

Michelle Grunauer MD., MSc., PhD.



Languages

Spanish (native), English and Portuguese fluent

EDUCATION

Doctor of Medicine and Surgery | 1992 | Universidad Central of Ecuador, School of Medicine, Quito, Ecuador

Specialist in Pulmonology | 1995 | Hospital das Clinicas-Facultade de Medicina da Universidade de Sao Paulo, Brazil

Specialist in Critical Care Medicine (Intensive Care) | 1997 | Hospital das Clinicas- Faculdade de Medicina da Universidade de Sao Paulo, Brazil

PhD., Research Line: Respiratory mechanics and mechanical ventilation | 1999 | Faculdade de Medicina da Universidade de Sao Paulo, Brazil

Certified in Cognitive Behavioral Therapy | 2006 | Beck Institute, USA

MSc, Child and Family Mental Health | 2008 | University of Birmingham, UK

Post-graduate Diploma in Palliative Medicine | 2016 | University of Cape Town

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Nationality: Ecuadorian

POSITIONS, JOBS AND CURRENT PROFESSIONAL ACTIVITIES

Project Director of RISE-Ecuador and Principal Technical Advisor RISE-GHS

RISE is a program, implemented by Jhpiego/USAID, 2021-Current (Consultant: 2020-2021).

This program responds to Global Health Security (GHS) principles in addressing public health emergencies in several areas for prevention, detection and response. Prevention of Antimicrobial resistance, zoonotic disease, biosafety and biosecurity. Detection of national laboratory systems, surveillance and human resources. Respond to infection, prevention and control, risk communication, community engagement, health emergency management and points of entry. Actively involved in GHS initiatives in Guatemala, Sierra Leone, and Ethiopia.

Engaged in coordinating Joint External Evaluations (JEE) to assess and enhance national capacities for health security, ensuring a holistic and interdisciplinary approach to strengthening health systems and resilience.

Associate Dean-One Health Research and Outreach Office. School of Medicine. Universidad San Francisco de Quito, 2022-Current

Dean of the School of Medicine, Universidad San Francisco de Quito, 2012- 2022

**POSITIONS, JOBS AND
CURRENT PROFESSIONAL ACTIVITIES**

- **Visiting Professor at the Carey Business School - Johns Hopkins University for the Innovation for Humanity program, in which specific projects are implemented annually, 2013- Current**
- **Adjunct Professor at Donald and Barbara Zucker School of Medicine at Hofstra/Northwell, 2018 – Current**
- **Attending physician and Academic Director of the Pediatric Critical Care Unit, Hospital de los Valles, Universidad San Francisco de Quito, 2008 – Current. Director of the integrated model of care program, that includes critical care, mental health and palliative medicine in the PICU and NICU of HDLV.**
- **Professor at Universidad San Francisco de Quito, School of Medicine, 1999 – Present**
- **EPEC (Education in Palliative and End of Life Care) Latin America. Co-editor of medical content in Spanish and Professor of EPEC for Latin America, 2014 - Present**
- **Director of the APLS (Advanced Pediatric Life Support) Program of the American Academy of Pediatrics, 2015 – Current**
- **Founder and member of the board of “Azulado” whose mission is to educate adults to prevent child maltreatment and abuse, 2013- Present**
- **Founder and head of medical development of MedPal-CNN, a mobile technology-oriented application that teaches healthcare professionals to apply pediatric palliative care, 2017-Present**

**PAST RELEVANT PROFESSIONAL
ACTIVITIES**

- **Elected as a member of the scientific advisory committee of the Inter-American Institute for Global Change Research (SAC-IAI), 2013-2016 and 2017–2019.**
- **Director of medical/humanitarian response during the earthquake that devastated the coastal areas in Ecuador, 2016—2017**
- **Director and responsible for the first accreditation of the medical school of Universidad San Francisco de Quito nationwide, 2015-2016**
- **Program Director: "Laude in Emergency and Intensive Care" in which, with Johns Hopkins University, national capacity development was achieved in 24 provinces of the country, 2013-2016.**
- **Medical Director of the Medical Clinic of Universidad San Francisco de Quito, 2000-2003**

DISTINCTIONS, AWARDS AND APPOINTMENTS

- **1992: Second highest academic graduation grade, in the School of Medicine, among 467 students.**
- **2001: ALAT (Latin American Thoracic Association) Young Researcher Award.**
- **2009: Named speaker at the Mental Health Corporations of America.**
- **2015: Awarded the "Scholarship Recipient Award" by the American Academy of Hospice and Palliative Medicine (AAHPM).**
- **2016: Board Member of the Ecuadorian Academy of Medicine.**
- **2017: Martha Bushore-Fallis APLS Award by the American Academy of Pediatrics. For the first time a doctor from outside the U.S. received this prestigious award.**
- **2019: "Nicolás Espinosa Román" Award, by the Ecuadorian Society of Pediatrics – Pichincha Branch.**
- **2020: Jaime Rivadeneira Dávila "Doctor of the Year" Award, by the Medical College of Pichincha.**
- **2021: Recognized as "Académico de Número" (Full Academician) by the Ecuadorian Academy of Medicine.**

PROFESSIONAL ORGANIZATIONS

- **Board Member of the Ecuadorian Academy of Medicine**
- **Member of the American Academy of Pediatrics**
- **Member of the American Academy of Hospice and Palliative Care**
- **Member of the American Thoracic Society**

PUBLISHED RESEARCH

1. Grunauer, M., Takagaki, T.Y., & Carvalho, C.R.R. (1994). *Monoclonal antibody CA 72-4 as a tumor marker in lung carcinoma* [Abstract]. American Journal of Respiratory and Critical Care Medicine: 1994; (149); (Suppl): (A178).
2. Amato, M.B.P., Barbas, C.S.V., Meyer, E.C., Grunauer, M., Magaldi, R.B., & Carvalho, C.R.R. (1995). *Limitations of the P-V Curve in Detecting Alveolar Hyperinflation during Mechanical Ventilation in ARDS* [Abstract]. American Journal of Respiratory and Critical Care Medicine: 1995; (151) (Suppl.); (A432).
3. Amato, M.B.P., Barbas, C.S.V., Meyer, E.C., Grunauer, M., Magaldi, R.B., Carvalho, C.R.R. (1995). *Setting the "Best PEEP" in ARDS: Limitations of Choosing the PEEP according to the "Best Compliance"*. American Journal of Respiratory and Critical Care Medicine: 1995; (151) (Suppl.); (A550).
4. Beards, C.S.V., Amato, M.B.P., Grunauer, M., Hoeltz, C., Medeiros, D., Saldiva, P.H.N., & Zin, W.A. (1995). *Changes in Static Compliance produced by Increasing Inflation Volumes Can Reveal Insufficient PEEP in ARDS* [Abstract]. American Journal of Respiratory and Critical Care and Medicine: 1995; (151); (Suppl.): (A550).
5. Carvalho, C.R.R., Grunauer, M., Capelozzi, V.L., Kairalla, R.A., Deheinzelin, D., Amato, M.B.P., & Saldiva, P.H.N. (1995). *Correlation between physiological measurements and morphometry in lung biopsy of patients with idiopathic pulmonary fibrosis* [abstract]. American Journal of Respiratory and Critical Care Medicine: 1995; (151); (Suppl): (A693).
6. Oliveira-Vianna, E.S., Grunauer, M., Cukier, A., & Barbas, C.S.V. (1995). *Acupuncture in the treatment of chronic asthma* [Abstract]. American Journal of Respiratory and Critical Care Medicine: 1995; (151); (Suppl): (A382).
7. Boueri, F.M.V., Kairalla, R.A., Deheinzelin, D., Grunauer, M., & Carvalho, C.R.R. (1995). *HRCT in sarcoidosis: Inflammation versus fibrosis and response to treatment*. World Association of Sarcoidosis and Other Granulomatous Disorders and British Society for Allergy and Clinical Immunology: 1995, 147.
8. Amato, M.B.P., Barbas, C.S.V., Pastore, L. Grunauer, M., Magaldi, R.B., & Carvalho, C.R.R. (1996). *Minimizing Barotrauma in ARDS: Protective Effects of PEEP and the Hazards of Driving and Plateau Pressures* [Abstract]. American Journal of Respiratory and Critical Care Medicine: 1996; (153); (Suppl): (A375).
9. Grunauer M., Barbas, C.S.V., Amato, M.B.P., Barbas Filho, J.V., & Carvalho, C.R.R. (1996). *Dynamic P-V Loop Can Reveal Tidal Volume Over-Distention when "Optimal PEEP" is applied in ARDS Patients* [Abstract]. American Journal of Respiratory and Critical Care Medicine 1996; (153); (Suppl): (A531).
10. Beards, C.S.V., Amato, M.B.P., Grunauer, M., Meyer, E.C., & Carvalho, C.R.R. (1996). *Effects of Optimal PEEP on Respiratory Mechanics in ARDS Patients: Recruitment versus Overdistension*. American Journal of Respiratory and Critical Care Medicine: 1996; (153); (Suppl): (A375).
11. Grunauer M., Amato, M.B.P., Barbas, C.S.V., Capelozzi, V.L., Kubo, S.K., Poggetti, R.S., Dolhnikoff, M., & Carvalho, C.R.R. (1997). *The lower Inflection Point of the Static P-V Curve (Pflex) may not predict Complete Alveolar Opening in Normal Lungs* [Abstract]. American Journal of Respiratory and Critical Care Medicine: 1997; (155); (Suppl): (A505).
12. Meyer, E.C., Barbas, C.S.V.; Grunauer, M., Caramez, M.P., Souza, R., Carvalho, C.R.R., & Amato, M.B.P. (1998). *PEEP at P Flex Cannot Guarantee A Fully Open Lung After A High Pressure Recruiting Maneuver In ARDS Patients* [Abstract]. American Journal of Respiratory and Critical Care Medicine: 1998; 157; (Suppl.): (A694).
13. Carvalho, C.R.R., Grunauer, M., & Schettino, G.P.P. (1998). *Lung disease induced by parasites*. [Review Article]. Clinical Pulmonary Medicine: 5(2): 93-103.
14. Meyer, E.C., Gaudencio, A.M.A.S., Salge, J.M., Grunauer, M., Carvalho, C.R.R., Amato M.B.P., & Barbas, C.S.V. (1999). *Pressure-volume curves in ARDS: Comparison of two methods* (Abstract). American Journal of Respiratory and Critical Care and Medicine: 1999, (159); (Suppl.): (A75).
15. Meyer, E.C., Barbas, C.S.V., Grunauer, M., Caramez, M.P., Souza, R., Carvalho, C.R.R., & Amato, M.B.P. (1999). *Finding the Best PEEP in ARDS patients: Influence of Tidal Volume and lung recruitment in the estimation of the best compliance* (Abstract). American Journal of Respiratory and Critical Care Medicine: 1999, (159); (Suppl.): (A76).

16. Grunauer M., Barbas, C.S.V., Meyer, E.C., Alzugaray, P.F., Carvalho, C.R.R., & Amato, M.B.P. (1999). *Tidal recruitment misinterpreted as viscoelastic dissipation in ARDS patients*. *American Journal of Respiratory and Critical Care Medicine*: 1999, (159); (Suppl.): (A76).
17. Gama AMCN, Meyer EC, Gaudencio AMAS, Grunauer M, et al. Different Low Constant Flows Can Equally Determine the Lower Inflection Point in Acute Respiratory Distress Syndrome Patients. *Artificial Organs*. 2001;25(11):882-889. doi:10.1046/j.1525-1594.2001.06898.x.
18. Briones Claudett, K.H., Reck C., De la Cerna Pérez, Briones, M., Romero A., Esquinas, A., & Grunauer, M. (2003). *Non-invasive mechanical ventilation in patients with cancer and acute respiratory failure*. *Rev.Iberoamérica VMNI* 2003; 1(35), (41).
19. Briones Claudett, K.H., Grunauer Andrade, M., & Briones Claudett, M.H. (2006). Acute Respiratory Failure in Cancer Patients. *Treaty on Non-Invasive Mechanical Ventilation. Clinical Practice and Methodology* (498- 500). Madrid, Spain: Aula Médica.
20. Briones Claudett, K.H., Grunauer Andrade, M., & Briones Claudett, M.H. (2006). Non-Invasive Mechanical Ventilation at the End of Life. *Treaty on Non-Invasive Mechanical Ventilation. Clinical Practice and Methodology* (498-500). Madrid, Spain: Aula Médica.
21. Briones Claudett, M.H., Chung, S., Wong, M., Grunauer Andrade, M., Cruz, C., Esquinas, A., González Díaz, G. (2008). *Noninvasive mechanical ventilation in patients with chronic obstructive pulmonary disease and severe hypercapnic neurologic deterioration in the emergency room*. *European Journal of Emergency Medicine*: 15 (3), (127-133).
22. Briones Claudett KH, Ramírez P, Contreras J, Camacho F, Wollmann P and Grunauer M. (2010). *Preliminary experience of the clinical and tomographic characteristics of patients with nonrefractory acute respiratory insufficiency caused by H1N1 influenza, virus infection and disease intervention*. *Journal of Clinical Medicine and Research*: 2(7), 103-109.
<http://www.academicjournals.org/jcmr>
23. Briones Claudett, K.H., Briones Claudett, M.H., Sang, C., Wong, M., Alajo, H., Grunauer Andrade, M., Cruz, C., Esquinas, A., & Gonzalez Diaz, G. (2010). *Noninvasive ventilation in relapse of acute respiratory failure outside ICU*. *Journal of Clinical Medicine and Research*, 2010; 2(3): 026-034. doi: 10.5897/JCMR12.024
24. Briones Claudett, K.H., Briones Claudett, M.H., Sang, C., Wong, M., Alajo, H., Grunauer Andrade, M., Cruz, C., Esquinas, A., & Gonzalez Diaz, G. (2010). *Noninvasive ventilation in relapse of acute respiratory failure outside ICU*. *The Internet Journal of Pulmonary Medicine*: 2(3), 026-034.
http://www.ispub.com/journal/the_internet_journal_of_pulmonary_medicine/volume
25. Llano, M., Suárez Jaramillo, A., del Pozo, G., & Grunauer, M. (2011). PD2iCA as prognostic score of mortality in the critical care unit. (Abstract). *Critical Care Medicine*, 39 (12), 138. doi: 10.1097/01.ccm.0000408627.24229.88
26. Briones Claudett K., Del Castillo Lemos, C., Briones Claudett, M., & Grunauer Andrade, M. (2012). Non-invasive mechanical ventilation in hypercapnic encephalopathy (hypercapnic coma). *Principles of Noninvasive Mechanical Ventilation in Critical Care Medicine* (259-261). Madrid, Spain: BiblioMedica.
27. Briones Claudett K, Mantilla M, Llanos M, & Grunauer A. (2012). Noninvasive Mechanical Ventilation in Influenza A H1N1 Infection. *Principles of Noninvasive Mechanical V Entilation in Critical Care Medicine* (337-342). Madrid, Spain: BiblioMedica. Edition ISBN 978-9974-8279-9-9.
28. Briones Claudett, K.H., Briones Claudett, M.H., Chung Sang, A., Nuques, A., Soto, R., Grunauer Andrade, M., Córdova, M., Esquinas, A., & Gonzalez Diaz, G. (2013). *Non-invasive mechanical ventilation with average volume assured pressure support (AVAPS) in patients with chronic obstructive pulmonary disease and hypercapnic encephalopathy: prospective interventional match-controlled study*. *BMP Medicine*, 13(12), 1-7.
29. Grunauer, M., Schrock, D., Fabara, E., Jimenez, G., Miller, A., Lai, Z., Kilbourne, A., & McInnis, M.G. (2014). *Tablet-Based Screening of Depressive Symptoms in Quito, Ecuador: Efficiency in Primary Care*. *International Journal of Family Medicine*; 1-7. doi:10.1155/2014/845397.
30. Salazar A, Yerovi R, Grunauer M, Campos-Miño S. ABSTRACT 764: SCOLIOSIS POSTOPERATIVE CARE CHARACTERIZATION, RISK FACTORS FOR MECHANICAL VENTILATION, AND COMPLICATIONS. *Pediatric Critical Care Medicine*. 2014;15(4):171. doi:10.1097/01.pcc.0000449490.83286.ed

31. Iza GM, Iza A, Grunauer M, Yerovi R, Campos-Miño S. ABSTRACT 303: PEDIATRIC BRAIN TUMOURS EPIDEMIOLOGY, POSTOPERATIVE INTENSIVE CARE TREATMENT, AND EARLY OUTCOMES. HOSPITAL DE LOS VALLES 2011 – 2013. *Pediatric Critical Care Medicine*:2014;15(4):71. doi:doi: 10.1097/01.pcc.0000449029.66933.9e.
32. Campos-Miño S, Yerovi R, Grunauer M. ABSTRACT 381: WATERSHED STROKE AS A LETHAL COMPLICATION AFTER CARDIAC SURGERY. *Pediatric Critical Care Medicine*. 2014;15(4):88. doi:doi: 10.1097/01.pcc.0000449107.92962.e8.
33. Grunauer M, Yerovi R, Campos-Miño S. ABSTRACT 524: LUNG-HEART INTERACTION: IMPROVEMENT OF CARDIAC FUNCTION IN A PATIENT WITH ACUTE FULMINANT MYOCARDITIS AND PROGRESSIVE INCREASES IN PEEP. *Pediatric Critical Care Medicine*. 2014;15:119. doi:10.1097/01.pcc.0000449250.61231.33.
34. Enderica-Gonzalez S, Guarderas M, Endara P, Grunauer M, Dorn H. Comparative Analysis of the Donation and Transplant Project with the New Organic Law of Donation and Transplant of Organs, Tissues and Cells in Ecuador (Conference Paper). *American Journal of Transplantation*. January 2014.
35. Grunauer, M., Mgelea, E., Fabara, S., Campos Miño, S., & Fussell, M. (2014). *Modified Delphi Assessment of Need-Based Learning Priorities for Capacity Building in Pediatric Acute Care in Ecuador: A Comparison with Tanzania*. [Abstract]. *Pediatric Critical Care Medicine*, 15(4), 636.
36. Karam, O., Demaret, P., Shefler, A., Leteurtre, S., Spinella, P.C., Stanworth, S. J., Tucci, M., Grunauer, M. (2015). *Indications and effects of plasma transfusions in critically ill children*. *American Journal of Respiratory and Critical Care Medicine*, 2015, 191: (12); 1395-1402.
37. Quiñones, E., Donoso, F., Ugazzi, M., Grunauer, M., & Noviski, N. (2015). *Update on Pediatric Emergencies*. Quito, Ecuador: Imprenta Noción.
38. Lichtenstein, S.T., Roa, J., Roldan, A., Lai, Z., Miller, A., Mosquera, J., Grunauer, M. Merajver, S., & McInnis, M. (2015). *Social Undermining and Intimate Partner Support Predict Depression in Cancer Patients*. *iMedPub Journals*, 3:31. 1-7.
39. Goldman, P., Prochaska, E., Ignacio, S., Miller, A., Merajver, S., Mosquera, J., Lai, Z., Grunauer, M., & McInnis, M.G. (2015). *Depression Risk and Cancer in Ecuador: The Protective Role of Social Support*. *Mental Health in Family Medicine*, 11:36-41.
40. Grunauer, M., Mantilla, B., Calderón, A., Barragán, E., Pérez, G., Hernández, S., & Barra, D. (2016). *Our life after the earthquake*. Quito, Ecuador: Universidad San Francisco de Quito. Printed.
41. Biskup, T., Phan, P., & Grunauer, M. (2016). *Lessons from the Design and Implementation of a Pediatric Critical Care and Emergency Medicine Training Program in a Low Resource Country—The South American Experience*. *Journal of Pediatric Intensive Care*, 1-6. Doi:10.1055/s-0036-1584678.
42. Grunauer, M. (2015). Current Status of Palliative Care in Ecuador [PowerPoint slides]. Retrieved from https://www.researchgate.net/publication/273277207_The_Practice_of_Palliative_Medicine_in_Developing_Countries-Part_One_FR400.
43. Custer, J., Grunauer, M., Bagdure, D., Bauer, C., Bhutta, A., Garber, N., Scala Muller, M., Nwankwor, A., Shanin, A., Siegrist, J., Simon, L., Trahan, M., Chicaiza, D., Chiriboga, N., & Cordero-Reyes, A. (2016). *Manual of Pediatric Emergencies and Intensive Care* (6th ed.). A. Cordero-Reyes (ed.). Quito, Ecuador: University San Francisco de Quito/University of Maryland. In press. ISBN: 978-9978-68-090-2.
44. Gangotena, S., Montúfar, C., Quiroga, D., & Grunauer, M. Preface. *The 2015-USFQ Biennial Meeting on Growth Hormone Research*. Editors Guevara-Aguirre, J., Rosenbloom, A., Terán, E., & Rosenfeld, R. 28. (1- 80). Quito, Ecuador: Universidad San Francisco de Quito
45. Karam O, Demaret P, Duhamel A, Shefler A, Spinella PC, Stanworth SJ, Tucci M, Leteurtre S; PlasmaTV investigators. *Performance of the Pediatric Logistic Organ Dysfunction-2 score in critically ill children requiring plasma transfusions*. *Ann Intensive Care*. 2016 Dec;6(1):98. Epub 2016 Oct 6
46. Karam O, Demaret P, Duhamel A, Shefler A, Spinella PC, Tucci M, Leteurtre S, Stanworth SJ; PlasmaTV investigators. *Factors influencing plasma transfusion practices in paediatric intensive care units around the world*. *Vox Sang*. 2017 Feb;112(2):140-149. doi: 10.1111/vox.12490. Epub 2017 Feb 7
47. Cordero-Reyes A, Palacios I, Ramia D, West, R., Valencia, M., Ramia, N., Rodas, P., & Grunauer, M. *Natural disaster management: experience of an academic institution after a 7.8 magnitude earthquake in Ecuador*. *Public Health*. 2017; 144: 134-141. DOI: 10.1016/j.puhe.2016.12.003.

48. Yépez, M., Endara, P., Bovera, M., Grunauer, M., Terán, E., & Caicedo, A. *Circulating mtDNA Levels as an Early Marker for Metabolic Syndrome*. Free Radical Biology and Medicine. OCC/SFRRE 2017. Poster Presentation Abstracts. 2017. 108: S73. <http://dx.doi.org/10.1016/j.freeradbiomed.2017.04.086>
49. Ripple WJ, Wolf C, Newsome TM, et al. World Scientists' Warning to Humanity: A Second Notice. *BioScience*. 2017;67(12):1026- 1028. doi:<https://doi.org/10.1093/biosci/bix125>.
50. Camazine, M.N., Karam, O., Colvin, R., Leteurtre, S., Demaret, P., Tucci, M., Muszynski, J.A., Stanworth, S., Spinella, P.C., Grunauer, M., et al. *Outcomes Related to the Use of Frozen Plasma or Pooled Solvent/Detergent-Treated Plasma in Critically Ill Children*. Pediatric Crit Care Med. 2017, 18(5): e215-e223. doi:10.1097/PCC.0000000000001149.
51. Briones Claudett, K.H. & Grunauer, M. 2017. *AVAPS in Acute Respiratory Failure of Various Etiologies*. ISRCTN Registry. ISRCTN-96455367. DOI 10.1186/ISRCTN96455367.
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53. Benalcazar, D., Eguiguren, L., Alvarez, M.B., Arteaga, E., Jácome, F., & Grunauer, M. *Design of an electronic device for turbidity detection in blood serum in newborns*. ETCM, IEEE. 16498903. DOI: 10.1109/ETCM.2016.7750852.
54. Grunauer, M. & Mikesell, C. C chapter ten: pediatric palliative care. July, 2017. In: Bedoya, R. Ed. *Family Medicine: Reflections from practice*. Quito: Ministry of Public Health of Ecuador and the Pan American Health Organization. ISBN: 978-9942-8604-1- 5.
55. Briones Claudett, K.H., Briones Cluadett, M.H., Esquinas, A.M., & Grunauer Andrade, M. *Determinants of immediate failure of noninvasive mechanical ventilation outside the intensive care unit*. Anaesthesiol Intensive Ther. 2017;49(4):252-258. doi: 10.5603/AIT.a2017.0054.
56. Grunauer, M. & Mikesell, C. *A Review of the Integrated Model of Care: An Opportunity to Respond to Extensive Palliative Care Needs in Pediatric Intensive Care Units in Under-Resourced Settings*. Front. Pediatric. 2018. <https://doi.org/10.3389/fped.2018.00003>
57. Custer JW, Grunauer M, Foster CB. *Pediatric emergency and intensive care manual*. Quito, Ecuador: USFQ Press; 2018.
58. Briones Claudett KH, Grunauer M. Noninvasive auto-titrating ventilation (AVAPS-AE) versus average volume-assured pressure support (AVAPS) ventilation in hypercapnic respiratory failure patients: comment. *Internal and Emergency Medicine*. May 2018:1-2. Doi10.1007/s11739-018-1866-2.
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60. Montúfar C, Córdova X, Gangotena S, Quiroga D, Grunauer M. Editorial Preface. *Growth Hormone & IGF Research*. 2018;31(1):1. Doi:<https://doi.org/10.1016/j.ghir.2017.12.015>.
61. Terán E, Grunauer M., Molina G. Capacity Building in Low Resource Settings through Continuous Medical Education in Health, Using E-Learning and Medical Simulation Successful Experience from Ecuador. In: Transnational Perspectives on Innovation in Teaching and Learning Technologies.
62. Grunauer M., Ordóñez G, Campos S, Mantilla G. Pediatric and neonatal intensive care. In: Ecuadorian Medicine In the Century: Clinical and Diagnosis. 2018.
63. Claudett KHB, Grunauer M. Pressure support ventilation vs continuous positive airway pressure for treating of acute cardiogenic pulmonary edema. Comment. *Respiratory Physiology & Neurobiology*. 2018. doi:10.1016/j.resp.2018.08.004.
64. Grunauer M, Jorge AA. Genetic short stature. *Growth Hormone & IGF Research*. 2018;38:29-33. doi:10.1016/j.ghir.2017.12.003
65. Briones-Claudett, KH1, Esquinas Rodriguez A, Briones-Claudett MH, Puga-Tejada M, Cabrera Baños MDP, Pazmiño Dueñas CR, Torres Herrera CI, Grunauer M. Use of noninvasive mechanical ventilation with pressure support guaranteed with average volume in de novo hypoxaemic respiratory failure. A pilot study. *Anaesthesiol Intensive Ther*. 2018;50(4):283-290. doi:10.5603/AIT.a2018.0036.2018 Oct 14.
66. Claudett, K. H., & Grunauer, M. (January 2019.). Letter to the Editor: Role of Domiciliary Noninvasive Ventilation in Chronic Obstructive Pulmonary Disease Patients Requiring Repeated Admissions with Acute Type II Respiratory Failure: A Prospective Cohort Study. *Indian Journal of Critical Care Medicin*,23(9), 56-57. doi:10.5005/jp-journals-10071-23115
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68. Grunauer, M., Mikesell, C., Bustamante G. *Integrated Model of Care in Pediatric and Neonatal Intensive Care Units: Pain management around the world*. Conference abstract. Pain in Europe XI— the 11th Congress of the European Pain Federation EFIC. 2019.
69. Grunauer, M., Mikesell, C., Bustamante G & PICU-MIC research group. ISRCTN registry. ISRCTN12556149. Pediatric intensive and *palliative care in pediatric and neonatal intensive care units around the world*. Protocol. 2019.
70. Briones-Claudett, K. H., & Grunauer, M. (2019). Effect of Hyperoxemia on Outcomes of Noninvasive Ventilation in Obese Patients With Acute Asthma Exacerbations. *Am J Ther*. doi:10.1097/MJT.0000000000000981
71. Bustamante, G., Mantilla, B., Cabrera-Barona, P., Barragan, E., Soria, S., Quizhpe, E., Grunauer, M. (2019). Awareness of obstetric warning signs in Ecuador: a cross-sectional study. *Public Health*, 172, 52-60. doi:10.1016/j.puhe.2019.04.013
72. Finette, B. A., McLaughlin, M., Scarpino, S. V., Canning, J., Grunauer, M. , Teran, E., Heath, B. (2019). Development and Initial Validation of a Frontline Health Worker mHealth Assessment Platform (MEDSINC((R))) for Children 2-60 Months of Age. *Am J Trop Med Hyg*, 100(6), 1556-1565. doi:10.4269/ajtmh.18-0869
73. Eguez, D.: Programmer. Grunauer, M. & Mikesell, C.: Content. *MedPal-CNN* [mobile app]. Quito, Ecuador. November 2019.
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MAJOR CONTRIBUTIONS TO CONTINUING MEDICAL EDUCATION

- **RISE: Interdisciplinary collaboration and knowledge exchange** among healthcare professionals regarding the interconnectedness of human, animal, and environmental health, through the development of courses and webinars, including "Towards a better future for all: One Health - Jhpiego".
- **RISE: Strengthening Emergency and Critical Care Unit Teams for the Clinical Management of Patients diagnosed with COVID-19, 2020-2021.** Two thousand health professionals, from all provinces of the country, who take care of critically ill patients, diagnosed with COVID-19, were trained and received TA.
- **RISE: Technical Assistance and Capacity Building in triage, emergency care, post-COVID 19 rehabilitation, evidence-based oxygen administration, physical trauma, resilience of health professionals, 2021-2023.** 9255 health providers, from all provinces of the country, have been trained through virtual, practice based learning and medical simulation.
- **APLS (Advanced Pediatric Life Support.** Over the years, this program has allowed to increase national capacity by 600%, 2015-2019
- **CNN (Cuidemos nuestros niños): Pediatric, Perinatal and Neonatal Palliative Care.** This program is the first in the country to offer training in Pediatric, Perinatal and Neonatal Palliative Medicine, 2017-2019.
- **Pediatric critical care, critical care and emergency medicine. Pediatric Emergency and Intensive Care Program—Laude, Quito, Ecuador;** is a specialized 1,200-hour training program, 2013-2015.
- **EPEC-Latam. Training in end-of-life care and pediatric palliative care in Latin America, co-editor and Professor.** We have completed several EPEC courses, the most relevant:

Introduction of Pediatric Palliative Care for Oncology Teams: This course was taught at St. Jude's Children's Research Hospital by EPEC's Latin American team June 8-9, 2017. We trained Latin American oncology teams, which collaborate with St. Jude's.

EPEC Transpacific. This course was held in 2021, virtually and simultaneously covered several continents.

EPEC-Pediátrico Latinoamérica. This course was held in 2022 with the support of OPS.

The list can be extended if requested

CONFERENCES AND CONGRESSES

Participation and guest speaker in multiple national and international congresses, in the areas of Global Health Security, One Health Critical Medicine, Palliative Medicine, Pediatrics, Bioethics and Medical Education.

Speaker of the webinar "Towards a better future for all: One Health – Jhpiego"

The list can be presented upon request.

NATIONAL CAPACITY BUILDING IN THE AREA OF MEDICAL EDUCATION

• Presentation for IAMSE (International Association for Medical Science Educators), in autumn-2017: Evolution and revolution in medical education: Global challenges and solutions in the education of health professionals: "*Learning from the design and implementation of a medical training program in pediatric critical care and urgent care in a low-income country*"— October 2017

• Training of instructors in medical simulation, basic level; Quito, Ecuador; specialized course of 40 hours; Professor, 2013

• Basic training course in medical simulation; Quito, Ecuador; 18-hour specialized course; Professor, 2016

• Training in medical pedagogy of instructors in medical simulation, advanced level; Quito, Ecuador; specialized course of 40 hours; Professor, 2014

• Design of the curriculum of the School of Medicine of Universidad San Francisco de Quito; Quito, Ecuador; 80-hour workshop; Director, November 2014-May 2015. Annual revision and curricular update, 2012-2022.

• Online workshop and clinical simulation to strengthen the teaching methodology in the management of total pain in the pediatric population; Quito, Ecuador; specialized course of 128 hours, Professor, 2016- Present.

• Through the RISE project, Dr. Grunauer designed and implemented several courses for health professionals living in all provinces in Ecuador, with a virtual and practice-based learning methodology combined with medical simulation.

• Community programs have been developed on health promotion and disease prevention. Through the RISE project, 24,230 people were trained on COVID-19 vaccine related topics and 476,101 were reached through mass and social media.

The list can be extended if requested