

# Stanford

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## William Rhine

Professor of Pediatrics (Neonatology)

Pediatrics - Neonatal and Developmental Medicine

### CLINICAL OFFICES

- **Neonatology**

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### Bio

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### CLINICAL FOCUS

- Neonatal-Perinatal Medicine

### ACADEMIC APPOINTMENTS

- Professor - University Medical Line, Pediatrics - Neonatal and Developmental Medicine

### ADMINISTRATIVE APPOINTMENTS

- President, California Association of Neonatologists, (2005-2006)
- President, Board of Governors, Stanford University School of Med. Alumni Assoc., (2009-2011)
- National Advisory Board Member, Vermont-Oxford Network NICQ, (2007-2015)
- Medical Director, Neonatal ICU, (2000-2016)

### PROFESSIONAL EDUCATION

- Fellowship: Stanford University School of Medicine (1989) CA
- Residency: Stanford University School of Medicine (1987) CA
- Internship: Stanford University School of Medicine (1985) CA
- Medical Education: Stanford University School of Medicine (1984) CA
- Board Certification: Neonatal-Perinatal Medicine, American Board of Pediatrics (1989)
- M.D., Stanford University , Medicine (1984)
- M.S., Mass. Institute of Technology , Nutritional Biochemistry (1979)
- B.S., Mass. Institute of Technology , Biology (1977)

## Research & Scholarship

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### CURRENT RESEARCH AND SCHOLARLY INTERESTS

Neonatology, extracorporeal membrane oxygenation, nitric oxide therapy, mechanisms of bilirubin toxicity and brain injury, non-invasive biotechnologies to study cellular and organ metabolism.

## Publications

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### PUBLICATIONS

- **Air pollution exposure associates with increased risk of neonatal jaundice.** *Nature communications*  
Zhang, L., Liu, W., Hou, K., Lin, J., Song, C., Zhou, C., Huang, B., Tong, X., Wang, J., Rhine, W., Jiao, Y., Wang, Z., Ni, et al  
2019; 10 (1): 3741
- **An Analysis of Time to Improvement in Oxygenation in Japanese Preterm and Late Preterm or Term Neonates With Hypoxic Respiratory Failure and Pulmonary Hypertension** *CLINICAL THERAPEUTICS*  
Rhine, W. D., Suzuki, S., Potenziano, J. L., Escalante, S., Togari, H.  
2019; 41 (5): 910–19
- **An Analysis of Time to Improvement in Oxygenation in Japanese Preterm and Late Preterm or Term Neonates With Hypoxic Respiratory Failure and Pulmonary Hypertension.** *Clinical therapeutics*  
Rhine, W. D., Suzuki, S., Potenziano, J. L., Escalante, S., Togari, H.  
2019
- **Welcome and Opening Remarks** *BREASTFEEDING MEDICINE*  
Bode, L., Rhine, W. D.  
2019; 14: S2
- **Welcome and Opening Remarks.** *Breastfeeding medicine : the official journal of the Academy of Breastfeeding Medicine*  
Bode, L., Rhine, W. D.  
2019; 14 (S1): S2
- **Welcome and Opening Remarks** *BREASTFEEDING MEDICINE*  
Rhine, W. D., Bode, L.  
2018; 13: S2
- **Technology - Considerations for the NICU of the Future** *NEWBORN AND INFANT NURSING REVIEWS*  
Rhine, W. D.  
2016; 16 (4): 208–12
- **Apolipoprotein E genotype and outcome in infants with hypoxic-ischemic encephalopathy.** *Pediatric research*  
Cotten, C. M., Goldstein, R. F., McDonald, S. A., Goldberg, R. N., Salhab, W. A., Carlo, W. A., Tyson, J. E., Finer, N. N., Walsh, M. C., Ehrenkranz, R. A., Lupton, A. R., Guillet, R., Schibler, et al  
2014; 75 (3): 424-430
- **Parental coping in the neonatal intensive care unit.** *Journal of clinical psychology in medical settings*  
Shaw, R. J., Bernard, R. S., Storfer-Isser, A., Rhine, W., Horwitz, S. M.  
2013; 20 (2): 135-142
- **Impact of an EMR-Based Daily Patient Update Letter on Communication and Parent Engagement in a Neonatal Intensive Care Unit.** *Journal of participatory medicine*  
Palma, J. P., Keller, H., Godin, M., Wayman, K., Cohen, R. S., Rhine, W. D., Longhurst, C. A.  
2012; 4
- **A Quality Improvement Project to Increase Breast Milk Use in Very Low Birth Weight Infants** *PEDIATRICS*  
Lee, H. C., Kurtin, P. S., Wight, N. E., Chance, K., Cucinotta-Fobes, T., Hanson-Timpson, T. A., Nisbet, C. C., Rhine, W. D., Risingsun, K., Wood, M., Danielsen, B. H., Sharek, P. J.  
2012; 130 (6): E1679-E1687

- **Combining hand techniques with electric pumping increases the caloric content of milk in mothers of preterm infants** *JOURNAL OF PERINATOLOGY*  
Morton, J., Wong, R. J., Hall, J. Y., Pang, W. W., Lai, C. T., Lui, J., Hartmann, P. E., Rhine, W. D.  
2012; 32 (10): 791-796
- **Prediction of Bronchopulmonary Dysplasia by Postnatal Age in Extremely Premature Infants** *AMERICAN JOURNAL OF RESPIRATORY AND CRITICAL CARE MEDICINE*  
Laughon, M. M., Langer, J. C., Bose, C. L., Smith, P. B., Ambalavanan, N., Kennedy, K. A., Stoll, B. J., Buchter, S., Laptook, A. R., Ehrenkranz, R. A., Cotten, C. M., Wilson-Costello, D. E., Shankaran, et al  
2011; 183 (12): 1715-1722
- **Improved outcomes with a standardized feeding protocol for very low birth weight infants** *JOURNAL OF PERINATOLOGY*  
McCallie, K. R., Lee, H. C., Mayer, O., Cohen, R. S., Hintz, S. R., Rhine, W. D.  
2011; 31: S61-S67
- **Brief Cognitive-Behavioral Intervention for Maternal Depression and Trauma in the Neonatal Intensive Care Unit: A Pilot Study** *JOURNAL OF TRAUMATIC STRESS*  
Bernard, R. S., Williams, S. E., Storfer-Isser, A., Rhine, W., Horwitz, S. M., Koopman, C., Shaw, R. J.  
2011; 24 (2): 230-234
- **Combining hand techniques with electric pumping increases milk production in mothers of preterm infants** *JOURNAL OF PERINATOLOGY*  
Morton, J., Hall, J. Y., Wong, R. J., Thairu, L., Benitz, W. E., Rhine, W. D.  
2009; 29 (11): 757-764
- **Synchronized Nasal Intermittent Positive-Pressure Ventilation and Neonatal Outcomes** *PEDIATRICS*  
Bhandari, V., Finer, N. N., Ehrenkranz, R. A., Saha, S., Das, A., Walsh, M. C., Engle, W. A., Van Meurs, K. P.  
2009; 124 (2): 517-526
- **A quality improvement project to improve admission temperatures in very low birth weight infants** *JOURNAL OF PERINATOLOGY*  
Lee, H. C., Ho, Q. T., Rhine, W. D.  
2008; 28 (11): 754-758
- **Inhaled nitric oxide in the treatment of preterm infants** *EARLY HUMAN DEVELOPMENT*  
Miller, S. S., Rhine, W. D.  
2008; 84 (11): 703-707
- **Neonatal heparin overdose-a multidisciplinary team approach to medication error prevention.** *The journal of pediatric pharmacology and therapeutics : JPPT : the official journal of PPAG*  
Arimura, J., Poole, R. L., Jeng, M., Rhine, W., Sharek, P.  
2008; 13 (2): 96-98
- **A cluster-randomized trial of benchmarking and multimodal quality improvement to improve rates of survival free of bronchopulmonary dysplasia for infants with birth weights of less than 1250 grams** *PEDIATRICS*  
Walsh, M., Laptook, A., Kazzi, S. N., Engle, W. A., Yao, Q., Rasmussen, M., Buchter, S., Heldt, G., Rhine, W., Higgins, R., Poole, K.  
2007; 119 (5): 876-890
- **The use of inhaled nitric oxide in the premature infant with respiratory distress syndrome.** *Minerva pediatrica*  
Van Meurs, K., Hintz, S., Rhine, W., Benitz, W.  
2006; 58 (5): 403-422
- **Eliminating nosocomial infections in the NICU: everyone's duty** *JOURNAL OF PERINATOLOGY*  
Rhine, W. D.  
2006; 26 (3): 141-143
- **Implementing potentially better practices to reduce lung injury in neonates** *PEDIATRICS*  
Burch, K., Rhine, W., Baker, R., Litman, F., Kaempf, J. W., Schwarz, E., Sun, S. Y., Payne, N. R., Sharek, P. J.  
2003; 111 (4)
- **Venoarterial versus venovenous extracorporeal membrane oxygenation in congenital diaphragmatic hernia: The Extracorporeal Life Support Organization Registry, 1990-1999** *31st Annual Meeting of the Section-on-Surgery of the American-Academy-of-Pediatrics*  
Dimmitt, R. A., Moss, R. L., Rhine, W. D., Benitz, W. E., Henry, M. C., VanMeurs, K. P.

W B SAUNDERS CO-ELSEVIER INC.2001: 1199-1204

- **Decreased use of neonatal extracorporeal membrane oxygenation (ECMO): How new treatment modalities have affected ECMO utilization** *PEDIATRICS*  
Hintz, S. R., Suttner, D. M., Sheehan, A. M., Rhine, W. D., Van Meurs, K. P.  
2000; 106 (6): 1339-1343
- **Tc-99m annexin V imaging of neonatal hypoxic brain injury** *STROKE*  
D'Arceuil, H., Rhine, W., de Crespigny, A., Yenari, M., Tait, J. F., Strauss, W. H., Engelhorn, T., Kastrup, A., Moseley, M., Blankenberg, F. G.  
2000; 31 (11): 2692-2699
- **Secondary infection presenting as recurrent pulmonary hypertension.** *Journal of perinatology*  
Hintz, S. R., Benitz, W. E., Halamek, L. P., Van Meurs, K. P., Rhine, W. D.  
2000; 20 (4): 262-264
- **Inhaled nitric oxide in term and near-term infants: Neurodevelopmental follow-up of The Neonatal Inhaled Nitric Oxide Study Group (NINOS)** *JOURNAL OF PEDIATRICS*  
Finer, N. N., Vohr, B. R., Robertson, C. M., Ehrenkranz, R. A., Verter, J., Wright, L. L., Hoffman, H. J., Walsh-Sukys, M. C., Dusick, A. M., Fleisher, B. E., Steichen, J., Laadt, G., Yolton, et al  
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- **Sonography, CT, and MR imaging: A prospective comparison of neonates with suspected intracranial ischemia and hemorrhage** *AMERICAN JOURNAL OF NEURORADIOLOGY*  
Blankenberg, F. G., Loh, N. N., Bracci, P., D'Arceuil, H. E., Rhine, W. D., Norbash, A. M., Lane, B., Berg, A., Person, B., Coutant, M., Enzmann, D. R.  
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- **Serial magnetic resonance diffusion and hemodynamic imaging in a neonatal rabbit model of hypoxic-ischemic encephalopathy** *NMR IN BIOMEDICINE*  
D'Arceuil, H. E., de Crespigny, A. J., Rother, J., Moseley, M., Rhine, W.  
1999; 12 (8): 505-514
- **Bilirubin toxicity and differentiation of cultured astrocytes.** *Journal of perinatology*  
Rhine, W. D., SCHMITTER, S. P., Yu, A. C., Eng, L. F., Stevenson, D. K.  
1999; 19 (3): 206-211
- **Inhaled nitric oxide for respiratory failure in pediatric patients**  
Andrus, J. P., Derish, M. T., Rhine, W. D., Van Meurs, K. P.  
INT PEDIATRIC RESEARCH FOUNDATION, INC.1999: 37A
- **Strategy for lipid suppression in lactate imaging using STIR-DQCT: A study of hypoxic-ischemic brain injury** *MAGNETIC RESONANCE IN MEDICINE*  
Nakai, T., Rhine, W. D., Okada, T., Stevenson, D. K., Spielman, D. M.  
1998; 40 (4): 629-632
- **Diffusion and perfusion magnetic resonance imaging of the evolution of hypoxic ischemic encephalopathy in the neonatal rabbit** *JOURNAL OF MAGNETIC RESONANCE IMAGING*  
D'Arceuil, H. E., de Crespigny, A. J., Rother, J., Seri, S., Moseley, M. E., Stevenson, D. K., Rhine, W.  
1998; 8 (4): 820-828
- **Congenital diaphragmatic hernia associated with aortic coarctation** *29th Annual Meeting of the Canadian-Association-of-Paediatric-Surgeons*  
Eghtesady, P., Skarsgard, E. D., Smith, B. M., Robbins, R. C., Wexler, L., Rhine, W. D.  
W B SAUNDERS CO-ELSEVIER INC.1998: 943-45
- **Response of premature infants with severe respiratory failure to inhaled nitric oxide. Premie NO Collaborative Group.** *Pediatric pulmonology*  
Van Meurs, K. P., Rhine, W. D., Asselin, J. M., Durand, D. J.  
1997; 24 (5): 319-323
- **Response of premature infants with severe respiratory failure to inhaled nitric oxide** *66th Annual Meeting of the Society-for-Pediatric-Research*  
VanMeurs, K. P., Rhine, W. D., Asselin, J. M., Durand, D. J., Peverini, R., Dudell, G., Butler, S., Durand, D., Asselin, J., VANMEURS, K., Rhine, W.  
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- **Hemopericardium from coronary artery laceration complicating extracorporeal membrane oxygenation.** *Journal of perinatology*  
Rhine, W. D., Hartman, G. E., Shochat, S. J., Benitz, W. E., Van Meurs, K. P.  
1997; 17 (3): 189-192

- **Inhaled nitric oxide in full-term and nearly full-term infants with hypoxic respiratory failure** *NEW ENGLAND JOURNAL OF MEDICINE*  
Stork, E., Gorjanc, E., Verter, J., Younes, N., Stenzel, B. A., Powers, T., Sokol, G., Wright, L. L., Yaffe, S. J., Catz, C., VANMEURS, K., Rhine, W., Ball, et al  
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- **Nitrovasodilator therapy for severe respiratory distress syndrome.** *Journal of perinatology*  
Benitz, W. E., Rhine, W. D., Van Meurs, K. P., Stevenson, D. K.  
1996; 16 (6): 443-448
- **A model for detecting early metabolic changes in neonatal asphyxia by 1H-MRS** *JOURNAL OF MAGNETIC RESONANCE IMAGING*  
Nakai, T., Rhine, W. D., Enzmann, D. R., Stevenson, D. K., Spielman, D. M.  
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- **NEONATAL JAUNDICE - WHAT NOW** *CLINICAL PEDIATRICS*  
Dennery, P. A., Rhine, W. D., Stevenson, D. K.  
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- **LOBAR LUNG TRANSPLANTATION AS A TREATMENT FOR CONGENITAL DIAPHRAGMATIC-HERNIA** *JOURNAL OF PEDIATRIC SURGERY*  
VanMeurs, K. P., Rhine, W. D., Benitz, W. E., Shochat, S. J., Hartman, G. E., Sheehan, A. M., Starnes, V. A.  
1994; 29 (12): 1557-1560
- **INTRACRANIAL ABNORMALITIES AND NEURODEVELOPMENTAL STATUS AFTER VENOVENOUS EXTRACORPOREAL MEMBRANE-OXYGENATION** *JOURNAL OF PEDIATRICS*  
VanMeurs, K. P., Nguyen, H. T., Rhine, W. D., Marks, M. P., Fleisher, B. E., Benitz, W. E.  
1994; 125 (2): 304-307
- **MAGNETIC-RESONANCE (MR) DIFFUSION AND PERFUSION IMAGING STUDIES OF IMMATURE RABBIT HYPOXIC-ISCHEMIC ENCEPHALOPATHY (HIE)**  
RHINE, W. D., DECRESPIGNY, A., PELC, L. R., MOSELEY, M. E., STEVENSON, D. K.  
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- **GD-DTPA MR DETECTION OF BLOOD-BRAIN-BARRIER OPENING IN RATS AFTER HYPEROSMOTIC SHOCK** *JOURNAL OF COMPUTER ASSISTED TOMOGRAPHY*  
Rhine, W. D., Benaron, D. A., Enzmann, D. R., Chung, C., GONZALESMENDEZ, R., Sayre, J. R., Stevenson, D. K.  
1993; 17 (4): 563-566
- **BRAIN-STEM BILIRUBIN TOXICITY IN THE NEWBORN PRIMATE MAY BE PROMOTED AND REVERSED BY MODULATING PCO2** *PEDIATRIC RESEARCH*  
Wennberg, R. P., Gospe, S. M., Rhine, W. D., Seyal, M., Saeed, D., Sosa, G.  
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- **ANTICOAGULATION THERAPY ADVISER - A DECISION-SUPPORT SYSTEM FOR HEPARIN-THERAPY DURING ECMO** *16th Annual Symposium on Computer Applications in Medical Care*  
Peverini, R. L., Sale, M., Rhine, W. D., Fagan, L. M., Lenert, L. A.  
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- **Where should the hemofiltration circuit be placed in relation to the extracorporeal membrane oxygenation circuit?** *ASAIO journal*  
Yorgin, P. D., Kirpekar, R., Rhine, W. D.  
1992; 38 (4): 801-803
- **Anticoagulation therapy advisor: a decision-support system for heparin therapy during ECMO.** *Proceedings / the ... Annual Symposium on Computer Application [sic] in Medical Care. Symposium on Computer Applications in Medical Care*  
Peverini, R. L., Sale, M., Rhine, W. D., Fagan, L. M., Lenert, L. A.  
1992: 567-571
- **Fatal postoperative Legionella pneumonia in a newborn.** *Journal of perinatology*  
Greene, K. A., Rhine, W. D., Starnes, V. A., Ariagno, R. L.  
1990; 10 (2): 183-184
- **NEONATAL ASPERGILLOSIS - A CASE-REPORT AND REVIEW OF THE LITERATURE** *CLINICAL PEDIATRICS*  
Rhine, W. D., Arvin, A. M., Stevenson, D. K.

1986; 25 (8): 400-403

- **SCHISTOSOMA-MANSONI - REPRODUCTIVE POTENTIAL OF MALE AND FEMALE WORMS CULTURED INVITRO** *JOURNAL OF PARASITOLOGY*

Basch, P. F., Rhine, W. D.

1983; 69 (3): 567-569