Stanford



Katherine Steffen

Clinical Professor, Pediatrics - Critical Care

Curriculum Vitae available Online

CLINICAL OFFICE (PRIMARY)

- **Pediatric Intensive Care**

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ACADEMIC CONTACT INFORMATION

- **Administrative Contact**

  Nancy Calderon Valenzuela - Administrative Associate

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Bio

CLINICAL FOCUS

- Pediatric Critical Care Medicine

ACADEMIC APPOINTMENTS

- Clinical Professor, Pediatrics - Critical Care
- Member, Maternal & Child Health Research Institute (MCHRI)

ADMINISTRATIVE APPOINTMENTS

- Physician lead for PICU Local Improvement Team, LPCH, (2016- present)

PROFESSIONAL EDUCATION

- Board Certification: Pediatric Critical Care Medicine, American Board of Pediatrics (2014)
- Board Certification: Pediatrics, American Board of Pediatrics (2011)
- MD, University of Iowa School of Medicine, Iowa City, IA (2008)
- Residency, Johns Hopkins University - Harriet Lane Pediatric Residency Program, Baltimore, MD , Pediatrics (2011)
- Fellowship, Johns Hopkins University - Fellowship in Pediatric Critical Care Medicine , Pediatric Critical Care (2014)

Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS

My research interests focus on using dissemination and implementation science tools to study and enhance care provided to patients in the pediatric ICU. I have a background in human factors research and in implementation science and am also interested in clinical effectiveness and outcomes in the PICU.

Publications

PUBLICATIONS

- **BARRIERS TO SINGLE IRB STUDY INITIATION IN PEDIATRIC CRITICAL CARE TRIALS**
  Grunyk, J., Spinella, P., Leeper, C., Steffen, K.
  LIPPINCOTT WILLIAMS & WILKINS.2025

- **Planning a Phased Guideline Implementation Strategy Across the Multicenter Ventilation Liberation for Kids (VentLib4Kids) Collaborative.** *Pediatric critical care medicine : a journal of the Society of Critical Care Medicine and the World Federation of Pediatric Intensive and Critical Care Societies*
  Loberger, J. M., Hearld, K. R., Nishisaki, A., Khemani, R. G., Steffen, K. M., Abu-Sultaneh, S.
  2024

- **Priorities for Clinical Research in Pediatric Extracorporeal Membrane Oxygenation Anticoagulation From the Pediatric Extracorporeal Membrane Oxygenation Anticoagulation CollaborativE Consensus Conference.** *Pediatric critical care medicine : a journal of the Society of Critical Care Medicine and the World Federation of Pediatric Intensive and Critical Care Societies*
  Muszynski, J. A., Bembea, M. M., Gehred, A., Lyman, E., Cashen, K., Cheifetz, I. M., Dalton, H. J., Himebauch, A. S., Karam, O., Moynihan, K. M., Nellis, M. E., Ozment, C., Raman, et al
  2024; 25 (7 Suppl 1): e78-e89

- **Implementing the Pediatric Ventilator Liberation Guidelines Using the Most Current Evidence** *RESPIRATORY CARE*
  Loberger, J. M., Steffen, K., Khemani, R. G., Nishisaki, A., Abu-Sultaneh, S.
  2024; 69 (7)

- **Executive Summary: The Pediatric Extracorporeal Membrane Oxygenation Anticoagulation CollaborativE (PEACE) Consensus Conference.** *Pediatric critical care medicine : a journal of the Society of Critical Care Medicine and the World Federation of Pediatric Intensive and Critical Care Societies*
  Alexander, P. M., Bembea, M. M., Cashen, K., Cheifetz, I. M., Dalton, H. J., Himebauch, A. S., Karam, O., Moynihan, K. M., Nellis, M. E., Ozment, C., Raman, L., Rintoul, N. E., Said, et al
  2024; 25 (7): 643-675

- **Anticoagulation Monitoring and Targets: The Pediatric Extracorporeal Membrane Oxygenation Anticoagulation CollaborativE Consensus Conference.** *Pediatric critical care medicine : a journal of the Society of Critical Care Medicine and the World Federation of Pediatric Intensive and Critical Care Societies*
  Ozment, C., Alexander, P. M., Chandler, W., Emani, S., Hyslop, R., Monagle, P., Muszynski, J. A., Willems, A., Gehred, A., Lyman, E., Steffen, K., Thiagarajan, R. R.
  2024; 25 (7 Suppl 1): e14-e24

- **Management of Extracorporeal Membrane Oxygenation Anticoagulation in the Perioperative Period: The Pediatric Extracorporeal Membrane Oxygenation Anticoagulation CollaborativE Consensus Conference.** *Pediatric critical care medicine : a journal of the Society of Critical Care Medicine and the World Federation of Pediatric Intensive and Critical Care Societies*
  Willems, A., Anders, M. M., Garcia, A. V., Vogel, A. M., Yates, A. R., Muszynski, J. A., Alexander, P. M., Steffen, K., Emani, S., Gehred, A., Lyman, E., Raman, L.
  2024; 25 (7 Suppl 1): e53-e65

- **Management of Bleeding and Thrombotic Complications During Pediatric Extracorporeal Membrane Oxygenation: The Pediatric Extracorporeal Membrane Oxygenation Anticoagulation CollaborativE Consensus Conference.** *Pediatric critical care medicine : a journal of the Society of Critical Care Medicine and the World Federation of Pediatric Intensive and Critical Care Societies*
  Rintoul, N. E., McMichael, A. B., Bembea, M. M., DiGeronimo, R., Patregnani, J., Alexander, P. M., Muszynski, J. A., Steffen, K., Gehred, A., Lyman, E., Cheifetz, I. M.
  2024; 25 (7 Suppl 1): e66-e77

- **Implementing the Pediatric Ventilator Liberation Guidelines Using the Most Current Evidence: a Narrative Review.** *Respiratory care*
  Loberger, J. M., Steffen, K., Khemani, R. G., Nishisaki, A., Abu-Sultaneh, S.
  2024

- **A MIXED-METHODS STUDY TO SCALE-UP IMPLEMENTATION OF PEDIATRIC EARLY WARNING SYSTEMS (PEWS) GLOBALLY: THE PEWS ADAPTATION TO SUPPORT HOSPITALS IN AFRICA (PASHA) PROGRAM**
  Richards, S., Cardenas-Aguirre, A., Omotola, A., Puerto-Torres, M., Bhakta, N., Steffen, K., Agulnik, A., Naidu, G., Kambugu, J., Hickson, M., Mulindwa, J., Bhattacharyya, P., Bassingthwaighte, et al

WILEY.2023: S423-S424

- **Implementation Science Research in Pediatric Critical Care Medicine.** *Pediatric critical care medicine : a journal of the Society of Critical Care Medicine and the World Federation of Pediatric Intensive and Critical Care Societies*

  Woods-Hill, C. Z., Wolfe, H., Malone, S., Steffen, K. M., Agulnik, A., Flaherty, B. F., Barbaro, R. P., Dewan, M., Kudchadkar, S. R., and the Excellence in Pediatric Implementation Science (ECLIPSE) for the Pediatric Acute Lung Injury and Sepsis Investigators (PALISI) Network

  2023; 24 (11): 943-951

- **Factors influencing pediatric transfusion: A complex decision impacting quality of care.** *Transfusion*

  Steffen, K. M., Spinella, P. C., Holdsworth, L. M., Ford, M., Lee, G. M., Asch, S. M., Proctor, E. K., Doctor, A.

  2023

- **Definition, Incidence, and Epidemiology of Pediatric Acute Respiratory Distress Syndrome: From the Second Pediatric Acute Lung Injury Consensus Conference.** *Pediatric critical care medicine : a journal of the Society of Critical Care Medicine and the World Federation of Pediatric Intensive and Critical Care Societies*

  Yehya, N., Smith, L., Thomas, N. J., Steffen, K. M., Zimmerman, J., Lee, J. H., Erickson, S. J., Shein, S. L.

  2023; 24 (Supplement 1 2S): S87-S98

- **Executive Summary of the Second International Guidelines for the Diagnosis and Management of Pediatric Acute Respiratory Distress Syndrome (PALICC-2).** *Pediatric critical care medicine : a journal of the Society of Critical Care Medicine and the World Federation of Pediatric Intensive and Critical Care Societies*

  Emeriaud, G., López-Fernández, Y. M., Iyer, N. P., Bembea, M. M., Agulnik, A., Barbaro, R. P., Baudin, F., Bhalla, A., Brunow de Carvalho, W., Carroll, C. L., Cheifetz, I. M., Chisti, M. J., Cruces, et al

  2023; 24 (2): 143-168

- **Methodology of the Second Pediatric Acute Lung Injury Consensus Conference.** *Pediatric critical care medicine : a journal of the Society of Critical Care Medicine and the World Federation of Pediatric Intensive and Critical Care Societies*

  Iyer, N., Khemani, R., Emeriaud, G., Lopez-Fernandez, Y. M., Korang, S. K., Steffen, K. M., Barbaro, R. P., Bembea, M. M., Second Pediatric Acute Lung Injury Consensus Conference (PALICC-2) Group on behalf and the Pediatric Acute Lung Injury and Sepsis Investigators (PALISI) Network

  2023; 24 (Supplement 1 2S): S76-S86

- **The Impact of Restrictive Transfusion Practices on Hemodynamically Stable Critically Ill Children Without Heart Disease: A Secondary Analysis of the Age of Blood in Children in the PICU Trial.** *Pediatric critical care medicine : a journal of the Society of Critical Care Medicine and the World Federation of Pediatric Intensive and Critical Care Societies*

  Steffen, K. M., Tucci, M., Doctor, A., Reeder, R., Caro, J. J., Muszynski, J. A., Spinella, P. C., Pediatric Critical Care Blood Research Network (BloodNet) subgroup of the Pediatric Acute Lung Injury and Sepsis Investigators (PALISI) Network

  2023; 24 (2): 84-92

- **Association of Diagnostic Stewardship for Blood Cultures in Critically Ill Children With Culture Rates, Antibiotic Use, and Patient Outcomes: Results of the Bright STAR Collaborative.** *JAMA pediatrics*

  Woods-Hill, C. Z., Colantuoni, E. A., Koontz, D. W., Voskertchian, A., Xie, A., Thurm, C., Miller, M. R., Fackler, J. C., Milstone, A. M., Bright STAR Authorship Group, Agulnik, A., Albert, J. E., Auth, M. J., et al

  2022

- **What Laboratory Tests and Physiologic Triggers Should Guide the Decision to Administer a Platelet or Plasma Transfusion in Critically Ill Children and What Product Attributes Are Optimal to Guide Specific Product Selection? From the Transfusion and Anemia EXpertise Initiative-Control/Avoidance of Bleeding.** *Pediatric critical care medicine : a journal of the Society of Critical Care Medicine and the World Federation of Pediatric Intensive and Critical Care Societies*

  Delaney, M., Karam, O., Lieberman, L., Steffen, K., Muszynski, J. A., Goel, R., Bateman, S. T., Parker, R. I., Nellis, M. E., Remy, K. E., Pediatric Critical Care Transfusion and Anemia EXpertise Initiative-Control/Avoidance of Bleeding (TAXI-CAB), i. c.

  1800; 23 (Supplement 1 1S): e1-e13

- **EHR USABILITY AND BARRIERS TO EFFICIENT INFORMATION GATHERING ON THE EHR IN THE PICU: CURRENT STATE**

  Sinha, A., Tawfik, D., Steffen, K.

  LIPPINCOTT WILLIAMS & WILKINS.2022: 640

- **Plasma and Platelet Transfusion Strategies in Critically Ill Children With Malignancy, Acute Liver Failure and/or Liver Transplantation, or Sepsis: From the Transfusion and Anemia EXpertise Initiative-Control/Avoidance of Bleeding.** *Pediatric critical care medicine : a journal of the Society of Critical Care Medicine and the World Federation of Pediatric Intensive and Critical Care Societies*

  Lieberman, L., Karam, O., Stanworth, S. J., Goobie, S. M., Crighton, G., Goel, R., Lacroix, J., Nellis, M. E., Parker, R. I., Steffen, K., Stricker, P., Valentine, S. L., Steiner, et al

  1800; 23 (Supplement 1 1S): e37-e49

- **Executive Summary of Recommendations and Expert Consensus for Plasma and Platelet Transfusion Practice in Critically Ill Children: From the Transfusion and Anemia EXpertise Initiative-Control/Avoidance of Bleeding (TAXI-CAB).** *Pediatric critical care medicine : a journal of the Society of Critical Care Medicine and the World Federation of Pediatric Intensive and Critical Care Societies*
  Nellis, M. E., Karam, O., Valentine, S. L., Bateman, S. T., Remy, K. E., Lacroix, J., Cholette, J. M., Bembea, M. M., Russell, R. T., Steiner, M. E., Goobie, S. M., Tucci, M., Stricker, et al
  1800; 23 (1): 34-51

- **Ultrasound education improves safety for peripheral intravenous catheter insertion in critically ill children.** *Pediatric research*
  Bhargava, V., Su, E., Haileselassie, B., Davis, D., Steffen, K. M.
  2021

- **Implementation of clinical practice changes in the PICU: a qualitative study using and refining the iPARIHS framework.** *Implementation science : IS*
  Steffen, K. M., Holdsworth, L. M., Ford, M. A., Lee, G. M., Asch, S. M., Proctor, E. K.
  2021; 16 (1): 15

- **Factors Influencing Implementation of Blood Transfusion Recommendations in Pediatric Critical Care Units.** *Frontiers in pediatrics*
  Steffen, K. M., Spinella, P. C., Holdsworth, L. M., Ford, M. A., Lee, G. M., Asch, S. M., Proctor, E. K., Doctor, A.
  1800; 9: 800461

- **Target Based Care: An Intervention to Reduce Variation in Postoperative Length of Stay.** *The Journal of pediatrics*
  Shin, A. Y., Rao, I. J., Bassett, H. K., Chadwick, W., Kim, J., Kipps, A. K., Komra, K., Loh, L., Maeda, K., Mafla, M., Presnell, L., Sharek, P. J., Steffen, et al
  2020

- **Regulating Critical Care Ultrasound, It Is All in the Interpretation.** *Pediatric critical care medicine : a journal of the Society of Critical Care Medicine and the World Federation of Pediatric Intensive and Critical Care Societies*
  Su, E. n., Soni, N. J., Blaivas, M. n., Bhargava, V. n., Steffen, K. n., Haileselassie, B. n.
  2020

- **Pediatric Transport Triage: Development and Assessment of an Objective Tool to Guide Transport Planning.** *Pediatric emergency care*
  Steffen, K. M., Noje, C. n., Costabile, P. M., Henderson, E. n., Hunt, E. A., Klein, B. L., McMillan, K. N.
  2020; 36 (5): 240–47

- **ULTRASOUND-GUIDED IV PROGRAM IMPROVES FIRST STICK SUCCESS AND LONGEVITY IN CRITICALLY ILL CHILDREN**
  Bhargava, V., Su, E., Haileselassie, B., Davis, D., Steffen, K.
  LIPPINCOTT WILLIAMS & WILKINS.2020

- **Ultrasound-Targeted Lung Recruitment: Process Improvement for Ventilating the Critically Ill Child** *PEDIATRIC CRITICAL CARE MEDICINE*
  Su, E., Steffen, K. M.
  2019; 20 (5): 493–94

- **Development of a Structured Outcomes Assessment and Implementation Program in the Pediatric Intensive Care Unit** *AMERICAN JOURNAL OF MEDICAL QUALITY*
  Steffen, K. M., Lin, J. C., Malone, S., Doctor, A., Hartman, M. E.
  2019; 34 (1): 23–29

- **LEVERAGING AGGREGATE DATA AT THE POINT OF CARE REDUCES VARIATION FOR PEDIATRIC NEUROSURGERY PATIENTS**
  Steffen, K., Su, F., Algaze, C., Duethman, L., Jacobs, K., Casazza, M., Chantra, J., Loh, L., Shin, A., Grant, G.
  LIPPINCOTT WILLIAMS & WILKINS.2019

- **Use of Telemedicine During Interhospital Transport of Children With Operative Intracranial Hemorrhage*** *PEDIATRIC CRITICAL CARE MEDICINE*
  Jackson, E. M., Costabile, P. M., Tekes, A., Steffen, K. M., Ahn, E. S., Scafidi, S., Noje, C.
  2018; 19 (11): 1033–38

- **Implementation of the Recommendations for RBC Transfusions for Critically Ill Children From the Pediatric Critical Care Transfusion and Anemia Expertise Initiative.** *Pediatric critical care medicine : a journal of the Society of Critical Care Medicine and the World Federation of Pediatric Intensive and Critical Care Societies*
  Steffen, K. M., Bateman, S. T., Valentine, S. L., Small, S., Spinella, P. C., Doctor, A., Pediatric Critical Care Transfusion and Anemia Initiative (TAXI), i. c.

2018; 19 (9S Suppl 1): S170–S176

- **Implementation of the Recommendations for RBC Transfusions for Critically Ill Children From the Pediatric Critical Care Transfusion and Anemia Expertise Initiative** *PEDIATRIC CRITICAL CARE MEDICINE*
  Steffen, K. M., Bateman, S. T., Valentine, S. L., Small, S., Spinella, P. C., Doctor, A.
  2018; 19: S170-S176

- **Consensus Recommendations for RBC Transfusion Practice in Critically Ill Children From the Pediatric Critical Care Transfusion and Anemia Expertise Initiative** *PEDIATRIC CRITICAL CARE MEDICINE*
  Valentine, S. L., Bembea, M. M., Muszynski, J. A., Cholette, J. M., Doctor, A., Spinella, P. C., Steiner, M. E., Tucci, M., Hassan, N. E., Parker, R. I., Lacroix, J., Argent, A., Carson, et al
  2018; 19 (9): 884–98

- **Development of a Structured Outcomes Assessment and Implementation Program in the Pediatric Intensive Care Unit.** *American journal of medical quality : the official journal of the American College of Medical Quality*
  Steffen, K. M., Lin, J. C., Malone, S., Doctor, A., Hartman, M. E.
  2018: 1062860618788173

- **Assessment of Virtual Support of Cardiopulmonary Resuscitation Using a Checklist**
  Chime, N. O., Jones, K., Steffen, K., Noje, C., Duval-Arnould, J., Hunt, E. A., McMillan, K.
  AMER ACAD PEDIATRICS.2018

- **Tele-Pediatric Intensive Care for Critically Ill Children in Syria** *TELEMEDICINE AND E-HEALTH*
  Ghbeis, M., Steffen, K. M., Braunlin, E. A., Beilman, G. J., Dahman, J., Ostwani, W., Steiner, M. E.
  2017

- **Controlling Phlebotomy Volume Diminishes PICU Transfusion: Implementation Processes and Impact.** *Pediatrics*
  Steffen, K., Doctor, A., Hoerr, J., Gill, J., Markham, C., Brown, S. M., Cohen, D., Hansen, R., Kryzer, E., Richards, J., Small, S., Valentine, S., York, et al
  2017; 140 (2)

- **RBC Distribution Width: Biomarker for Red Cell Dysfunction and Critical Illness Outcome?** *PEDIATRIC CRITICAL CARE MEDICINE*
  Said, A. S., Spinella, P. C., Hartman, M. E., Steffen, K. M., Jackups, R., Holubkov, R., Wallendorf, M., Doctor, A.
  2017; 18 (2): 134-142

- **Determination of Genetic Predisposition to Patent Ductus Arteriosus in Preterm Infants** *PEDIATRICS*
  Dagle, J. M., Lepp, N. T., Cooper, M. E., Schaa, K. L., Kelsey, K. J., Orr, K. L., Caprau, D., Zimmerman, C. R., Steffen, K. M., Johnson, K. J., Marazita, M. L., Murray, J. C.
  2009; 123 (4): 1116-1123

- **Evaluation of fetal and maternal genetic variation in the progesterone receptor gene for contributions to preterm birth** *PEDIATRIC RESEARCH*
  Ehn, N. L., Cooper, M. E., Orr, K., Shi, M., Johnson, M. K., Caprau, D., Dagle, J., Steffen, K., Johnson, K., Marazita, M. L., Merrill, D., Murray, J. C.
  2007; 62 (5): 630-635

- **Maternal and fetal variation in genes of cholesterol metabolism is associated with preterm delivery** *JOURNAL OF PERINATOLOGY*
  Steffen, K. M., Cooper, M. E., Shi, M., Caprau, D., Simhan, H. N., Dagle, J. M., Marazita, M. L., Murray, J. C.
  2007; 27 (11): 672-680