FMUSP. Further specialized in Pulmonary Hypertension at FMUSP. Currently pursuing a PhD in Pulmonary Vasculitis under the supervision of Prof. Carmen Sílvia Valente Barbas.

Eva Carolina Andrade Rocha

Neurologist specializing in Cerebrovascular Diseases and Neurointensivism at the Universidade Federal de São Paulo (UNIFESP). Holds a PhD from UNIFESP with a fellowship at Harvard Medical School. Associate Professor of Neurology at UNIFESP and Clinical Staff Physician at *Hospital Israelita Albert Einstein.*



Evandro José de Almeida Figueiredo

Medical Degree from the *Faculdade de Medicina de Itajubá* (FMIT). Completed Medical Residency in Clinical Medicine at *Hospital Universitário Alzira Velano - Universidade Professor Edson Antônio Velano* (UNIFENAS). Also completed Medical Residency in Intensive Care at *Hospital Israelita Albert Einstein.* Currently works as an Intensivist Physician in the Critical Care Department at *Hospital Israelita Albert Einstein.*

Fabio Grunspun Pitta

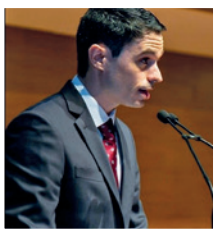
Cardiologist at the Atherosclerosis Clinical Unit of the *Instituto do Coração, Hospital das Clínicas, Faculdade de Medicina, Universidade de São Paulo* (InCor-HC-FMUSP), as well as at the Cardiology Program and the Coronary Unit of *Hospital Israelita Albert Einstein.*

Fabio Tanzillo Moreira

He holds a Degree in Clinical and Intensive Care Medicine, specialized in Intensive Care Medicine certified by the *Associação de Medicina Intensiva Brasileira (AMIB)*. Additionally, he has a postgraduate Degree in Health Management and serves as a Professor of Postgraduate Intensive Care Medicine at *Hospital Israelita Albert Einstein.*

Farah Christina de la Cruz Scarin

She holds a Degree in Medicine from the State *Universidade Estadual de Campinas* (UNICAMP), completed a Residency in Clinical Medicine at the *Universidade Federal de São Paulo* (UNIFESP), followed by a Residency in Intensive Care at *Hospital Israelita Albert Einstein.* She also holds a Postgraduate qualification in Palliative Care from the same institution. Currently, she works as an attending Physician in the Intensive Care Unit and as a Physician in the institutional Patient Support and Palliative Care service at Einstein.



Felipe Souza Lima Vianna

He completed Medical Residencies in Neurology and Intensive Care Medicine. He holds a Master's Degree in Medicine from *Universidade Federal Fluminense*. He is a full member of the Brazilian Intensive Care Medicine Association and an active member of the Brazilian Academy of Neurology. Currently, he serves as an on-duty Physician in the Critical Care Department at *Hospital Israelita Albert Einstein.*

Fernanda Guimarães Aguiar

Specialized in Intensive Care Medicine at *Hospital Israelita Albert Einstein*, with a Clinical Fellowship in Trauma and Neurointensivism at the University of Toronto - St. Michael's Hospital. Currently serves as the on-duty Physician in the Adult Intensive Care Unit at *Hospital Israelita Albert Einstein*.

Flavia Julie do Amaral Pfeilsticker

Medical Doctor with a Master's Degree in Health Sciences from *Hospital Israelita Albert Einstein*. Specialized in Intensive Care Medicine by the *Associação de Medicina Intensiva Brasileira* (AMIB) and in Parenteral and Enteral Nutrition by the *Sociedade Brasileira de Nutrição Parenteral e Enteral* (SBNPE). Currently serves as an attending physician in the Adult Intensive Care Unit and is a member of the *Equipe Multiprofissional de Terapia Nutricional* (EMTN) at *Hospital Israelita Albert Einstein*.

Flávia Sales Leite

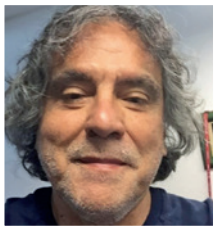
She holds a Master's Degree in Rehabilitation Sciences from *Universidade Nove de Julho* (UNINOVE-2011) and a Postgraduate Degree in Teaching in Health from Albert Einstein Faculty of Health Sciences (2021). Additionally, she is a Specialist in Respiratory Physiotherapy from *A Irmandade da Santa Casa de Misericórdia de São Paulo* (2005) and *Escola Paulista de Medicina* (EPM-2007). Currently, she serves as a Physiotherapist Reference in the Adult Intensive Care Unit of the Critical Care Department, Professor of Postgraduate Physiotherapy in Intensive Care, and Tutor in the Multiprofessional Residency Program in Intensive Care at *Hospital Israelita Albert Einstein.*

Frederico Polito Lomar

Doctor graduated from the *Universidade de São Paulo* (USP), specialized in Intensive Care and Internal Medicine. Currently serving as an attending physician in the Adult Intensive Care Unit at *Hospital Israelita Albert Einstein.*

Giancarlo Colombo

An intensive care physician, he completed the Fellowship Program at Sunnybrook Health Science Centre in Toronto, CA, and later obtained an MBA in Health Management from *Faculdade Getúlio Vargas* (FGV). He is an Improvement Specialist certified by the Institute for Healthcare Improvement (IHI) and currently serves as the Medical Manager of the Medical Practice Department at *Hospital Israelita Albert Einstein*.



Glenn Hernandez Poblete

Professor of Intensive Medicine, Pontifícia Universidad Católica do Chile, and Principal Investigator in the study ANDROMEDA-SHOCK.

Gisele Sampaio Silva

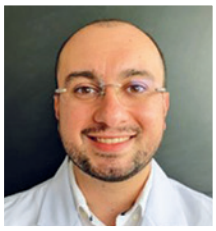
She holds a Degree in Medicine from the *Universidade Federal do Ceará* (UFC), completed her residency and earned a doctorate in Neurology from the *Universidade Federal de São Paulo* (UNIFESP). Additionally, she pursued specialization in Cerebrovascular Diseases and Neurointensivism at Harvard University/Massachusetts General Hospital, and obtained a Master's Degree in public health from the Harvard School of Public Health. Currently, she serves as an associate professor of Neurology at the *Universidade Federal de São Paulo* (UNIFESP) and as Head Clinical Trialist in Neurology at *Hospital Israelita Albert Einstein.* Her extensive expertise lies in the field of Neurology.

Glauco Cabral Marinho Plens

She graduated from the *Faculdade de Medicina, Universidade de São Paulo* (FMUSP) with a Degree in Medicine, completed her Residency in Internal Medicine and Pulmonology at the *Hospital das Clínicas, Faculdade de Medicina, Universidade de São Paulo* (HC-FMUSP), and currently works as a physician in the Respiratory Intensive Care Unit at *Instituto do Coração, Hospital das Clínicas, Faculdade de Medicina, Universidade de São Paulo* (InCor-HC-FMUSP). She is pursuing a doctorate in the Respiratory Sciences Program at the University of Sao Paulo and is a member of the Physiology Working Group of the Practical Platform, an International Platform for Clinical Studies in Mechanical Ventilation.

Grasiani Breggue Pires

She holds a Master's and Doctorate in Cardiopulmonary Rehabilitation Sciences in Oncology from *Universidade Nove de Julho* (UNINOVE). She is also a specialist in Oncological and Hospital Physiotherapy, having completed her training at *A.C.Camargo Cancer Center - Unidade Antônio Prudente*. She currently serves as a physiotherapist in the Adult Intensive Care Unit at *Hospital Israelita Albert Einstein* and as a Professor of Postgraduate courses at *Hospital Israelita Albert Einstein.*



Guilherme Martins de Souza

He is a Specialist in Intensive Care Medicine at *Hospital Israelita Albert Einstein*, holding a specialist title in Intensive Care Medicine from *Associação Médica Brasileira* (AMB)/ *Associação de Medicina Intensiva Brasileira* (AMIB). Additionally, he holds a Master's Degree in Health Sciences from the *Faculdade Israelita de Ciências da Saúde Albert Einstein* (FICSAE). Currently, he serves as the Coordinator of the Intensive Care Unit at *Hospital Ortopédico do Estado (Salvador), Sociedade Beneficente Israelita Brasileira Albert Einstein.*

Gustavo Faissol Janot de Matos

He is an Adult Intensive Care Unit Intensivist at *Hospital Israelita Albert Einstein* and serves as the Patient Safety doctor within the Risk Management and Surveillance (GVR) department at *Hospital Israelita Albert Einstein*. He holds a PhD in Pneumology from the *Hospital das Clínicas, Faculdade de Medicina, Universidade de São Paulo* (HC-FMUSP) and is a Fellow of the Institute for Healthcare Improvement at *Hospital Israelita Albert Einstein.*

Hélio Penna Guimarães

He serves as the Intensive Care Unit day doctor and Unidade Móvel do Einstein (UME) doctor at *Hospital Israelita Albert Einstein.* He holds an MD and a Doctor of Science Degree from the *Universidade de São Paulo* (USP). Additionally, he is the President of the Latin American Federation of Emergency Medicine (FLAME) and serves as the Supervisor of the Emergency Medicine Residency Program at the *Hospital das Clínicas, Faculdade de Medicina, Universidade de São Paulo* (HC-FMUSP).

Ilusca Cardoso de Paula

She has earned both a Master's and Doctorate in Medical Sciences with a specialization in Infectious Diseases from *Escola Paulista de Medicina* (EPM), *Universidade Federal de São Paulo* (EPM-UNIFESP), focusing on infections in immunocompromised patients. Additionally, she is a Fellow of the Clinical Mycology Group at EPM-UNIFESP.

Isabela Yuri Tsuji

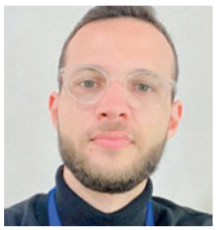
She graduated from *Faculdade de Medicina de Marília* (FAMEMA) and completed residencies in Internal Medicine and Intensive Care at *Hospital das Clínicas, Faculdade de Medicina, Universidade de São Paulo* (HC-FMUSP). She holds an Intensive Care qualification from the *Associação de Medicina Intensiva Brasileira* (AMIB). Currently, she serves as an attending Physician in the Transplant Intensive Care Unit at *Hospital Israelita Albert Einstein.*

Jessica Ramos

Infectious Disease specialist and PhD in Science from *Universidade de São Paulo* (USP). Doctor on the clinical staff of *Hospital Sírio-Libanês* and *Hospital Israelita Albert Einstein*. Member of the Transplant Infection Committee of the *Sociedade Brasileira de Imunologia* (SBI).

João Manoel da Silva Junior

He is the Director of the Anesthesiology Department at the Hospital do Servidor Público Estadual and a Professor at the *Faculdade de Medicina, Universidade de São Paulo* (FMUSP). Additionally, he serves as an Intensivist Physician in the Anesthesiology division of both the Hospital das Clínicas of the *Hospital das Clínicas, Faculdade de Medicina, Universidade de São Paulo* (HC-FMUSP) and *Hospital Israelita Albert Einstein.*



João Paulo Victorino

He is a Senior Nurse in the Intensive Care Unit at *Hospital Israelita Albert Einstein*, having completed a residency and obtained a Post-graduate Degree in Adult Intensive Care from the same institution. He coordinates the USG point-of-care support group for nurses there. Additionally, he holds a certificate in intensive care from Associação Brasileira De Enfermagem Em Terapia (ABENTI) and is currently pursuing a doctorate in Health Sciences at *Escola de Enfermagem de Ribeirão Preto da Universidade de São Paulo* (EERP-USP).

Juliana Borges de Menezes Anacleto

She graduated from the *Centro Universitário de Votuporanga* (UNIFEV) and holds a postgraduate Degree in Intensive Care and Quality Management at *Hospital Israelita Albert Einstein*. Currently, she coordinates the Appointment Center Unit (CMC) and the Transplant Intensive Care Unit at *Hospital Israelita Albert Einstein.*

Karina Tavares Timenetsky

She holds a PhD in Sciences from the *Faculdade de Medicina, Universidade de São Paulo* (FMUSP) and is a Specialist in Physiotherapy in Intensive Care recognized by *Conselho Federal de Fisioterapia e Terapia Ocupacional* (COFFITO). Currently, she serves as the Higher Education Manager of *Faculdade Israelita de Ciências da Saúde Albert Einstein* (FICSAE) Physiotherapy Degree Program and is a Permanent Professional Master's Program in Teaching at *Faculdade Israelita de Ciências da Saúde Albert Einstein* (FICSAE).

Lecticia Jorge

Nephrologist and Intensivist; CM and Nephrology Residency at *Hospital das Clínicas, Faculdade de Medicina, Universidade de São Paulo* (HC-FMUSP). PhD from the HC-FMUSP. Member of the *Associação de Medicina Intensiva Brasileira* (AMIB) Nephrointensivism Committee.

Leonardo Jose Rolim Ferraz

Leonardo Rolim Ferraz leads the Einstein Network for critically ill patients and serves as the head of the *Hospital Municipal Dr. Moysés Deutsch*. As an intensive Care Physician, he received his academic training at the *Universidade Federal da Bahia* (UFBA) and the *Universidade de São Paulo* (USP), focusing on high complexity and liver transplantation. He holds an MBA in Health Management from Insper, and completed Fellowships at the Harvard T.H. Chan School of Public Health and the Institute for Healthcare Improvement, where he obtained the Improvement Advisor certification. Additionally, he completed a Post MBA in Management at Harvard Business School. In his role as director of the *Hospital Municipal Dr. Moysés Deutsch*, he has driven transformations aimed at enhancing equity, diversity, ESG impact, and innovation within the Public Health System.

Lianna Ferreira Bringel Cavalieri

She serves as the Technical Reference Doctor in the Intensive Care Unit at *Hospital Municipal da Vila Santa Catarina Dr. Gilson Cássia Marques de Carvalho, Hospital Israelita Albert Einstein*. She is qualified as a Cardiologist by the *Sociedade Brasileira de Cardiologia* (SBC) and as an Intensivist by the *Associação de Medicina Intensiva Brasileira (AMIB)*.

Lilian Moreira Pinto

She is an Intensivist Physician qualified by the *Associação de Medicina Intensiva Brasileira (AMIB)*, with a Post-graduate Degree in Nutrology from the *Associação Brasileira de Nutrologia* (ABRAN) and qualification from the *Sociedade Brasileira de Nutrição Parenteral e Enteral* (SBNPE). She currently serves as the Coordinator of the Medical Assistance Group (GMA) for critically ill patients at *Hospital Israelita Albert Einstein.* Additionally, she holds an Executive MBA in Management of Clinics, Hospitals, and Health Industries from *Faculdade Getúlio Vargas* (FGV).

Luis Fernando Aranha Camargo

He holds a PhD in Medicine from the *Faculdade de Medicina, Universidade de São Paulo* (FMUSP) and serves as a Professor of Medicine at the *Faculdade Israelita de Ciências da Saúde Albert Einstein (FICSAE)*. Additionally, he is an Infectious Diseases Specialist at *Hospital Israelita Albert Einstein.*

Luís Otávio Sales Ferreira Caboclo

He is a Neurologist and Clinical Neurophysiologist with a PhD in Neurology/Neurosciences from *Universidade Federal de São Paulo* (UNIFESP). Currently, he serves as the Medical Manager of the Clinical Neurophysiology Department at *Hospital Israelita Albert Einstein.* Additionally, he holds the position of Assistant Professor of Neurology at the *Faculdade Israelita de Ciências da Saúde Albert Einstein (FICSAE).*

Luiz Marcelo Sá Malbouisson

He is a Professor at the *Faculdade de Medicina, Universidade de São Paulo* (FMUSP) and coordinates the Intensive Care, Surgical, and Gastroenterological Units at *Hospital das Clínicas, Faculdade de Medicina, Universidade de São Paulo* (HC-FMUSP).

Marçal Durval Siqueira Paiva Júnior

Master in Tropical Medicine from *Universidade Federal de Pernambuco* (UFPE); Intensive care doctor at *Associação de Medicina Intensiva Brasileira* (AMIB); Preceptor of the Medical Clinic at *Hospital Agamenon Magalhães*; Professor of the Medicine Course at Centro *Universitário Maurício de Nassau* (UNINASSAU); Medical coordinator of the Intensive Care Unit at *Rede D'Or Hospital Esperança Unidade Olinda*; Daily intensive care physician at *Rede D'Or Hospital Esperança Unidade Recife*.

Marcelino de Souza Durão Junior

He is an Associate Professor of Nephrology at *Escola Paulista de Medicina - Universidade Federal de São Paulo* (EPM-UNIFESP) and serves as the Coordinator of the Onco-Nephrology Sector. Additionally, he holds a position as Professor of Internal Medicine at the *Faculdade Israelita de Ciências da Saúde Albert Einstein (FICSAE)* and is actively involved in Renal Transplantation at *Hospital Israelita Albert Einstein.*

Marcele Liliane Pesavento

She is the Nursing Coordinator of the Adult Intensive Care Unit at *Hospital Israelita Albert Einstein.* She holds an Executive MBA in Administration in the Management of Clinics, Hospitals, and Health Industries from *Fundação Getúlio Vargas* (FGV). Additionally, she is a specialist in Extracorporeal Membrane Oxygenation (ECMO), having trained at the Stollery Children's Hospital and the *Instituto do Coração, Hospital das Clínicas, Faculdade de Medicina, Universidade de São Paulo* (InCor-HC-FMUSP). She also completed a Post-graduate course in Intensive Care Unit s at the Universidade Federal de São Paulo (UNIFESP).

Marcelo Barciela Brandão

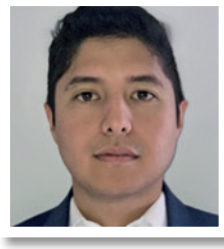
He holds an MSc and PhD in Child and Adolescent Health from *Faculdade de Ciências Médicas*, *Universidade Estadual de Campinas* (FCM-UNICAMP). Currently, he serves as the Coordinator of the Pediatric Intensive Care Unit at *Hospital de Clínicas, Universidade Estadual de Campinas* (HC-UNICAMP) and is a Professor of Postgraduate Child and Adolescent Health at FCM-UNICAMP. Additionally, he holds the position of President of the *Sociedade Paulista Terapia Intensiva* (SOPATI).

Marcelo Britto Passos Amato

Professor at the *Faculdade de Medicina, Universidade de São Paulo* (FMUSP), Head of the Respiratory Intensive Care Unit at the *Instituto do Coração, Hospital das Clínicas, Faculdade de Medicina, Universidade de São Paulo* (InCor-HC-FMUSP), and Coordinator of Scientific Research at LIM09 in the *Faculdade de Medicina, Universidade de São Paulo* (FMUSP).

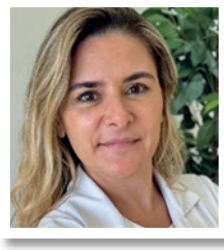
Marco Ranieri

Full Professor of Anesthesia and Critical Care at the Universities of Turin, Rome, Bologna, and since few weeks at the University of Bari. Chair of the Department of Anesthesia and Emergency, Critical Care at the Policlinico Hospital of Bari. Past President of the European Society of Intensive Care Medicine.



Marcos Vinicius Tadao Fujino

Neurology Technical Reference in the Critical Care Department at *Hospital Israelita Albert Einstein*; Neurologist with a postgraduate Degree in Neurointensivism at *Escola Paulista de Medicina - Universidade Federal de São Paulo* (EPM-UNIFESP).



Maria Daniela Di Dea Bergamasco

Infectologist and Medical Coordinator of the Hospital Infection Control Service at *Hospital Israelita Albert Einstein*; holds a Master's and Doctorate in Medical Sciences - Infectology from *Escola Paulista de Medicina, Universidade Federal de São Paulo* (EPM-UNIFESP), with a specialization in Infections in Immunocompromised Patients. Fellow of the Clinical Mycology Group at EPM-UNIFESP.

Mauro Roberto Tucci

Physician specialized in Intensive Care Medicine and Pulmonology; Doctor of Medicine from the *Faculdade de Medicina, Universidade de São Paulo* (FMUSP); Attending Physician at the Respiratory Intensive Care Unit of the *Instituto do Coração, Hospital das Clínicas, Faculdade de Medicina, Universidade de São Paulo* (InCor-HC-FMUSP).

Mayara Laise Assis

She graduated as an intensivist from *Hospital Israelita Albert Einstein* (2019-2021). Currently, she works as an attending Physician in the Adult Intensive Care Unit at *Hospital Israelita Albert Einstein* and serves as a Preceptor in the Intensive Care Medical Residency Program at the same hospital.

Moacyr Silva Junior

He holds a Degree in Medicine from the *Faculdade de Ciências Médicas de Santos* (FCMS), a Master's Degree in Infectious and Parasitic Diseases from the *Universidade Federal de São Paulo* (UNIFESP), and a doctorate in Infectology from the same University. Currently, he practices as a physician in the Intensive Care Unit at Hospital São Paulo and *Hospital Israelita Albert Einstein.* He also serves as an Infectious Diseases Physician in the Hospital Infection Control Service and the Immunosuppressed Infections Group at *Hospital Israelita Albert Einstein.*

Murillo Santucci César de Assunção

Holder of a Master's in Health Sciences from *Universidade Federal de São Paulo* (UNIFESP) and a PhD in Translational Medicine from the same institution. He currently serves as an Intensivist at the Adult Intensive Care Unit at *Hospital Israelita Albert Einstein* and holds specialist certification in Intensive Care Medicine from the *Associação de Medicina Intensiva Brasileira* (AMIB).

Nelson Hamerschlak

He graduated in Medicine from the *Escola Paulista de Medicina - Universidade Federal de São Paulo* (EPM-UNIFESP), specialized in Haematology/Hemotherapy and Clinical Medicine, and completed at Fellowship at Cornell University Medical Center. He holds a PhD in Immunology from the *Universidade de São Paulo* (USP) and currently serves as a Professor at the Department of Pediatrics (Discipline of Clinical Pediatrics) at the *Faculdade de Medicina, Universidade de São Paulo* (FMUSP). Additionally, he works as a Haematologist and Haemotherapist at *Hospital Israelita Albert Einstein*, where he also coordinates the Postgraduate Course in Haematology/ Hemotherapy and serves as an affiliated researcher at the Albert Einstein Institute for Teaching and Research.

Patricia Albizu Piaskowy

She is a specialist in Internal Medicine from *Universidade Federal do Paraná* (UFPR) and in Intensive Care from *Universidade Estadual de Campinas* (UNICAMP). She also has specialized training in Palliative Care from Hospital Sírio Libanês. Currently, she works as an attending physician in the Transplant Intensive Care Unit at *Hospital Israelita Albert Einstein.*

Patrícia Machado Veiga de Carvalho Mello

Master in Sciences and Health. Intensive Care Physician qualified by the *Associação de Medicina Intensiva Brasileira* (AMIB) and SCCM, Emergency Physician qualified by the *Associação Brasileira de Medicina de Emergência* (ABRAMEDE), Coordinator of the Intensive Care Hospital Intensive Care Unit, Professor of Medicine at *Centro Universitário Facid Wyden* (UNIFACID).

Patricia Rieken Macedo Rocco

She is a Full Professor at the Universidade Federal do Rio de Janeiro (UFRJ), where she heads the Pulmonary Research Laboratory. She is also a full member of both the National Academy of Medicine and the *Academia Brasileira de Ciências* (ABC).

Patrícia Sherer

She is a specialist in Nephrology and Intensive Care, serving as an attending Physician in the Intensive Care Unit at *Hospital Israelita Albert Einstein.* Additionally, she works as a nephrologist in the Nephrology Support Group at the same hospital.

Paula Rodrigues Sanches

She holds Postgraduate Degrees in Neurosciences from *Instituto Israelita de Ensino e Pesquisa* (IIEP) and Neurosonology from *Faculdade de Medicina, Universidade de São Paulo* (FMUSP). She completed a Fellowship in Neurocritical Care at Massachusetts General Hospital in Boston, MA. Certified as an Intensivist by *Associação de Medicina Intensiva Brasileira* (AMIB), she currently serves as a reference Physician in the Department of Critically Ill Patients at *Hospital Israelita Albert Einstein.* Additionally, she supervises the Medical Residency Program in Intensive Care Medicine at the same hospital.

Pedro Caruso

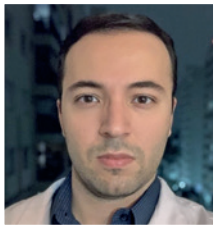
He serves as the Medical Director of the Intensive Care Unit at *A.C. Camargo Cancer Center* and is a Professor of Pulmonology at the *Faculdade de Medicina, Universidade de São Paulo* (FMUSP).

Pedro Paulo Zanella do Amaral Campos

Fellow in Experimental Research at Bern University Hospital in Switzerland. He hold certifications as an adult ECMO Specialist from ELSO and as an adult Intensive Care Specialist from *Associação de Medicina Intensiva Brasileira* (AMIB). Currently, he serves as an ECMO Specialist and Intensivist at *Hospital Israelita Albert Einstein.*

Raquel Afonso Caserta Eid

She holds an Executive MBA in Health Management and is currently a PhD student in Pneumology at the *Universidade de São Paulo* (USP). She earned a Master of Science Degree from the *Universidade Federal de São Paulo* (UNIFESP). At *Hospital Israelita Albert Einstein*, she serves as the coordinator for physiotherapists in the Department of Critically ill Patients.



Renan Sandoval de Almeida

He graduated in Medicine from the *Universidade Federal do Triângulo Mineiro* (UFTM) in 2015 and completed his Residency in Internal Medicine at the *Hospital de Clínicas da Universidade Federal de Uberlândia* (HC-UFU) in 2018. Currently, he is a resident in Intensive Care at *Hospital Israelita Albert Einstein*. Previously, he worked as an on-duty Physician in the Intensive Care Unit s at Uberlândia Medical Center (UMC), *Hospital Mater Dei Santa Clara*, and *Fundação de Assistência, Estudo e Pesquisa de Uberlândia* (FAEPU). He also serves as an intensivist physician in the Department of Critically ill Patients at *Hospital Israelita Albert Einstein.*

Renato Carneiro de Freitas Chaves

He is a Physician specializing in Anesthesiology and Intensive Care Medicine. He completed his Post-doctorate at the Laboratory for Computational Physiology at the Massachusetts Institute of Technology (MIT) and holds a Doctor of Science Degree in Pneumology from the *Faculdade de Medicina, Universidade de São Paulo* (FMUSP). Additionally, he earned an MBA in People Management from *Universidade de São Paulo* (USP) and completed a fellowship in Medical Research at *Hospital Israelita Albert Einstein*. Currently, he works in the Intensive Care Unit at *Hospital Israelita Albert Einstein*.

Ricardo Goulart Rodrigues

He is a Pulmonologist at *Universidade Federal de São Paulo* (UNIFESP) and Intensivist by *Associação de Medicina Intensiva Brasileira* (AMIB), serving as the General Secretary of AMIB. He also acts as a Preceptor of the Intensive Care Service at *Hospital do Servidor Público Estadual* and holds the position of President of the Technical Chamber of Intensive Care Medicine *at Conselho Regional de Medicina do Estado de São Paulo* (CREMESP).

Ricardo Kenji Nawa

He holds an MSc and PhD in Sciences from the *Faculdade de Medicina de Ribeirão Preto Universidade de São Paulo* (FMRP-USP). He is also a physiotherapist, having graduated from the same institution. Currently, he works as a researcher at the *Instituto Israelita de Ensino e Pesquisa* (IIEP) of *Hospital Israelita Albert Einstein*.

Rodrigo Dias Rodrigues

Nurse Coordinator of Semi Intensive Care at *Hospital Israelita Albert Einstein*, He has a Postgraduate Degree in Prevention and Control of Hospital Infections from the *Instituto Israelita de Ensino e Pesquisa* (IIEP-2012), a Degree in Nursing from *Universidade Nove de Julho* (UNINOVE-2008). Has experience in the area of Nursing, emphasis on critical patients, continuous improvement and quality projects, education and training and revenue loss projects.

Roberta Fittipaldi Palazzo

She holds a PhD in Science from the *Faculdade de Medicina, Universidade de São Paulo* (FMUSP) and serves as a Pulmonologist at *Hospital Israelita Albert Einstein.* Additionally, she works as a Physician in the Respiratory Intensive Care Unit at the *Instituto do Coração, Hospital das Clínicas, Faculdade de Medicina, Universidade de São Paulo* (InCor-HC-FMUSP) and holds a position as a Professor of Postgraduate Intensive Care at *Hospital Israelita Albert Einstein.*

Roberto Camargo Narciso

He is an Intensivist Physician at *Hospital Israelita Albert Einstein*, holding a Degree in Medicine from the *Fundação Universidade Regional de Blumenau* (FURB). He is specialized in Nephrology by the *Sociedade Brasileira de Nefrologia* (SBN) and in Intensive Care Medicine by the *Associação de Medicina Intensiva Brasileira (AMIB)*. Additionally, he holds a PhD in Science from the *Universidade Federal de São Paulo* (UNIFESP) and an MBA from the Faculdade Getúlio Vargas (FGV).

Roberto Rabello Filho

He holds a PhD in Health Sciences from the *Faculdade Israelita de Ciências da Saúde Albert Einstein (FICSAE)*. Currently, he serves as the Coordinator of the Critically Ill Patient Line at *Hospital M'boi Mirim* and works as a Physician in the Adult Intensive Care Unit at *Hospital Israelita Albert Einstein.*

Rogerio da Hora Passos

He is a Nephrology specialist and a specialist in Intensive Care Medicine. Additionally, he holds an MBA in Health Management and practices at *Hospital Israelita Albert Einstein.*

Roseny dos Reis Rodrigues

She holds a Doctorate and Post-Doctorate from *Faculdade de Medicina, Universidade de São Paulo* (FMUSP). Trained as an Anesthesiologist and Intensivist, she holds specialist titles TSA and *Associação de Medicina Intensiva Brasileira* (AMIB) in Intensive Care Medicine. Currently, she serves as an Intensivist Physician in the Department of Critically Ill Patients at *Hospital Israelita Albert Einstein* and also coordinates the urgency and emergency line at *Hospital Municipal Dr. Moysés Deutsch.*

Sergio Nogueira Nemer

He has received international training in Proprioceptive Neuromuscular Facilitation, Bobath, Maitland, Mulligan, Osteopathy, Physiotherapy, and Neurodynamics. He holds a PhD in Pneumology from the *Universidade de São Paulo* (USP) and specializes in Neurophysiology, Respiratory, and Neurological Physiotherapy. Additionally, he serves as a Professor in Postgraduate courses at Interfisio and *Rede D'Or São Luiz*.

Sidney Klajner

Sidney Klajner is a renowned Digestive tract Surgeon, Robotic Surgeon, and Coloproctologist. He currently serves as the President of *Sociedade Beneficente Israelita Brasileira Albert Einstein* (SBIBAE). In 2023, he joined the Board of Directors of the Institute for Healthcare Improvement (IHI), leveraging Einstein's strategic alliance with the Organization. Since 2018, he has been a member of the Advisory Board of the *Faculdade de Medicina, Universidade de São Paulo* (FMUSP). Dr. Klajner is also a Professor in the Executive MBA in Healthcare Management Program at the *Instituto Israelita de Ensino e Pesquisa (IIEP)*. He has been at the forefront of Advancing Digital Health at Einstein since 2016, advocating for the Integration of Cutting-Edge Technologies and Data-Driven Decision-Making Processes. His leadership in Healthcare Technology earned him an invitation to participate in South by Southwest (SXSW) in 2023, where he became the first speaker from a Brazilian Health Organization to attend this prestigious innovation and technology festival. In 2019, Dr. Klajner authored the book "A Revolução Digital da Saúde" (The Digital Revolution in Health) (Publisher: Editora dos Editores), contributing to discussions on the digital transformation of healthcare. Recognized for his influential presence, he is listed among the top ten Brazilian leaders with significant influence on LinkedIn by GVexecutivo, a magazine affiliated with the *Faculdade Getúlio Vargas* (FGV). Since 2020, he has been recognized as a Top Voice in Health on Social Media Platforms.

Suzana Margareth Ajeje Lobo

She is an AMIB-accredited intensive Care Physician and a Professor at the *Faculdade de Medicina de São José do Rio* Preto (FAMERP). Additionally, she serves as the Coordinator of the Intensive Care Service and Medical Residency in Intensive Care Medicine at *Hospital de Base*. She holds positions of significant leadership within *Associação de Medicina Intensiva Brasileira* (AMIB), including being a member of its Advisory Board and currently serving as President. Furthermore, she contributes to the Scientific Committee of the Bricnet Research Network.

Tatiana Mohovic

She is a Physician with a Residency in General Practice and Intensive Care. Currently pursuing an MBA in Project Management, she also holds a specialist Degree in Intensive Care and a Master's Degree in Infectious Diseases. She currently serves as an attending physician in the Intensive Care Unit at *Hospital Israelita Albert Einstein.*

Telma Antunes

She completed her Graduation and Residency in Clinical Medicine and Pulmonology at the *Faculdade de Medicina, Universidade de São Paulo* (FMUSP). She holds a PhD in Pulmonology from FMUSP. From 2002 to 2013, she served as a collaborating Physician at the Vasculitis Outpatient Clinic of the Pulmonology Department at *Hospital das Clínicas, Faculdade de Medicina, Universidade de São Paulo* (HC-FMUSP). Currently, she practices as a pulmonologist at *Hospital Israelita Albert Einstein.*

Thais Dias Midega

She is currently a PhD student in Health Sciences at the *Faculdade Israelita de Ciências da Saúde Albert Einstein (FICSAE)*. She holds a specialist title in Intensive Care Medicine from *Associação de Medicina Intensiva Brasileira* (AMIB) and practices as an Intensive Care Physician in the adult Intensive Care Unit at *Hospital Israelita Albert Einstein.*

Thaís Martins de Almeida Souza

She is a psychologist graduated from *Faculdade Martha Falcão* and specialized in Intensive Care through the Multiprofessional Residency Program at the São Francisco University. Currently, she serves as a reference psychologist in the Department of Critically Ill Patients at *Hospital Israelita Albert Einstein*.

Thiago Domingos Corrêa

He serves as the Medical Manager of the Department of Critically Ill Patients at *Hospital Israelita Albert Einstein.* Additionally, he holds a position as a Permanent Professor in the Stricto Sensu Postgraduate Program in *Faculdade Israelita de Ciências da Saúde Albert Einstein (FICSAE).*

Uri Adrian Prync Flato

Intensive Care Physician at *Hospital Israelita Albert Einstein* department of critically ill patients; Holds a PhD from the Universidade de São Paulo (USP); Board-certified in Intensive Care Medicine by *Associação de Medicina Intensiva Brasileira* (AMIB) and Adult Echocardiography by Cardiovascular Imaging Department (DIC)/*Sociedade Brasileira de Cardiologia* (SBC); Professor at the *Faculdade Israelita de Ciências da Saúde Albert Einstein (FICSAE)* at *Hospital Israelita Albert Einstein.*

Vinicius Barbosa Galindo

Graduated in Medicine from the *Universidade Federal de Alagoas* (UFAL-2016). Completed residency in Internal Medicine at *Conjunto Hospitalar do Mandaqui* (2019) and in Intensive Care at *Hospital Israelita Albert Einstein* (2021). Currently working as an Intensivist at CTIA at *Hospital Israelita Albert Einstein* and pursuing a Master's Degree in the Stricto Sensu Postgraduate Program in Health Sciences at *Faculdade Israelita de Ciências da Saúde Albert Einstein (FICSAE)*.

Walace de Souza Pimentel

PhD from the *Universidade de São Paulo* (USP); serves as Medical Coordinator of CTI - Telemedicine at *Hospital Israelita Albert Einstein.* Additionally, holds the role of Associate Professor at the *Escola Paulista de Medicina - Universidade Federal de São Paulo* (EPM-UNIFESP), where he coordinates the Cardiac Surgery Intensive Care Unit at *Hospital São Paulo, Universidade Federal de São Paulo* (HSP-UNIFESP). Concurrently, he practices as a Physician at the Critical Care Department of *Hospital Israelita Albert Einstein.*

Scientific Program

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IV Einstein International Symposium on Intensive Care					
Moise Safra Auditorium					
August 14, 2024 | Wednesday					
Time Start	**Time Finish**	**Duration**	**Activity**	**Activity**	**Speaker/Moderator**
08:00	09:00	01:00	Opening Session	Speaker	Sidney Klajner
				Speaker	Eliézer Silva
				Speaker	Elias Knobel
				Speaker	Carmen Silvia Valente Barbas
				Speaker	Leonardo Jose Rolim Ferraz
				Speaker	Thiago Domingos Corrêa
				Speaker	Bruno Franco Mazza
09:00	10:00	01:00	Opening Panel – Intensive care medicine over the years - People, Technology and Art	Moderator	Leonardo Jose Rolim Ferraz
				Speaker	Elias Knobel
				Speaker	Carmen Silvia Valente Barbas
				Speaker	Marcelo Barciela Brandão
				Speaker	Patrícia Machado Veiga de Carvalho Mello
				Speaker	Claudia Regina Laselva
10:00	10:30	00:30	Coffee Break / Moise Safra Auditorium Separate Auditoriums		
10:30	12:30	02:00	Keynote Lecture: Critically Ill Patients	Moderator	Thiago Domingos Correa
				Moderator	Bruno de Arruda Bravim
10:30	11:00	00:30	Current applications of Artificial Intelligence in the ICU	Speaker	Leonardo Jose Rolim Ferraz
11:00	11:30	00:30	Corticosteroids in the ICU, for whom and when?	Speaker	Djillali Annane
11:30	12:00	00:30	Are we examining microcirculation adequately?	Speaker	Glenn Hernandez Poblete
12:00	12:30	00:30	Can VILI be prevented?	Speaker	Marco Ranieri
12:30	13:30	01:00	Satellite Symposium Astrazeneca - The role of the Multidiciplinary Team in identifying MAT and differentially diagnosing aHUS	Speaker	Lecticia Jorge
13:30	15:30	02:00	Cardiac Intensive Care	Moderator	Antonio Carlos Bacelar Nunes Filho
				Moderator	Elias Knobel
13:30	13:50	00:20	The challenges of anticoagulation and antiplatelet therapy in cardio intensive care	Speaker	Fabio Grunspun Pitta
13:50	14:10	00:20	CPR beyond ACLS	Speaker	Hélio Penna Guimarães
14:10	14:30	00:20	Approaching Cardio-renal Syndrome in the ICU: strategies and considerations	Speaker	Walace de Souza Pimentel
14:30	14:50	00:20	Special considerations in airway management for ICU patients with severe heart disease	Speaker	Fabio Tanzillo Moreira
14:50	15:10	00:20	Myocarditis in critically ill patients, assessment and management?	Speaker	Renan Sandoval de Almeida
15:10	15:30	00:20	Discussion	All Module Speakers	_
15:30	16:00	00:30	Coffee Break Moise Safra Auditorium		
16:00	18:00	02:00	DPG Surgery / Nutrition	Moderator	Lilian Moreira Pinto
				Moderator	Décio Diament

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August 14, 2024 | Wednesday					
Time Start	**Time Finish**	**Duration**	**Activity**	**Activity**	**Speaker/Moderator**
16:00	16:20	00:20	Current approaches to managing post-traumatic coagulopathy	Speaker	Roseny dos Reis Rodrigues
16:20	16:40	00:20	Emerging technologies and innovations in minimally invasive monitoring for high-risk patients	Speaker	João Manoel da Silva Junior
16:40	17:00	00:20	Therapy aimed at microcirculation: is there evidence in the perioperative period?	Speaker	Glenn Hernandez Poblete
17:00	17:20	00:20	The role of perioperative nutrition in the recovery of high-risk surgical patients	Speaker	Flavia Julie do Amaral Pfeilsticker
17:20	17:40	00:20	Should biomarkers guide nutritional support?	Speaker	Diogo Oliveira Toledo
17:40	18:00	00:20	Discussion	All Module Speakers	_
18:00	19:00	01:00	Free Themes - Presentation of Abstracts	Moderator	Carolina Cáfaro
				Moderator	Adriano José Pereira
				Moderator	Hélio Penna Guimarães
18:00	18:10	00:10	4DMC - Implementation process of the Hemorrhage Code (H code) at the Hospital Municipal Moysés Deutsch, São Paulo, Brazil	Presenter	Niklas Soderberg Campos
18:10	18:20	00:10	4DMH - The effect of protein supply in critical cancer patients	Presenter	Fabio Barlem Hohmann
18:20	18:30	00:10	4DMJ - Covid-19: when to intubate?	Presenter	Fabio Barlem Hohmann
18:30	18:40	00:10	4DN2 - Impact of peripheral muscle strength on extubation success after cardiac surgery	Presenter	André Luiz Lisboa Cordeiro
18:40	18:50	00:10	4DNT - Creutzfeldt-Jakob Disease - Sporadic Form	Presenter	Niklas Soderberg Campos
18:50	19:00	00:10	4DME - Metabolic and perfusion trends in polytrauma patients post-peritoneostomy: identification of risk factors and clinical implications	Presenter	Fabio Barlem Hohmann
19:00			Closing		

IV Einstein International Symposium on Intensive Care					
Moise Safra Auditorium					
August 15, 2024 | Thursday					
Time Start	**Time Finish**	**Duration**	**Activity**	**Activity**	**Speaker/Moderator**
08:00	10:00	02:00	Humanization, Palliative Care, and Post-ICU Care in the Department of Critically Ill Patients DPG	Moderator	Angelo Antonio Gomes de Carvalho
				Moderator	Tatiana Mohovic
08:00	08:20	00:20	Caring for the person: from ICU diaries to outside walks	Speaker	Thaís Martins de Almeida Souza
08:20	08:40	00:20	The ICU survivor: Predictive strategies and care through discharge	Speaker	
08:40	09:00	00:20	Between rehabilitation and comfort: What sets acute care apart?	Speaker	Grasiani Breggue Pires
09:00	09:20	00:20	Caring for the elderly in the ICU: Best practices	Speaker	Farah Christina de la Cruz Scarin
09:20	09:40	00:20	Challenges and strategies for pressure injury prevention in the intensive care unit	Speaker	Amanda Cristina Maria Aparecida Gonçalves Brandão
09:40	10:00	00:20	Discussion	All Module Speakers	_
10:00	11:00	01:00	Satellite Symposium Pfizer - Update on the treatment of resistant bacteria in the critically ill	Speaker	Jessica Ramos
11:00	11:30	00:30	Break		
11:30	12:30	01:00	Conference: Critically Ill Patients	Moderator	Arnaldo Alves da Silva
				Moderator	Guilherme Martins de Souza
11:30	12:00	00:30	Extracorporeal Ultrafiltration in Heart failure management	Speaker	Rogerio da Hora Passos
12:00	12:30	00:30	Fluid resuscitation: Restrictive? Liberal, or Individualised approach?	Speaker	Glenn Hernandez Poblete
12:30	13:30	01:00	Satellite Symposium MSD - How can we change the treatment scenario for hospital-acquired pneumonia?	Speaker	Marçal Durval Siqueira Paiva Júnior
13:30	15:30	02:00	Management, Quality, and Safety in the Department of Critically Ill Patients DPG / Tele-ICU	Moderator	Adriano José Pereira
				Moderator	Ana Claudia Ferraz
13:30	13:50	00:20	How can we enhance the experience of patients and their families in the ICU?	Speaker	Thiago Domingos Corrêa
13:50	14:10	00:20	Remote Monitoring Tool for Critically Ill Patients: Enhancing ICU Safety	Speaker	Gustavo Faissol Janot de Matos
14:10	14:30	00:20	How to conduct a successful disclousure after a catastrophic adverse event in the ICU?	Speaker	Giancarlo Colombo
14:30	14:50	00:20	ICU indicators: past, present and future	Speaker	Bruno Franco Mazza
14:50	15:10	00:20	Networked ICU coordination - The importance of telemedicine	Speaker	Adriano José Pereira
15:10	15:30	00:20	Discussion	All Module Speakers	_
15:30	16:00	00:30	Coffee Break Moise Safra Auditorium		
16:00	18:00	02:00	Sepsis | Infection and Antibiotic Therapy	Moderator	Maria Daniela Di Dea Bergamasco
				Moderator	Ilusca Cardoso de Paula
16:00	16:20	00:20	Current treatment of covid-19 in immunosuppressed patients	Speaker	Luis Fernando Aranha Camargo
16:20	16:40	00:20	Vasopressors and early fluid management in sepsis: Is there a rationale?	Speaker	Murillo Santucci César de Assunção
16:40	17:00	00:20	Challenges and strategies in implementing guidelines for treating community-acquired pneumonia in the ICU	Speaker	Roberto Rabello Filho
17:00	17:20	00:20	Antibiotic therapy strategy for CVVHDF and ECMO	Speaker	Bruno de Arruda Bravim
17:20	17:40	00:20	Optimal use of corticosteroids in sépsis treatment	Speaker	Djillali Annane
17:40	18:00	00:20	Discussion	All Module Speakers	_

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August 15, 2024 | Thursday					
Time Start	**Time Finish**	**Duration**	**Activity**	**Activity**	**Speaker/Moderator**
18:00	19:00	01:00	Free Themes - Presentation of Abstracts	Moderator	Arnaldo Alves da Silva
				Moderator	Thais Dias Midega
				Moderator	João Manoel da Silva Junior
18:00	18:10	00:10	4DMV - Use of video lessons to disseminate knowledge of patient safety during infusion therapy: reported experiences	Presenter	Mariana Crisostomo Custódio
18:10	18:20	00:10	4DMW - Interfaces for noninvasive ventilation for adult critically ill patients in the intensive care unit-a systematic review and network meta-analysis	Presenter	Bianca Maria Schneider Pereira Garcia
18:20	18:30	00:10	4DNF - Use of the Lung Ultrasound in Emergency	Presenter	Andre Luiz Fernandes
18:30	18:40	00:10	4DNG - Comparative analysis of the effects of bronchial hygiene maneuvers on respiratory mechanics of adult patients under invasive mechanical ventilation: a randomized clinical trial	Presenter	Samantha de Freitas Campos
18:40	18:50	00:10	4DNM - Incidence and Impact of Near-Miss Events During Continuous Renal Replacement Therapy in Critically Ill Patients	Presenter	Isabela Argollo Ferreira
18:50	19:00	00:10	4DNS - Effectiveness of using an artificial intelligence platform in quality of care and health management	Presenter	Anelvira de Oliveira Florentino
19:00			Closing		

IV Einstein International Symposium on Intensive Care					
Moise Safra Auditorium					
August 16, 2024 | Friday					
Time Start	**Time Finish**	**Duration**	**Activity**	**Activity**	**Speaker/Moderator**
07:00	08:00	01:00	Free Themes - Presentation of Abstracts	Moderator	Guilherme Martins de Souza
				Moderator	Renato Carneiro de Freitas Chaves
				Moderator	Ricardo Kenji Nawa
07:00	07:10	00:10	4DMP - Physiological effects of using humidifiers in invasive mechanical ventilation: a literature review	Presenter	Edcarlos José Gonzalez de Souza
07:10	07:20	00:10	4DMS - Generalized pustular psoriasis (von Zumbusch)	Presenter	Renato Pereira Gomes
07:20	07:30	00:10	4DN6 - Applying Simulation-Bases Learning in Cardiology Education: A Systematic Review	Presenter	André Luiz Lisboa Cordeiro
07:30	07:40	00:10	4DNB - Applicability Of Lung Ultrasound During Weaning From Mechanical Ventilation: A Systematic Review	Presenter	André Luiz Lisboa Cordeiro
07:40	07:50	00:10	4DND - Retrospective evaluation of hemodynamic parameters and cerebral Near-Infrared Spectroscopy levels in patients treated with Veno-Arterial Extracorporeal Membrane Oxygenation	Presenter	Sávio Sérgio Ferreira Custódio
07:50	08:00	00:10	4DNQ - A Systematic Review of Weaning Strategies in Neurologic Patients	Presenter	Felipe Galdino Campos
08:00	10:00	02:00	Hemodynamic Monitoring in the critically ill patients department (DPG)	Moderator	Fernanda Guimarães Aguiar
				Moderator	Frederico Polito Lomar
08:00	08:20	00:20	Venous congestion in critically ill patients: assessment, approach and consequences	Speaker	Djillali Annane
08:20	08:40	00:20	Personalized hemodynamic management in shock	Speaker	Alejandra Del Pilar Gallardo Garrido
08:40	09:00	00:20	Basic and advanced monitoring: Implementation in clinical practice	Speaker	Luís Marcelo Sá Malbouisson
09:00	09:20	00:20	Hemodynamic monitoring beyond cardiac output	Speaker	Glenn Hernandez Poblete
09:20	09:40	00:20	Resolving the dilemma between hypoperfusion and hypervolemia	Speaker	Suzana Margareth Ajeje Lobo
09:40	10:00	00:20	Discussion	All Module Speakers	_
10:00	11:00	01:00	Satellite Symposium Mundipharma	Speaker	
11:00	11:30	00:30	Break		
11:30	12:30	01:00	Critically Ill Patient Conference	Moderator	Isabela Yuri Tsuji
				Moderator	Renato Carneiro de Freitas Chaves
11:30	12:00	00:30	Communication in Critical Situations: An Integrated Perspective on Needs	Speaker	Daniel Neves Forte
12:00	12:30	00:30	Applicability of AI in sepsis, is this the future? Prediction? Intervention?	Speaker	Djillali Annane
12:30	13:30	01:00	Satellite Symposium Baxter - Volume Replacement and Non-Invasive Hemodynamic Monitoring in the ICU	Speaker	Bárbara Vieira Carneiro
13:30	15:30	02:00	Oncohematology | Transplants in the critically ill patients department (DPG)	Moderator	Lianna Ferreira Bringel Cavalieri
				Moderator	Patricia Albizu Piaskowy
13:30	13:50	00:20	Managing complications of CAR-T Cell Therapy in the ICU	Speaker	Nelson Hamerschlak
13:50	14:10	00:20	Chemotherapy in the ICU: Current evidence and considerations	Speaker	Pedro Caruso
14:10	14:30	00:20	Prognostic assessment and clinical outcomes of critically ill cancer patients	Speaker	Amanda Pascoal Valle Felicio
14:30	14:50	00:20	Circulatory death vs. brain death - implications for transplantation	Speaker	Bárbara Vieira Carneiro
14:50	15:10	00:20	ACLF and fulminant Hepatitis: Management strategies while awaiting liver transplantation	Speaker	Bruno Franco Mazza
15:10	15:30	00:20	Discussion	All Module Speakers	_
15:30	16:00	00:30	Coffee Break Moise Safra Auditorium		
16:00	18:00	02:00	DPG Neurointensive Care	Moderator	Felipe Souza Lima Vianna
				Moderator	Marcos Vinicius Tadao Fujino
16:00	16:20	00:20	Transcranial point-of-care ultrasound for the intensivist: Enhancing bedside monitoring	Speaker	Paula Rodrigues Sanches
16:20	16:40	00:20	Interact 3 (the third intensive Care bundle in acute cerebral haemorrage)	Speaker	Gisele Sampaio Silva
16:40	17:00	00:20	Status epilepticus, non-convulsive Seizures, and interictal patterns: Significance and management of EEG findings for intensivists	Speaker	Luís Otávio Sales Ferreira Caboclo
17:00	17:20	00:20	Prognosis and palliative care in neurocritical care	Speaker	Ana Luiza Vieira de Araujo
17:20	17:40	00:20	NCS guidelines on neuroprognosis in comatose survivors of cardiac arrest and post-aSAH	Speaker	Eva Carolina Andrade Rocha
17:40	18:00	00:20	Discussion	All Module Speakers	_
18:00			Closing		

XXXI International Symposium on Mechanical Ventilation - Hospital Israelita Albert Einstein					
Camilla Bueno Auditorium					
August 14, 2024 | Wednesday					
Time Start	**Time Finish**	**Duration**	**Activity**	**Activity**	**Speaker/Moderator**
10:30	12:30	02:00	An update on Respiratory Distress Syndrome	Moderator	Carmen Silva Valente Barbas
10:30	11:00	00:30	New definition of acute respiratory distress syndrome	Speaker	Marco Ranieri
11:00	11:30	00:30	Genetics and ARDS subphenotypes	Speaker	Carmen Silva Valente Barbas
11:30	12:00	00:30	Diagnosing respiratory infections as a cause of ARDS	Speaker	Carmen Silva Valente Barbas
12:00	12:30	00:30	Improving protective ventilation in ARDS	Speaker	Marcelo Britto Passos Amato
12:30	13:30	01:00	Satellite Symposium Mindray	Speaker	
13:30	15:30	02:00	Non-invasive respiratory support in acute respiratory failure	Moderator	Bruno Franco Mazza
				Moderator	Thais Dias Midega
13:30	13:50	00:20	NIV or HFNC in acute respiratory failure: Which one to use?	Speaker	Bruno Franco Mazza
13:50	14:10	00:20	How best to apply HFNC and NIV in practice	Speaker	Eduardo Colucci
14:10	14:30	00:20	ECCO2-R in COPD: Results from the VENT-AVOID TRIAL	Speaker	Marco Ranieri
14:30	14:50	00:20	What is the right time for orotracheal intubation in patients with acute respiratory failure?	Speaker	Thais Dias Midega
14:50	15:10	00:20	Intubating with the videolaryngoscope	Speaker	Bruno de Arruda Bravim
15:10	15:30	00:20	Discussion	All Module Speakers	_
15:30	16:00	00:30	Coffee Break Moise Safra Auditorium		
16:00	18:00	02:00	Starting Mechanical Ventilation	Moderator	Ricardo Goulart Rodrigues
				Moderator	Telma Antunes
16:00	16:20	00:20	Volume controlled versus pressure controlled ventilation: How best to adjust?	Speaker	Rogerio da Hora Passos
16:20	16:40	00:20	Adjustment of arterial blood gases in the intubated patient	Speaker	Ricardo Goulart Rodrigues
16:40	17:00	00:20	What is the best way to measure compliance and resistance?	Speaker	Eduardo Correa Meyer
17:00	17:20	00:20	How to measure and minimize AUTO-PEEP in COPD	Speaker	Marco Ranieri
17:20	17:40	00:20	Adjusting ANALGO-SEDATION - BLOCKING agents in MV patients	Speaker	Roseny dos Reis Rodrigues
17:40	18:00	00:20	Discussion	All Module Speakers	_
18:00	19:00	01:00	Free Themes - Presentation of Abstracts	Moderator	Carla Luciana Batista
				Moderator	Bruno Caldin da Silva
				Moderator	Thiago Domingos Correa
18:00	18:10	00:10	4DMB - Medical characterization and benchmarking of ventilatory care in critically ill patients: operational efficiency and quality of care	Presenter	Lucas Garcia
18:10	18:20	00:10	4DMK - Continuous intravenous calcium replacement in a chronic kidney disease dialysis patient after parathyroidectomy: Case report	Presenter	Isabella Lemos Rosmino
18:20	18:30	00:10	4DMT - Implementation of a monitoring system for adherence to the therapeutic plan by the multidisciplinary team in the ICU: rationale and study design	Presenter	Carlos Eduardo Cerqueira Rolim
18:30	18:40	00:10	4DMY - Inspiratory muscle training for chronic critically ill patients - a systematic review and meta-analysis	Presenter	Gustavo Rodrigues das Chagas
18:40	18:50	00:10	4DNE - Lung Ultrasound in the Management of Acute Respiratory Distress Syndrome: A Comprehensive Systematic Review	Presenter	Igor Dovorake Lourenço
18:50	19:00	00:10	4DMM - Using the MAGIC® and DAV Expert® algorithms in management of venous catheters during intensive care	Presenter	Juliana Gerhardt Soares Fortunato
19:00			Closing		

XXXI International Symposium on Mechanical Ventilation - Hospital Israelita Albert Einstein					
Camilla Bueno Auditorium					
August 15, 2024 | Thursday					
Time Start	**Time Finish**	**Duration**	**Activity**	**Activity**	**Speaker/Moderator**
08:00	10:00	02:00	Transitioning from controlled to assisted MV	Moderator	Eduardo Leite Vieira Costa
				Moderator	Glauco Cabral Marinho Plens
08:00	08:20	00:20	Care in the transition from controlled to assisted MV	Speaker	Eduardo Leite Vieira Costa
08:20	08:40	00:20	Avoiding VILI during mechanical ventilation	Speaker	Patricia Rieken Macedo Rocco
08:40	09:00	00:20	Starting pressure support	Speaker	Roberta Fittipaldi Palazzo
09:00	09:20	00:20	Strategies for diaphragmatic protection	Speaker	Carla Luciana Batista
09:20	09:40	00:20	Estimating muscle pressure: Can it help?	Speaker	Glauco Cabral Marinho Plens
09:40	10:00	00:20	Discussion	All Module Speakers	_
10:00	11:00	01:00	Satellite Symposium Biomerieux	Speaker	
11:00	11:30	00:30	Break		
11:30	12:30	01:00	Conference: Mechanical Ventilation	Moderator	Telma Antunes
				Moderator	Carmen Silva Valente Barbas
11:30	12:00	00:30	Ventillatory support: Where are we headed?	Speaker	Marco Ranieri
12:00	12:30	00:30	Practical guidelines on MV as per AMIB - SBPT	Speaker	Alexandre Marini Ísola
12:30	13:30	01:00	Satellite Symposium Astrazeneca	Speaker	
13:30	15:30	02:00	Diagnosing and treating asynchronies	Moderator	Mauro Roberto Tucci
				Moderator	Farah Christina de la Cruz Scarin
13:30	13:50	00:20	Wasted effort	Speaker	Farah Christina de la Cruz Scarin
13:50	14:10	00:20	Auto-triggering/Double-triggering	Speaker	Mauro Roberto Tucci
14:10	14:30	00:20	Reverse triggering	Speaker	Glauco Cabral Marinho Plens
14:30	14:50	00:20	Electrical impedance to monitor asynchronies	Speaker	Eduardo Leite Vieira Costa
14:50	15:10	00:20	Use of an esophageal catheter to adjust asynchronies	Speaker	Cristhiano Adkson Sales Lima
15:10	15:30	00:20	Discussion	All Module Speakers	_
15:30	16:00	00:15	Coffee Break Moise Safra Auditorium		
16:00	18:00	02:00	Monitoring patients on mechanical ventilation	Moderator	Rogerio da Hora Passos
				Moderator	Alexandre Marini Ísola
16:00	16:20	00:20	p0.1 measurement and adjustment	Speaker	Cilene Saghabi de Medeiros Silva
16:20	16:40	00:20	Monitoring of neural drive: NAVA	Speaker	Alexandre Marini Ísola
16:40	17:00	00:20	Estimating work of breathing	Speaker	Carmen Silva Valente Barbas
17:00	17:20	00:20	Estimating the PMI and POCC	Speaker	Eder Chaves Pacheco
17:20	17:40	00:20	Estimating driving pressure and mechanical power	Speaker	Rogerio da Hora Passos
17:40	18:00	00:20	Discussion	All Module Speakers	_
18:00	19:00	01:00	Free Themes - Presentation of Abstracts	Moderator	Uri Adrian Prync Flato
				Moderator	Roberto Rabello Filho
				Moderator	Vinicius Barbosa Galindo
18:00	18:10	00:10	4DMD - Multidrug-resistant bacteria in an intensive care unit: a review of management	Presenter	Renato Pereira Gomes
18:10	18:20	00:10	4DNH - Transcranial Doppler in Post-Cardiac Arrest Management: A Systematic Review	Presenter	Igor Dovorake Lourenço

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August 15, 2024 | Thursday					
Time Start	**Time Finish**	**Duration**	**Activity**	**Activity**	**Speaker/Moderator**
18:20	18:30	00:10	4DNJ - The Vitruvian Exploration: Systematic Review of Capillary Refill Time in Adult Critically Ill Patients	Presenter	Rogerio da Hora Passos
18:30	18:40	00:10	4DNN - Systematic Review: Inadequate Allocation of Critically Ill Patients in Hospital Settings	Presenter	Leonardo Van de Wiel Barros Urbano Andari
18:40	18:50	00:10	4DNR - Evaluating the Quality of Systematic Reviews on the Use of Balanced Crystalloids Versus Saline in Fluid Resuscitation of Critically Ill Patients	Presenter	Leonardo Van de Wiel Barros Urbano Andari
18:50	19:00	00:10	4DMG - Ventilatory weaning and multifaceted rehabilitation in the postoperative period of robotic tracheobronchoplasty with veno-venous extracorporeal membrane oxygenation: a case study	Presenter	Júlia Maria de Jesus Vital
19:00			Closing		

XXXI International Symposium on Mechanical Ventilation - Hospital Israelita Albert Einstein					
Camilla Bueno Auditorium					
August 16, 2024 | Friday					
Time Start	**Time Finish**	**Duration**	**Activity**	**Activity**	**Speaker/Moderator**
08:00	10:00	02:00	Weaning from Mechanical Ventilation	Moderator Moderator	Raquel Afonso Caserta Carolina Cáfaro
08:00	08:20	00:20	How best to assess patient readiness for liberation from Mechanical Ventilation	Speaker	Pedro Caruso
08:20	08:40	00:20	How best to perform a spontaneous breathing test?	Speaker	Flávia Sales Leite
08:40	09:00	00:20	NIV or high flow after extubation	Speaker	Carmen Silva Valente Barbas
09:00	09:20	00:20	Difficult weaning; and now what?	Speaker	Sergio Nogueira Nemer
09:20	09:40	00:20	Indicating tracheostomy: When?	Speaker	Carolina Cáfaro
09:40	10:00	00:20	Discussion	All Module Speakers	_
10:00	11:00	01:00	Satellite Symposium Moise Safra Auditorium	Speaker	
11:00	11:30	00:30	Break		
11:30	12:30	01:00	Conference: Mechanical Ventilation	Moderator Moderator	Raquel Afonso Caserta Carla Luciana Batista
11:30	12:00	00:30	Using electrical impedance to monitor the MV patient	Speaker	Karina Tavares Timenetsky
12:00	12:30	00:30	How best to rehabilitate patients undergoing mechanical ventilation	Speaker	Ricardo Kenji Nawa
12:30	13:30	01:00	Satellite Symposium Moise Safra Auditorium	Speaker	Bárbara Vieira Carneiro
13:30			Closing		

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Presentation Abstracts

001

Evaluating the quality of systematic reviews on the use of balanced crystalloids *versus* saline in fluid resuscitation of critically ill patients

Arnaldo Alves da Silva[1], Leonardo Van de Wiel Barros Urbano Andari[1], Natália Dilella Acherman[1]

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Category: Hemodynamics/Shock/Sepsis

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Introduction: Intravenous fluid therapy is a fundamental aspect of critical care, yet the optimal choice between balanced crystalloids and saline solutions remains a subject of ongoing debate. This debate is fueled by the significant impact fluid choice can have on patient outcomes, particularly in critically ill individuals. Systematic reviews aiming to clarify this issue by synthesizing existing evidence have yielded varying conclusions, likely due to differences in methodological rigor. **Objective:** This study aimed to evaluate the methodological quality of systematic reviews comparing balanced crystalloids to saline for fluid resuscitation in critically ill patients, ultimately clarifying the strength and reliability of existing evidence. Understanding the quality of these reviews is crucial for informing evidence-based clinical decisions regarding fluid management in critical care settings. **Methods:** A comprehensive meta-research approach was employed, systematically searching databases such as MEDLINE, EMBASE, Web of Science, and the Cochrane CENTRAL Register of Controlled Trials (up to December 2019), ensuring a broad capture of relevant literature. Inclusion criteria were stringent, requiring studies to be systematic reviews with or without meta-analysis, focusing on adult critically ill patients, and comparing balanced crystalloids to saline. The primary outcomes of interest were mortality and renal replacement therapy (RRT), while secondary outcomes included ICU length of stay and incidence of acute kidney injury (AKI). Each systematic review's quality was assessed using the AMSTAR (A Measurement Tool to Assess Systematic Reviews) tool, and the certainty of the evidence was evaluated using the GRADE (Grading of Recommendations Assessment, Development and Evaluation) approach. The extracted data were synthed and will be presented in a tabular format, summarizing the number of randomized controlled trials (RCTs) included, the quality of evidence, and the consistency of the findings across the reviews, in a manner that provides a clear and concise comparison of the evidence base. **Results:** Six systematic reviews, encompassing 19,105 to 35,456 participants across diverse critical care settings, were analyzed. Considerable variability in methodological quality and conclusions regarding the comparative effectiveness of balanced crystalloids and saline was found. While some evidence suggests benefits for balanced crystalloids (*e.g*, reduced mortality, lower AKI incidence), the overall quality and consistency of this evidence remains limited. **Conclusions:** The variability in systematic review quality significantly impacts the reliability of conclusions and subsequent clinical decision-making. Future research must prioritize rigorous methodological standards, including adherence to established protocols (*e.g*, PRISMA), thorough risk of bias assessments, and GRADE assessments, to generate high-quality evidence for informing clinical practice.

Presentation Abstracts

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002

Metabolic and perfusion trends in polytrauma patients post-peritoneostomy: identification of risk factors and clinical implications

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Introduction: Circulatory shock secondary to severe trauma is a significant cause of death globally.(1) Many cases undergo peritoniostomy and the assessment of metabolic and perfusion variables is crucial as early diagnosis of hypoperfusion is a fundamental part of management in these patients.(2,3) **Objective:** To analyze perfusion and tissue oxygenation trends in post-peritoneostomy polytraumatized patients, focusing on mortality and seeking to understand the consequences of tissue dysoxia. **Methods:** Prospective longitudinal study in specialized trauma ICUs including severely traumatized adults diagnosed with post-peritoneostomy shock. Palliative patients and deaths prior to ICU admission were excluded. Primary outcomes: metabolic evolution associated with hospital mortality. Secondary outcomes: complications and risk factors for mortality. **Results:** Forty six patients (mean age 31.2±11.4 years; 87% male) with post-peritoneostomy due to severe trauma were analyzed. The majority received more than 10 red blood cell concentrates (90.2%) and tranexamic acid (65.2%). During the first surgery, the median blood transfusion was 7.5 bags (3.75-14.7). All received crystalloids during (median 2250 mL) and in the first 24 hours of ICU (median 3000 mL). The average ICU stay was 12 days, with 4 days of vasopressor use. Hospital complications occurred in 47.8%, with mortality of 26.1%. Non-survivors had a higher ISS (32.7±9.9 *versus* 26.4±9.9, p=0.05), longer sedation time (7.5 *versus* 4 days, p=0.037) and vasopressors (8 *versus* 3 days, p=0.036) as well as a greater volume of crystalloids in the first 24 hours in the ICU (4000 *versus* 2750 mL, p=0.029). In the multivariate logistic regression analysis, only the time of vasopressor use (OR=1.53; 95%CI=1.02-2.29) and the volume received in the first 24 hours of ICU (OR=1,0005; 95%CI 1,0001-1,001) were independent risk factors for death in this population. Regarding the evolution of metabolic and perfusion variables over time, a significant difference was observed between survivors and non-survivors in lactate (p=0.03). Regarding pH, bicarbonate and urea, significant trends were observed (p<0.1). Creatinine did not differ between groups (p=0.156) (Figure 1). Regarding coagulation analysis, survivors presented lower APTT and PT values with a statistically significant difference between the groups (p<0.05). **Conclusion:** In this study, we identified that metabolic and perfusion variables are risk factors for mortality in post-peritoneostomy polytraumatized patients. We highlight the importance of monitoring these variables and interventions to improve outcomes for these patients.

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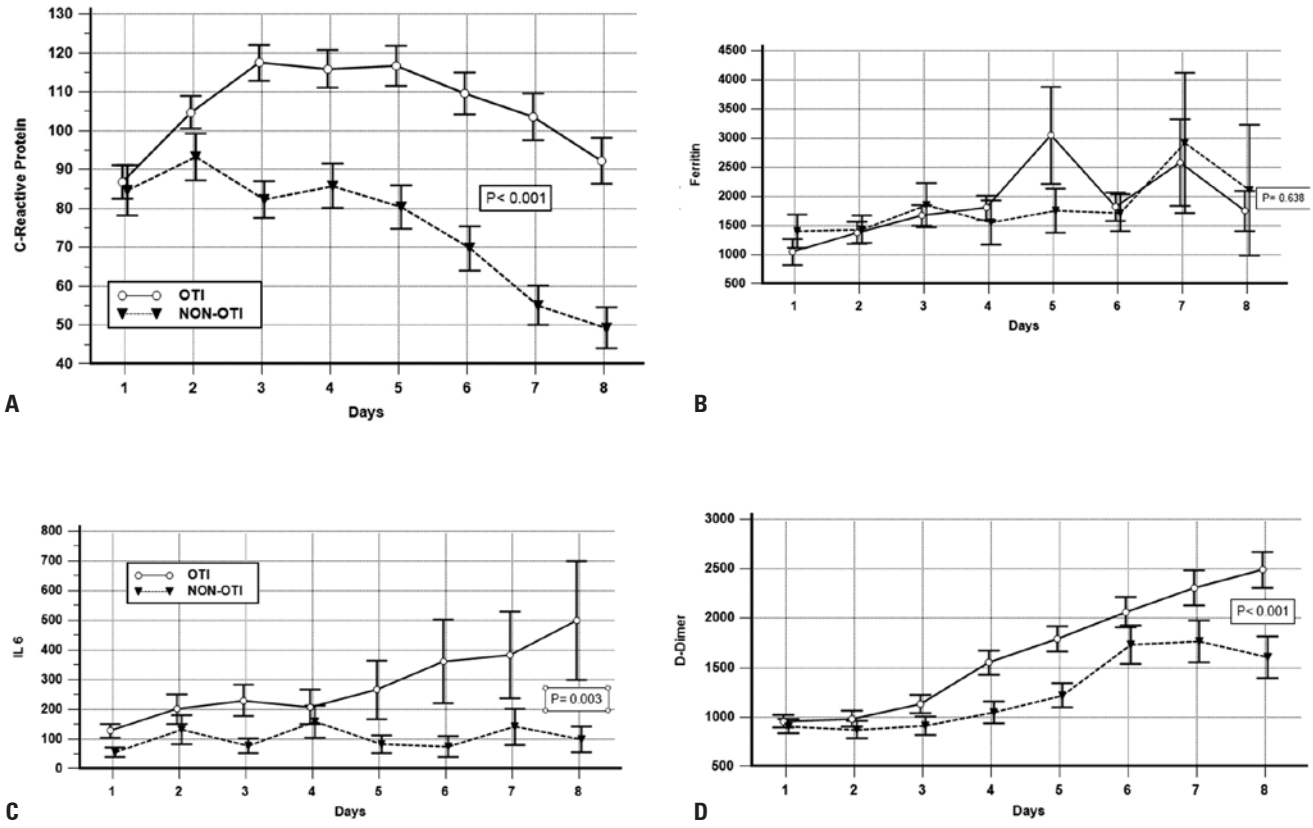

Figure 1. Evolution of metabolic and perfusional variables in post-operative peritoniostomy patients: comparison between survivors and non-survivors

Presentation Abstracts

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003

Retrospective evaluation of hemodynamic parameters and cerebral near-infrared spectroscopy levels in patients treated with veno-arterial extracorporeal membrane oxygenation

Sávio Sérgio Ferreira Custódio[1], Paula Rodrigues Sanches[1], Eduardo José Paolinelli Vaz de Oliveira[1], Pedro Paulo Zanella do Amaral Campos[1], Arnaldo Alves da Silva[1]

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Category: Hemodynamics/Shock/Sepsis

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Introduction: Extracorporeal membrane oxygenation (ECMO) provides advanced bridge therapy for refractory cardiopulmonary failure and perioperative support, including refractory cardiopulmonary resuscitation,[1] being associated with improved survival and neurological outcomes in these patients.[2] Neurological complications such as seizures, intracranial hemorrhage, ischemic stroke, cerebral microembolism, among others, are frequently encountered and are important causes of sequelae and functional impairment in these patients.[3] These complications are more common in V-A ECMO compared to V-V ECMO.[4] Neurological complications are also more frequent in extracorporeal cardiopulmonary resuscitation (ECPR) compared to ECMO indication in the context of cardiac or respiratory failure.[5] Considering these complications and the need for constant evaluation of the level of sedation or the emergence of Harlequin syndrome, adequate neurological monitoring in this context is mandatory.[6-11] **Methods:** This was a single-center, retrospective cohort study of patients who received support with V-A ECMO and neurological monitoring with cerebral NIRS treated at the Critical Care Department of *Hospital Israelita Albert Einstein* (HIAE) in São Paulo, SP, during the period from January 2015 until July 2023. Data was extracted from the electronic medical record, EPIMED database of HIAE and ECMO-related database of the Critical Care Department of HIAE. This study was approved by the Research Ethics Committee of *Hospital Israelita Albert Einstein*. Informed consent was waived due to retrospective design. **Results:** Twenty-three out of 55 V-A ECMO patients (aged 47 [18-70] years) were included. The mean SAPS-3 score on admission was 46.35±12.77. Fifteen individuals (65.2%) were male, and 8 individuals (34.8%) were female. Fifteen patients (65.2%) survived, and 8 patients (34.8%) died. 6 patients (26.1%) were hypertensive. Seven patients (30.4%) had diabetes. 9 patients (39.1%) were cannulated due to cardiogenic shock, 6 (26.1%) due to ECPR, and 8 (34.8%) due to heart or lung transplantation. The mean duration of V-A ECMO treatment was 7.04 days±7.125, with a minimum of 1 day and a maximum of 26 days. The most frequent treatment duration was 4 days (21.7%). The mean ECMO flow was 3.15±0.76. The mean membrane oxygen fraction (FmO2) was 57.29%±18.35. The mean mean arterial pressure (MAP) was 71.59±11.28. The mean left cerebral rSO2 was 52.53±10.41, and right cerebral rSO2 was 52.925±10.45. Multivariate regression analysis showed that mean arterial pressure (MAP) was significantly associated with NIRS levels in both the right ($p<0.038$) and left ($p<0.004$) cerebral hemispheres. **Conclusions:** In conclusion, in our retrospective analysis the observed correlation between mean arterial pressure (MAP) and NIRS levels underscores the importance of effective hemodynamic management in maintaining cerebral perfusion during V-A ECMO.

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CAAE: 73955623.7.0000.0071.

Presentation Abstracts

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004

The Vitruvian exploration: systematic review of capillary refill time in adult critically ill patients

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Introduction: Capillary refill time (CRT) assessment is pivotal in evaluating peripheral perfusion and circulatory status in adult critically ill patients.[1-3] Prolonged CRT serves as an early indicator of compromised tissue perfusion and potential circulatory insufficiency.[4,5] **Objective:** This systematic review synthes current evidence on the diagnostic accuracy, prognostic implications, and correlations with lactate levels and mottling scores of CRT in adult critically ill patients. **Methods:** A systematic search of PubMed, Scopus, and Cochrane Library databases was conducted for studies published from 2000 to 2023. Inclusion criteria encompassed original research and systematic reviews focusing on CRT in adult critically ill populations. Key search terms included "capillary refill time," "critical illness," "shock," "perfusion assessment," and related terms. Data extraction included study design, patient demographics, CRT measurement techniques, sensitivity, specificity, positive predictive value (PPV), negative predictive value (NPV), correlation with lactate levels and mottling scores, clinical outcomes (*e.g.*, mortality, length of stay), statistical methods (including sensitivity and specificity analysis), and bias risk assessment. **Results:** Twenty studies met inclusion criteria, demonstrating CRT's reliability in assessing peripheral perfusion in adult critically ill patients. Prolonged CRT consistently correlated with increased mortality rates (pooled odds ratio 2.5, 95%CI=1.8-3.4) and longer hospital stays. Sensitivity analysis showed robust sensitivity (mean 0.78, 95%CI=0.72-0.84) and moderate specificity (mean 0.65, 95%CI=0.58-0.71) for predicting adverse outcomes. Moreover, prolonged CRT exhibited a significant positive correlation with elevated lactate levels (correlation coefficient 0.50, $p<0.001$) and higher mottling scores (correlation coefficient 0.45, $p<0.01$), highlighting its utility in assessing tissue perfusion abnormalities. **Conclusion:** Capillary refill time is a valuable clinical tool for assessing peripheral perfusion and circulatory status in adult critically ill patients. Its simplicity and reliability enable early detection of circulatory compromise and timely intervention. Standardization of CRT measurement protocols and further validation across diverse patient populations are essential to optimize its clinical utility and integrate it into routine critical care practice.

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005

Generalized pustular psoriasis (von Zumbusch)

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Category: Infection

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Introduction: Von Zumbusch syndrome, also known as Leiner-Moussous ichthyosiform erythroderma, is a rare and severe form of generalized pustular psoriasis. Characterized by the sudden appearance of sterile pustules (filled with liquid) on the skin, which then turn red and peel intensely, it initially appears in areas of flexure. It may be accompanied by fever, general malaise, muscle weakness and other systemic symptoms. It can be dangerous due to potential complications such as dehydration, secondary infection and organ failure. It requires urgent medical attention and aggressive treatment with medications, which may include corticosteroids, retinoids, immunosuppressants and biological therapies.[1-5] **Objective:** This report aims to illustrate an individual with a characteristic clinical presentation of Von Zumbusch syndrome. **Case description:** JDD, 66 years old, female, with chronic obstructive pulmonary disease GOLD IV D, systemic arterial hypertension, heart failure, type 2 *diabetes mellitus*, hypothyroidism and grade 3 obesity. Patient was admitted to the *Hospital Regional José Alencar Gomes da Silva* in Uberaba - Minas Gerais, on 06/09/2023 due to acute respiratory failure due to an exacerbation of the underlying disease due to pneumonia. During treatment, the patient suddenly developed the presence of widespread pustular papules, with erythema, which progressed to desquamation during the use of systemic corticosteroids and not after their discontinuation, as is commonly observed (Figure 1). There was already a history of similar previous injuries in another hospitalization. The diagnostic hypothesis was raised and a biopsy of the lesions was performed, resulting in skin with foci of parakeratosis, agranulosis and an intense neutrophilic inflammatory process with intraepidermal and subepidermal vesico-bullous formations. The use of corticosteroids was suspended due to the possibility of their use being a trigger for the development of the disease. A significant improvement in the lesions was observed in addition to the cessation of the appearance of other lesions. **Comments:** In this case, the skin changes were extremely suggestive of generalized pustular psoriasis, but due to the scarcity of data on the disease it is difficult to think about the diagnostic hypothesis. In this sense, more studies and evidence are needed to help.

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Figures 1. Figures 1 to 9 showing the patient's skin lesions

006

Multidrug-resistant bacteria in an intensive care unit: a review of management

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Category: Infection

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Introduction: Antimicrobial resistance is considered a global health problem, which compromises the effectiveness of antibiotics, making the treatment of common infections unfeasible.(1) Microorganisms can undergo genetic mutation when exposed to antimicrobial drugs and are referred to as "superbugs." Healthcare-related infections have an impact on hospital mortality, length of stay and costs. Developing countries suffer from a higher burden of these infections, which can be up to 20 times higher than developed countries.(2,3) **Objective:** Review the literature highlighting what actions should be taken in the presence of infections caused by multidrug-resistant bacteria. **Methods:** The scope question was formulated by inserting the identification of essential words in order to enable the location of primary studies available in the databases, namely: "What are the most effective procedures to combat multidrug- resistant bacteria in intensive care environments?" The search was carried out in the following databases: PubMed, Scielo and Medline. Original articles available in full in the databases or in the selected Virtual Library were selected, in open online access, in Portuguese, English, Spanish or French. The search has been contemplated for the last 25 years. Then, the full texts were read, seeking to choose the studies that answered the research question. **Results:** The review included 17 articles and the approaches found were early diagnosis, guided antibiotic therapy, creation of an isolation unit, hand washing and continuing education. **Discussion:** The first step to be taken is the identification of potentially colonized or infected patients. Once diagnosed, isolation of the patient is mandatory. It is necessary to develop and follow specific protocols for assistance. Regarding antibiotic therapy, whenever possible guided by cultures and antibiograms5. When started empirically, escalate as soon as possible, enabling adequate treatment, minimizing resistance and contributing to the prophylaxis of future colonization and/or infections by "superbugs". Continuing education is a tool that enables the continuous improvement of prophylaxis, encourages monitoring of hand washing and the rational use of antibiotic therapy. Hand washing should be encouraged and emphad among professionals involved or not in assistance, with information also provided among family members and visitors. **Conclusion:** Early diagnosis is the approach that guides the treatment of infections caused by multidrug-resistant bacteria. The review found that isolation is essential for preventing spread and hand washing is the most important measure in the prophylaxis of cross-infections. It is suggested, based on the scarce literature, that new research using this topic be carried out and enable the translation of scientific knowledge into health practice in Intensive Care Units.

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Presentation Abstracts

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007

Impact of peripheral muscle strength on extubation success after cardiac surgery

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Introduction: Although an experienced clinician can predict the likely outcome of attempting to wean the patient from mechanical ventilation, it is desirable to have predictive indices that can be easily measured and widely applied. In this scenario there is a need to understand whether peripheral muscle strength can be a predictor after cardiac surgery. **Objective:** To evaluate the impact of peripheral muscle strength on extubation success after cardiac surgery. **Methods:** This is a prospective cohort study. Evaluation of ventilatory, peripheral muscle strength (MRC) and rapid shallow breathing index (IRRS) was performed at 30 and 10 minutes during the Spontaneous Breath Test (SBT). Patients were extubated and followed up for 48 hours to verify the success or failure of extubation and to compare the variables collected preoperatively. **Results:** Sixty-six patients were evaluated, 55 (83%) were classified as successful and 11 (17%) as failure to wean. CRM 30 minutes before ERT with cutoff value 44±4, with sensitivity and specificity, respectively 77% and 84%, AUC 0.864 and 95%CI=0.69-1.00. On the other hand, the MRC 10 minutes before TRE showed a cutoff value of 49±5, with sensitivity of 55%, specificity of 80%, AUC 0.845 and 95%CI=0.77-1.00. Finally, the IRRS 10 minutes before ERT with a cutoff value of 45±4, sensitivity 30%, specificity 70%, AUC 0.476 and 95%CI=0.22-0.71. **Conclusion:** We conclude that peripheral muscle strength is a predictor of extubation success in patients undergoing cardiac surgery.

008

Continuous intravenous calcium replacement in a chronic kidney disease dialysis patient after parathyroidectomy: case report

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Category: Nefrology

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Introduction: Parathyroidectomy is a common treatment for secondary hyperparathyroidism in chronic kidney disease (CKD) patients. Postoperative management includes calcium, phosphate, and vitamin D replacement to prevent sudden parathyroid hormone deficiency and bone hunger syndrome.[1-3] This replacement can be done intravenously and orally.[4] **Objective:** To report a case of continuous intravenous calcium replacement in a CKD patient after parathyroidectomy, with an emphasis on nursing and pharmacy care. **Methods:** Descriptive case report of a continuous intravenous calcium replacement strategy in a CKD patient on dialysis and post-parathyroidectomy at a quaternary hospital in the private healthcare network in São Paulo, in 2024. The study was conducted after obtaining informed consent from the patient. **Case Report:** An 84-year-old male, CKD patient on dialysis, with secondary hyperparathyroidism refractory to drug therapy, with a history of bone lesions. Underwent elective parathyroidectomy without complications, requiring continuous intravenous calcium replacement postoperatively. Replacement was performed by infusing a 500ml solution consisting of 240ml of 10% calcium gluconate 260ml of 0.9% SF at a rate of 5ml/h in an infusion pump, if ionized calcium <1.2. Oral calcium and vitamin D replacement was also performed. **Results:** Continuous intravenous calcium replacement is uncommon in the institution's clinical practice and requires multidisciplinary care in preparation, administration, and maintenance. Among the pharmaceutical care, we can mention the analysis of the bag formulation, as well as the dose, frequency, infusion rate, stability, and total volume of the solution, prioritizing the minimum possible volume, due to the dialysis context. As for nursing care, we can mention double checking the administration of the solution, using an infusion pump, continuous cardiac monitoring, pausing the infusion during calcium collection and serial serum monitoring, as well as evaluating the Chvostek and Trousseau signs. Intravenous calcium infusion can cause risks, including altered consciousness and cardiac arrhythmias.[5] Hospitalization in an Intensive Care Unit allows for adequate management of these risks and immediate intervention in case of complications, and also guarantees continuous calcium administration by infusion pump and strict patient monitoring. **Conclusion:** The proposed therapeutic strategy is a safe, effective, and appropriate option for the treatment of postoperative hypocalcemia after parathyroidectomy in special populations. The engagement of the multiprofessional team with an emphasis on pharmacists and nurses is essential to ensure patient safety and quality of care.

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Presentation Abstracts

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009

Incidence and impact of near-miss events during continuous renal replacement therapy in critically ill patients

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Introduction: Continuous Renal Replacement Therapy (CRRT) is essential for managing acute kidney injury (AKI) in critically ill patients.[1-4] However, the complexity of CRRT increases the risk of near-miss events-incidents that could cause harm but are intercepted before actual damage occurs.[5] This study investigates the incidence, risk factors, and outcomes of near-miss events during CRRT in a tertiary ICU setting. **Methods:** A retrospective cohort study was conducted over 24 months in the ICU of a tertiary care hospital. Data from 200 adult patients requiring CRRT for AKI were analyzed. Near-miss events, defined as incidents intercepted before causing harm, were identified and correlated with patient outcomes using descriptive statistics, multivariate logistic regression, and χ^2 tests. **Results:** Among 900 CRRT sessions, 150 near-miss events were recorded, yielding an incidence rate of 16.7 events per 100 sessions. Common near-miss events included circuit clotting (40%), electrolyte disturbances (30%), incorrect fluid balance adjustments (20%), and equipment malfunctions (10%). Key risk factors included higher APACHE II scores (OR=1.12), sepsis (OR=2.45), prolonged CRRT duration (OR=1.08 per 24 hours), and inadequate anticoagulation (OR=3.15). Patients experiencing near-miss events had higher ICU mortality (62% *versus* 32%), longer ICU stays (mean 14.2 *versus* 10.5 days), prolonged mechanical ventilation (mean 9.8 *versus* 6.7 days), and lower renal recovery rates (25% *versus* 40%). **Conclusion:** Near-miss events during CRRT are common and significantly impact patient outcomes. Enhanced monitoring, better anticoagulation protocols, and improved staff training are crucial to mitigating these risks and improving patient safety.

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010

A systematic review of weaning strategies in neurologic patients

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Introduction: Optimal weaning from mechanical ventilation (MV) is crucial for neurologic patients, who often face challenges such as altered respiratory mechanics and neurogenic respiratory failure. However, the diversity in weaning protocols across neurologic conditions like traumatic brain injury (TBI), stroke, and neuromuscular disorders complicates effective management.[1-4] **Objectives:** This systematic review seeks to evaluate and synthesize existing research on weaning protocols and strategies for neurologic patients reliant on mechanical ventilation. The primary goal is to identify effective weaning practices, assess prevalent complications, and determine key outcomes. Through comprehensive analysis of current evidence, this review advocates for the formulation and adoption of standardized, neurology-specific weaning protocols to enhance patient outcomes and mitigate complications within critical care settings. **Methods:** This systematic review synthesize literature from PubMed, Embase, and Cochrane Library databases, covering studies published between 2000 and 2023. Inclusion criteria focused on weaning protocols, strategies, outcomes, and complications in both adult and pediatric neurologic populations. Data extraction included study design, patient demographics, specific weaning techniques (*e.g.*, spontaneous breathing trials, automated systems), readiness criteria, complications (*e.g.*, reintubation rates), and key outcomes (*e.g.*, successful extubation, mortality). Study quality was assessed using the Newcastle-Ottawa Scale for observational studies and the Cochrane Risk of Bias Tool for randomized controlled trials. **Results:** Analysis of 32 selected studies revealed a broad spectrum of weaning approaches tailored to diverse neurologic impairments. Successful extubation rates ranged significantly (50% to 90%), with reintubation rates also varying (10% to 30%). Common complications included ventilator-associated pneumonia and respiratory distress, underscoring the need for standardized protocols and individualized management strategies.

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Presentation Abstracts

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011

Applicability of lung ultrasound during weaning from mechanical ventilation: a systematic review

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Introduction: Lung ultrasound is a widely used tool in the ICU environment. However, the real effectiveness of using ultrasound to help wean patients off mechanical ventilation is still unknown, as it is still imprecise to assess the ideal time for extubation. **Objective:** To review the use of lung ultrasound as a predictor of weaning from artificial ventilation. **Methods:** This is a systematic review using the PICOS strategy, with searches carried out in the Pubmed, CENTRAL, LILACS, CINAHL and Cochrane databases using the descriptors mechanical ventilation, artificial ventilation, extubation, lung ultrasound, thoracic ultrasound and weaning, added by the Boolean operators AND and OR. **Results:** Fourteen articles were found after reading the title and abstract, eight of which were selected after reading in full. Four concluded that lung ultrasound is effective in aiding weaning, three articles inferred the inaccuracy of lung ultrasound in extubation and one article was inconclusive. We observed that protocols for applying lung ultrasound were used, such as LUS, evaluating the six regions, the modified LUSm procedure or even the BLUE protocol. This resulted in a sensitivity rate for predicting weaning success ranging from 66% to 97-100% and specificity from 37.4% to 96% among the articles selected. **Conclusion:** Lung ultrasound can help predict the outcome of weaning with relative accuracy, and is a promising technique for hospital use.

012

Comparative analysis of the effects of bronchial hygiene maneuvers on respiratory mechanics of adult patients under invasive mechanical ventilation: a randomized clinical trial

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Introduction In bedridden patients, the integrity of the respiratory system may be compromised, leading to increased secretions and airway obstruction, which can cause atelectasis, impaired ventilation, and prolonged hospital stay. Bronchial hygiene maneuvers are used to optimize secretion removal; however, their repercussion are not fully understood.(1) Including the behavior of static compliance of the respiratory system, peak airway pressure and airway resistance.(2) **Objective:** Analyze the effects of flow and oscillatory secretion removal maneuvers followed by airway suctioning compared to isolated airway suctioning on respiratory mechanics of mechanically ventilated adults. **Methods:** A blind, randomized clinical trial was conducted with 50 participants. Inclusion criteria were: patients ≥18 years old with diagnosis of pneumonia, under controlled invasive mechanical ventilation. We excluded patients with hemodynamic or neurologic instability, with contraindication to the bronchial hygiene maneuvers and with patient-ventilator asynchrony. The participants were allocated into five groups, and for statistical analysis, they were regrouped into three macro-groups (oscillatory maneuvers, flow maneuvers, and Control Group) (Table 1). Intervention was performed once, by the same physiotherapist, who was experienced in intensive care units. The primary outcomes were respiratory system compliance, airway resistance, and peak airway pressure, and the secondary outcomes included heart rate, blood pressure, and peripheral oxygen saturation. All the variables were measured before, immediately after, and 1 h after the intervention. **Results:** There were no significant differences in the primary or secondary outcomes among the flow maneuver, oscillatory maneuver, and control groups in any evaluation time point. Neither flow maneuvers nor oscillatory maneuvers were superior to isolated aspiration for improving ventilatory mechanics. Nevertheless, our results demonstrate that these maneuvers are hemodynamically safe, because interruption of these maneuvers due to hemodynamic changes was not observed in in any of the participants and there was no effect on the secondary outcomes. **Conclusions:** The bronchial hygiene maneuvers followed by airway suctioning have similar effects compared to isolated airway suctioning on respiratory mechanics and do not pose risks to patient hemodynamics. This clinical trial is registered in the Brazilian Clinical Trials Registry under the identifier RBR-3qyt32y.

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Table 1. Within-group comparison of primary outcome variables at the three assessment time points

	Oscilatory	Flow	Control
Static compliance (ml/cmH2O), mean (SD)			
Before intervention	31.8±13.3	53.4±29.7	41.3±21.6
Immediately after intervention	30.7±15.0	49.7±23.8	36.5±15.8
1 hour after intervention	32.1±15.5	61.1±42.7	36.5±17.6
p-value	0.76	0.24	0.54
Peak pressure (cmH2O)			
T0	28.5±8.1	22.3±5.1	26.8±13.8
T1	28.1±7.5	22.9±6.0	23.9±7.7
T2	27.8±8.5	21.1±5.9	25.5±11.0
p-value	0.75	0.11	0.27
Airway resistance cmH2O/1/seg			
T0	14.2±7.8	14.4±7.2	16.4±11.5
T1	11.9±4.1	14.4±8.7	11.0±5.2
T2	12.5±4.9	12.8±7.7	13.5±3.5
p-value	0.15	0.11	0.20

T0: before; T1: immediately after the procedure; T2: 1 h after the procedure; SD: standard deviation.

Presentation Abstracts

013

COVID-19: when to intubate?

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Introduction: Severe respiratory failure in Covid-19 often requires invasive mechanical ventilation.(1) However, many of these patients are initially managed with NIV and HFNC, postponing intubation.(2,3) **Objectives:** This study aims to identify whether there is a difference in the device used before intubation, as well as whether the time taken until invasive mechanical ventilation influences mortality. **Methods:** Retrospective cohort study with patients hospitalized between May 1, 2020 and May 1, 2021. Patients over 18 years old admitted to semi-intensive and intensive care units, with positive PCR, chest tomography and inflammatory markers were included. carried out within 72 hours of admission. Patients with COPD using home oxygen, intubation not related to Covid-19, heart failure, previous tracheostomy and hospitalization of less than 24 hours were excluded. The main outcome was to identify the factors that determined tracheal intubation and the evolution of these patients. **Results:** Of the 852 patients treated, 316 were excluded, leaving 550, of which 346 required intubation. Intubated patients had higher BMI (p=0.02), SAPS-3 (p<0.001) and shorter time from symptom onset to hospitalization (p<0.001). Until the eighth day of hospitalization, these patients had higher levels of CRP (p<0.001), interleukin-6 (p=0.003) and d-dimer (p<0.001). Chest CT scans revealed a larger area of lung injury since admission. In the Cox model, SAPS-3 (HR=1.028, 95%CI=1.002-1.055, p=0.038) and time to intubation (HR=1.118, 95%CI=1.021-1.224, p=0.016) were independent risk factors for mortality. Patients intubated 15 days after the onset of symptoms had a higher risk of mortality (OR=2.13, 95%CI=1.07-4.23) (Figure 1). At intubation, the average respiratory rate was 27.5rpm, with 85% FiO2 and ROX index of 4.37. The use of non-invasive ventilatory support was longer in the quartile with more than 15 days until intubation (median of 5 [3-7] days) and the use of a high-flow nasal catheter was associated with a longer time to decide on intubation (p=0.002). **Conclusion:** Late intubation was associated with higher mortality. Non-invasive ventilation support strategies can be used as long as there is no delay in using an invasive strategy when necessary.

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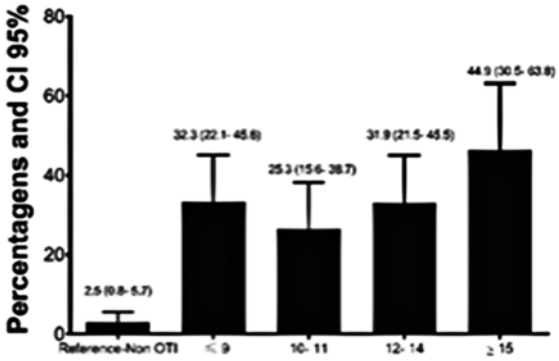
A



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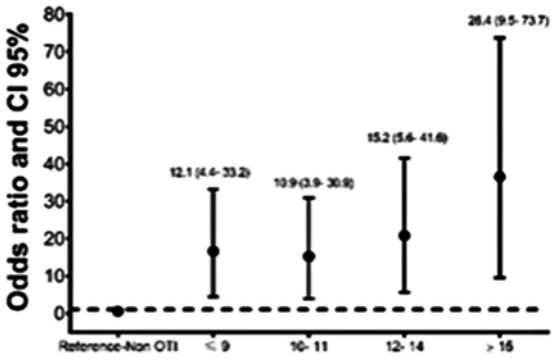

C

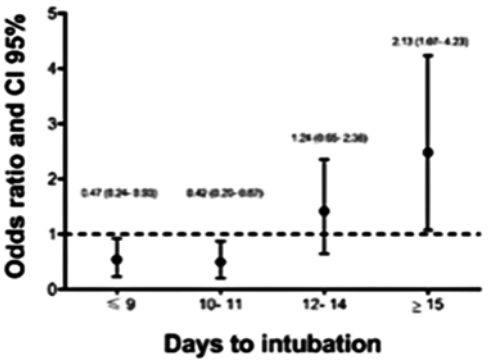

Figure 1. Mortality in relation to time to intubation from the onset of symptoms. The top figure is unadjusted and the bottom figure is adjusted for SAPS 3 and BMI

014

Inspiratory muscle training for chronic critically ill patients: a systematic review and meta-analysis

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Introduction: The evolution of care for critically ill patients has saved many lives around the world.[1] Nevertheless, the increased number of survivors of critically ill episodes has also given rise to a substantial and expanding population of chronically critically ill patients (CCIP) who rely on mechanical ventilation (MV) support and other intensive care therapies for an extended period of time.[1-3] The prolonged MV support and other prevalent conditions encountered during intensive care unit (ICU) hospitalization are associated with the development of clinical conditions that become a challenge for physical rehabilitation, such as peripheral muscle weakness and dysfunction of the diaphragm.[4-6] However, in order to improve patients' respiratory muscle strength, the inspiratory muscle training (IMT) is considered a good alternative, reducing symptoms like dyspnea, and possibly contributing to improving successful weaning rate.[7,8] Although several studies showing the effectiveness of IMT in patients undergoing MV support have been published, its applicability to CCIP remains uncertain. **Objective:** The purpose was to assess whether inspiratory muscle training is associated with enhancements in muscle strength among CCIP. **Methods:** This review was performed following the PRISMA guidelines,[9,10] and the methodological recommendations of the Cochrane Collaboration Handbook.[11] MEDLINE, Embase, Cochrane Central, and LILACS, Clinical Trials Registry, and World Health Organization databases performed on November 24, 2022, and updated on July 11, 2023. Titles and abstracts were screened independently and in duplicate to identify potentially eligible studies, and then a full text was utilized for eligibility. Characteristics and outcome data from included studies were independently extracted by two investigators and revised by a third investigator, using a data collection form for outcomes previously defined. For analysis, the RevMan V5.4 software was used, adopting the mean difference or standardized mean difference with 95% confidence interval (95%CI) for continuous variables or risk ratio with 95% CI for dichotomous outcomes. The GRADE system was used to measure and summarize the overall certainty of the current evidence of each outcome. **Results:** A total of 6,867 records were identified through the initial search, and after excluding duplicates, 6,304 unique reports were screened. Following the assessments of titles, abstracts, and full texts, 16 reports from 7 studies were included in this systematic review, with a total of 434 participants. The IMT showed a significant increase in the inspiratory muscle strength comparing IMT *versus* usual care, mean difference -8.37 (95%CI=-15.21 to -1.52), with very low certainty of evidence. **Conclusion:** IMT has demonstrated an association with better outcomes of inspiratory muscle strength compared to usual care and sham groups.

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015

Interfaces for noninvasive ventilation for adult critically ill patients in the intensive care unit: a systematic review and network meta-analysis

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Introduction: The use of interfaces for non-invasive ventilation (NIV) is of great importance in adult patients admitted to the intensive care unit (ICU). The choice of interface for NIV is crucial as it directly affects patient comfort, tolerance and effectiveness of therapy. **Objectives:** This systematic review and network meta-analysis compare the effectiveness of interfaces in the treatment of patients with exacerbated acute or chronic respiratory failure requiring NIV in the ICU. Methods: The last search was performed on June 6, 2024 at MEDLINE, CENTRAL, EMBASE, and LILACS databases. Only parallel randomized controlled trials (RCTs) were included. The study protocol was registered on PROSPERO [CRD42022345068]. The outcomes evaluated were intubation, ICU and hospital length of stay, in-hospital mortality, severe adverse events, moderate and mild adverse events, comfort, overall hospital costs, tolerance and adherence. Direct comparisons were carried out in the Review Manager 5 software. Risk ratios (RR) with 95% confidence interval (95%CI) or credible interval (CrI) were used for dichotomous outcomes. Continuous outcomes were reported as mean differences (MD) with 95%CIs. For conducted network meta-analysis (NMA) the MetaInsigth software was used with Bayesian random-effects model. **Results:** Our search strategy yielded a total of 2,119 records. At the end of the analysis, 7 studies from 8 reports were included, with a total of 406 adult participants. For ICU length of stay, full face mask and helmet compared to oral nasal mask can reduce length of stay [MD with 95% CrI - 4.08 (-11.31 to 3.35); -3.34 (-6 to 0.49)], and the helmet can reduce hospital stay [MD with 95% CrI -2.4 (-6.23 to 1.62)]. Furthermore, helmet use may reduce serious adverse events compared to oral-nasal mask RR 0.38 [95% CrI, 0.1 to 1.38]. For intubation, the evidence is very uncertain about the difference between using a full-face mask *versus* helmet, RR 1.04 [95% CrI, 0.09 to 10.44], *versus* nasal mask, RR 0.49 [95% CrI 0.03 to 8.12], and *versus* oronasal mask, RR 0.39 [95% CrI, 0.03 to 4.42]. For in-hospital mortality, the NMA results suggest that there may be no clinically important difference between the interfaces. There may be a reduction in the incidence of serious adverse events with helmet use compared with oronasal use, RR 0.38 [95% CrI, 0.1 to 1.38], although there is inaccuracy in the estimates. Only 2 studies evaluated comfort, of which one study showed that the helmet may be more comfortable than the oronasal mask, and another study compared nasal and nasal oral masks with little or no difference between the groups. The helmet may increase tolerance to NIV therapy when compared to an oral nasal mask, RR 1.36 [95% CrI, 0.90 to 2.08]. **Conclusions:** The present NMA

demonstrated that the helmet is an alternative interface of non-invasive ventilation for critically ill patients. Our finding should be interpreted with caution as it generates from RCT with small sample sizes.

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Presentation Abstracts

016

Lung ultrasound in the management of acute respiratory distress syndrome: a comprehensive systematic review

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Introduction: Acute Respiratory Distress Syndrome (ARDS) remains a significant challenge in intensive care, with an incidence rate of approximately 10% among hospital admissions and a mortality rate reaching up to 35%. Effective management of ARDS critically depends on early diagnosis and the timely initiation of appropriate treatment strategies. Traditional diagnostic criteria, particularly imaging techniques, are often criticized for their low sensitivity and specificity, which impede early detection. The advent of lung ultrasound (LUS) offers a promising alternative, recognized in the "New global definition of ARDS (2023)" for its potential to enhance diagnostic accessibility.[1-3] However, the operator-dependent nature of LUS underscores the need for thorough evaluation to ensure its standardization and reliability. **Objectives**: This systematic review and meta-analysis aims to explore the efficacy of LUS in the diagnosis, monitoring, and therapeutic decision-making for ARDS patients in intensive care units, compared to conventional diagnostic modalities. **Methods**: This review includes randomized controlled trials (RCTs), quasi-randomized studies, and cohort studies, both prospective and retrospective, focusing on adult patients diagnosed with ARDS in intensive care settings. The intervention of interest is the application of LUS in the management of ARDS, compared to traditional diagnostic methods such as chest X-rays and CT scans. Exclusion criteria were applied to studies not explicitly evaluating LUS for ARDS, pediatric populations, non-critical care settings, or those with a high risk of bias. A comprehensive literature search was conducted across PubMed/MEDLINE, Cochrane Library, and Scopus databases up to February 2024, using specified descriptors. The quality of included studies was assessed using the Cochrane Risk of Bias Tool and ROBINS-I Tool. This systematic review is registered with PROSPERO (CRD42019115185), ensuring transparency and methodological rigor. Data extraction included study characteristics, participant demographics, ultrasound standardization, outcomes, and etiology. **Results**: The primary analysis assessed the diagnostic accuracy of LUS compared to traditional diagnostic standards and its influence on clinical decision-making, including mechanical ventilation and fluid management strategies. Secondary analyses examined mortality rates, duration of ICU stay, duration of mechanical ventilation, and incidence of ventilation-associated complications. A total of 21 studies were included, and 1 study was excluded during the analysis. **Conclusion**: By rigorously evaluating the role of LUS in the management of ARDS, this systematic review and meta-analysis, substantiates the utility of LUS, potentially revolutionizing diagnostic and therapeutic paradigms in critical care. The findings indicate that LUS offers higher diagnostic accuracy, improves clinical decision-making, and is associated with better patient outcomes, including lower mortality rates, shorter ICU stays, and reduced incidence of ventilation-associated complications. These results underscore the importance of integrating LUS into standard ARDS management protocols in intensive care settings.

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Table 1. Basic data of the included studies

		Period 2008-2023
Type of study (nº study)	Cohort	18
	RCT	3
Purpose (nº study)	Diagnosis	16
	Prognosis	5
Number of patients (nº)	Total	1538
	Men	838
	Women	638
Etiology (nº study)	Pulmonary	17
	Extrapulmonary	6
	Not reported	3
ARDS Criteria (nº study)	AECC 1994	1
	Berlim 2012	11
	Non-standard	3
	Not informed	5
Patients with ARDS (nº)	Mild	61
	Moderate	179
	Severe	247
	Not identified	266
Evaluation method (nº study)	LUS score	16
	BLUE protocol	3
	Non-standard/other	1
Qualification (nº study)	Quantitative	10
	Qualitative	10
Deaths (nº)		227

017

Physiological effects of using humidifiers in invasive mechanical ventilation: a literature review

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Introduction: The airways play an important role in warming and humidifying inspired gas. During inspiration under normal physiological conditions, the air in the upper airway is heated to 37°C and becomes fully saturated at approximately 44 mgH2O per liter. The air passage through the airways that goes from the nose to the terminal bronchioles needs to fulfill three essential functions: humidifying, filtering and warming the inspired air. The use of invasive respiratory mechanical ventilation through an endotracheal tube alters the protective mechanisms of the upper airways, causing a lack of air heating and drying out of the airway mucosa, which can lead to various complications. The lack of air humidification reduces nasal and lung defenses, increasing the risk of damage to the tracheobronchial mucosa due to the dry air inspired. Ciliary dysfunction, inflammation of the respiratory mucosa and low levels of humidification achieved can lead to complications such as mucosal obstruction, decreased functional residual capacity, atelectasis, endotracheal tube occlusion and ventilator-acquired pneumonia. Given the importance of humidification and the damage that its absence can cause, devices are used to artificially meet the needs for humidification and heating of the airways. Carrying out a review of the literature on humidifiers and heaters in mechanical ventilation is extremely important, as it allows a comprehensive and up-to-date understanding of the topic.[1-10] **Objective:** To review the currently used devices for heating and humidification methods effects in The Physiology of Respiration in patients undergoing mechanical ventilation. **Methods:** The literature review was based on scientific journals available in open access electronic databases: PubMed, Web of Science, Scopus, Embase and Bireme. The descriptors used for searching were: humidification and mechanical ventilation. The connector "and" was used for an accurate selection of articles. Original articles, with full text available, in English and Portuguese languages were included. Repeated articles and/or articles that did not address the subject of this research theme were excluded. Inclusion criteria: articles that explain the use of humidification in adults undergoing mechanical ventilation, published from 2013 to 2023, without language barrier. **Results:** The initial research resulted in 410 studies. One hundred and seventy three were duplicated and got excluded. The title and summary of the remaining 237 publications were read and analyzed until 5 articles were selected to compose this review. **Conclusions:** Humidification and heating devices are allies against the loss of the physiological barrier of the airways caused during invasive mechanical ventilation, but it is still not possible to define the superiority of one over the other without associating it with the clinical conditions of each patient.

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018

Use of the lung ultrasound in emergency

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Introduction: Lung Ultrasound (LUS) is a complementary imaging method utilized alongside clinical examination for the etiological identification of acute respiratory failure (ARF). It assists physicians in the differential diagnosis of conditions such as pneumothorax, pneumonia, pulmonary embolism, pulmonary edema, asthma, and Chronic Obstructive Pulmonary Disease (COPD) in patients with dyspnea in emergency departments. The advantage of LUS is that it can be performed bedside without exposing the patient to radiation, and it requires only one trained professional.[1-4] **Methods:** This presentation is based on a comprehensive literature review focusing on recent studies and publications related to the application of lung ultrasound in emergency settings. The BLUE protocol is highlighted for its quick and effective application, typically executed within an average of 3 minutes. The protocol boasts a high accuracy rate, with sensitivity ranging from 81% to 97% and specificity between 95% and 100%. The review emphases the practical applicability of the BLUE protocol and its effectiveness in diagnosing various pulmonary conditions in emergency scenarios. **Results:** The findings elucidate the significance of the BLUE protocol within emergency and urgent care settings for the management of patients presenting respiratory failure. The protocol guides specific therapeutic interventions based on the diagnosed condition. For instance, the identification of A' profile with deep venous thrombosis suggests pulmonary embolism, while A' profile without thrombosis indicates COPD or asthma. The absence of lung sliding with the presence of lung point confirms pneumothorax. POCUS enhances and simplifies the accuracy of physical examinations, proving to be an indispensable tool in contemporary medicine for its application in critical care scenarios. **Conclusions:** The BLUE protocol is essential for timely and accurate diagnosis in emergency care. It provides significant advantages, including rapid execution, high accuracy, and the need for only one trained professional. The implementation of this protocol can significantly enhance clinical decision-making and patient outcomes in emergency settings. Training healthcare professionals, including students, specialists, and non-specialists, in the correct application of the BLUE protocol is crucial. Mastery of probe manipulation and understanding of thoracic anatomical landmarks are essential for effective LUS use.

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Presentation Abstracts

CONTENTS

019

Ventilatory weaning and multifaceted rehabilitation in the postoperative period of robotic tracheobronchoplasty with veno-venous extracorporeal membrane oxygenation: a case study

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Introduction: Pulmonary neoplasms represent one of the most prevalent types of malignant tumors. In some cases, treatment requires complex thoracic surgeries, including the use of Venovenous Extracorporeal Membrane Oxygenation (VV ECMO), a pulmonary support technique used in patients with severe respiratory problems.[1-7] To aid in the recovery of these patients, physiotherapy plays a critical role, especially in cases of difficult ventilator weaning caused by loss of muscle strength. **Objective:** To describe the individualized physiotherapy strategies used to promote physical rehabilitation and weaning from mechanical ventilation in a patient in the postoperative period of tracheobroncoplasty with VV ECMO support. The study is a case report based on the data obtained through the electronic patient record, evaluations and daily follow-up. It was obtained the Patient Consent for Publication, following the institution regulation. Case Report: A 41-year-old male patient underwent robotic surgery tracheobroncoplasty due to adenoid cancer with invasion of the main carina and right stem bronchus with the need for ECMO. Periodic assessments of strength, mobility, and diaphragmatic function using ultrasound were included in the therapeutic plan, as well as physiotherapy strategies to assist in difficult weaning from mechanical ventilation and recovery of functionality. Intensive physiotherapy treatment was carried out for 40 days, with 2 sessions of motor therapy and 4 sessions of respiratory therapy per day, lasting an average of 40 minutes, following the institution's early mobilization guideline. The following respiratory strategies were applied: bronchial hygiene maneuvers, tracheal aspiration, diaphragmatic neuromuscular electrical stimulation, fine adjustments in mechanical ventilation to correct asynchrony, and transition from assisted-controlled ventilation mode to spontaneous breathing after tracheostomy (TQT), respiratory muscle training. After clinical evolution: postural changes (sitting, standing, and periods in an armchair), aerobic exercises and resistance training of peripheral limbs (dumbbells and ankle weights with load progression. The individualized therapeutic strategies contributed to the gradual weaning from mechanical ventilation, followed by decannulation and hospital discharge after 47 days of hospitalization. The mobility assessment was performed using Perme Score scores, which were evaluated daily from admission to discharge from the Intensive Care Unit (Figure 1). **Conclusion**: This case study highlights the effectiveness of a rehabilitation program that employed individualized rehabilitation strategies and physiotherapy interventions, including respiratory and peripheral muscle training, ventilator weaning, and aerobic exercise, which significantly contributed to the patient's recovery process and discharge from the Intensive Care Unit (ICU).

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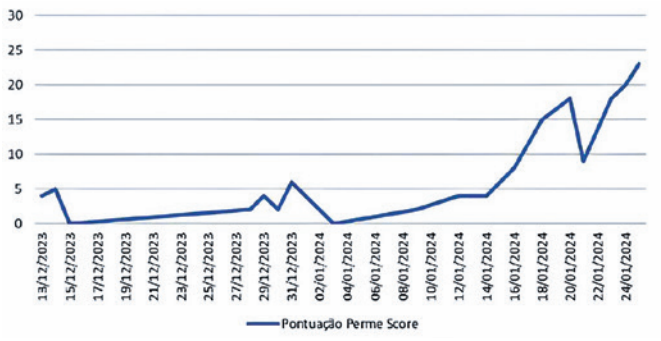

Figure 1. Perme Score Scale

Presentation Abstracts

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020

Creutzfeldt-Jakob disease - sporadic form

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Introduction: Dementia is a syndrome characterized by cognitive and/or behavioral decline associated with significant functional impairment, predominantly affecting the population over 65 years of age. A subgroup of dementia syndromes has a more aggressive clinical course, leading to complete dependency within a few years, with Creutzfeldt-Jakob disease being the most predominant cause of rapidly progressive dementia.[1] **Objectives:** To present a clinical case, discuss the clinical presentation, diagnostic criteria, differential diagnoses, and the challenges of managing the case in a public hospital scenario in São Paulo. **Case Report:** A 53-year-old female patient was diagnosed with Creutzfeldt-Jakob disease at a public hospital in the state of São Paulo (Figure 1). **Conclusion:** Sporadic Creutzfeldt-Jakob disease is a rare encephalopathy with a fatal course. Reversible or treatable causes of rapidly progressive dementia should be ruled out through a comprehensive diagnostic investigation and a detailed clinical history to achieve an accurate and precise diagnosis. Tests such as Real-Time Quaking Induced Conversion and 14-3-3 protein measurement are not widely available in the public health system, leading to the underdiagnosis of sporadic Creutzfeldt-Jakob disease in Brazil.

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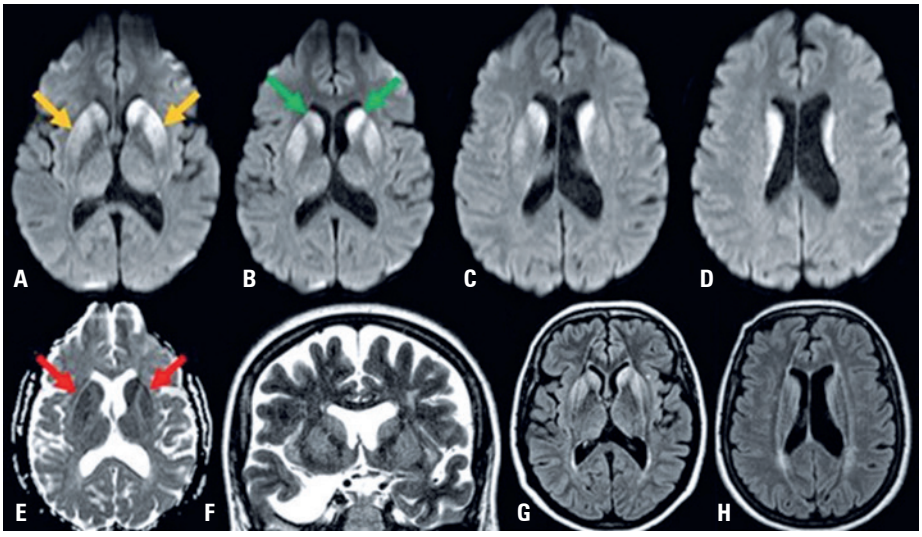

Figure 1. Creutzfeldt-Jakob disease

Presentation Abstracts

021

Transcranial doppler in post-cardiac arrest management: a systematic review

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Introduction: Post-cardiac arrest syndrome often involves significant neurological injury, necessitating early and accurate cerebral perfusion assessment to optimize patient management and prognostication. Transcranial Doppler (TCD) offers a non-invasive method for monitoring cerebral blood flow velocities, potentially aiding in the early detection of neurological impairment and guiding therapeutic interventions. **Methods:** A systematic search of PubMed, Scopus, and the Cochrane Library was conducted using keywords such as "transcranial Doppler," "cardiac arrest," and "neurological outcome." Studies were included if they assessed TCD in adult post-cardiac arrest patients, reported on neurological outcomes, and were published in English from 2000 to 2023. Data on study design, patient characteristics, TCD parameters, and outcomes were extracted and analyzed. The Newcastle-Ottawa Scale and Cochrane Risk of Bias Tool were used for quality assessment. **Results:** Out of 652 citations, 15 studies met inclusion criteria, encompassing prospective cohorts, retrospective analyses, and randomized controlled trials. Higher mean flow velocity (MFV) in the middle cerebral artery (MCA) was significantly associated with favorable neurological outcomes, with a pooled odds ratio of 3.21 (95%CI=2.05-5.02). Prospective cohort studies demonstrated higher sensitivity (0.85; 95%CI=0.75-0.92) and specificity (0.78; 95%CI=0.67-0.86) compared to retrospective analyses. Variability in TCD protocols affected results, with standardized protocols yielding more consistent findings. **Conclusion:** TCD is a promising tool for predicting neurological outcomes in post-cardiac arrest patients. Prospective studies and standardized protocols enhance its predictive utility. Further large-scale prospective trials and standardized methodologies are necessary to confirm these findings and integrate TCD into routine clinical practice for improving post-cardiac arrest patient outcomes.

Presentation Abstracts

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022

The effect of protein supply in critical cancer patients

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Introduction: According to the National Cancer Institute, 704 thousand new cases of cancer are expected in Brazil for each year of the 2023-2025 triennium.(1) Malnutrition in cancer patients is common and largely multifactorial due to the direct and indirect effects of the tumor, treatments performed and psychological factors.(2) **Objective:** To verify whether, in patients admitted to the ICU, a protein intake target of 2.0g/kg/day compared to a conservative protein intake target of 1.5g/kg/day may be associated with kidney damage as well as provide benefits such as reduced days on mechanical ventilation, ICU, hospital and reduced mortality rates in the ICU and hospital. **Methods:** Multicenter, randomized and controlled study. Patients admitted to the ICU using enteral and/or parenteral nutritional therapy were involved. Data related to nutritional therapy (calorie and protein), renal function and hospital outcomes were collected. Eligible patients were randomized into two groups of protein targets: Group 1 (G1) with 1.5g/kg/day and Group 2 (G2) with 2.0g/kg/day of protein supply. **Results:** 125 patients were randomized, 60 patients in G2 and 65 in G1. Median age was 78.0 (59.5-87) years, 51.2% female, BMI 23.7 (20.2-27) kg/m2, NRS 2002 median 3.0 (2.0-4.0), NUTRIC median 4.0 (2.0-5.0) and SAPS 3 was 57.0 (36.0-67). There was no statistically significant difference between the groups in relation to demographic characteristics. The groups had no difference about serum creatinine level [0.74(0.59-0.91) *versus* 0.77 (0.57-1.02), p=0.913] mg/dL, urea [60.7(41.3- 80.2) *versus* 63.1 (38.6-95.7) mg/dL, p=0.83], length of hospital stay [19.0(15.0-31.5) *versus* 19.0 (11.7-30.0) days, P=0.617], duration of mechanical ventilation [7.0 (3.5-11.5) *versus* 8.5 (6.0-13.0) days, p=0.405]. However, the G2 group, target of higher protein consumption, had a shorter length of stay in the ICU [10.0 (7.0-17.2) *versus* 13.5 (10-21) days, p=0.017]. As expected, G2 had a higher protein intake [1.36 (0.97-1.7) *versus* 1.18 (1.02-1.4) g/kg/day, p=0.023] than G1. Furthermore, there was no statistically significant difference in the rate of hospital mortality (p=0.627) and dialysis (p=0.37). **Conclusion:** Higher protein intake targets have been shown to be safe in terms of preserving kidney function and may be associated with shorter ICU stays.

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023

Applying simulation-based learning in cardiology education: a systematic review

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Introduction: The use of simulation within medical education is already a reality. Currently many articles describe the various modes and the impacts self-reported by students. Within cardiology it is no different, but reviews on the subject do not direct to a single area. **Objective:** To review the effects of using simulation for medical education, specifically within cardiology. **Methods:** This is a systematic review according to PRISMA guidelines, using the Ovid MEDLINE, LILACS, CINAHL and CENTRAL databases. Clinical trials reporting the use of realistic simulation for teaching in cardiology were included. Two reviewers independently assessed potential studies for inclusion. Simulation methods and topics with their evaluations were assessed. **Results:** Four hundred and thirty-five articles were initially identified using the search criteria. Seven articles were selected for analysis. Of the seven, three found improvement in cardiac auscultation ability with the use of simulation. One demonstrated improved ability to recognize coronary anatomy, one improved ability during catheterization and one improved ability during angioplasty. Only one showed slight improvement for diagnosis of acute myocardial infarction. In addition to these results, there was also an increase in student adherence and satisfaction. **Conclusion:** Realistic simulation, as a complement to existing curricula, improves the performance of cardiology students.

Presentation Abstracts

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024

Effectiveness of using an artificial intelligence platform in quality of care and health management

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Introduction: Modern healthcare systems demand innovative solutions to enhancecare quality and streamline hospital management. Artificial intelligence (AI) platforms, integrating complex data from various hospital systems, offer promising tools toaddress these challenges.[1,2] This study evaluates the impact of implementing the QlinkAI platform in a private hospital in São Paulo's interior, aiming to improve patient safety, elevate care standards, and enhance operational efficiency. Detailed analysis includes assessing reductions in hospital infections, improvement in diagnostic accuracy, and enhanced interdepartmental communication. This study contributes findings into AI's transformative role in healthcare practices. **Objective:** Evaluate Qlink's impact on care quality and hospital management in aprivate hospital in a city in the interior of the State of São Paulo. **Methods:** Using the Process Improvement Studies approach from 2023 to 2024, the study analyzed and enhanced professional and management practices. Before Qlink, manual microorganism control by the Healthcare-Associated Infection Control Service was segmented. Implementation of Qlink improved patient care safety, service quality, and interdepartmental communication. Data collection involved meticulous documenter views, administrative indicator analysis, and structured interviews. Comparative pre-and post-implementation analysis identified significant improvements in infection rates, operational efficiency, and communication. **Results:** The study provided a comprehensive 2023-2024 microbiological profile, analyzing blood cultures, tracheal secretions, and urine samples. Variations in microorganism prevalence and resistance were observed, notably in Escherichia coliand Staphylococcus aureus. Tracheal secretions highlighted Klebsiella and Pseudomonas resistance impacts, with ICU-specific data revealing microorganism evolution. Antimicrobial resistance analysis categorized microorganisms, prompting antibiotic use policy adjustments. Qlink integration facilitated real-time data monitoring, improving interdepartmental communication, automating monitoring, optimizing resource allocation, and enhancing operational efficiency. **Conclusion:** It is concluded that Qlink significantly enhanced care quality, patient safety, and hospital efficiency, with reduced infection rates and improved communication. Future research should focus on resistance monitoring, healthcareprofessional training, and Qlink integration for comprehensive benefits optimization.

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025

Implementation of a monitoring system for adherence to the therapeutic plan by the multidisciplinary team in the ICU: rationale and study design

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Introduction: Efficient management of daily goals is strategic for tracking quality and communication of care in the Intensive Care Unit (ICU).(1) In the dynamic and complex environment of the ICU, clear coordination of conduct among members of the multidisciplinary teams is essential to ensure the direction of the therapeutic plan, efficiency of care, and team satisfaction.(2,3) Thus, a tool for monitoring team adherence to daily goals can contribute to better hospital outcomes. **Objective:** To develop and implement a system within the electronic medical record that allows visualization and monitoring of the fulfillment of daily goals defined during multidisciplinary rounds in the ICU, assigning specific responsibilities to each team member, allowing for consolidated information tracking as well as identifying barriers and execution time. **Methods:** A standardized electronic form model will be implemented, to be developed within the institution's electronic medical record system. This form will allow attending physicians to record, during multidisciplinary rounds, the care goals for each patient, assigning responsibility to each team member for execution. The information will be automatically consolidated into an interactive dashboard, displaying the status of the goals. **Expected results:** Monitoring performance indicators, such as the percentage of goal completion and completion time, facilitates the identification of barriers to completing the therapeutic plan, improving communication efficiency among multidisciplinary team members. It is expected to increase care safety, as the team dynamics are better understood, as well as improve satisfaction and engagement of healthcare professionals through action plans better adjusted to the care reality. **Conclusion:** The implementation of an interactive dashboard for monitoring daily goals in the ICU is a promising innovation that can significantly improve the efficiency of multidisciplinary rounds, communication among healthcare professionals, and the quality of care provided to patients. Future studies will be necessary to assess the quantitative impact of this tool on clinical and operational outcomes.

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Presentation Abstracts

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026

Implementation process of the Hemorrhage Code (H Code) at the Hospital Municipal Moysés Deutsch, São Paulo, Brazil

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Introduction: The protocolized care for patients with severe hemorrhage has proven to be a determining factor in reducing morbidity and mortality among hospitalized patients. The primary mechanism leading to death in this population is the state of shock resulting from this situation. Based on this information and an existing protocol in a private hospital of the Einstein Network, the H code was adapted and implemented in the *Hospital Municipal Dr. Moysés Deutsch*, which is part of the secondary layer of healthcare in the Unified Health System of São Paulo. **Objective:** To describe the process of implementation, combined with the creation of a culture of protocolized care for patients with severe hemorrhage, and to present indicators that will demonstrate improvement in the accuracy rate of identifying and activating the hemorrhagic code and reducing catastrophic events related to failure or delay in identifying shock in the hospital. **Methods:** From a care model of one of the network's institutions, we will demonstrate the adaptation of the care flow for the patient with severe hemorrhage, called the Hemorrhagic Code, or H Code (Figure 1). We will describe the entire chain of code activation and the high-risk bleeding identification points for hospitalized patients. Furthermore, we will present the reduction of catastrophic events related to the failure or delay in identifying patients in hemorrhagic shock and greater accuracy in activating the code. **Results:** Over 34 months of analysis (January 2021 to October 2023), there were 418 activations of the hemorrhagic code, with a complementary analysis of a total of 2,783 patient records. The accuracy percentage of code activation increased by 49%, the percentage of identification of hemorrhagic shock rose by 46%, the lethality of hemorrhagic shock in the institution decreased by 25%, and it was possible to eliminate the number of catastrophic adverse events related to the failure of activating the hemorrhagic code. **Conclusion:** The development and implementation of an institutional protocol for care, adapted and directed towards patients with life-threatening hemorrhage in a public hospital with limited resources, proved to be feasible and resulted in improved in-hospital outcomes.

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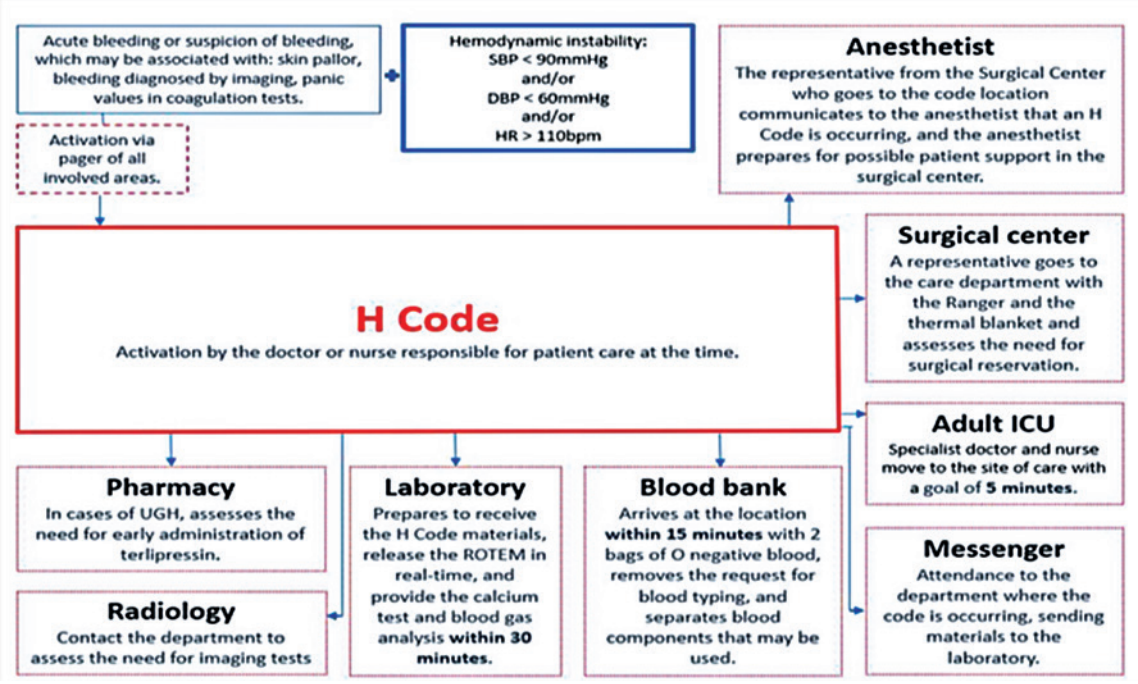

Figure 1. Activation by the doctor or nurse responsible for patient care at the time

Presentation Abstracts

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027

Medical characterization and benchmarking of ventilatory care in critically ill patients: operational efficiency and quality of care

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Introduction: Invasive mechanical ventilation (IMV) is the most widely used vital medical support worldwide in a diverse context of indications, such as: medical treatment of severe respiratory failure conditions, trauma, elective surgical procedures, among others.[1,2] However, adequate management by the multidisciplinary team is essential to achieve the goal set out in the therapeutic plan, the guarantee of operational efficiency, the rational use of the resource, and the prevention of adverse events, especially episodes of infection. Thus, a discussion emerges about the medical efficiency of intensive therapies, critically analyzing performance, comparing with the best results to collaborate with the health system. Therefore, the analysis of medical characterization and medical performance allows a better understanding of the patient profile at the paying source, be it the public system or health insurers; of the progression and monitoring of resource use; and of the improvement of care practices of healthcare teams.[3] **Objective:** To characterize critically ill patients ventilated in intensive care by analyzing clinical performance. **Methods:** Retrospective cohort study, carried out between January 1, 2023 and April 30, 2024 in the critical care line of a university hospital in Rio de Janeiro, Brazil. Clinical patients aged 18 years or over admitted to the intensive care unit, who used invasive mechanical ventilation, were included from a database of the Epimed Monitor UTI Adulto®. **Results:** The general intensive care service used in the study is divided into six units, totaling 63 beds. During this period, there were 2,500 hospitalizations for medical reasons, 841 mechanically ventilated patients, representing 37.35% of the occupancy rate of the units, with an average length of stay in the ICUs of 18.78 days. The average age was 60 years, men (56.12%), average Charlson comorbidity index of 2.25, SAPS score of 62 points (average). It should be mentioned that 55.64% used vasoactive drugs, median IMV duration (days) was 10 with a standardized mortality rate (SMR, 95%CI) of 1.46 (1.43-1.47). According to the EPM (Epimed Prediction Model), SMR (95%CI) was 1.18 (1.17-1.20). In Brazil, we observed that the hospital had a better performance comparing the outcome. The SMR of public hospitals was 1.53 (1.52-1.55). However, from the perspective of operational efficiency, there are opportunities for improvement regarding the median IMC duration (days) of 4 and the average length of stay of 13.04 (days). **Conclusion:** The findings of this study reinforce the importance of patients' medical characterization, especially stratified by the use of medical resources. Therefore, benchmarking with monitoring and knowledge of patients' medical performance contributes to reducing unfavorable medical outcomes for critically ill patients compared to external scenarios, resulting in a tool for health care from a perspective of quality of care and patient safety.

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Presentation Abstracts

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028

Systematic review: inadequate allocation of critically ill patients in hospital settings

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Introduction: Inadequate allocation of critically ill patients in hospital settings poses significant challenges, potentially leading to suboptimal care, increased complications, and higher mortality rates. Factors such as ICU bed availability, variability in acuity assessment, and communication gaps among healthcare teams contribute to delays or inappropriate placement of patients in general wards or stepdown units.[1-5] **Objective:** This systematic review examines the implications of inadequate allocation of critically ill patients to wards or stepdown units. It analyzes contributing factors, clinical outcomes, and potential interventions to improve allocation practices and patient outcomes **Methods:** A systematic search of PubMed, Cochrane, and Embase databases was conducted using keywords related to critically ill patient allocation in wards and stepdown units. After screening 300 articles, 15 studies (observational and RCTs) met the inclusion criteria, focusing on allocation practices, outcomes, and influencing factors. Data extracted included study characteristics, patient demographics, interventions, and outcomes such as mortality rates and complications. Methodological quality and risk of bias were assessed using appropriate tools (*e.g.*, Newcastle-Ottawa Scale for observational studies, Cochrane risk of bias tool for randomized controlled trials). Due to study heterogeneity, a meta-analysis was not feasible, so a narrative synthesis was conducted, summarizing findings on factors contributing to inadequate allocation, clinical impact, healthcare utilization, and intervention effectiveness. **Results:** Limited ICU bed availability (n=12 studies), inconsistent acuity assessments (n=10), and communication gaps (n=10) were key drivers of inadequate allocation. This was linked to increased mortality (n=8), more complications (*e.g.*, sepsis, respiratory failure, n=7), and inappropriate care (suboptimal monitoring, medication errors, and delayed recognition of deteriorating conditions, n=9), leading to prolonged hospital stays and strained resources (n=11). Effective interventions included standardized transfer criteria, early warning systems, and improved interdisciplinary communication (n=10). **Conclusion:** Inadequate allocation of critically ill patients has significant consequences. Healthcare systems must prioritize addressing systemic challenges, including ICU capacity and communication breakdowns, to optimize patient outcomes and resource use. Future research should evaluate long-term intervention effectiveness and tailor strategies for diverse settings.

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029

Use of video lessons to disseminate knowledge of patient safety during infusion therapy: reported experiences

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Introduction: Patient safety is characterized as a series of actions aimed at preventing and minimizing harm or potential complications associated with healthcare practices.(1) Health care education is an important tool in promoting patient safety since it aims to raise individual and collective awareness among professionals that completed their studies or are currently undergoing training. Information and Communication Technologies have allowed professionals to disseminate content for educational purposes, as well as provided for self-learning via the Internet, thereby reinforcing best care practices.(2) **Objectives:** Present production of five educational videos describing situations involving the implementation of infusion therapy among hospitalized patients. **Methods:** Experience report on the production of educational videos describing techniques applied to safe infusion therapy in a hospital environment. The respective methodological pathway consists of three phases: pre-production (scripting), production (video recording and editing) and post-production (uploading to digital platform and monitoring reach). A script was prepared in order to demonstrate situations related to infusion therapy, namely: the flushing technique,(3) flow and reflux test,(4) use of 3-way taps,(5) Scrub the hub(6) and administration of multiple intravenous drugs.(7) Videos were posted on March 29, 2024, and results were evaluated throughout April and May 2024. The content of the videos was based on the manual Infusion therapy standards of practice published by the Infusion Nurses Society in 2021 (8th edition).(8) **Results:** After production, videos were published on the Zenodo(9) platform and received total of 143 views and 33 downloads over a two-month period, as shown in figure 1. **Conclusion:** The use of video lessons allows knowledge to be disseminated among people located in different areas by facilitating access and the sharing of materials. The existence of free platforms for making content available may favor access to such materials. Further studies are recommended to assess the impact of each video on individual learning processes.

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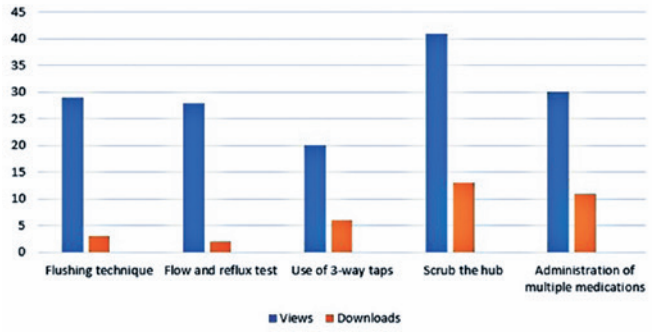

Figure 1. Reach of video lessons in terms of views and downloads via the platform Zenodo

030

Using the MAGIC® and DAV Expert® algorithms in management of venous catheters during intensive care

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Introduction: Proper care for venous catheters is essential in managing critically ill patients, assessing clinical needs, duration of access, and specific patient conditions.(1) Certain tools can be used to make well-informed, evidence-based choices as part of safe, harm-free and minimally invasive care practices. The Michigan Appropriateness Guide for Intravenous Access (MAGIC®).(2) and the Venous Access Device (VAD) Expert® were used in this study. **Objectives:** Compare recommendations provided under the MAGIC® and DAV Expert® algorithms as part of decision-making processes when choosing between catheters based on the current realities of two intensive care units at a general hospital in Rio de Janeiro. **Methods:** Cross-sectional, descriptive study. Data was collected at two intensive care units (ICU) in a general hospital in Rio de Janeiro between January 2019 and December 2020. The use of a Free and Informed Consent Form was waived for this study since it comprises an analysis of medical records. Centrally inserted central venous catheters (CVCs) were selected that had been punctured in the intensive care unit in patients over the age of 18 and remained in the patient for more than 48 hours. Provided indications for CVC puncture options were listed. These indications were subsequently entered into the MAGIC® and DAV Expert® algorithms in order to compare potential options. **Results:** Two hundred forty-eight catheters were evaluated in 158 patients. Identified indications for the use of CVCs included: vasoactive amines (n=126; 50.81%), prolonged antibiotic therapy (n=216; 87.1%), parenteral nutrition (n=5; 2.02%) and failure in peripheral venous access (n=5; 2.02%). The same patient could have more than one indication. After data were collected, suggestions provided by the two tools for the situations presented were analyzed. For the entirety of situations in which a CVC was installed, there were other options that may have been considered a potential choice as they were less invasive and accounted for the length of therapy. These options included: Peripherally Inserted Central Catheter (PICC), midline and mini midline. DAV expert® considers the use of the mini midline catheter, differentiating between elective and emergency situations, age range and also offers suggestions for preferred puncture sites. MAGIC®, on the other hand, directs decision making in a more straightforward manner, without considering specific details and does not make mention the mini midline. **Conclusion:** Based on the recommendations provided by the algorithms studied, it was observed that it is important to assess situations individually, according to patients' needs, seeking to make use of the least invasion procedures. It is important to note that, in addition to centrally inserted CVCs, the study scenario only included short peripheral catheter and the PICC as potential options. This study will also potentially serve to subsidize future assessment of options for devices that may assist in treating hospitalized patients.

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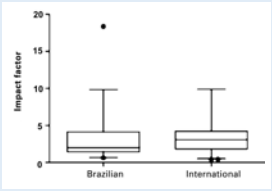
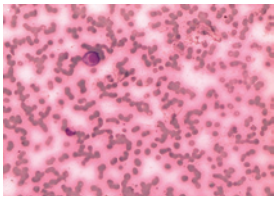
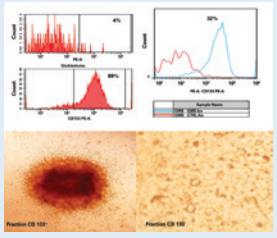
Line art	An image composed of lines and text, which contains no tonal or shaded areas		tif or eps	Monochrome 1 bit or RGB	900 to 1,200 dpi
Halftone	A continuous tone photograph containing no text		tif	RGB or Grayscale	300 dpi
Combo	Image contains halftone plus text or line art elements		tif or eps	RGB or Grayscale	500 to 900 dpi

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