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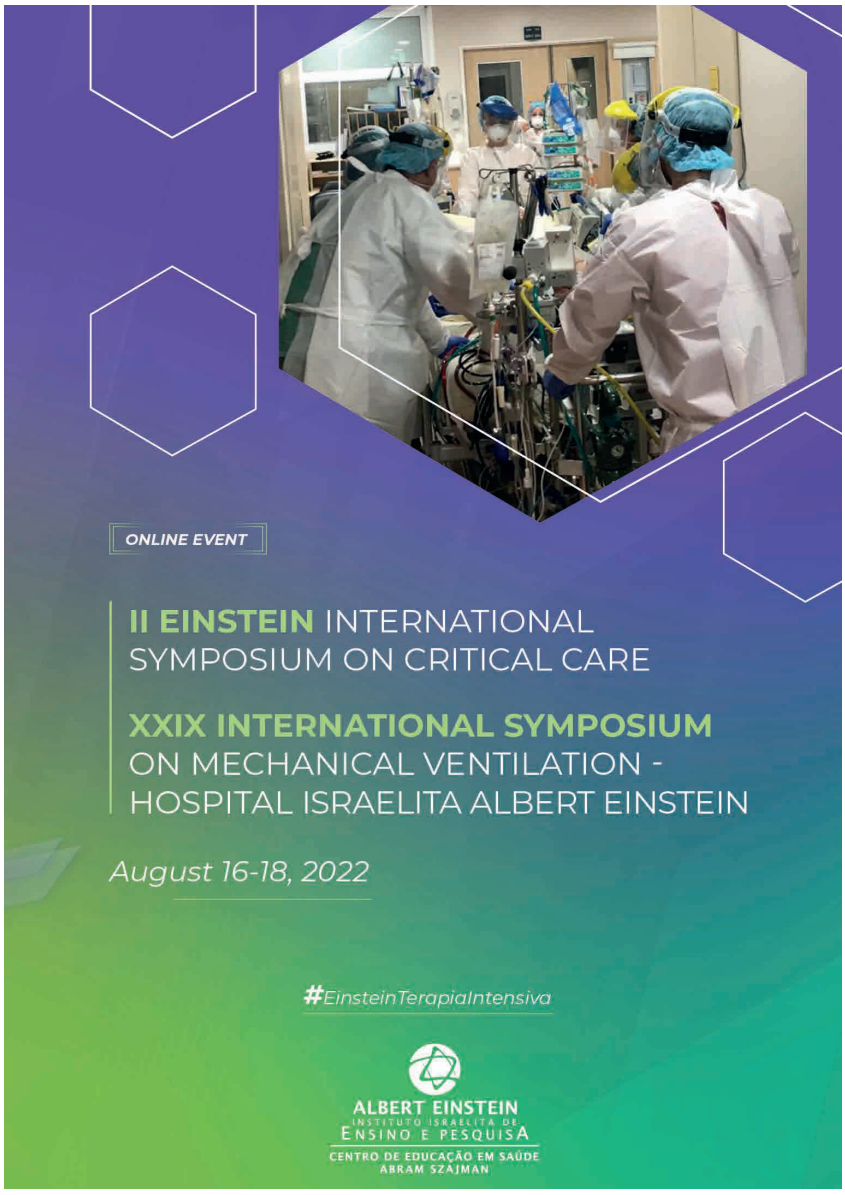

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Editorial

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II Einstein International Symposium on Critical Care and the XXIX International Symposium on Mechanical Ventilation of *Hospital Israelita Albert Einstein* August 16-18, 2022

The organization of a scientific event is made by many hands and each one of them is an essential part in the construction of an assertive, updated, and robust scientific program. The Department of Critical Care Medicine of the *Hospital Israelita Albert Einstein* (HIAE) by organizing the "II Einstein International Symposium on Critical Care" and the "XXIX International Symposium on Mechanical Ventilation of *Hospital Israelita Albert Einstein*" reaffirms its commitment to bring together nationally and internationally renowned specialists in the area of intensive care medicine.

In this year, we are celebrating the HIAE Department of Critical Care Medicine 50th anniversary. We are honored to look back and observe the impact in scientific progress that we made with the support of our unique team during all these years. This celebration makes us even more proud to have the opportunity to organize this event.

Among the various presentations and discussions throughout this event, the publication of the abstracts of selected papers will surely contribute to advance knowledge and disseminate information in the seeking of the best care practice.

To us, it is with great satisfaction and a feeling of accomplishment that we were able to publish the abstracts of our event in this issue of "Journal **einstein** (São Paulo)" – which has a history of 20 years of publishing high-quality health related scientific content free of costs to authors and open access.

We thank you all for your contribution!

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- Walace de Souza Pimentel – Physician on-duty, Intensive Care Unit - *Hospital Israelita Albert Einstein, São Paulo, SP,* Brazil.

Speakers

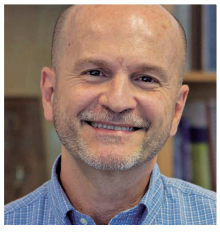
International Speakers

Adrian Wong

Adrian Wong, MD, has been a consultant in Anaesthesia & Intensive Care since 2015. Wong is a consultant at King's College Hospital, London. Within the field of ultrasound, he is interested in training/accreditation, measurements of organ perfusion and right heart imaging. His other research interest includes Clinical Governance and Safety, Medical Education, and Burnout/Well-being amongst Medical Professionals.

Alain Combes

Professor Alain Combes, MD, PhD is Professor of Intensive Care Medicine at Sorbonne Université, Paris, and head of the ICU Department at La Pitié-Salpêtrière Hospital, Assistance Publique Hopitaux de Paris, France.



Antonio Capone Neto

Antonio Capone is faculty of the Institute for Healthcare Improvement (IHI). Currently, he is project Director, Institute for Healthcare Improvement (IHI) – 2020-2022. Dr. Capone worked as patient safety manager and ICU Coordinator at *Hospital Israelita Albert Einstein* (2010 – 2018).

Ary Serpa Neto

Ary Serpa Neto, MD belongs to Australian and New Zealand Intensive Care Research Centre (ANZIC-RC), School of Public Health and Preventive Medicine, Monash University, Melbourne, Australia. Department of Critical Care, Melbourne Medical School, University of Melbourne, Austin Hospital, Melbourne, Australia. Department of Intensive Care, Austin Hospital, Melbourne, Australia Department of Critical Care Medicine, *Hospital Israelita Albert Einstein*, São Paulo, Brazil.

Daniel De Backer

Daniel De Baker is head of Intensive Care at CHIREC Hospitals, Brussels, Belgium. Professor of Intensive Care at the Université Libre de Bruxelles (Brussels). Past President of the European Society of Intensive Care Medicine (ESICM 2014-2016).

Etienne Macedo

I graduated as a medical doctor, completed my internal medicine residency and nephrology fellowship through *Universidade* de São Paulo, Brazil. PhD at *Universidade de São Paulo*, ISN fellowship award for research trainning in nephrology at the University of Califórnia San Diego (UCSD). In 2015, I relocated to San Diego as a permanent U.S resident. Currently, I am an Associate Professor at UCSD.

Ian Barbash

Dr. Ian Barbash is a pulmonary and critical care physician and critical care health services researcher at the University of Pittsburgh. His research focuses on the intersection of health policy and critical care, examining the impact of policy on care delivery and outcomes. He also directs UPMC's Tele-ICU, which serves more than a dozen hospitals across the U.S. health system.

Ignácio Martin-Loeches

Ignacio Martin-Loeches, PhD, FJFICMI is a full time Consultant in Intensive Care Medicine, Professor & Research Director of the Multidisciplinary Intensive Care Research Organization (MICRO) at St James's Hospital and Trinity College and Steering committee member of the Surviving Sepsis Campaign (SSC). He is the Chair of the European Network for ICU-related respiratory infections under the European Respiratory Society (ERS). Dr. Loeches has published many manuscripts in high impact factor journals.

Jan Bakker

Trained in the Netherlands and Belgium where he earned his MD and PhD title. Currently editor-in-chief of the Journal of Critical Care and practicing physician at NYU Langone Medical Intensive Care Unit. Professor of Medicine at NYU Medical School and Columbia University College of Physicians and Surgeons both in New York, USA, and tenured professor at Erasmus University in Rotterdam Netherlands.

Klaus Görlinger

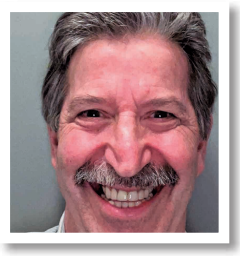
Klaus Görlinger is senior consultant for Anaesthesiology, Emergency and Intensive Care Medicine, Hemostaseology, Pain Therapy, and Diving Medicine. Dec 1986 - June 2012: Senior Consultant at the Department of Anesthesiology and Intensive Care Medicine, University Hospital Essen, Germany (Trauma, Liver Transplant and Cardiac Surgery). Since July 2012, Global Medical Director of Team Innovations GmbH, Munich, Germany, which since 2016 belongs to Werfen.

Laurent Brochard

Laurent Brochard is Director of the Interdepartmental Division of Critical Care Medicine at the University of Toronto, Canada. He holds the Keenan Chair in Critical Care and is Clinical Scientist, Critical Care, at St. Michael's Hospital, Unity Health Toronto. Brochard received his MD degree from the University Paris V in 1986. He became head of the ICU at the University Hospital of Geneva, Switzerland (2010-2013) before moving to Toronto. He was editor-in-chief of Intensive Care Medicine, and he is currently deputy editor of the American Journal of Respiratory and Critical Care Medicine. He created the clinical research network in mechanical ventilation REVA. He leads an international respiratory physiology group (PLUG) and leads the Centre of Excellence in Mechanical Ventilation in Toronto. He has mentored and directed over 20 PhDs, many of whom are leaders in Critical Care. He has over 600 peer-reviewed published.

Massimo Antonelli

Professor of Intensive Care and Anesthesiology; Director of the Department of Emergency, Intensive Care Medicine and Anesthesiology of Fondazione Policlinico A. Gemelli University Hospital IRCCS, Catholic University, Rome; Past President of the European Society of Intensive Care Medicine (ESICM); Past President of the SIAARTI (Società Italiana di Anestesia); Former editor-in-chief of Intensive Care Medicine Journal.



Mervyn Singer

Mervyn Singer is Professor of Intensive Care Medicine at University College London and Emeritus Senior Research Fellow at the UK National Institute of Health. He co-headed the 'Sepsis-3' definitions task force and was Chairman of the International Sepsis Forum. He has co-edited/written several textbooks including the Oxford Textbook of Critical Care. His research focuses on Sepsis, Mitochondrial Dysfunction, Shock States, Infection and Monitoring.

Nicole Juffermans

Nicole Juffermans is an intensive care physician and staff member at the Department of Intensive Care Medicine at the OLVG Hospital, a large teaching hospital in Amsterdam. She is PI of the Laboratory of Experimental Intensive Care and Anesthesiology (L.E.I.C.A) of the Amsterdam University Medical Center. She is editor-in-chief of ICM experimental.

Paolo Pelosi

Paolo Pelosi is full professor in Anesthesiology and Critical Care - University of Genoa - Head of Anesthesia and Critical Care - San Martino Policlinico Hospital - IRCCS for Oncology and Neurosciences - Genoa - Fellow of the European Respiratory Society - and - Fellow of the European Society of Anaesthesiology and Intensive Care.

Paul Young

Paul Young is the co-clinical leader at Wellington ICU and the Medical Research Institute of New Zealand Deputy Director. His expertise in the design and conduct of large-scale multicentre RCTs in Intensive Care Medicine. He has published more than 200 publications in peer-reviewed journals including 11 in the NEJM. Currently, he is leading a global 40,000-patient trial designed to establish the optimal dose of oxygen to use in patients receiving life support in the ICU.

Paulo Borem

Dr. Paulo Borem, MD is a Senior Director, Improvement Advisor and certified Patient Safety Officer (PSO) at the Institute for Healthcare Improvement (IHI). Dr. Borem has led 11 large-scale improvement initiatives in Portugal and Brazil. He is also responsible for IHI's improvement capability programming in Portuguese-speaking countries. Before joining IHI he was a Vascular Surgeon by clinical training.

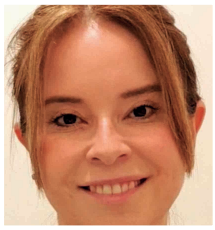
Rui Paulo Jinó Moreno

Intensivist Physician; Coordinator of the Catastrophe Committee of the *Centro Hospitalar Universitário de Lisboa Central,* E.P.E. and Coordinator of the Clinical Audit Cabinet of the *Centro Hospitalar Universitário de Lisboa Central* Hospital Center, E.P.E; Professor of Medicine; Former President of the Portuguese Society of Intensive Care, the European Society of Intensive Care Medicine and of the European Board of Intensive Care Medicine; President of the *Associação Lusófona de Terapia Intensiva*; Honorary Member of AMIB and SPCI, Gold Medal of ESICM.

National Speakers

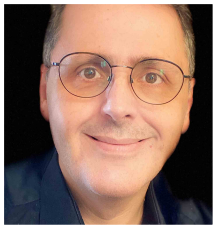
Adriano José Pereira

MD, PhD in Health Sciences from the *Universidade de São Paulo*, post-doctoral fellowships from the University of Bern (Switzerland) and Free University of Brussels (Belgium). He is Professor of Graduate Program at *Faculdade Israelita de Ciências da Saúde Albert Einstein*. Dr. Perreira is an intensive care physician, Medical Coordinator of the Tele-ICU Service, and Analytics Consultant for the Big Data Department at *Hospital Israelita Albert Einstein*.



Alejandra del Pilar Gallardo Garrido

Physician graduated from the *Universidade Federal de Santa Catarina,* School of Medicine, Specialist in Intensive Care Medicine from AMIB (Brazilian Intensive Care Medicine Association), PhD in Sciences from *Faculdade de Medicina, Universidade de São Paulo, Brazil.*



Alexandre Marini Isola

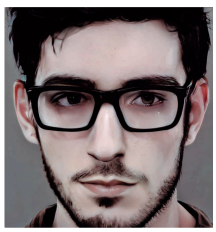
Physician manager of the Continuing Education Department of IMED Group. Specialist in Intensive Care Medicine by the Brazilian Intensive Care Medicine Association and Pulmonologist by *Escola Paulista de Medicina, Universidade Federal de São Paulo*. Member of the Board of the Venuti Course - Brazilian Intensive Care Medicine Association and President of the Respiratory Insufficiency and Mechanical Ventilation Committee of AMIB (Brazilian Intensive Care Medicine Association).

Amanda Pascoal Valle Felicio

MD from the *Universidade Federal de Minas Gerais*. She completed her residency in Clinical Medicine from the *Fundação Hospitalar do Estado de Minas Gerais* and Intensive Care Medicine from the Mater Dei Health Network/Belo Horizonte. Dr. Felicio is specialist in Intensive Care Medicine by AMIB (Brazilian Intensive Care Medicine Association) and completed her graduate studies in Palliative Care by the *Instituto Israelita de Ensino e Pesquisa Albert Einstein, Hospital Israelita Albert Einstein*. MBA in Health Management by *Fundação Getúlio Vargas*. Daytime attending physician at the Transplant ICU of *Hospital Israelita Albert Einstein*.

Ana Claudia Ferraz

Intensivist physician. Responsible for the Improvement Support Group of the Adult ICU of *Hospital Israelita Albert Einstein*.



Andrew Maranhão Ventura Dadário

Grandmaster in data science by the Kaggle platform, currently ranked 1st out of 67,000 worldwide. Data scientist at the Big Data department at *Hospital Israelita Albert Einstein* working in the areas of computer vision and natural language processing and also a finalist for the Valuable Young Leaders award, from Harvard Business Review.

Antônio Carlos Bacelar Nunes Filho

Coordinator of the *Núcleo de Apoio ao Ensino em Cardiologia* (NAEC); Cardiologist of the Coronary Unit of the Albert Einstein Intensive Care Center; Specialist in Valvopathies and Endocarditis at InCOR - *Instituto do Coração, Hospital das Clínicas, Faculdade de Medicina, Universidade de São Paulo*.

Antonio Eduardo Pereira Pesaro

MD from the *Universidade de São Paulo* (1998), residency in Clinical Medicine and Cardiology at InCOR - *Instituto do Coração, Hospital das Clínicas, Faculdade de Medicina, Universidade de São Paulo* and medical qualifications in Cardiology, Clinical Medicine and Intensive Care Medicine by the respective Brazilian societies. In 2010, he completed his PhD in Cardiology at the *Universidade de São Paulo*. He is currently a cardiologist at the Intensive Care Center and researcher for the Cardiology Program at *Hospital Israelita Albert Einstein*. He is professor and coordinator of cardiology for the post-graduate course in Intensive Care Medicine at *Hospital Israelita Albert Einstein*. He is a reviewer for Clinics. His clinical work is mainly on the following topics: Dyslipidemia, Acute Coronary Syndromes and Intensive Care Medicine.

Antonio Paulo Nassar Junior

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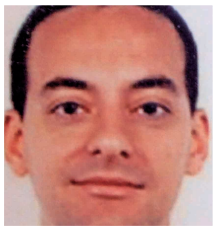
Physician at the Transplant ICU - Critical Care Department - *Hospital Israelita Albert Einstein*. Specialist in Intensive Care Medicine by AMIB (Brazilian Intensive Care Medicine Association). Executive MBA in Health Management by *Fundação Getúlio Vargas.* Master in Intensive Care Medicine by *Universidade Federal de São Paulo.*

Carla Luciana Batista

Reference Physiotherapist at the ICU of *Hospital Israelita Albert Einstein*. Specialist in Cadiorespiratory Physiotherapy by InCOR - *Instituto do Coração, Hospital das Clínicas, Faculdade de Medicina, Universidade de São Paulo*. PhD Candidate at the Pulmonology Discipline of the *Universidade de São Paulo*.



Carlos Eduardo Saldanha de Almeida

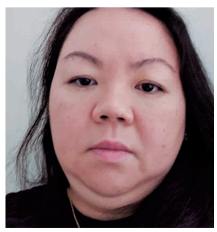
Intensivist at the Adult Intensive Care Unit of *Hospital Israelita Albert Einstein* and A.C.Camargo Cancer Center.

Carmen Silvia Valente Barbas

Full professor in Pulmonology at the *Faculdade de Medicina, Universidade de São Paulo*. Pulmonologist and Intensivist at *Hospital Israelita Albert Einstein.* President of the Paulista Intensive Care Society - 2020-2021.

Carolina de Lima Pires

Nurse at *Hospital Israelita Albert Einstein* working in Long Stay Risk Management and Dehospitalization; MBA in Health Services Management at *Universidade Nove de Julho*; Postgraduate in Palliative Care (*Pallium Lationamerica*); Postgraduate in ICU – *Universidade Federal de São Paulo.*



Carolina Keiko Yamamoto Honda

Intensivist on-duty in Adult ICU - *Hospital Israelita Albert Einstein*; Daily attending Intensivist at the Tele-ICU - *Hospital Israelita Albert Einstein*.

Caroline Gomes Mól Rodrigues

Physiotherapist at Critical Care Department of *Hospital Israelita Albert Einstein*. PhD student in Rehabilitation Sciences at the *Faculdade de Medicina, Universidade de São Paulo*. Specialist in Adult Intensive Care Physiotherapy (ASSOBRAFIR/ COFFITO) and Cardiorespiratory Physiotherapy (InCOR - *Instituto do Coração, Hospital das Clínicas, Faculdade de Medicina, Universidade de São Paulo*). Collaborator in research related to Physiotherapy and Ultrasound in the ICU.

César Augusto Madid Truyts

Nephrologist at *Hospital Israelita Albert Einstein, São Paulo, SP, Brazil.*

Claudia Regina Laselva

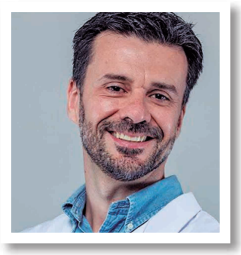
Nurse at *Hospital Israelita Albert Einstein*. She holds a Master's Degree in Nephrology - Basic Sciences, by *Universidade Federal de São Paulo*. MBA in Health Management from Insper with international extension at TUFTS University in Boston. Director of Operations and Care Practices at *Sociedade Beneficente Israelita Brasileira Albert Einstein*.

Daniel Joelsons

Intensivist at *Hospital das Clínicas, Faculdade de Medicina, Universidade de São Paulo* and *Hospital Israelita Albert Einstein*. Member of the ECMO team at *Hospital das Clínicas* and Member of the ECMO team at *Hospital Israelita Albert Einstein*. Specialist in ECMO by ELSO.

Daniel Neves Forte

Physician specialized in Intensive and Palliative Medicine, Associate professor in Bioethics at *Faculdade de Medicina, Universidade de São Paulo*, daily Intensivist at UCI-COVID *Hospital das Clínicas, Faculdade de Medicina, Universidade de São Paulo*, Humanization manager and coordinator of the assistance, teaching and research center in palliative care - *Hospital Sírio-Libanês*.

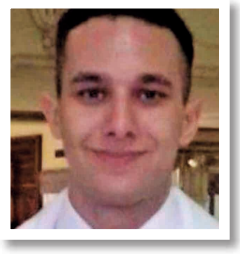


Daniel Souza Cesar

Physician at the *Faculdade de Medicina*, *Universidade de São Paulo*, Medical Residency in Anesthesiology at the *Hospital das Clínicas, Faculdade de Medicina*, *Universidade de São Paulo*. He is currently the Medical Coordinator of Anesthesiology at the *Hospital Israelita Albert Einstein*. Higher Degree in Anesthesiology.

Dante Moreira Lima

Physician specialized in Intensive Care Medicine by the AMIB - Brazilian Intensive Care Medicine Association.

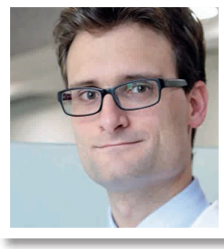


Dante Raglione

Physician graduated from *Faculdade de Medicina, Universidade de São Paulo*. Residency in Clinical Medicine and Intensive Care Medicine at *Hospital das Clínicas, Faculdade de Medicina, Universidade de São Paulo*. Intensive Care Physician certified by AMIB (Brazilian Intensive Care Medicine Association). Attending physician at the *Hospital Samaritano Paulista*. Attending physician at the *Câncer do Estado de São Paulo, Octávio Frias de Oliveira.*

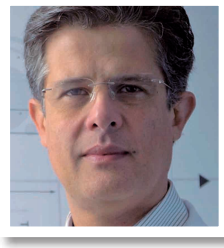
Décio Diament

Physician at the Critical Care Department and at the Multidisciplinary Nutritional Therapy Team at *Hospital Israelita Albert Einstein.*



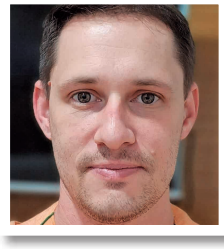
Diogo Bugano

Oncologist specialized in tumors of the digestive tract. Works at *Hospital Israelita Albert Einstein*. He also coordinates the Oncology Department at *Hospital Municipal da Vila Santa Catarina Dr. Gilson de Cássia Marques de Carvalho; Hospital Israelita Albert Einstein.*



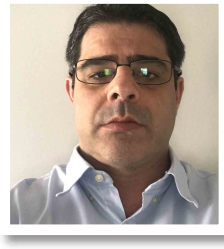
Edson Amaro Júnior

MD, Neuroradiologist at *Hospital Israelita Albert Einstein*. Superintendent of Data Science and Big Data Analytics *at Hospital Israelita Albert Einstein*. Associate Professor at the Radiology Department of the *Faculdade de Medicina, Universidade de São Paulo*. Full Professor at the *Faculdade Israelita de Ciências da Saúde Albert Einstein*.



Eduardo Colucci

Specialist in Intensive Care Medicine by AMIB (Brazilian Intensive Care Medicine Association).

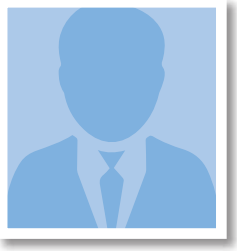


Eduardo da Rosa Borges

PhD in Pulmonology from the *Faculdade de Medicina, Universidade de São Paulo*. Specialist in Intensive Care Medicine by the AMIB (Brazilian Intensive Care Medicine Association) and Pulmonology by the Brazilian Society of Pulmonology and Phthisiology. Daily physician at the ICU of the *Hospital Sírio-Libanês*.

Eduardo José Tonato

Intensivist at ICU, *Hospital Israelita Albert Einstein;* Assistant Nephrologist of the Renal Transplant Program at *Hospital Israelita Albert Einstein.*



Eduardo Leite Vieira Costa

Pulmonologist, Associate Professor at *Universidade de São Paulo*. Researcher at *Instituto de Ensino e Pesquisa do Hospital Sírio-Libanês*.

Eliana Bernadete Caser

Specialist in Intensive Care Medicine by AMIB (Brazilian Intensive Care Medicine Association). PhD in Sciences in the area of pulmonology from the *Faculdade de Medicina, Universidade de São Paulo*; Professor of Emergency Medicine and coordinator of the Residency Program in Intensive Care Medicine at the *Universidade Federal do Espírito Santo*. Coordinator of adult ICUs at *Hospital Unimed Vitória/ES.*

Elias Knobel

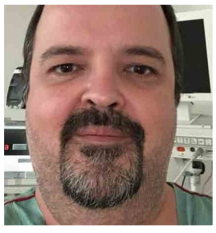
Assistant professor of the Department of Medicine at *Universidade Federal de São Paulo* from 1971 to 1998, Emeritus Director and Founder of the ICU at *Hospital Israelita Albert Einstein*. He is a fellow of the American Heart Association, fellow of the American College of Critical Care Medicine and master of the American College of Physicians, and honorary member of the European Society of Intensive Care Medicine. He is author of the best-seller book Conduct in the Critically Ill Patient, received the 53rd Jabut Prize - *Câmara Brasileira do Livro* - for the book "*Coração... É Emoção*" in 2011.

Ellen Pierre de Oliveira

Graduated from the *Faculdade de Medicina, Universidade de São Paul*o. Residency in Clinical Medicine and Pulmonology at the *Faculdade de Medicina, Universidade de São Paul*o. Complementary training: Pulmonary hypertension at the *Faculdade de Medicina, Universidade de São Paul*o. Currently doing her PhD in Pulmonary Vasculitides (Supervisor Prof. Carmen Sílvia Valente Barbas)

Erika Satomi

Geriatrician, specialist in Palliative Care, responsible for the Palliative Care Service at *Hospital Israelita Albert Einstein*.

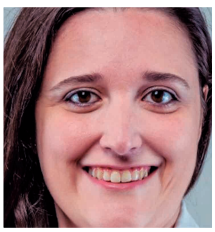


Evandro José de Almeida Figueiredo

Attending Intensivist at the Adult ICU, *Hospital Israelita Albert Einstein.*

Fabrício Rodrigues Torres de Carvalho

Assistant physician at Adult ICU, *Hospital Israelita Albert Einstein.* Infectologist working as a specialist for special health insurance services at the *Hospital Israelita Albert Einstein*; Attending physician at A.C.Camargo Cancer Center; PhD in Medicine at the *Faculdade de Medicina, Universidade de São Paulo.*



Farah Christina de la Cruz Scarin

Intensivist Physician, Technical ICU Reference at *Hospital Israelita Albert Einstein*.

Felipe Maia de Toledo Piza

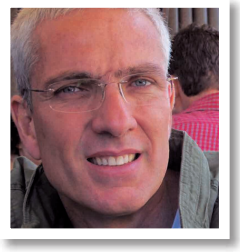
Master Medical Education from Harvard Medical School in Boston (USA); PhD from the *Hospital das Clínicas, Faculdade de Medicina, Universidade de São Paulo*; MBA in Health Management and Economics from *Universidade Federal de São Paulo*; Title of Specialist in Internal Medicine, Infectious Diseases and Intensive Care; He has experience as an intensive care physician at *Hospital Israelita Albert Einstein*; Coordinator of the ICU at *Hospital Municipal Dr. Moysés Deustch (M'boi Mirim)*; Graduated in Medicine from the *Universidade São Francisco*.

Fernando Bacal

Coordinator of the Heart Failure and Transplant Program at *Hospital Israelita Albert Einstein*.

Fernando Gatti de Menezes

Master's and PhD in Infectology from *Universidade Federal de São Paulo.*



Fernando Luiz Gutierrez

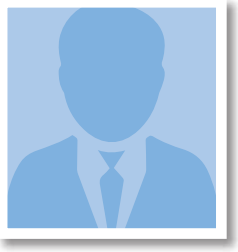
Coordinator of the Intensive Care Service at *Instituto Nacional do Câncer, Rio de Janeiro*; MD and PhD in Cardiology from Tufts University - Boston, United States, and *Universidade Federal do Rio de Janeiro*; Master in Health Technology Assessment - IMS/ *Universidade do Estado do Rio de Janeiro*; Specialist in Intensive Care Medicine – AMIB (Brazilian Intensive Care Medicine Association);

Flávia Julie do Amaral Pfeilsticker

Intensivist physician, member of the Adult ICU and Multidisciplinary Nutritional Therapy Team at *Hospital Israelita Albert Einstein.* Master in Health Sciences from *Hospital Israelita Albert Einstein*. Specialist in Intensive Care Medicine by AMIB (Brazilian Intensive Care Medicine Association). Specialist in Enteral and Parenteral Nutrition by BRASPEN.

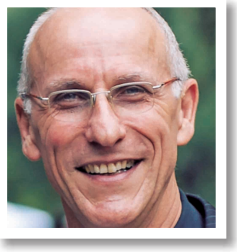
Flávia Nunes Dias Campos

Graduated in Medicine from the *Pontifícia Universidade Católica de São Paulo*, residency in General Surgery at *Hospital do Servidor Público Estadual de São Paulo*, and Intensive Care at *Hospital Israelita Albert Einstein*. Attending intensivist at the department of critically ill patients at *Hospital Israelita Albert Einstein.*



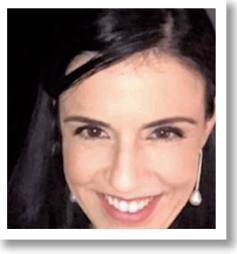
Flávio Nácul

Intensivist at *Hospital Universitário, Universidade Federal do Rio de Janeiro, Rio de Janeiro, RJ, Brazil.*



Gilberto Fridman

Full Professor of Medicine, *Faculdade de Medicina, Universidade Federal do Rio Grande do Sul*; Coordinator of the Medical Residency Program in Intensive Care Medicine, *Hospital de Cínicas de Porto Alegre*; Coordinator of the Intrahospital Sepsis Combat Program - *Hospital de Clínicas de Porto Alegre*; Editor-in-chief - Clinical & Biomedical Research.



Gisele Sampaio Silva

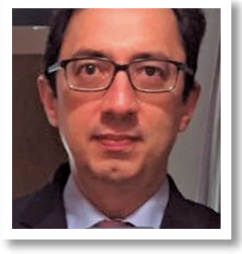
Associate Professor of Clinical Neurology, *Escola Paulista de Medicina, Universidade Federal de São Paulo*. Clinical Trialist, *Escola Paulista de Medicina, Universidade Federal de São Paulo*. Clinical Trialist / Neurology, *Hospital Israelita Albert Einstein.*

Guilherme de Paula Pinto Schettino

Graduation in Medicine from the *Universidade Federal do Rio de Janeiro* (1988), Medical Residency in Internal Medicine and Pulmonology at the *Hospital das Clínicas, Faculdade de Medicina, Universidade de São Paulo* (1989-1991). Specialist in Pulmonology and Intensive Care. Doctorate in Medicine from the *Faculdade de Medicina, Universidade de São Paulo* (1994 -1998) and Post-Doctorate from Harvard Medical School (Boston, MA, USA, 2000-2002). Specialization in Management and Health Care at *Fundação Dom Cabral/Hospital Sírio-Libanês* (2008-2009). He worked as Medical Manager of Serious Patients at *Hospital Sírio-Libanês* (2002 to 2014) and *Hospital Israelita Albert Einstein* (2014 to 2016) both in São Paulo. Medical Director, *Hospital Municipal da Vila Santa Catarina Dr. Gilson de Cássia Marques de Carvalho; Hospital Israelita Albert Einstein, São Paulo, SP* (2016-17). He currently holds the position of Superintendent Director of the *Instituto Israelita de Responsabilidade Social* of the *Sociedade Beneficente Israelita Brasileira Albert Einstein* (2017). Specialist in operation and management of public and private outpatient and hospital Health Systems with a focus on: projects, management by result, strategic planning, quality, risk and safety, hospital accreditation, public-private partnership, continuous medical planning, medicine based on care protocols and health informatics.

Gustavo Faissol Janot de Matos

Intensivist at the Intensive Care Unit of *Hospital Israelita Albert Einstein*. PhD in Pulmonology from *Hospital das Clínicas, Faculdade de Medicina, Universidade de São Paulo*. Fellow of the Institute for Healthcare Improvement.



Hélio Penna Guimarães

Emergency Physician and Intensivist. PhD in Sciences from the *Universidade de São Paulo.* Attending physician at the ICU of *Hospital Israelita Albert Einstein.* Associate professor at the *Escola Paulista de Medicina, Universidade Federal de São Paulo.* President of the Brazilian Association of Emergency Medicine - ABRAMEDE.

João Manoel da Silva Junior

Director of the Anesthesiology Department at *Hospital do Servidor Público Estadual*. Intensive Care Physician at the Anesthesiology Division of *Hospital das Clínicas, Faculdade de Medicina, Universidade de São Paulo* and at *Hospital Israelita Albert Einstein*.

João Paulo Marochi Telles

Professor at *Pontifícia Universidade Católica do Paraná* and *Hospital Israelita Albert Einstein* Post-Graduation Lato Sensu; MD Infectologist at A.C.Camargo Cancer Center.

José Eduardo Afonso Júnior

Holds a medical degree from the *Universidade de São Paulo* (2000) and a doctorate in Pulmonology from the *Universidade de São Paulo* (2010). He is currently a member of the American Respiratory Society, Brazilian and Paulista Societies of Pulmonology and Phthisiology, European Respiratory Society, Brazilian Association of Organ Transplantation and International Society for Heart and Lung Transplantation (ISHLT). Medical Coordinator of the Transplant Program at *Hospital Israelita Albert Einstein*. He has experience in the field of Medicine, with emphasis in Pulmonology, working mainly with lung transplantation, lung transplantation, patients and pulmonology.

Juliana Carvalho Ferreira

Full Professor, Discipline of Pulmonology, *Universidade de São Paulo*. Physician at the Respiratory ICU of the *Instituto do Coração.* ICU Physician at A.C.Camargo Cancer Center.

Lara Patricia Kretzer

Coordinator of Palliative Medicine Residency at *Hospital Universitário, Universidade Federal de Santa Catarina;* Coordinator of the Palliative Care Team and Pain Clinic at *Hospital Universitário, Universidade Federal de Santa Catarina;* Intensivist at *Hospital Nereu Ramos,* Florianópolis; PhD in Law from University of London.

Leandro Utino Taniguchi

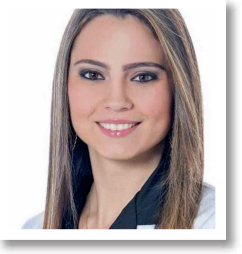
Diarist Physician of the ICU of the Clinical Emergencies Discipline of *Hospital das Clínicas, Faculdade de Medicina, Universidade de São Paulo*; Physician on-duty at the ICU of *Hospital Sírio-Libanês*; Member of the BRICnet Scientific Committee; Postgraduate supervisor of the *Sírio-Libanês* Institute of Teaching and Research.

Leonardo José Rolim Ferraz

Director of Einstein Network for Critically Ill Patients, intensivist physician. Finish his academic training at the *Universidade Federal da Bahia* and at the *Universidade de São Paulo* with a special interest in high complexity and liver transplantation. He has an MBA in Health Management from Insper, having completed a Fellowship at Harvard T.H. Chan School of Public Health and a Fellowship at the Institute for Healthcare Improvement with a focus on quality, safety and improvement science, earning the certification of Improvement Advisor. As the first medical manager of *Hospital Municipal da Vila Santa Catarina Dr. Gilson de Cássia Marques de Carvalho; Hospital Israelita Albert Einstein*, he had the opportunity to contribute to the development of a high complexity hospital in the public sector under the logic of cost effectiveness and value generation. Throughout his career he has led Intensive Care Units in the public and private sectors, focusing on the development of high reliability, patient-centered care and value generation in health.

Liana Maria Tôrres de Araújo Azi

Anesthesiologist TSA-SBA. Attorney at Law. Assistant professor at the *Universidade Federal da Bahia*. Co-responsible for the Teaching and Training Center of the *Hospital Universitário Professor Edgard Santos.*



Lianna Ferreira Bringel Cavalieri

Technical reference physician of the ICU at Hospital *Municipal da Vila Santa Catarina Dr. Gilson de Cássia Marques de Carvalho; Hospital Israelita Albert Einstein;* Cardiologist, certified by the Brazilian Society of Cardiology; Intensivist by AMIB (Brazilian Intensive Care Medicine Association).

Lilian Moreira Pinto

Intensivist physician, accredited by AMIB (Brazilian Intensive Care Medicine Association), working on duty at the ICU, Hospital *Israelita Albert Einstein;* Nutrologist, post graduated by ABRAN and certified by BRASPEN.

Lúbia Caus de Moraes

Intensivist Physician of the Adult Intensive Care Unit at *Hospital Israelita Albert Einstein*; Intensive Care Teleconsultant Physician of Telemedicine at *Hospital Israelita Albert Einstein*.

Luiz Fernando Aranha Camargo

Associate Professor at *Faculdade Israelita de Ciências da Saúde Albert Einstein*; Assistant Professor at *Escola Paulista de Medicina, Universidade Federal de São Paulo.*

Luiz Gustavo Vala Zoldan

MD, *Universidade Estadual de Campinas*, with a psychiatry degree from the *Universidade de São Paulo*, a specialist in chemical dependency from *Universidade Federal de São Paulo*, with an MBA in Health Management from Einstein- Insper. Specialist in Positive Psychology and Well-Being Science from *Pontifícia Universidade Católica do Rio Grande do Sul*. He worked as clinical director at the Center for References for Alcohol, Tobacco, and Other Drugs in São Paulo and as Technical Director of the Cantareira Psychiatric Hospital. He is currently Head of the mental health programs for Sociedade Beneficente Israelita Brasileira Albert Einstein's employees and corporate clients, by the Population Health team of MDA-Einstein.

Marcele Liliane Pesavento

Executive MBA in administration in the management of clinics, hospitals and health industries by *Fundação Getúlio Vargas*. Specialist in Extracorporeal Oxygen Membrane (ECMO) by Stollery Children's Hospital and InCOR - *Instituto do Coração*, *Hospital das Clínicas, Faculdade de Medicina, Universidade de São Paulo* (2015). Post-graduate modality residency in intensive care unit nursing by the *Universidade Federal de São Paulo*. Graduate in Nursing from the *Universidade Estadual Paulista Júlio de Mesquita Filho*. Nursing coordinator of the adult ICU at *Hospital Israelita Albert Einstein*.

Marcelo de Oliveira Maia

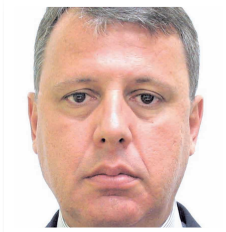
President of the 2022/23 AMIB's Executive Board (Brazilian Intensive Care Medicine Association). Medical Coordinator of the ICU at *Hospital Santa Luzia Rede D'Or São Luiz* DF. Coordinator of the PEMI of AMIB at the ICU of *Hospital Santa Luzia Rede D'Or São Luiz*/DF. Regional Coordinator of the Post-Graduated in Intensive Care Medicine at AMIB in the Federal District. Member of the Technical Chamber in Intensive Care Medicine at CRM/DF.

Márcia Jacomelli

Medical Coordinator of the Respiratory Endoscopy Center at *Hospital Israelita Albert Einstein* since 2013. Medical Supervisor of the Respiratory Endoscopy Service of InCOR - *Instituto do Coração, Hospital das Clínicas, Faculdade de Medicina, Universidade de São Paulo* since 2009. PhD in Sciences by *Universidade de São Paulo* (2007). Member of the Title Commission of the Brazilian Society of Pneumology and Phthisiology since 2012. Deputy coordinator of the Department of Respiratory Endoscopy of the Brazilian Society of Pulmonology and Phthisiology. Pulmonologist from *Universidade de São Paulo* (1998). Graduated in Medicine from the *Universidade Federal do Espírito Santo* (1994).

Marcio Soares

Director of Research and Development, *Epimed Solutions*; Researcher at the Intensive Care Medicine Department and Professor of the Post-Graduation Program at *Instituto D'Or de Pesquisa e Ensino*, *Rio de Janeiro*.



Marcos Augusto Stávale Joaquim

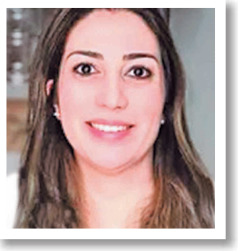
PhD from the *Universidade de São Paulo* and author of the books Basis of Neurosurgical Intensive Care and Intracranial Hemodynamics.

Marcos Soares Tavares

Specialist in Pulmonology and Intensive Care Medicine from the *Hospital das Clínicas, Faculdade de Medicina, Universidade de São Paulo.* PhD from the *Faculdade de Medicina, Universidade de São Paulo*. Pulmonologist and Coordinator of the Onco-Hematology ICU of the *Hospital 9 de Julho*.

Marcos Vinicius Tadao Fujino

Neurologist at the Critical Care Department of *Hospital Israelita Albert Einstein*. Neurologist with a postgraduate degree in Neurointensivism from *Escola Paulista de Medicina, Universidade Federal de São Paulo*.



Melina Gouveia Castro

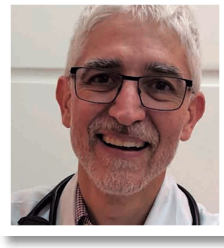
Nutrologist physician from the *Faculdade de Medicina, Universidade de São Paulo*. PhD from *Faculdade de Medicina, Universidade de São Paulo*. MD of the Multiprofessional Nutrition Therapy Team (EMTN) of *Hospital Israelita Albert Einstein* and President of the Brazilian Society of Parenteral and Enteral Nutrition (BRASPEN) 2020/2021.

Milene Silva Ferreira

PhD in Medicine from the *Universidade Federal de São Paulo.* Medical residency in Physical Medicine and Rehabilitation at *Universidade Federal de São Paulo*. Specialization in Geriatrics and Gerontology from *Universidade Federal de São Paulo*. MBA in Health Management from Insper. Medical manager of Rehabilitation and Sports Medicine services at *Hospital Israelita Albert Einstein.*

Moacyr Silva Junior

Infectious Diseases Physician at the Infection Service and Intensive Care Unit, *Hospital Israelita Albert Einstein*; Assistant Physician at the *Universidade Federal de São Paulo.*



Murillo Santucci César de Assunção

Intensivist at the Adult Intensive Care Center of *Hospital Israelita Albert Einstein*. Master in Health Sciences from *Universidade Federal de São Paulo.* PhD in Translational Medicine from *Universidade Federal de São Paulo.* Specialist in Intensive Care Medicine by AMIB (Brazilian Intensive Care Medicine Association).

Neymar Elias

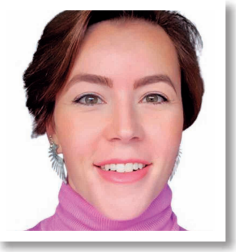
Intensive Care Physician at the *Hospital HOME* in Brasília; Master by the *Faculdade de Medicina de São José do Rio Preto, São Paulo;* Instructor at IRCAD Latin America, Barretos unit, São Paulo; Instructor of the VENUTI and HEMODYNAMIC courses of the AMIB (Brazilian Intensive Care Medicine Association); Member of the AMIB High Risk Surgery Committee.

Niklas Söderberg Campos

Attending Physician at the Adult ICU of *Hospital Israelita Albert Einstein*, Supervising Physician at the Adult ICU of *Hospital Municipal Dr. Moysés Deustch (M'boi Mirim*), and PhD from the *Faculdade de Medicina, Universidade de São Paulo.*

Otávio Ranzani

Otávio Ranzani is a specialist in Intensive Care Medicine from *Faculdade de Medicina, Universidade de São Paulo*. Master's degree from the London School of Hygiene & Tropical Medicine and PhD from *Universidade de São Paulo*. Professor at the Barcelona Institute of Global Health and researcher at the Division of Pulmonology, InCOR - *Instituto do Coração*, *Hospital das Clínicas, Faculdade de Medicina, Universidade de São Paul*o.



Patricia Albizu Piaskowy

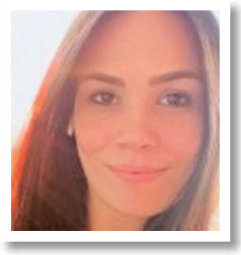
Specialist in Internal Medicine from the *Universidade Federal do Paraná* and specialist in Intensive Care from the *Universidade Estatual de Campinas*, post graduated in Palliative Care from the *Hospital Sírio-Libanês.*

Patricia Faria Scherer

MD, Nephrologist, member of the Nephrology Support Group Daily Intensivist at the Adult ICU.

Patricia Rieken Macedo Rocco

Full Professor at *Universidade Federal do Rio de Janeiro*; Head of the Pulmonary Research Laboratory; Full Member of the National Academy of Medicine; Full Member of the Brazilian Academy of Sciences.



Paula Rodrigues Sanches

Intensivist by AMIB (Brazilian Intensive Care Medicine Association); Post-graduate in neurosciences *by Instituto Israelita de Ensino e Pesquisa*, *Hospital Israelita Albert Einstein.* Clinical Research Fellow at Massachussets General Hospital, Boston; Reference Physician at the Critical Care Department, *Hospital Israelita Albert Einstein;* Coordinator of the Post-Graduation in Neurointensivism at *Hospital Israelita Albert Einstein.*

Pedro Caruso

Medical Director of the ICU at A.C.Camargo Cancer Center; Physician of the Respiratory ICU of the *Instituto do Coração*; PhD in Pulmonology from the *Faculdade de Medicina, Universidade de São Paulo*.

Pedro Paulo Zanella do Amaral Campos

Specialist in ECMO and Intensivist at *Hospital Israelita Albert Einstein*. Specialist in ECMO by the Extracorporeal Life Support Organization - Latin America. Specialist in Intensive Care by AMIB (Brazilian Intensive Care Medicine Association). Fellow in experimental research by the Inselspital, University Hospital of Bern, Switzerland.

Polyana Vulcano de Toledo Piza

MD, neurologist, Department of Critically Ill Patients at *Hospital Israelita Albert Einstein.* PhD from the *Hospital Israelita Albert Einstein.* College of Medical Sciences. Felowship in neurosciences laboratory of Spaulding Rehabilitation Hospital/ Harvard Medical School.

Raquel Afonso Caserta Eid

Coordinator of Physiotherapy of the departments of critically ill patients. Master in Sciences by *Universidade Federal de São Paulo*. PhD candidate in Pulmonology at *Universidade de São Paulo.*

Regis Goulart Rosa

Intensivist by AMIB (Brazilian Intensive Care Medicine Association). MSc and PhD from *Universidade Federal do Rio Grande do Sul*. Post-doctorate by *Universidade Federal de Ciências da Saúde de Porto Alegre*. Researcher at *Hospital Moinhos de Vento*. Member of the executive committee of BRICNet.

Ricardo Kenji Nawa

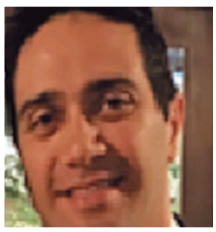
Graduated in Physical Therapy from the *Faculdade de Medicina de Ribeirão Preto* of the *Universidade de São Paulo*. Master and Doctor in Sciences by the *Faculdade de Medicina de Ribeirão Preto* of the *Universidade de São Paulo*. Physiotherapist of the Critical Care Department at *Hospital Israelita Albert Einstein*.

Ricardo Luiz Cordioli

Graduation in Medicine by *Faculdade de Ciência Médicas* da *Santa Casa de São Paulo* (2002). Residency in Intensive Care (2005-2006) at the *Hospital das Clínicas, Faculdade de Medicina, Universidade de São Paulo.* PhD from the *Faculdade de Medicina, Universidade de São Paulo* (2010-2011). Postdoctoral fellowship at the Geneva University Hospital (2012-2014). He is currently a researcher, mentor and physician working on duty at the Adult ICU of *Hospital Israelita Albert Einstein*.

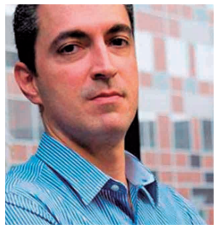
Roberta Fittipaldi Palazzo

Assistant physician at InCOR - *Instituto do Coração, Hospital das Clínicas, Faculdade de Medicina, Universidade de São Paulo* respiratory unit; Post-graduation professor in intensive care at *Hospital Israelita Albert Einstein*. PhD in sciences by the *Faculdade de Medicina, Universidade de São Paulo.*



Roberto Rabello Filho

Attending Physician at the adult ICU of the *Hospital Israelita Albert Einstein*, PhD in Health Sciences from the *Hospital Israelita Albert Einstein*.



Rodrigo Caruso Chate

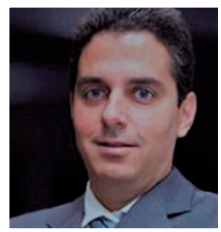
Graduated in Medicine from the *Universidade de São Paulo* (2000). Specialization in Radiology and Diagnostic Imaging from the *Instituto de Radiologia, Hospital das Clínicas, Faculdade de Medicina, Universidade de São Paulo*. Full Member of *Colégio Brasileiro de Radiologia e Diagnóstico por Imagem*. Assistant Physician at the InCOR - *Instituto do Coração, Hospital das Clínicas, Faculdade de Medicina, Universidade de São Paulo*. Medical Coordinator of the Cardiothoracic Radiology Group at *Hospital Israelita Albert Einstein.*

Rodrigo Costa Gonçalves

Physician. Specialist in Nephrology, Intensive Care, Nutrology and Parenteral and Enteral Nutrition. President of the Nutritional Therapy Committee at the Brazilian Intensive Care Medicine Association (AMIB). Member of the Board of the Brazilian Guidelines for Nutritional Therapy in the Critically ill Patient. Coordinator of the Multiprofessional Teams of Nutritional Therapy at *Hospital Estadual de Urgências Governador Otávio Lage de Siqueira* and *Hospital Órion* (Einstein Management), in the city of Goiânia - GO.

Rodrigo Kappel Castilho

Intensive Care Physician and Palliative Care Physician of the Intensive Care & Palliative Care Services of the *Hospital de Clínicas de Porto Alegre*; Scientific Director of ANCP 2021-2022; CEO of *Pallatium Cuidados Paliativos*; Member of the Technical Chamber of Palliative Medicine of CREMERS.



Rodrigo Meirelles Massaud

Neurologist at *Hospital Israelita Albert Einstein, São Paulo, SP, Brazil.*

Roger Monteiro Alencar

Physician with residency in Internal Medicine at the *Secretaria da Saúde de São Paulo* and Intensive Care Medicine *from Hospital Israelita Albert Einstein*. Currently he is the Coordinator of Emergency, Adult ICU and Critically ill patients unit at *Hospital Municipal Dr. Moysés Deustch (M'boi Mirim) at Sociedade Beneficente Israelita Brasileira Albert Einstein.*

Rogerio da Hora Passos

Specialist in Intensive Care Medicine; Specialist in Nephrology.

Roseny dos Reis Rodrigues

Anesthesiologist and intensivist physician, coordinator of the ICU of the Orthopedics Institute of the *Hospital das Clínicas, Faculdade de Medicina, Universidade de São Paulo* and intensivist physician of the Critically ll Patient Department of the *Hospital Israelita Albert Einstein*. She holds a PhD and post-doctoral degree from the *Hospital das Clínicas, Faculdade de Medicina, Universidade de São Paulo.*

Sandrigo Mangini

PhD in Cardiology by *Faculdade de Medicina, Universidade de São Paulo;* Physician of the ICU and Transplant Program at *Hospital Israelita Albert Einstein;* Assistant Physician of the Transplant Center at InCOR - *Instituto do Coração, Hospital das Clínicas, Faculdade de Medicina, Universidade de São Paulo;* Professor at *Faculdade Israelita de Ciências da Saúde Albert Einstein.*

Sérgio Nogueira Nemer

Physiotherapist, PhD in Pulmonology from the *Universidade de São Paulo.* Specialist in neurophysiology, respiratory and neurological physiotherapy, Professor of postgraduate courses at *Interfisio* and *Rede D'or*. International Training in Proprioceptive Neuromuscular Facilitation, Bobtah, Maitland, Mulligan, Osteopathy and Neurodynamics.

Suzana Margareth Ajeje Lobo

Assistant professor at the *Faculdade de Medicina de São José do Rio Preto, São Paulo;* Director-President of AMIB (Brazilian Intensive Care Medicine Association); Coordinator of the Intensive Care Service and medical residency in intensive medicine at *Hospital de Base*.

Thais Dias Midega

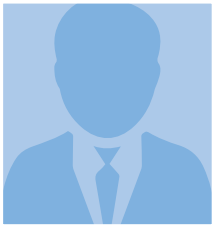
Intensivist Physician of the Adult Intensive Care Unit at *Hospital Israelita Albert Einstein*; Intensive Care Teleconsultant Physician of Telemedicine at *Hospital Israelita Albert Einstein*. Specialist in Intensive Medicine by AMIB (Brazilian Intensive Care Medicine Association).

Thaís Martins de Almeida Souza

Graduated in Psychology by *Faculdade Martha Falcão/AM*; Specialist in Intensive Health through the Multiprofessional Residency Program of *Universidade São Francisco/SP*; Hospital Psychologist of the Psychology Service of *Hospital Israelita Albert Einstein* in the Critically Ill Patient Department; and Coordinator of the Ensino Einstein's Hospital Psychology Updates Course.

Thiago Domingos Corrêa

Medical Manager of the Critically ill patients Department at *Hospital Israelita Albert Einstein*, Full Professor of the Post-Graduation *Stricto Sensu* Program in Health Sciences at *Hospital Israelita Albert Einstein* and Member of the Scientific Committee of the Brazilian Network for Intensive Care Research - BRICNet.



Thiago Lisboa

Uri Adrian Prync Flato

Intensivist at the Critically ill Patients Department at *Hospital Israelita Albert Einstein;* PhD from the *Faculdade de Medicina, Universidade de São Paulo;* AMIB (Brazilian Intensive Care Medicine Association) Specialist in Intensive Care Medicine and Adult Echocardiography DIC/SBC; Full Professor with a Master's Degree in Health at the *Universidade de Marília.*

Walace de Souza Pimentel

Physician on-duty at *Hospital Israelita Albert Einstein, São Paulo, SP, Brazil.*

Scientific Program

CONTENTS

August 16 | Tuesday			
XXIX International Symposium on Mechanical Ventilation - Hospital Israelita Albert Einstein			
12:00 pm - 1:00 pm	Opening Session		
	ROOM 1	**Moderator/Speaker**	**Institution**
	Acute respiratory failure	Carmen Silvia Valente Barbas Ricardo Luiz Cordioli	Hospital Israelita Albert Einstein
1:00 pm - 1:15 pm	Diagnosis of acute respiratory failure (ARF)	Carmen Silvia Valente Barbas	Hospital Israelita Albert Einstein
1:15 pm - 1:30 pm	Role of angiotomography/dual energy tomography in the diagnosis of ARF	Rodrigo Caruso Chate	Hospital Israelita Albert Einstein
1:30 pm - 1:45 pm	Diagnosis of respiratory infection: role of the molecular panel	Ellen Pierre De Oliveira	InCor
1:45 pm - 2:00 pm	Lung ultrasound in the diagnosis of ARF	Ricardo Luiz Cordioli	Hospital Israelita Albert Einstein
2:00 pm - 2:15 pm	Discussion		
	Ventilatory support in patients with ARF	Bruno Franco Mazza Eliana Bernadete Caser	Hospital Israelita Albert Einstein UFES e Unimed Vitória
2:15 pm - 2:30 pm	Oxygen therapy x HFNC therapy: recommendations and evidence	Bruno Franco Mazza	Hospital Israelita Albert Einstein
2:30 pm - 2:45 pm	Adjusting and monitoring the patient with HFNC	Eduardo Colucci	Hospital Israelita Albert Einstein
2:45 pm - 3:00 pm	HELMET: Clinical results	Massimo Antonelli	Fondazione Policlinico A. Gemelli University Hospital IRCCS - Universidade Católica, Roma
3:00 pm - 3:15 pm	NIV in hypoxemic respiratory failure	Eliana Bernadete Caser	UFES e Unimed Vitória
3:15 pm - 3:30 pm	Awake prone position in COVID 19: what are the evidences?	Carla Luciana Batista	Hospital Israelita Albert Einstein
3:30 pm -3:45 pm	Discussion		
3:45 pm - 4:00 pm	BREAK		
	Intubation and Monitoring of the ARF	Roseny dos Reis Rodrigues Marcia Jacomelli	Hospital Israelita Albert Einstein Hospital Israelita Albert Einstein
4:00 pm - 4:15 pm	How to best schedule and perform intubation in patients with Irpa	Roseny dos Reis Rodrigues	Hospital Israelita Albert Einstein
4:15 pm - 4:30 pm	Using a videolaryngoscopy for intubation | Ventilation of cardiac patients	João Manoel Silva Junior	Hospital Israelita Albert Einstein
4:30 pm - 4:45 pm	Using bronchoscopy for intubation and BAL collection	Marcia Jacomelli	Hospital Israelita Albert Einstein
4:45 pm - 5:00 pm	Discussion		

August 17 | Wednesday			
XXIX International Symposium on Mechanical Ventilation - Hospital Israelita Albert Einstein			
	ROOM 1	**ROOM 2**	
12:00 pm - 1:00 pm	**Free Themes 1**	**Free Themes 2**	
ROOM 1		**Moderator/Speaker**	**Institution**
	Mechanical ventilation - acute respiratory distress syndrome	Ary Serpa Neto Juliana Carvalho Pereira	ANZIC-RC and Austin Hospital
1:00 pm - 1:15 pm	HC-FMUSP experience	Juliana Carvalho Pereira	InCor FMUSP
1:15 pm - 1:30 pm	Evidence: optimal VC, driving pressure and respiratory rate	Ary Serpa Neto	ANZIC-RC and Austin Hospital
1:30 pm - 1:45 pm	Capnography: monitoring and decision making	Ricardo Luiz Cordioli	Hospital Israelita Albert Einstein
1:45 pm - 2:00 pm	Importance of PaCO2 levels in arterial blood gas	Laurent Brochard	Universidade de Toronto
2:00 pm - 2:15 pm	Discussion		
	MV management	Roberta Fittipaldi Palazzo	Hospital Israelita Albert Einstein and Faculdade de Medicina da Universidade de São Paulo
		Alexandre Marini Isola	Imed Group
2:15 pm - 2:30 pm	Transition from controlled mechanical ventilation to spontaneous MV	Eduardo Leite Vieira Costa	Hospital Sírio Libanês
2:30 pm - 2:45 pm	How to best adjust pressure support	Roberta Fittipaldi Palazzo	Hospital Israelita Albert Einstein and Faculdade de Medicina da Universidade de São Paulo
2:45 pm - 3:00 pm	Asynchrony during MV	Alexandre Marini Isola	Imed Group
3:00 pm - 3:15 pm	NIV and HFNC in the weaning process	Carmen Silvia Valente Barbas	Hospital Israelita Albert Einstein
3:15 pm - 3:30 pm	Difficult weaning: assessment and treatment plan	Sérgio Nogueira Nemer	Governo do Estado do Rio de Janeiro
3:30 pm -3:45 pm	Discussion		
3:45 pm - 4:00 pm	BREAK		
	Mechanical ventilation in special cases	Eduardo da Rosa Borges	Hospital Sírio-Libanês and Hospital Israelita Albert Einstein
		Antonio Eduardo Pereira Pesaro	Hospital Israelita Albert Einstein
4:00 pm - 4:15 pm	Ventilating neurological patient	Paolo Pelosi	Universidade de Gênova
4:15 pm - 4:30 pm	Ventilation of cardiac patients	Antonio Eduardo Pereira Pesaro	Hospital Israelita Albert Einstein
4:30 pm - 4:45 pm	Ventilation of obstructed patients	Eduardo da Rosa Borges	Hospital Sírio-Libanês and Hospital Israelita Albert Einstein
4:45 pm - 5:00 pm	Discussion		

August 18 | Thursday			
XXIX International Symposium on Mechanical Ventilation - Hospital Israelita Albert Einstein			
	ROOM 1 / ROOM 2		
12:00 - 13:00	Free Themes 3 / Free Themes 4		
	ROOM 1	**Moderator/Speaker**	**Institution**
	Ventilation of patients with COVID -19	Carmen Silvia Valente Barbas Thais Midega	Hospital Israelita Albert Einstein
1:00 pm - 1:15 pm	Protective mechanic ventilation strategy	Carmen Silvia Valente Barbas	Hospital Israelita Albert Einstein
1:15 pm - 1:30 pm	HIAE experience	Thais Dias Midega	Hospital Israelita Albert Einstein
1:30 pm - 1:45 pm	Brazilian experience	Otávio Ranzani	Incor/FMUSP
1:45 pm - 2:00 pm	How to implement mechanical ventilation protocols in Brazil	Patricia Rieken Macedo Rocco	Universidade Federal do Rio de Janeiro
2:00 pm - 2:15 pm	Discussion		
	Severe ARDS from COVID-19	Gustavo Faissol Janot de Matos	Hospital Israelita Albert Einstein
		Bruno de Arruda Bravim	Hospital Israelita Albert Einstein
2:15 pm - 2:30 pm	Ventilation of COVID-19 patients with severe ARDS in prone position	Marcos Soares Tavares	Hospital 9 de Julho
2:30 pm - 2:45 pm	Indications for rescue maneuvers in refractory hypoxemia	Gustavo Faissol Janot de Matos	Hospital Israelita Albert Einstein
2:45 pm - 3:00 pm	Tracheostomy in severe COVID 19	Arthur Oswaldo de Abreu Vianna	CLÍNICA São Vicente
3:00 pm - 3:15 pm	ECMO and CO2 removal systems: indications and monitoring	Bruno de Arruda Bravim	Hospital Israelita Albert Einstein
3:15 pm - 3:30 pm	Rehabilitating severe post-ARDS COVID patients	Raquel Afonso Caserta	Hospital Israelita Albert Einstein
3:30 pm -3:45 pm	Discussion		
3:45 pm - 4:00 pm	BREAK		
	ROOM 1		
16:00 - 17:00	**Free Themes**		

August 16 | Tuesday						
II Einstein International Symposium on Critical Care						
	ROOM 1	**Moderator/Speaker**	**Institution**	**ROOM 2**	**Moderator/Speaker**	**Institution**
Module	**Oncology/Hematology**	Diogo Bugano Lianna Ferreira Bringel Cavalieri	Hospital Israelita Albert Einstein	**Sepsis**	Roberto Rabello Filho	Hospital Israelita Albert Einstein Hospital Israelita Albert Einstein
05:00 pm - 05:15 pm	Chemotherapy in the ICU: what are the outcomes and when is it indicated?	Dante Raglione	Instituto do Câncer do Estado de São Paulo	When should inotropes be used in sepsis?	Leandro Utino Taniguchi	Faculdade de Medicina da USP
05:15 pm - 05:30 pm	ICU trial: what do we know?	Pedro Caruso	Hospital AC Camargo Cancer Center	Fluid replacement in sepsis guided by laboratory parameters of tissue perfusion vs clinical parameters	Gilberto Fridman	Faculdade de Medicina - Universidade Federal do Rio Grande do Sul
05:30 pm - 05:45 pm	Prognostic scores in ICU, is there validity in oncologic patients?	Rui Moreno	Hospital de São José, Centro Hospitalar Universitário de Lisboa Central	The 1-hour protocol: what changed in clinical outcome?	Murillo Santucci César de Assunção	Hospital Israelita Albert Einstein
05:45 pm - 06:00 pm	Outcome of septic shock in oncologic patients, is there a difference?	Antonio Paulo Nassar Junior	Hospital AC Camargo Cancer Center	Inflammatory syndromes: when to start the sepsis protocol?	Mervyn Singer	University College London
06:00 pm - 06:15 pm	Discussion			Discussion		
06:15 pm - 07:00 pm	**SANOFI SATELLITE SYMPOSIUM: Clinical evidence in VTE prophylaxis and treatment with enoxaparin - National speaker - Felipe Gallego Lima**			**BIOMERIUEX SATELLITE SYMPOSIUM: The importance of fast and assertive microbiological diagnosis in the treatment of septic patients, welcome to the new technology! - Ricardo Cordioli**		
	ROOM 1	**Moderator/Speaker**	**Institution**	**ROOM 2**	**Moderator/Speaker**	**Institution**
Module	**Post-ICU Care**	Raquel Afonso Caserta Eid Roger Monteiro Alencar	Hospital Israelita Albert Einstein Hospital Israelita Albert Einstein	**Nephrology**	Bruno Caldin da Silva Eduardo José Tonato	Hospital Israelita Albert Einstein Hospital Israelita Albert Einstein
07:00 pm - 07:15 pm	Long COVID: overview	Milene Silva Ferreira	Hospital Israelita Albert Einstein	Management of patients with cerebral edema and acute kidney injury	Etienne Macedo	University of California San Diego: La Jolla, CA, US
07:15 pm - 07:30 pm	Challenges in the dehospitalization process	Carolina de Lima Pires	Hospital Israelita Albert Einstein	Indications for dialysis in the ICU: what have we learned in the last decade?	Bento Fortunato Cardoso dos Santos	Hospital Israelita Albert Einstein
07:30 pm - 07:45 pm	Post-ICU syndrome	Ricardo Kenji Nawa	Hospital Israelita Albert Einstein	Specificities of renal replacement therapy in ECMO	Patricia Faria Scherer	Hospital Israelita Albert Einstein
07:45 pm - 08:00 pm	Post-traumatic stress disorder	Thaís Martins de Almeida Souza	Hospital Israelita Albert Einstein	Saline vs. balanced solution in ICU: association with renal injury?	Paul Young	Medical Research Institute of New Zealand
08:00 pm - 08:15 pm	Discussion			Discussion		

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August 16 | Tuesday						
II Einstein International Symposium on Critical Care						
	ROOM 1	**Moderator/Speaker**	**Institution**	**ROOM 2**	**Moderator/Speaker**	**Institution**
Module	**Quality and Safety**	Ana Claudia Ferraz Marcele Liliane Pesavento	Hospital Israelita Albert Einstein Hospital Israelita Albert Einstein	**Cardiology**	Elias Knobel Antonio Carlos Bacelar Nunes Filho	Hospital Israelita Albert Einstein Hospital Israelita Albert Einstein
08:15 pm - 08:30 pm	Driving lasting change in critical patient care (psychology of change)	Paulo Borem	Institute for Healthcare Improvement (IHI)	Ventricular Assist Devices in Acute Heart Failure	Sandrigo Mangini	Hospital Israelita Albert Einstein
08:30 pm - 08:45 pm	Equity in the Health Care System	Claudia Regina Laselva	Hospital Israelita Albert Einstein	HF management: state of the art in 2022	Fernando Bacal	Hospital Israelita Albert Einstein
08:45 pm - 09:00 pm	Organizational learning system: key component in promoting patient and health worker safety	Antonio Capone Neto	Institute for Healthcare Improvement (IHI)	Atrial fibrillation in the intensive care unit: challenges in treatment and anticoagulation	Hélio Penna Guimarães	Hospital Israelita Albert Einstein
09:00 pm- 09:15 pm	Diagnostic time and the new concept of diagnostic error	Gustavo Faissol Janot de Matos	Hospital Israelita Albert Einstein	Management of Acute Right Ventricular Failure	Walace de Souza Pimentel	Hospital Israelita Albert Einstein
09:15 pm - 09:30 pm	Discussion			Discussion		

August 17 | Wednesday						
II Einstein International Symposium on Critical Care						
	ROOM 1	**Moderator/Speaker**	**Institution**	**ROOM 2**	**Moderator/Speaker**	**Institution**
Module	**ICU Neurology**	Polyana Vulcano de Toledo Piza Marcos Vinicius Tadao Fujino	Hospital Israelita Albert Einstein Hospital Israelita Albert Einstein	**ICU Management**	Guilherme de Paula Pinto Schettino Marcelo de Oliveira Maia	Hospital Israelita Albert Einstein Hospital Santa Luzia - Rede Dor São Luiz / Associação de Medicina Intensiva Brasileira no DF e AMIB
05:00 pm - 05:15 pm	Multimodal Neuromonitoring in the ICU: combining invasive and non-invasive bedside strategies	Paula Rodrigues Sanches	Hospital Israelita Albert Einstein	Mental health of ICU staff	Luiz Gustavo Vala Zoldan	Hospital Israelita Albert Einstein
05:15 pm - 05:30 pm	Curing Coma Day	Gisele Sampaio Silva	Hospital Israelita Albert Einstein	How to maintain staff engagement in crisis situations?	Leonardo Jose Rolim Ferraz	Sociedade Beneficente Israelita Brasileira Albert Einstein
05:30 pm - 05:45 pm	Intensive care in postoperative carotid surgery. What should every intensivist know?	Rodrigo Meirelles Massaud	Hospital Israelita Albert Einstein	Using data to manage the ICU	Marcio Soares	Epimed Solutions
05:45 pm - 06:00 pm	Update on neurosurgical treatment of aneurysmal SAH	Marcos Augusto Stávale Joaquim	Hospital Israelita Albert Einstein	Improving empathy and soft skills in the ICU	Felipe Maia de Toledo Piza	Hospital Municipal Dr. Moysés Deutsch (M'Boi Mirim)
06:00 pm - 06:15 pm	Discussion			Discussion		
06:15 pm - 07:00 pm	**MINDRAY SATELLITE SYMPOSIUM: Advanced ventilation - National speaker - João Manoel da Silva Junior - HIAE**			**Break**		
	ROOM 1	**Moderator/Speaker**	**Institution**	**ROOM 2**	**Moderator/Speaker**	**Institution**
Module	**Tele-ICU and Big Data**	Lubia Caus de Moraes Cesar Truyts	Hospital Israelita Albert Einstein	**Trauma and Surgery**	João Manoel da Silva Junior Carlos Eduardo Saldanha de Almeida	Hospital Israelita Albert Einstein Hospital Israelita Albert Einstein
07:00 pm - 07:15 pm	Challenges in tele-ICU implementation: current and future	Ian Barbash	University of Pittsburgh	Fluid replacement in high risk surgical patients: what's new?	Suzana Margareth Ajeje Lobo	Hospital de Base de São José do Rio Preto
07:15 pm - 07:30 pm	From algorithm performance evaluation to clinical validation: artificial intelligence and machine learning solutions in ICUs and hospitals	Andrew Maranhão Ventura Dadário		Particularities of tissue perfusion in the perioperative period	Flávio Nacúl	
07:30 pm - 07:45 pm	Artificial intelligence solutions in healthcare: A new drug, a new medical device, or both?	Edson Amaro Júnior	Hospital Israelita Albert Einstein	Cerebral oxygenation: importance in care of surgical patients	Neymar Elias	Hospital Home de Brasília

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August 17 | Wednesday						
II Einstein International Symposium on Critical Care						
	ROOM 1	**Moderator/Speaker**	**Institution**	**ROOM 2**	**Moderator/Speaker**	**Institution**
07:45 pm - 08:00 pm	Real-life challenges in developing AI/Big Data solutions applied to hospitalized patients: case discussions	Adriano José Pereira	Hospital Israelita Albert Einstein	COVID-19 and its impact on high risk surgeries	Daniel Souza Cesar	
08:00 pm - 08:15 pm	Discussion			Discussion		
	ROOM 1	**Moderator/Speaker**	**Institution**	**ROOM 2**	**Moderator/Speaker**	**Institution**
Module	**Monitoring**	Fernando Luiz Gutierrez Rogerio da Hora Passos	Instituto Nacional do Câncer - INCA, RJ Hospital São Rafael	**Humanization**	Erika Satomi Lara Patricia Kretzer	Hospital Israelita Albert Einstein HU-UFSC
08:15 pm - 08:30 pm	Fluid administration in acute circulatory dysfunction using basic monitoring	Jan Bakker	NYU Langone and Columbia University Medical Center New York	Humanization in intensive care: what is the evidence?	Regis Goulart Rosa	Hospital Moinhos de Vento
08:30 pm - 08:45 pm	When, which and how to start vasopressors in vasodilatory shock?	Thiago Domingos Corrêa	Hospital Israelita Albert Einstein	Fundamental for humanization and palliative care	Rodrigo Kappel	Hospital de Clínicas de Porto Alegre
08:45 pm - 09:00 pm	How to use the combination of tissue perfusion parameters in the treatment of circulatory shock?	Alejandra Del Pilar Gallardo Garrido	Hospital Israelita Albert Einstein	Ethical decisions, techniques and the human factor	Daniel Neves Forte	Hospital Sírio Libanês
09:00 pm- 09:15 pm	Cardiac output monitoring: how to choose and individualize the best tool for the patient?	Daniel De Backer	CHIREC Hospitals, Université libre de Bruxelles	Person-centered care: the interaction between intensivist and palliativist	Farah Christina de la Cruz Scarin	Hospital Israelita Albert Einstein
09:15 pm - 09:30 pm	Discussion			Discussion		

August 18 | Thursday						
II Einstein International Symposium on Critical Care						
	ROOM 1	**Moderator/ Speaker**	**Institution**	**ROOM 2**	**Moderator/Speaker**	**Institution**
Module	**Nutrition**	Décio Diament Evandro José de Almeida Figueiredo	Hospital Israelita Albert Einstein Hospital Israelita Albert Einstein	**Coagulation and Haemostasis**	Carolina Keiko Yamamoto Honda Flávia Nunes Dias Campos	Hospital Israelita Albert Einstein Hospital Israelita Albert Einstein
05:00 pm - 05:15 pm	Energy metabolism in the ICU: calorimetry-based reasoning	Flávia Julie do Amaral Pfeilsticker	Hospital Israelita Albert Einstein	Transfusion strategies when dealing with a patient refusing transfusion	Liana Maria Tôrres de Araújo Azi	Hospital Universitário Professor Edgard Santos
05:15 pm - 05:30 pm	Protein supply in the ICU: high from the start?	Melina Gouveia Castro	Hospital Israelita Albert Einstein	What does an intensivist need to know about disseminated intravascular coagulation (DIC)?	Nicole Juffermans	Amsterdam UMC and OLVG Hospital
05:30 pm - 05:45 pm	Parenteral nutrition: what has changed in the new American guideline?	Lilian Moreira Pinto	Hospital Israelita Albert Einstein	PBM- Patient Blood Management- How can it be implemented?	Klaus Gorlinger	Tem Innovations GmbH, Munich, Germany, and University Hospital Essen, Essen, Germany
05:45 pm - 06:00 pm	After all, should I count non-nutritional calories?	Rodrigo Costa Gonçalves	Hospital Israelita Albert Einstein - Unidade Goiânia	I have no point-of-care; how to manage bleeding in the ICU?	Roseny dos Reis Rodrigues	Hospital Israelita Albert Einstein
06:00 pm - 06:15 pm	Discussion			Discussion		
06:15 pm - 07:00 pm	**SATELLITE SYMPOSIUM PFIZER: Difficult-to-treat gram-negative infections in critically ill patients - Ederlon Rezende**			**ASTRAZENECA SATELLITE SYMPOSIUM: Bleeding in patients using DOACs - Gisele Sampaio Silva**		
	ROOM 1	**Moderator/ Speaker**	**Institution**	**ROOM 2**	**Moderator/Speaker**	**Institution**
Module	**Infection**	Moacyr Silva Junior Fabrício Rodrigues Torres de Carvalho	Hospital Israelita Albert Einstein Hospital Israelita Albert Einstein	**ICU Imaging**	Niklas Söderberg Campos Uri Adrian Prync Flato	Hospital Israelita Albert Einstein Hospital Israelita Albert Einstein
07:00 pm - 07:15 pm	How to optimize antimicrobial prescribing using Pk/Pd model-based tools?	João Paulo Marochi Telles	Pontifícia Universidade Católica	How to use the point-of-care echocardiogram as a guideline for volume resuscitation?	Ricardo Luiz Cordioli	Hospital Israelita Albert Einstein
07:15 pm - 07:30 pm	Implications of VAP to clinical pratice	Ignácio Martin-Loeches	St James's Hospital	Pulmonary USG more than a stethoscope in the hands of the multidisciplinary team	Carla Luciana Batista	Hospital Israelita Albert Einstein
07:30 pm - 07:45 pm	Procalcitonin and its relationship with prognosis and cost-effectiveness	Thiago Lisboa		Pulmonary USG: how to train the ICU multiprofessional team?	Adrian Wong	King's College Hospital, London
07:45 pm - 08:00 pm	Prevention of health care related infection in the ICU in the era of pan-resistance.	Fernando Gatti de Menezes	Hospital Israelita Albert Einstein	Poin-of-care gastric USG: how far can we explore its use in the ICU?	Dante Moreira Lima	Hospital Israelita Albert Einstein
08:00 pm - 08:15 pm	Discussion			Discussion		

continue...

...Continuation

August 18 | Thursday						
II Einstein International Symposium on Critical Care						
	ROOM 1	**Moderator/ Speaker**	**Institution**	**ROOM 2**	**Moderator/Speaker**	**Institution**
Module	**Transplant**	Patricia Albizu Piaskowy José Eduardo Afonso Júnior	Hospital Israelita Albert Einstein Hospital Israelita Albert Einstein	**ECMO**	Bruno de Arruda Bravim Daniel Joelsons	Hospital Israelita Albert Einstein Hospital Israelita Albert Einstein
08:15 pm - 08:30 pm	Infections in organ donors: impact for the recipient	Luiz Fernando Aranha Camargo	Hospital Israelita Albert Einstein	VV ECMO after COVID-19: which ventilatory strategy?	Alain Combes	Pitie Salpetriere APHP University Hospital
08:30 pm - 08:45 pm	Peculiarities of sedation and analgesia in the transplanted patient	Bárbara Vieira Carneiro	Hospital Israelita Albert Einstein	VA ECMO: dilemmas during the support process	Barbara Rubim Alves	Hospital Israelita Albert Einstein
08:45 pm - 09:00 pm	Identifying acute graft dysfunction following heart transplantation: what do we need to know?	Amanda Pascoal Valle Felicio	Hospital Israelita Albert Einstein	Institutional training, how to make it possible?	Pedro Paulo Zanella do Amaral Campos	Hospital Israelita Albert Einstein
09:00 pm- 09:15 pm	Challenges in volume replacement in the postoperative period of liver transplantation	Bruno Franco Mazza	Hospital Israelita Albert Einstein	Rehabilitation in ECMO: day-to-day challenges	Caroline Gomes Mól	Hospital Israelita Albert Einstein
09:15 pm - 09:30 pm	Discussion			Discussion		

Presentation Abstracts

001

Impact of sanitizer-based disinfection of hospital environment and medical devices on clinical or microbiological outcomes: a systematic literature review

Category: Infection.

Amanda Malveira Guimarães[1], Renato Carneiro de Freitas Chaves[1,2,3], Claudia Vallone Silva[1], Erika Yumiko Kumoto[1], Adriano José Pereira[1,4]

[1] Intensive Care Unit, Hospital Israelita Albert Einstein, São Paulo, SP, Brazil.

[2] Department of Anesthesiology, Hospital Israelita Albert Einstein, São Paulo, SP, Brazil.

[3] Takaoka Anestesia, São Paulo, SP, Brazil.

[4] Big Data Department, Hospital Israelita Albert Einstein, São Paulo, SP, Brazil.

Introduction: The health environment is an important reservoir for a multitude of microorganisms. Contact with environment surfaces contaminated with multidrug-resistant organisms (MDROs) may be associated with healthcare-associated infections and higher hospital costs, morbidity, and mortality.(1) **Objective**: To perform a systematic review of clinical and microbiological outcomes associated with interventions based on use of sanitizers in hospital environment surfaces or medical devices. **Methods:** Published studies were identified through electronic literature search of PubMed, Cumulative Index to Nursing and Allied Health Literature (CINAHL) and SCOPUS by three independent reviewers. All interventions based on use of sanitizers (in isolation or combined with other methods) and targeting the hospital environment or medical devices were included. No restrictions regarding patients and microorganisms were imposed. Bench studies, studies involving surface contamination with MDROs and animal studies were excluded. The quality of randomized controlled trials (RCTs) and non-randomized trials was assessed using the Cochrane Collaboration's tool and the Newcastle-Ottawa scale, respectively. **Results:** A total of 8,984 studies involving sanitizer interventions targeting the healthcare environment or medical devices were found. Of these, 26 were included in this review (Figure 1). Intervention effectiveness varied between studies. The five randomized studies which met the inclusion criteria involved the use of different sanitizers in disinfection: isopropyl alcohol swab, sodium hypochlorite (bleach), benzalkonium chloride swabs, quaternary ammonium disinfectant and UV-C light, bleach, and UV-C light, organosilane, hydrogen peroxide and silver vapor, and 65% ethyl alcohol. Environmental studies comprised two multicenter randomized trials and one single center randomized trial. All these studies assessed microbiological outcomes and only 6 included clinical outcomes. Studies focusing on medical device disinfection consisted of single center randomized trials and assessed microbiological outcomes. Selected studies involved the use of different chemical or physical-chemical cleaning and disinfection methods. Significant variation in cleaning and disinfection strategies in these settings reflect of lack of consensus on management of hospital rooms, medical devices and patients infected with MDROs. **Conclusion:** The efficacy of sanitizers was consistent across studies included in this systematic review. However, few RCTs were found, and most were limited to microbiological outcomes. More studies are urgently needed to evaluate the impact of environmental interventions on clinical outcomes.

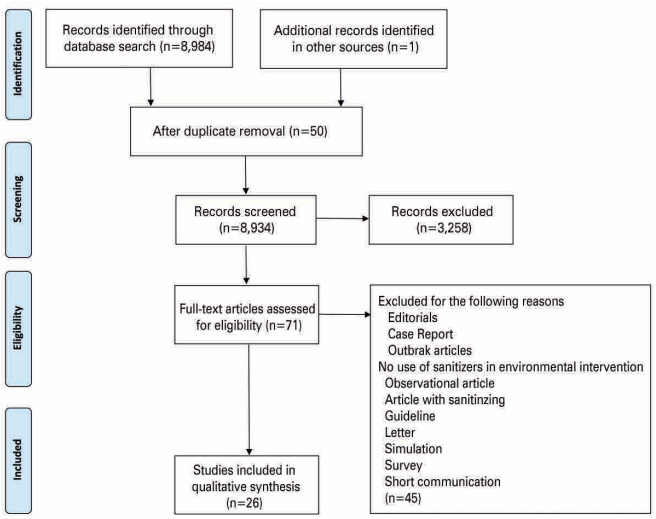

Figure 1. Literature search strategy and databases used: PubMed, SCOPUS, and CINAHL. Restrictions: articles in English or Spanish only

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Research funding: This study was supported by the Brazilian Unified Health System Institutional Development Program (PROADI-SUS - *Programa de Desenvolvimento Institucional do Sistema Único de Saúde*), from the Brazilian Ministry of Health, in collaboration with the Brazilian Health Regulatory Agency (ANVISA - *Agência Nacional de Vigilância Sanitária*), as part of the "IMPACTO MR - Saneantes" project (grant number 25000.030652/2018-37, June 2018).

002

Use of unsupervised machine learning models to investigate associations between hospital infrastructure and acquisition of Healthcare-Associated Infections in Brazilian Intensive Care Units - IMPACTO MR study group

Category: Infection.

Erika Yumiko Kumoto[1], Renato Carneiro de Freitas Chaves[1,2,3], Claudia Vallone Silva[1], Amanda Malveira Guimarães[1], Leonardo Daniel Tavares[1,4], Adriano José Pereira[1,4]

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Introduction: The environment is an important reservoir of microorganisms, especially multidrug-resistant (MR) organisms, which often tend to survive on surfaces (bed rails, door handles, computer keyboards) for extended periods of time. Evidence regarding the relationship between inadequate environmental hygiene practices and/or infrastructure and increased risk of healthcare-associated infections (HAIs) is unclear.[1,2] **Objective:** To identify hospital infrastructure patterns potentially associated with intensive care unit-acquired infections (ICU-AIs) using unsupervised machine learning techniques. **Methods:** Thirty-eight Brazilian hospitals located in different regions of the country were visited by healthcare professionals trained by the Research Group between November and December 2020. An instrument comprising 99 specifically designed questions and K-means clustering were used to examine potential relationships between items and presence of infection upon patient admission to respective intensive care units. The number of clusters was chosen according to the silhouette metric, as can be seen in figure 1. **Results:** Two groups (Group 0 and Group 1) were created after application of the K-means clustering algorithm. Findings revealed differences between hospital clusters, which may be related to the number of infections diagnosed upon admission. Intensive care unit-acquired infection rates were 28% higher in Group 0 relative to Group 1 hospitals (preliminary results; table 1). The three most distinguishing characteristics were: percentage of properly functioning liquid soap dispenser (58% and 100%, Group 0 and Group 1 respectively); percentage of alcohol solution dispensers in the unit (8% and 22%, Group 0 and Group 1 respectively); percentage of alcoholic solution availability in visible and readily accessible areas close to the point of care (10% and 60%, Group 0 and Group 1 respectively). **Conclusion:** Unsupervised machine learning methods (such as K-means) can be used to distinguish between hospitals according to infrastructure characteristics. Preliminary results suggest a relation between infrastructure and infection at admission.

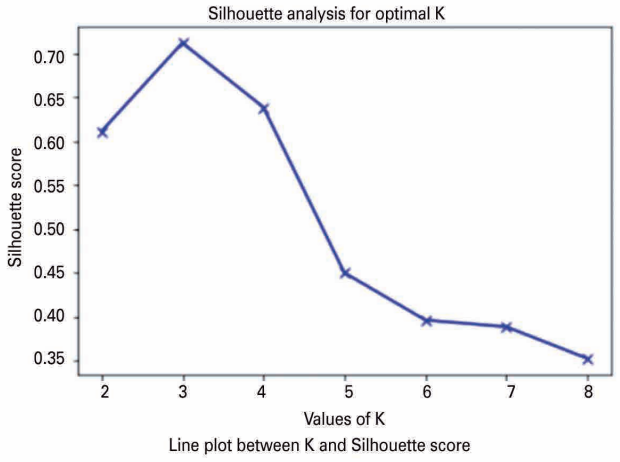

Figure 1. Optimal number of clusters determined using silhouette analysis[3]

Table 1. Differences in incidence of infection at admission

Group	Infection at admission Yes (%)	Infection at admission No (%)
0	12.91	87.09
1	10.08	89.92

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Research funding: This study was supported by the Brazilian Unified Health System Institutional Development Program (PROADI-SUS - *Programa de Desenvolvimento Institucional do Sistema Único de Saúde*), from the Brazilian Ministry of Health, in collaboration with the Brazilian Health Regulatory Agency (ANVISA - *Agência Nacional de Vigilância Sanitária*), as part of the "IMPACTO MR - Saneantes" project (grant number 25000.030652/2018-37, June 2018).

003

Safety and feasibility of early mobilization in patients submitted to cardiac surgery carrying a subxiphoid tube

Category: Cardiology.

Heloísa Oliveira da Silva Pimenta[1], Geovanna Lima Almeida[1], Natascha Conceição Carneiro Silva[1], André Raimundo França Guimarães[2], André Luiz Lisboa Cordeiro[1]

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[2] Instituto Nobre de Cardiologia, Feira de Santana, BA, Brazil.

Introduction: Patients submitted to cardiac surgery remain in bed rest during intensive care unit (ICU) stay. Immobility associated with bed rest may lead to clinical and functional impairments.[1] Although these complications can be avoided by early mobilization, in some hospitals this cannot be accomplished due to use of a subxiphoid tube in the immediate postoperative period.[2,3] **Objective:** To determine the safety and feasibility of early mobilization of cardiac surgery patients carrying a subxiphoid tube. **Methods:** This was a prospective cohort study. On the first day after surgery, patients were placed in the sedestation in bed, then transferred from sitting to orthostasis, gait training and sedestation in an armchair. On the second postoperative day, the same activities were repeated with progressive increase in walking distance around the ICU. At these time points, patients were using a subxiphoid and/or an intercostal tube. Patients were seen three times per day. However, physical rehabilitation was performed twice daily. The following adverse events were analyzed: chest tube obstruction, accidental removal or displacement, total atrioventricular block, postoperative low output syndrome, cardiorespiratory arrest, pneumomediastinum, infection, and pericardial or myocardial damage. **Results:** One hundred seventy-six patients were evaluated (Table 1). The incidence of complications after early mobilization in patients carrying a subxiphoid tube was low (Table 2). Only 2 patients (0.4%) had complications during or after mobilization, 1 (0.2%) due to tube obstruction and 1 (0.2%) due to accidental tube removal or displacement. **Conclusion:** Findings of this study suggest early mobilization of patients carrying a subxiphoid tube after cardiac surgery is safe and feasible.

Table 1. Clinical and surgical data of the patients studied

Age (years)	57±6
Gender (%)	
Male	109 (62)
Female	67 (38)
BMI (kg/m^2)	24±3
Smoking history (%)	25 (14)
Ejection fraction	52±4
Level of physical activity (%)	
Active	61 (35)
Sedentary	115 (65)
Comorbidities	
SAH	114 (65)
DM	92 (52)
DLP	69 (39)
Surgery time (hours)	4.4±1.6
Time of CPB (min.)	94±9
Time of ICU stay (days)	2±1
Time of hospital stay (days)	11±3
Time of stay with subxiphoid drain (days)	3±1
MV time (hours)	6±3
Number of drains	2±1
Number of grafts	2±1

BMI: body mass index; SAH: systemic arterial hypertension; DM: *diabetes mellitus*; DLP: dyslipidemia; CPB: cardiopulmonary bypass; ICU: intensive care unit; MV: mechanical ventilation.

Table 2. Complications associated with ambulation

Total mobilization sessions	528
Total complications (%)	2 (0.4)
Drain obstruction (%)	1 (0.2)
Accidental removal or displacement (%)	1 (0.2)
Total atrioventricular block (%)	0 (0)
Postoperative low output syndrome (%)	0 (0)
Cardiorespiratory arrest (%)	0 (0)
Pneumomediastinum (%)	0 (0)
Infection (%)	0 (0)
Pericardial or myocardial damage (%)	0 (0)

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Research funding: Not applicable.

004

Clinical and functional outcomes associated with pulmonary complications after coronary artery bypass grafting

Category: Cardiology.

Altina Vitória Souza[1], Raquel da Cunha Carvalho[1], Daniela da Cruz Dias[1], Darley Gabrielle Teles Santana[1], André Raimundo França Guimarães[2], Hayssa de Cássia Mascarenhas Barbosa[1], André Luiz Lisboa Cordeiro[1]

[1] Centro Universitário Nobre, Feira de Santana, BA, Brazil.

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Introduction: Coronary artery bypass grafting (CABG) is a surgical procedure used in coronary artery disease to improve patient symptoms and life expectancy. Benefits aside, pulmonary, and functional postoperative[(1)] complications may occur due to invasive mechanical ventilation (IMV), cardiopulmonary bypass and immobility, leading to longer hospital stay.[(2,3)] **Objective:** To evaluate clinical and functional outcomes associated with postoperative pulmonary complications in patients undergoing coronary artery bypass grafting (CABG). **Methods:** This is a prospective cohort study. During ICU stay, patients were divided into two groups: No Complicated Group (NCG; patients who did not develop complications during ICU stay) and Complication Group (CG; patients who developed complication during ICU stay). Functional variables were assessed using the following tests: six-minute walk test, gait speed, sit and stand test, Timed Up and Go, peripheral muscle strength, ventilatory lung function and Functional Independence Measure. Tests were applied prior to surgery, at hospital discharge and six months after the surgical procedure. **Results:** The study evaluated 90 patients, 59 in the NCG and 31 CG. In the six-minute walk test (6MWT) there was a 2% decrease (p=0.43) in the NCG, while the decrease was 13% (p<0.01) in the CG. In the peripheral strength (MRC) the drop was also 2% (p=<0.01) in the NCG, while in the group with complication the drop was 14% (p=<0.01). In maximal inspiratory pressure (MIP) the NCG had a fall of 6% (p=0.67), while the CG had a fall of 16% (p=<0.01). The complication that was most prevalent during the survey in the com group was atelectasis, where in a total of 31 patients, 17(55%) of them were diagnosed. **Conclusion:** Patients with postoperative complications after coronary artery bypass grafting may have reduced functional performance, muscle strength and lung function at hospital discharge and after six months.

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Research funding: Not applicable.

005

Kids Save Hearts Project: hands-only cardiopulmonary resuscitation training for schoolchildren

Category: Cardiology.

Yuuki Daniel Tahara Vilas Boas[1], Giuliana Simões Nakano[1], Isabella Bispo Diaz Toledo Martins[1],

Manuela Simões Nakano[1], Miguel Florentino Antonio[1], Pedro Gazotto Rodrigues da Silva[1], Rafael Carreira Batista[1], Vinicius Gazin Rossignoli[1], Thiago Victor Cambauva Cardoso[1], Jaqueline Vidal Rodrigues[1], Emílio José Beffa dos Santos[1], Nayla Barbosa Girotto[1], Francine Lima Baldo Ramos[1], Tereza Lais Menegucci Zutin[1], Uri Adrian Prync Flato[1]

[1] Universidade de Marília, Marília, SP, Brazil.

Introduction: Several countries currently provide cardiopulmonary resuscitation (CPR) training to children in the school environment as part of a global initiative. This type of training is not part of the Brazilian school curriculum. However, it is necessary due to the often-fatal outcome of cardiorespiratory arrest.[1,2] **Objective:** This study investigated the effectiveness of hands-only cardiopulmonary resuscitation training in schoolchildren in different age groups. **Methods:** This study was approved by the institution Research Ethics Committee. Parents and participants signed a consent form prior to training. The study was carried out in three (public and private) schools and using a quasi-experimental intervention design and two age groups: 7 to 11 years and 12 to 17 years (Group I and Group II respectively). The 90-minute training module consisted of short practice videos watched while listening to a song dedicated to "hands-only CPR." Students were then individually evaluated for skills and knowledge using Skill Reporter Software Laerdal Medical while performing one minute of chest compressions on a manikin and a dedicated game. **Results:** A total of 102 schoolchildren (54 females and 48 males) (Table 1) were trained and evaluated. Demographic variables and chest compression quality were analyzed. Chest compression quality was rated according to international guidelines 2020 (rate, depth, recoil). Physical characteristics of participants differed significantly ($p<0.05$). Chest compression depth during CPR differed significantly (median 66mm; $p=0.01$) in Group II. **Conclusion:** Schoolchildren were able to perform hands-only cardiopulmonary resuscitation effectively. Future efforts are warranted to implement and expand cardiopulmonary resuscitation training in low-income regions in Brazil.

Table 1. Demographic data and quality of chest compression

	Total			Group I			Group II			*t*-test
Variables	**N**	**%**		**N**	**%**		**N**	**%**		
Total	**102**	**100**		**60**	**58.82**		**42**	**41.18**		
	Mean	**Median**	**CI**	**Mean**	**Median**	**CI**	**Mean**	**Median**	**CI**	**p value**
Age (Years)	11.72	10.00	0.75	9.52	10.00	0.34	14.86	15.00	0.64	<0.001
Height (cm)	151.62	150.00	3.59	142.75	143.50	2.74	164.29	165.00	4.19	<0.002
Weight (Kg)	51.27	49.15	4.67	43.58	43.00	4.52	62.26	61.18	7.37	<0.003
Biceps circumference (cm)	25.55	25.40	1.19	24.50	24.35	1.41	27.05	27.00	1.93	0.004
Palm pressure	32.58	30.25	3.64	31.74	31.45	3.61	33.78	26.85	7.17	0.26
Chest compressions per minute (comp./min.)	111.31	109.00	4.24	113.68	112.00	5.22	107.93	106.50	6.90	0.05
Complete chest recoil (%)	96.00	100.00	3.35	97.80	100.00	2.83	93.43	100.00	6.93	0.07
Compression depth (mm)	50.82	38.50	14.76	35.35	21.00	18.67	64.00	89.00	20.03	0.01
Number of children: 102										

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Research funding: Not applicable.

006

Kids Save Hearts Project: assessment of perception and awareness of family and students about CPR training

Category: Cardiology.

Julia Caroline Romão[1], Miguel Florentino Antonio[1], Nayla Barbosa Girotto[1], Rafael Carreira Batista[1], Pedro Gazotto Rodrigues da Silva[1], Yuuki Daniel Tahara Vilas Boas[1], Emílio José Beffa dos Santos[1], Gabriel Cunha[1], Giuliana Simões Nakano[1], Isabella Bispo Diaz Toledo Martins[1], Leonardo Escobar Medeiros[1], Manuela Simões Nakano[1], Vinicius Gazin Rossignoli[1], Tereza Lais Menegucci Zutin[1], Uri Adrian Prync Flato[1]

[1] Universidade de Marília, Marília, SP, Brazil.

Introduction: In Brazil, approximately 30 percent of deaths are attributable to cardiovascular disease.[1] Children and family members who witness such tragic events are not able to perform life-saving procedures. We believe schools and families should be moving in the same direction, focusing on social responsibility. Unfortunately, basic first aid and cardiopulmonary resuscitation (CPR) instructions are often not provided to children and their families.[2] Cardiopulmonary resuscitation procedures practiced in school courses are not submitted to careful assessment or improved upon. As a result, the Children Save Hearts Project must deal with situations inside and outside the school environment. **Objective:** The purpose of the study was to increase perception and awareness of life-saving cardiopulmonary resuscitation procedures and techniques among family members and other players in public and private schools. **Methods:** This study consisted of a qualitative cross-sectional observational analysis for assessment of CPR quality among children aged 7 to 17 years, regarding their ability to perceive and respond to an emergency. A sample comprising

of approximately 90 youngsters was obtained via questionnaire administration before and after CPR training. To quantify the social impact of CPR training on the lives of children, parents and guardians were asked to complete a questionnaire about their perception of CPR training. **Results:** Results emphasized the significance and entertaining nature of training for students and their families. According to qualitative assessment, family members believe the project had a transformative social impact and enabled children to preserve their lives. After training, youngsters felt prepared to perform CPR and confident in their ability to respond appropriately to an emergency. **Conclusion:** Family members support cardiopulmonary resuscitation training and acknowledge the significance of cardiopulmonary resuscitation procedures. Personal lack of access to training in childhood was also reported. Parents were pleased that their children participate in the program and learn how to save lives.

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Research funding: Not applicable.

007

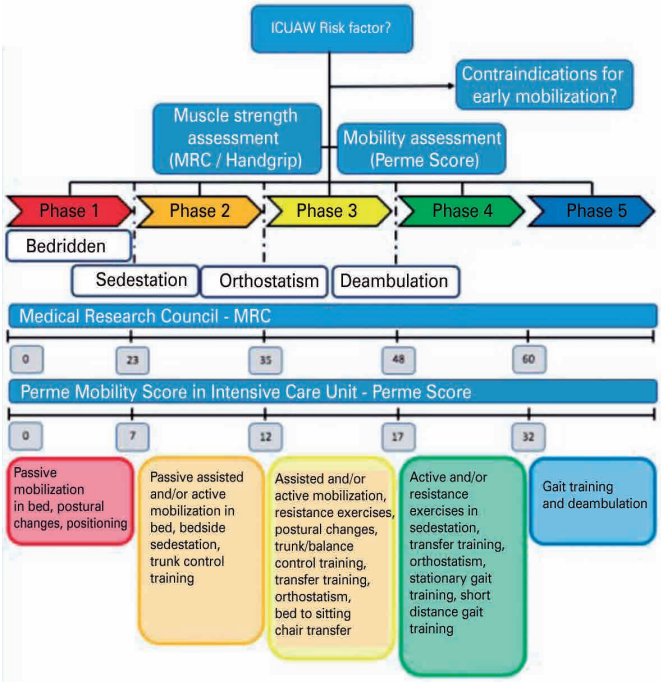
A rehabilitation program to facilitate mechanical ventilation weaning: case report

Category: Pneumology.

Flavia Ferreira Pereira de Souza[1]

[1] Hospital Israelita Albert Einstein, São Paulo, SP, Brazil.

Introduction: Mechanical ventilation may induce several complications, including muscle weakness. Muscle weakness makes the weaning process difficult, leading to prolonged weaning time.(1) Rehabilitation programs are thought to be effective to assist this process.(2) **Objective:** To describe the effectiveness of a rehabilitation program in a case of difficult weaning from mechanical ventilation. **Methods:** A female patient aged 50 years and suffering from respiratory distress syndrome (ARDS) was referred from a different institution after two days of mechanical ventilation. Comorbidities were as follows: hypertension, morbid obesity, hypothyroidism, and rheumatoid arthritis. After 15 days of ventilation, the patient failed extubation and was submitted to a tracheostomy 3 days later. After two days, a rehabilitation program was introduced. Initial Perme Score was 9.(3) The program was designed according to rehabilitation phases, *as per* the institutional protocol (Figure 1), as follows: Phase 1 - respiratory muscle training, use of an orthostatic board, passive sitting in an armchair and neuromuscular electrical stimulation (NMES); Phase 2 - bedside sitting and trunk balance; Phase 3 - orthostatic training; Phase 4 - gait training and resistance exercises. **Results:** After two months of rehabilitation, successful weaning from mechanical ventilation was achieved and decannulation performed. The patient was discharged from hospital after 5 months, with a Perme Score of 27 and significant functional improvement. **Conclusion:** Rehabilitation programs can be used to assist difficult weaning from mechanical ventilation. Well-designed programs tailored to patient needs are quite effective and may reduce hospitalization time and improve patient quality of life. The patient described signed an informed consent form.



NMES: neuromuscular electrical stimulation; MRC: muscle strength assessment; ICU-AW: intensive care unit-acquired weakness; 6MWT: six-minute walk test; TUG: timed up and go test; FIM: functional independence measure.

Figure 1. Institutional protocol to early mobilization

Acknowledgements: Special thanks to all members of the Physiotherapy and the Multidisciplinary teams of *Hospital Municipal Vila Santa Catarina* intensive care unit.

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Research funding: Not applicable.

008

Weaning from mechanical ventilation in a tertiary care hospital in São Paulo (SP), Brazil

Category: Pneumology.

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Introduction: Weaning from mechanical ventilation remains a great challenge in clinical practice worldwide, particularly in intensive care units (ICU) and some Emergency Rooms.(1) The aim of this project is to decrease extubation failure rates by means of a proprietary institutional protocol and a mechanical ventilation weaning "script" based on a standard spontaneous breathing trial (SBT) and additional criteria, such as clinical, laboratory and sonographic features,(2) to achieve safe and successful extubation. **Objective**: To develop an institutional mechanical ventilation weaning protocol for successful extubation in the Emergency Room and intensive care unit of a tertiary hospital. **Methods:** Literature review and standardization of current criteria for identification of emergency or ICU patients eligible for SBT, such as hemoglobin level, paO_2/FiO_2 ratio, diaphragm thickness and Tobin index. **Results**: Tool in the validation stage. **Conclusion**: Institutional mechanical ventilation weaning and extubation protocols may increase successful extubation rates.(3) In our hospital, standardized criteria for identification of patients eligible for spontaneous breathing are lacking. This project was designed to improve these services at our institute.

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Research funding: Not applicable.

009

Physical therapy techniques for successful weaning from mechanical ventilation: a systematic review

Category: Pneumology.

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Introduction: Mechanical ventilation (MV) is a resource used to enable artificial breathing. Despite wide use in intensive care units (ICU), prolonged MV may have several complications. Physical therapists play a key role in MV, from ventilator adjustment to patient weaning. Respiratory muscle training (RMT)(1) and early rehabilitation(2) associated with passive cycle ergometer exercise(3) are commonly used by ICU physical therapists during weaning. However, which techniques are most effective is unclear at this stage. Systematic reviews of this topic may help determine the major contributions of each treatment and in which phase they should be used. **Objective:** To carry out a literature review of studies investigating the benefits of physical therapy techniques applied to ICU patient weaning. **Methods:** Literature search carried out from April to June 2022. PubMed, LILACS, and PEdro databases were searched using the keywords "weaning", "mechanical ventilation" and "physical therapy", and the Boolean operator AND. Inclusion criteria were clinical trials, studies addressing the topic of interest and articles published from 2016 onward. A total of 120 articles were found in databases. Of these, only three met inclusion criteria. **Results:** In selected articles, patients requiring ventilatory support in the ICU underwent early rehabilitation with breathing techniques and kinesiotherapy. Exercises varied according to patient level of consciousness. Some patients were also exercised using a passive cycle ergometer to reduce MV time. Respiratory muscle

training was performed during the intubation and post-extubation period to facilitate weaning and minimize MV sequelae. Early rehabilitation of hospitalized patients proved to be an effective and safe strategy for alleviation of diaphragmatic dysfunction and reduction of ventilatory support time and may contribute to early extubation. Combination of early rehabilitation passive cycle ergometer exercise had no impact on MV time. Respiratory muscle training in the post-extubation period was thought to be a beneficial strategy to reverse residual respiratory muscle weakness and improve patient quality of life. However, it was not effective in the weaning period. **Conclusion:** According to selected articles, early rehabilitation and respiratory muscle training are more effective in the weaning period, whereas respiratory muscle training is more beneficial in the post-extubation period.

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Research funding: Not applicable.

010

Impact of inspiratory muscle training on sleep quality and pulmonary function after coronary artery bypass grafting

Category: Surgery and Trauma.

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Introduction: Cardiac surgery is considered a complex procedure in the treatment of cardiovascular diseases, but it is associated with complications that can be caused by the decline in pulmonary function and inspiratory muscle strength.(1) In this scenario, inspiratory muscle training (IMT) may be useful to optimize muscle and lung function and decrease postoperative complications. Patients with sleep disorders may be less responsive to training, thus increasing postoperative risk.(2) **Objective:** To investigate the impact of inspiratory muscle training on sleep quality and lung function in patients submitted to coronary artery bypass grafting (CABG). **Methods:** This is a randomized controlled trial. Participants were randomized to the inspiratory muscle Training (TG) or the Control (CG) Group by drawing lots. Patients in the CG were submitted to non-invasive ventilation, breathing exercises, kinesiotherapy, cycloergometry and walking. Patients in the TG were submitted to the standard unit protocol plus maximal inspiratory pressure (MIP) evaluation and started inspiratory muscle training with 40% of MIP. Pulmonary function, vital capacity (VC), peak expiratory flow (PEF), ventilatory muscle strength (maximal inspiratory and expiratory pressure) and sleep quality (Pittsburgh Sleep Quality Index Questionnaire - PSQI and Epworth Sleepiness Scale - EPS) were evaluated prior to surgery and at hospital discharge. **Results:** One hundred and two patients participated in this study, 54 in the CG and 48 in the TG. Inspiratory muscle training had a stronger impact on sleepiness at hospital discharge (EPS 95%CI: 7; 6.39 to 7.61; PSQI 95%CI: 8; 7.61 to 8.39). Patients undergoing inspiratory muscle training showed a significant improvement in MIP (95%CI: 18; 17.14 to 18.86), maximal expiratory pressure (MEP) (95%CI: 6; 5.37 to 6.63) and VC (95%CI: 12; 1.61 to 2.39). In contrast, PEF did not differ significantly between groups (95%CI: 5; -11.78 to 1.78). **Conclusion:** Inspiratory muscle training was an effective strategy to mitigate ventilatory muscle strength and sleep quality losses after coronary artery bypass grafting.

Brazilian Registry of Clinical Trials (ReBEC) registration number RBR-8dqrdq.

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Research funding: Not applicable.

011

Impact of physiotherapy guidance on functional capacity and quality of life after coronary artery bypass grafting

Category: Surgery and Trauma.

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Introduction: Patients undergoing coronary artery bypass graft (CABG) are prone to functional capacity decline, with increased risk of pulmonary complications and potential loss of quality of life.(1) This decline is often associated with lack of understanding of activities that can be performed after surgery. In these settings, patient guidance can be an effective strategy.(2,3) **Objective:** To determine the impact of physiotherapy guidance on functional capacity, functionality, postoperative complications, and quality of life in patients submitted to CABG. **Methods:** This is a randomized controlled trial. Patients were assessed prior to surgery and at hospital discharge. Functional capacity, functionality and quality of life were assessed using the six-minute walk test (6MWT), the functional independence measure (FIM) and the stand test (SST), and the SF-36 questionnaire, respectively. Postoperative pulmonary complications were also investigated. At intensive care unit (ICU) discharge, patients were randomized to the Guidance (GO) or the Control (CG) Group by drawing lots. While at hospital, patients in the GO received verbal guidance and were later given a booklet containing instructions aimed at raising awareness about their condition and how to prevent immobility by staying active during hospital stay. **Results:** During the experimental period, 114 patients were evaluated (57 per group). Mean patient age was 54±6 years and male patients prevailed. Patients in the GO performed significantly better in the 6MWT (95%CI: 46 meters; 25.53 to 66.47), FIM (95%CI: 12; 9.30 to 14.70) and SST (95%CI: -2 seconds; 4.31 to -1.69) at hospital discharge compared to baseline values. Quality of life did not differ significantly between groups. As to postoperative pulmonary complications, atelectasis rates were lower in the GO relative to the CG (15 patients /26% and 26 patients/46%; GO and CG respectively; p=0.02). **Conclusion:** Postoperative physiotherapeutic guidance was an effective strategy to reduce functional capacity and functionality losses and decrease atelectasis rates. However, it had no impact on quality of life or other pulmonary complications.

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Research funding: Not applicable.

012

Impact of electroanalgesia on respiratory and peripheral muscle strength in patients undergoing coronary artery bypass grafting

Category: Surgery and Trauma.

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Introduction: Patients undergoing coronary artery bypass grafting (CABG) often have reduced respiratory and peripheral muscle strength and function.(1) In these settings, electroanalgesia stands out as a potential strategy to reverse such deleterious effects.(2,3) **Objective:** To investigate the impact of electroanalgesia on respiratory and peripheral muscle strength and lung function in patients undergoing coronary artery bypass grafting. **Methods:** This is a randomized controlled trial. Patients had their maximal inspiratory pressure (MIP), expiratory pressure (MEP), vital capacity (VC) and peripheral muscle strength (MRC) measured prior to surgery and at intensive care unit (ICU) and hospital discharge. Research participants were randomized to the Electroanalgesia (EG) or the Control (CG) Group by drawing lots. Conventional transcutaneous electrical nerve stimulation (TENS) was performed with a pulse

amplitude of 0.25 milliseconds, frequency of 100Hz and current of 10-20 milliamps. Minimum time to analgesia was 10 minutes and analgesic effects lasted 20 minutes. Intensity was adjusted according to patient level of tolerance. **Results:** One hundred patients were evaluated (50 per group). Mean patient age was 52±8 years and male patients prevailed. Patients in the EG had higher MIP (95%CI: 13cmH2O; 9.43 to 16.57), MEP (95%CI: 12cmH2O; 9.22 to 14.78) and VC (95%CI: 8mL/kg; 5.02 to 10.98) at hospital discharge compared to baseline values. Peripheral muscle strength did not differ significantly between groups. **Conclusion:** Electroanalgesia minimized respiratory muscle strength and vital capacity losses but had no impact on peripheral muscle strength.

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Research funding: Not applicable.

013

Machine learning model for prediction of intensive care unit length of stay in COVID-19 patients at a Brazilian hospital

Category: Safety, Quality and Management.

Uri Adrian Prync Flato[1,2], Amanda Gomes Rabelo[1,2], César Augusto Madid Truyts[1,2], Kelly Carolina Pereira Cabral[1], Daniel Scaldaferri Lages[1], Leonardo Daniel Tavares[1], Maria Tereza Fernandes Abrahão[1], Gabriela Chiuffa Tunes[1], Etienne Duim[1], Mateus de Lima Freitas[1], Luana Silva Rodrigues de Araujo[1], Adriano José Pereira[1,2]

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Introduction: Rapid increase in need of intensive respiratory care requiring mechanical ventilation in patients with severe disease was a major adverse effect of the COVID-19 pandemic. These circumstances unveiled an obvious lack of sufficient health service capacity to meet the needs of the affected population, not only with respect to ventilators, but also to hospital beds. As part of a collaborative effort between health professionals, data engineers and data scientists, initial performance metrics of a predictive machine learning model for hospital length of stay are reported. Model construction was based on integrated, multidimensional data of patients used in local decision making by managers and healthcare professionals of a Brazilian hospital during the SARS-Cov-2 pandemics. **Objective:** The aim of this study is to develop a machine learning-based model approach for predicting in-hospital lenght of stay (LOS) from the first 72 hours of hospitalization. **Methods:** This is a retrospective study with patients admitted to *Hospital Israelita Albert Einstein* (HIAE), a quaternary hospital with 705 beds located in São Paulo. Patients with PCR confirmed diagnosis of COVID-19 admitted between February 2020 and April 2022 were included. This study was approved by the local Research Ethics Committee.(1) Data was divided into training and test sets (70/30%). The predictive performance of the algorithms was measured by the sensitivity, specificity, and area under the ROC curve in training data. Machine learning algorithms(2,3) used for structured data were neural networks, random forests, and gradient boosted trees. Metrics used consisted of a predictive model (regression) constructed with data from the first 72 hours of hospitalization. The following variables were used in the regression model: diagnosis upon admission, demographic data, anthropometric data, near real time vital signs, laboratory tests, risk scores, prior care, medications, comorbidities, and outcomes (discharge or death). **Results:** A total of 5,262 patients were included in the validation phase. A Voting Classifier (based on the best machine learning models), ROC curve of 83% was generated (Figure 1) for LOS >7 days. **Conclusion**: As described in the literature, artificial intelligence and machine learning models can be used to accurately predict COVID-19 patient outcomes. Future research should focus not only on prediction enhancement but also on how to measure the impact of the use of these models in routine healthcare.

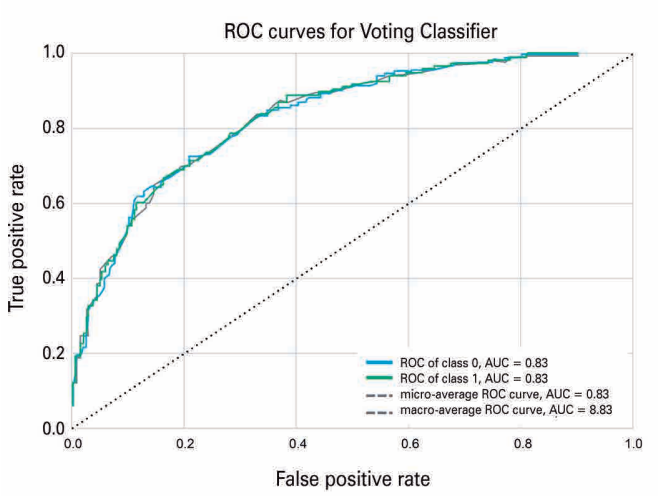

Figure 1. Receiver operator curve of Voting Classifier LOS 72 hours of admission

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Research funding: Not applicable.

014

Common data models in intensive care medicine during COVID-19 pandemics: the *Hospital Israelita Albert Einstein* experience

Category: Safety, Quality and Management.

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Introduction: The Observational Health Data Sciences and Informatics (OHDSI)[(1)] initiative has redefined the field of observational research in healthcare, empowering an open science community on how to use and integrate medical data. A specific common data model (Observational Medical Outcomes Partnership-Common Data Model; OMOP-CDM) was developed as part of this initiative. This model uses standardized vocabularies and routines to generate interoperable datasets, to enable the integration of large research datasets. The OMOP-CDM has been implemented at *Hospital Israelita Albert Einstein* (HIAE) in 2018 (to our knowledge, the first hospital to adopt it in Brazil), with data extracted from Electronic Health Records. *Hospital Israelita Albert Einstein* is a member of the OHDSI LATAM chapter since 2021. **Objective:** To characterize the cohort of COVID-19 patients treated at HIAE from 2020 to 2022 using the local OMOP-CDM. **Methods:** A cohort comprising all COVID-19 patients receiving care at any HIAE unit was built using the OHDSI tool ATLAS. Patients were selected whenever the field "condition" described "coronavirus infection" (SNOMED-CT and ICD-10 mapping) as the diagnosis and patients were evaluated in the Critically Ill Patient Department. **Results:** *Hospital Israelita Albert Einstein* OMOP-CDM dataset comprised more than 6 million patients, with more than 1,5 billion variables mapped. In this analysis, 23,510 patients and 5,340 Critical Care Unit hospitalizations were initially included. Demographic characteristics, medication use, comorbidities, procedures and clinical outcomes such as length of stay and resource utilization could be quickly analyzed in a structured manner (Figure 1). **Conclusion:** Data standardization in critical care settings using Observational Medical Outcomes Partnership-Common Data Model (Observational Health Data Sciences and Informatics initiative) is a feasible and promising strategy for acceleration of multicenter/multinational observational research.

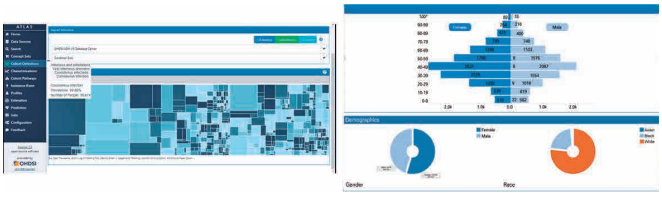

Figure 1. Medication use, comorbidities, procedures, and clinical data[(2)]

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Research funding: Not applicable.

015

Long-term consequences of COVID-19 in critical care survivors: prospective cohort study

Category: Safety, Quality and Management.

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Introduction: The expansion of the pandemic sparked the interest in long-term effects of COVID-19 on critical care patients.(1) **Objective:** To report on clinical outcomes of critical COVID-19 survivors within one year of hospital discharge. **Methods:** Prospective cohort study with COVID-19 survivors admitted to an intensive care unit (ICU). Patients were assessed every three months during the first year after discharge. Data on 15 activities of daily living (basic, instrumental and mobility), frailty (Clinical Frailty Scale), cognition (10-point Cognitive Screener or AD8 Dementia Screening) and clinical events (readmission, transfer to a long-term facility and falls) were collected. **Results:** The sample included 428 patients (57% of males) with a mean age of 64 years. Of these, 61% required invasive mechanical ventilation during ICU stay. The median (interquartile range [IQR]) number of disabilities in activities of daily living was higher at 90 days compared to the pre-COVID-19 period (3 [1-7] and 1 [0-2] respectively, p<0.001), then decreased over the course of the one-year follow-up (median [IQR]=0 [0-4]). At 1-year follow-up, 12% of patients were frail. Half of them developed frailty only after COVID-19. The prevalence of cognitive symptoms was 17% (70/413 patients) at Day 90 and decreased progressively to 12.1% (42/348 patients, p=0.012 for trend) over the course of the one-year follow-up. Clinical events were detected in all assessments. **Conclusion**: Most critical COVID-19 survivors improved during the first year after hospital discharge. However, a considerable proportion experienced worse health conditions compared to the pre-COVID period.

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016

Impact of coronavirus vaccination on the performance of a machine learning model aimed to predict the length of stay of critically ill patients in a Brazilian quaternary hospital

Category: Safety, Quality and Management.

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Introduction: Coronavirus vaccines are effectively to protect against severe COVID-19 and reduce the length of stay in intensive care unit (ICU) during the pandemic.(1,2) Awareness of outcome differences between vaccinated and unvaccinated patients is helpful for effective treatment planning and resource allocation. This study examined the effect of vaccination on length of stay (LOS) at *Hospital Israelita Albert Einstein* (HIAE). Findings were then used as input for development of a machine learning model to predict LOS in critically ill

patients. **Objective:** We evaluated the effect of vaccination on the length of stay at *Hospital Israelita Albert Einstein* and applied it as input for a machine learning model developed to predict lenght of stay in critically ill patients. **Method:** This study comprised 1,361 patients admitted to the HIAE ICU in 2021. Patients who had received at least a dose of the COVID-19 vaccine (n=873) were defined as vaccinated. Patients who had not been vaccinated were defined as unvaccinated (n=488). The Kruskal-Wallis test ($p<0.05$) was used to investigate significant LOS differences between vaccinated and unvaccinated patients. Vaccination status was used as a variable in a model for LOS prediction at HIAE. The coefficient of determination (R^2-Score) and the root-mean-square error (RMSE) were measured to assess model performance after introduction of this new variable. This study was approved by the local Research Ethics Committee. **Results:** The median length of stay differed significantly between unvaccinated and vaccinated patients (7 and 5 days, respectively; $p<0.05$, Kruskal-Wallis test) (Figure 1). Vaccination status was also used as a new variable in a regression model constructed to predict LOS in the critically ill department of HIAE. The primary objective of this model is to predict patient length of stay based on diagnosis at admission, demographic, and anthropometric data, near real time vital signs, laboratory tests, risk scores, prior care, medications, comorbidities, and outcomes (discharge or death). Model performance before and after introduction of this new variable was measured and compared (Table 1). **Conclusion:** Vaccinated patients with COVID-19 hospitalized at *Hospital Israelita Albert Einstein* had a shorter length of stay than unvaccinated patients. Vaccination status was not a significant variable for prediction of length of stay in this cohort of patients using this model. More research into how to integrate machine learning algorithms into the healthcare routine is needed.

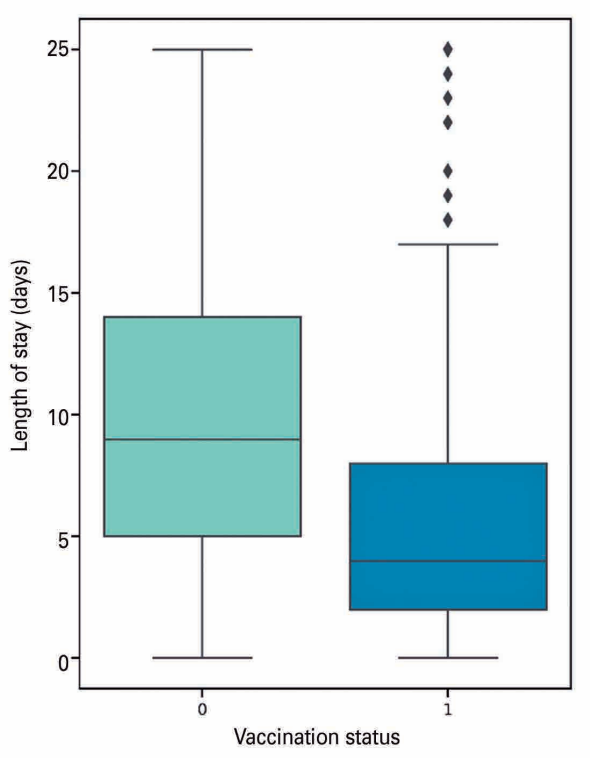

Figure 1. Impact of vaccination status on length of stay

Table 1. Model performance with and without vaccination status

With vaccination status		Without vaccination status	
R^2-Score	RMSE	R^2-Score	RMSE
0.67	1.75	0.68	1.78

RMSE: root-mean-square error.

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Research funding: Not applicable.

017

Precision medicine in intensive care: preliminary exploratory analysis of the *Hospital Israelita Albert Einstein* experience during the COVID-19 pandemic

Category: Safety, Quality and Management.

Amanda Gomes Rabelo[1,2], Uri Adrian Prync Flato[1,2], César Augusto Madid Truyts[1,2], Kelly Carolina Pereira Cabral[1], Daniel Scaldaferri Lages[1], Leonardo Daniel Tavares[1], Luana Silva Rodrigues de Araujo[1], Roberta Cardoso Petroni[1], André Mario Doi[1], Priscila de Meira Oliveira[1], Nair Hideko Muto[1], João Renato Rebello Pinho[1], Adriano José Pereira[1,2], Tatiana Ferreira de Almeida[1]

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Introduction: The overall or COVID-19 related complexity of critical illness justifies studies investigating the use of precision medicine (PM) approaches for improvement of individualized treatment strategies in this patient population.(1) An experimental protocol was designed to expand our understanding of the profile of patients diagnosed with COVID-19 in the intensive care unit (ICU) of *Hospital Israelita Albert Einstein* (HIAE). This protocol was developed to characterize 14 patients according to clinical data, host genome and genome sequencing of SARS-CoV-2. **Objective:** To better understand patient profiles diagnosed with COVID 19 in intensive care unit at *Hospital Israelita Albert Einstein*, we developed an experimental protocol to characterize 14 patients in terms of clinical information, host genome, and genome sequencing of SARS-CoV-2. **Methods:** Retrospective study carried out in 2021 with patients diagnosed with COVID-19 in the Critical Care Department of HIAE. Fourteen patients were included in the preliminary analysis. Data collection included epidemiological information (demographic and clinical data), length of stay and genome sequences of viruses and hosts. This study was approved by the local Research Ethics Committee. **Results:** Some features described in the literature(2) for characterization of patients in the critical stage of COVID-19 based on precision medicine assumptions are shown in table 1. **Conclusion:** Preliminary findings support the applicability of precision medicine in intensive care in Brazil. At this stage, predictive machine learning algorithms are ready to learn from multidimensional data (clinical, host genetics and pathogen genetics). However, more research into how to train, integrate and test prescriptive models in clinical practice (clinical trials) is needed.

Table 1. Characteristics of COVID-19 patients

Demographic data					Host genomes (SNP)			Virus genomes		Outcome
ID	Age	Gender	SAPS3	rs 73064425	rs 74956615	rs 2109069	rs 2236757	Variant	Spike mutations	Length of stay
1	49	M	39	CC	TT	GG	AG	P1	D138Y D614G E484K H655Y K417T L18F N501Y P26S R190S T1027I T20N V1176F	5
2	44	F	45	CT	TT	GA	AG	P1	A1078S D138Y D614G E484K H655Y K417T L18F N501Y P26S Q677H R190S T1027I T20N V1176F	6
3	38	M	36	CC	TT	GA	AG	P1	D138Y D614G E484K H655Y K417T L18F N501Y P26S R190S T1027I T20N V1176F	6
4	52	M	39	CC	TT	GG	AA	P1	D138Y D614G E484K H655Y K417T L18F N501Y P26S R190S T1027I T20N V1176F	6
5	29	M	37	CT	TT	GA	GG	B.1.621	T95I Y144T Y145S 146N R346K K417N E484K N501Y D614G P681H D950N	6
6	46	M	39	CC	TT	AA	GG	P1	D138Y D614G E484K H655Y K417T L176F L18F N501Y P26S R190S T1027I T20N V1176F	8
7	42	M	42	CT	TT	GG	GG	P1	A845S D138Y D614G E484K H1058Y H655Y K417T L18F N501Y P26S R190S T1027I T20N V1176F	8

continue...

...continuation

Table 1. Characteristics of COVID-19 patients

Demographic data					Host genomes (SNP)			Virus genomes		Outcome
ID	Age	Gender	SAPS3	rs 73064425	rs 74956615	rs 2109069	rs 2236757	Variant	Spike mutations	Length of stay
8	35	M	33	CC	TT	GG	AG	P1	D138Y D614G E484K H655Y K417T L18F N501Y P26S R190S T1027I T20N V1176F	8
9	57	F	45	CT	TT	GA	AG	P1	D138Y D614G E484K H655Y K417T L18F N501Y P26S R190S T1027I T20N V1122L V1176F	9
10	62	M	48	CT	TT	GA	AG	P1	D138Y D614G E484K H655Y K417T L18F N501Y P26S R190S T1027I T20N V1176F	9
11	47	M	45	CT	TT	GG	AG	P1	D138Y D614G E484K H655Y K417 T L18F N501Y P26S R190S T1027I T20N V1176F	10
12	56	M	42	CC	TT	AA	GG	P1	D138Y D614G E484K H655Y K417T L18F P26S R190S T1027I T20N V1176F	10
13	58	F	42	CC	TT	GG	AG	P1.2	D138Y D614G E484K H655Y K417T L18F N501Y P26S R190S T1027I T20N V1176F	13
14	65	M	51	CT	TT	AA	GG	P1	D138Y D614G E484K H655Y K417T L18F N501Y P26S R190S T1027I T20N V1176F	36

Correlations between outcome and features was weak. However, the risk of T allele of rs73064425 may contribute to longer LOS (Table 1). Furthermore, all variants were Gamma lineage variants (P.1) or Brazilian Variant.

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Research funding: Not applicable.

018

Factors associated with occurrence of skin lesions in patients with COVID-19 admitted to an intensive care unit

Category: Safety, Quality and Management.

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Introduction: COVID-19 is a severe and rapidly spreading infectious disease. Disease severity and need of invasive ventilatory support increase the frailty of affected patients. Hence, the higher chances of negative care outcomes such as pressure injuries.[1,2] **Objective:** To investigate factors associated with occurrence of skin lesions in patients with COVID-19. **Methods:** Cross-sectional, retrospective analytical study based on data from patients diagnosed with COVID-19 admitted to an intensive care unit between 2020 and 2021. Sociodemographic and clinical data were collected using questionnaires. Descriptive statistics and a multivariate regression model were used in statistical analysis. **Results:** The sample comprised 188 patients with COVID-19. Of these, 112 (59.6%) were males and 152 (80.9%) were white. Eighty (42.6%) patients were classified as high risk of pressure sore according to the Braden Scale and 102 (54%) had an injury. Risk factors associated with skin lesions development were enteral nutrition (OR: 2.61; 95%CI: 1.14 - 5.97), body mass index <29.4kg/m2 (OR:1.05; 95%CI: 1.01 - 1.11). Prone positioning was also a highly significant factor for injury development (OR: 1.68; 95%CI: 1.12 - 3.42). **Conclusion:** Skin injury was a prevalent event in this patient population. Enteral nutrition, being overweight and prone positioning were independent risk factors for developing injury. Findings of this study may contribute to the design of strategies aimed at early identification and prevention of pressure injuries.

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Research funding: Not applicable.

019

The importance of physical therapy in cancer patients in palliative care: a systematic review

Category: Palliative Care.

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Introduction: The World Health Organization (WHO) defines palliative care as "assistance provided by a multidisciplinary team, which aims to improve the quality of life of patients and their families in the face of a life-threatening disease through prevention and relief of suffering by means of early identification, impeccable assessment and treatment of pain and other physical, social, psychological or spiritual symptoms". Palliative care is not always appreciated by oncologic patients and their families. However, this treatment approach must be effectively used, especially in patients with advanced stage cancer.(1) Cancer patients in the advanced stage of disease may experience several treatment-related complications which affect their quality of life (QOL), such as fatigue, pain and psychological impairments (*e.g.*, anxiety and depression).(2) When it comes to improving the QOL of these patients, physiotherapy provides several resources (kinesiotherapy, electrotherapy, manual therapy) for symptom alleviation.(1-3) **Objective:** To carry out a literature review aimed to determine the role of the physical therapy in palliative care and which resources can be used to improve the quality of life of cancer patients. **Methods:** A systematic review addressing the topic of interest was carried out between May and June 2022. The PEdro, PubMed and SciELO databases were searched using the following descriptors: palliative care, cancer, and physiotherapy, combined with the Boolean operator AND. Randomized clinical trials and articles published in English or Portuguese in the last 5 years were included. **Results:** Sixty-two articles were found in selected databases. Of these, only three met inclusion criteria. Articles included in this review revealed that patients suffering from fatigue after cancer treatment respond well to physical therapy and report overall improvement in well-being. One study reported that transcutaneous electrical nerve stimulation (TENS) may benefit these patients. However, clinical trials addressing this method are lacking. Studies have also shown increased food intake and less nausea and vomiting in patients submitted to nutritional and physical therapy. **Conclusion:** Physical therapy is beneficial for cancer patients undergoing palliative care. However, related studies are lacking. Therefore, further research is warranted to determine the importance of these professionals and seek better treatments for patients.

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Research funding: Not applicable.

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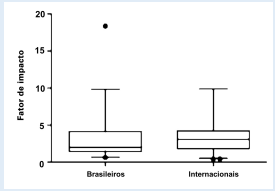
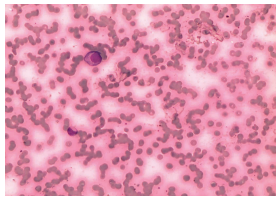
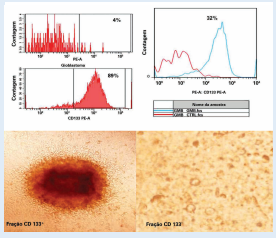
Line art	An image composed of lines and text, which contains no tonal or shaded areas		tif or eps	Monochrome 1 bit or RGB	900 to 1,200 dpi
Halftone	A continuous tone photograph containing no text		tif	RGB or Grayscale	300 dpi
Combo	Image contains halftone plus text or line art elements		tif or eps	RGB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

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