

CURRICULUM VITAE

KEITH L. KLEIN, MD, FACP, FASN**Professor of Medicine, Cedars-Sinai Medical Center****Clinical Professor of Medicine, David Geffen School of Medicine at UCLA****Address:****OFFICE:**

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Date and Place of Birth:

February 22, 1946, New York, NY.
United States Citizen
Married, two daughters, two dogs, two cats

EDUCATION:

University of California, Riverside BA. Chemistry, 1967
University of Southern California School of Medicine, Los Angeles, M.D. 1971
Johns Hopkins Hospital, Baltimore, Maryland. Straight Medical Internship, 1971-1972
Los Angeles County-USC Medical Center, Los Angeles, California, Internal Medicine
Residency, 1974-1976
University of Southern California School of Medicine- Nephrology Fellowship, 1976-1978
AMIA 10x10 Certified, Oregon Health Sciences University, 2007

LICENSURE:

California, 1972: G22950 DEA AK5216406
Florida Department of Health Medical Doctor Expert Witness Certificate 04/12/2021 -
04/11/2023

BOARD CERTIFICATION:

Diplomat, American Board of Internal Medicine, 1976
Subspecialty of Nephrology, 1978
AMIA 10x10 certified 2006

CURRENT ACTIVITIES:

Director Education, Metabolic Support Committee, Cedars Sinai Medical Center Feb 2023-
present
Medical Executive Committee, Cedars Sinai Medical Center 2020-2023
COVID Dialysis Task Force 2020-2021
COVID certified physician, Cedars Sinai Medical Center 2000-present

Academic Promotions Committee, David Geffen School of Medicine at UCLA 2019-2023
 Professor of Medicine, Division of Nephrology, Cedars-Sinai Medical Center
 Clinical Professor of Medicine, David Geffen School of Medicine at UCLA
 Consultant, Pharmacy Department, Cedars-Sinai Medical Center on TPN, Tolvaptan, and
 Albumin infusions 2010-2021

Gate Keeper: Tolvaptan usage at Cedars-Sinai Medical Center

Director, Metabolic Support Team, Cedars-Sinai Medical Center January 2005-December
 2018

Chairperson, Nutritional Advisory Support Committee, Cedars-Sinai Medical Center, January
 2016-December 2018

Clinical Professor of Medicine, David Geffen School of Medicine at UCLA September 1994-
 present

Attending Physician, Cedars Sinai Medical Center 1982-present

Private practice: Internal Medicine and Nephrology 1982-present

IT Consultant, Cedars-Sinai Health Associates, August 2013-July 2018

Hypertension Center of Excellence, Consulting physician, Cedars-Sinai Medical Center,
 January 2014 -present

Pharmacy & Therapeutics Committee, Cedars-Sinai Medical Center, January 2016-2019

Informational Technology/Computer Activities

Presentation, Healthcare Information and Management Society, Chicago, Il. 2014

Presentation EPIC UGM. 2013

Presentation EPIC UGM. 2012

AMIA 10x10 Certified, Oregon Health Sciences University, 2007

Paid IT Consultant, Cedars-Sinai Health Associates, August 2013-July 2018

Course work in Fortran IV Univ of Southern California School of Medicine, 1963

Programmer, Fortran IV, USC Medical School 1963-1967

Programmed Digoxin pharmacokinetics for HP 65 USC School of Medicine, LA County USC
 Medical Center 1976

Programmed Bone Histomorphometry program, BASIC language, Division of Nephrology,
 USC 1976

Designed and Maintained Clinical Faculty Data Base,, UCLA School of Medicine, 1982-86

Designed and maintained Transplant Data base Cedars Sinai Medical Center, 1986

Created office based Electronic Medical Record and Billing Software, 1986-2007

Invited Lecturer, EPIC Systems, 2012, voted Classic designation and invited back for encore
 presentation

Lecture, American College of Physicians Regional Meeting, California 2013

Risks and Pitfalls of EMR”

Lecturer, HIMSS, Chicago, 2014

Consultant to Doctors Company, EMR “How to lose 30 Million dollars: Use an EMR”

Lecturer hospital in Kauai, Hawaii, California on EMR

Invited Lecture, Clinical Faculty Annual Meeting, “Risks of EMR” UCLA 2015

IT Consultant, Cedars Sinai Medical Center

IT Lead Consultant, Dept of Medicine, Cedars Sinai Medical Center

Lead several task forces on design of Order Sets in EPIC

implementation of first CPOE 2003

Forensic Analyst of EMR, Court approved in Boston, MA

Forensic Analysis of EMR, Seattle, WA, Los Angeles, Ca, Washington DC., Nashville, TN,
 Honolulu, Hi,

PROFESSIONAL EXPERIENCE:

Course Instructor, Introduction to Fluid and Electrolytes, UCLA School of Medicine, 2005-2019

Medical Executive Committee, Cedars-Sinai Medical Center January 2015-December 2023

Department of Medicine Performance Improvement Committee January 2012-December 2018

Pharmacy & Therapeutics Committee, Cedars-Sinai Medical Center, January 2016-2021

Hypertension Center of Excellence, Consulting physician, Cedars-Sinai Medical Center, January 2014 -present

Bioethics Committee, Cedars-Sinai Medical Center July 2012-2014

Dept. of Medicine CSMC, Resident Intake Rounds 2005-2014

Consultant, Baxter Health Care Corporation, July 2009-December 2011

Department of Medicine Representative, Medical Executive Committee, Cedars-Sinai Medical Center January 2005-December 2010

Treasurer, Medical Staff, Cedars-Sinai Medical Center 2008-2009

Secretary, Medical Staff, Cedars-Sinai Medical Center 2007-2008

Co-Chairperson, Clinical Resource Committee, Cedars-Sinai Medical Center 2006-2009

Co-Chairperson, American Society of Nephrology Regional Meeting, Review Course, Los Angeles, California February 25-26, 2006

Vice-Chair, Pharmacy and Therapeutics Committee, Cedars-Sinai Medical Center, 2006-2007

Member, Chancellor's Advisory Committee, University of California, Riverside, 2005-2008

Clinical Chief of Nephrology, Cedars Sinai Medical Center, 2004-2007

Co-Chairperson, American Society of Nephrology Regional Meeting, Review Course, Los Angeles, California January 7-9, 2005

Chairperson, Medication Reconciliation Task Force, Cedars-Sinai Medical Center 2005

Physician Leader, Electronic Discharge Summary Project, Cedars-Sinai Medical Center 2004-2009

Member, Chief of Staff Advisory Committee, Cedars Sinai Medical Center, 2004-2009

Chairperson, Medical Education Committee, Cedars Sinai Medical Center, 2004-2008

Physician Consultant, Enterprise Information Service, Cedars-Sinai Medical Center, 2003-present

Chairperson, Nutrition Advisory Support Committee, Cedars Sinai Medical Center, 2004

Reviewer for Self-Assessment Program for American Society of Nephrology, 2004-2008

Assistant Chairman, Performance Improvement, Department of Medicine, Cedars Sinai Medical Center, 2003-present

Member, American Medical Informatics Association, 2003-present

Enterprise Information Service Council, Cedars Sinai Medical Center, 2003-2005

Quality Improvement Committee, Cedars Sinai Medical Center, 2003-2006

Department of Medicine, Performance Improvement Committee, Cedars Sinai Medical Center, 2003-2010

Medical Informatics Committee, Cedars Sinai Medical Center, 2003-2008

Department of Medicine Representative and Consultant, Enterprise Information Services, Cedars Sinai Medical Center, August 2002-present

Secretary, Clinical Faculty Association, UCLA Medical Center, 2001-2009

Chairman, In Patient Nutrition Advisory Committee, Cedars Sinai Medical Center 2000-2004

Performance Improvement Committee, Nephrology Division, Cedars Sinai Medical Center 2000

Nutrition Advisory and Support Committee; 2000-2019

Clinical Professor of Medicine, UCLA. School of Medicine, 1994-present

Attending Physician, UCLA. Medical Center, 1981 - present
Attending Physician, Cedars Sinai Medical Center, 1982 -present
Executive Board, Clinical Faculty Association, UCLA. Medical Center, 1987-2009
Chairman, Utilization Review and Practice Guidelines Committee, Health Source Medical Group, 1999-2000
Private practice, Internal Medicine, Nephrology, and Hypertension 1982-present
Chairman, Practice Guidelines Committee, Health Source Medical Group, 1996-1999
Quality Improvement Committee, Health Source Medical Group, 1996-2000
Metabolic Support Team, Cedars Sinai Medical Center, 1995-present
Metabolic Support Team Appeals Committee, Cedars Sinai Medical Center, 1999-present
Course instructor, History and Physical Examination, Second Year Medical Students, UCLA School of Medicine, 1995-2008.
Team Physician, Palisades High School Girls Basketball Team, 1994-1997
Chief of Medicine, Health Source Medical Group, Inc 1996-2000
Morbidity and Mortality Committee, UCLA School of Medicine, 1995-1996
Medical Records Committee, Cedars Sinai Medical Center, 1993-1997
Executive Committee, Enterprise Systems and Networks Committee, Cedars Sinai Medical Center, 1994-1996
Enterprise Systems and Networks Committee, Cedars Sinai Medical Center, 1994-1996
Chairman, Nephrology Division Reappointment, Appointment, Proctoring, Privileging and Peer Review Committee, Cedars Sinai Medical Center, 1993-1995
Medicine Division Reappointment, Appointment, Proctoring, Privileging and Peer Review Committee, Cedars Sinai Medical Center, 1993-1996
Associate Clinical Professor of Medicine, UCLA. School of Medicine, 1985 -1995
Medical Records Committee, Cedars Sinai Medical Center, 1993-1997
Nephrology Division Reappointment, Appointment, Proctoring, Privileging and Peer Review Committee, Cedars Sinai Medical Center, 1991-1995
Transplant Advisory Committee, Cedars Sinai Medical Center, 1988-1995
Executive Board, Cedars Sinai IPA, 1989-1993
Bioethics Committee, Cedars Sinai Medical Center, 1988-1992
Medical Education Committee, Cedars Sinai Medical Center, 1986-1989
Consultant, California Medical Review, Inc. 1984-1996
Associate Medical Director, Los Angeles Dialysis Training Center, 1986-1989
President, Medical Data Systems 1989-1995
Vice-President, MedWest Medical Group, Inc., 1987-1995
Commissioner, Board of Medical Quality Assurance, State of California 1983-1993
Assistant Clinical Professor of Medicine, UCLA. School of Medicine, 1982- 1985
Medical Examiner, Department of Social Services, State of California 1982-1993
Associate Director, Biomedical Applications Dialysis Unit, Beverly Hills, 1982- 1985
Director, Medical Intensive Care Unit, Wadsworth VA Medical Center, 1981-1983
Clinical Investigator, Career Development Program, Research Division, Wadsworth VA Medical Center 1981-1982
Assistant Professor of Medicine, UCLA. School of Medicine, 1978 - 1982
Research Associate, Career Development Program, Research Division, Wadsworth VA Medical Center, 1978 - 1981
CPR Instructor, American Heart Association
Director, Renal Outpatient Clinic, Wadsworth VA Medical Center, 1978 - 1982
Attending Physician, Department of Medicine Professional Group, UCLA School of Medicine, 1978- 1981

Staff Physician, Home Care Program, Los Angeles County-USC Medical Center, Los Angeles, California 1974 - 1982

Fellow, Division of Nephrology, University of Southern California School of Medicine 1976-1978

Clinical Instructor of Medicine, University of Southern California School of Medicine 1976-1978

Staff Associate, National Cancer Institute, National Institutes of Health, Japan-Hawaii Cancer Study, 1973 - 1974

Clinical Instructor of Medicine, University of Hawaii School of Medicine, 1973- 1974

General Medical Officer, US. Public Health Service, 1972 - 1973

Nursing Home Project, Los Angeles County Health Department, 1976 - 1977

HONORS:

Classics honor, UGM 2012 Epic Systems

Honorary Alumnus of the Year, Cedars-Sinai Alumni Association, 2007

Golden Apple Award for Excellence in Teaching, Cedars-Sinai Medical Center 2006

Chief of Staff Award, Physician of the Year, Cedars-Sinai Medical Center, 2004

Fellow, Kidney Foundation of Southern California 1976 - 1977

Fellow, National Kidney Foundation, 1977 - 1978

Research Associate Award, Career Development Program, Veterans Administration, Wadsworth VA Medical Center 1978-1980

Clinical Investigator Award, Career Development Program, Veterans Administration, Wadsworth VA Medical Center 1980

Recipient, VA Merit Review

LECTURES AND PRESENTATIONS

UCLA Extension Program January 2024

Kaiser Nephrology Grand Rounds 2023

Nephrology Grand Rounds, Cedars Sinai Medical Center 2018,2019,2020, 2021,2022,2023

Invited Lecture, Clinical Faculty Annual Meeting, "Risks of EMR" UCLA 2015

Course Instructor, Introduction to Fluid and Electrolytes, UCLA School of Medicine, 2005-2019

Medical Grand Rounds, Cedars Sinai Medical Center 2019

Medical Grand Rounds, Cedars Sinai Medical Center 2015

Presentation, Healthcare Information and Management Society, Chicago, Il. 2014

Presentation EPIC UGM. 2013

Keith L Klein, Barry Bershow, Andrew Rosenblatt: How to Create Better Progress Notes; UGM, September 2012, EPIC Systems

American Society Parenteral and Enteral Nutrition, Electrolyte Disorders in TPN. 2012

TPN in Chronic Renal Failure 2011, Boston, MA

Lecture, American College of Physicians Regional Meeting, California 2013

Risks and Pitfalls of EMR

Lecturer Kauai hospital, Hawaii, California on EMR 2015

Long Beach Memorial Hospital, 2012

Y. Katoh, K.L. Klein, R.A. Kaplan, W.G. Sanborn and K. Kurokawa: Parathyroid Hormone has a direct inotropic action. Western Society for Clinical Research, Carmel, California, 1981.

Nancy S. Ling, , Don Yeoh, Keith L. Klein, Phillip K Ng, Dani Hackner; Implementation of Half-Goal Initiation Rate of TPN to Reduce Incidence of Hyperglycemia; Abstract presented at ASPEN, February 2004, Poster Presentation, Southern California Chapter American College of Physicians, Tolvaptan in Hyponatremia

of Cirrhosis, 2017

MILITARY SERVICE:

Commissioned Officer, US. Public Health Service, Honorable Discharge 1974

Served in Coast Guard and research station of National Institutes of Health, Honolulu Heart Study and Japan-Hawaii Cancer Study 1972-1974

Inactive Reserve, United States Coast Guard, 1974-Present

SOCIETIES:

Fellow, American Society of Nephrology

Fellow, American College of Physicians

HOSPITAL AFFILIATIONS

UCLA Center for Health Sciences 1978-present

Cedars Sinai Medical Center 1978-present

Saint Johns Hospital and Health Center 1982-1996

INTERESTS

Raising two adult daughters, one granddaughter, woodworking, welding, fishing, boating-both design, construction and cruising, rescuing and raising wolves, and Information Technology.

PUBLICATIONS

Research Papers, Peer Reviewed

1. G. Globber, K. L. Klein, J. Moore and B. Abba: Bowel transit times in two populations experiencing similar colon cancer risks. *Lancet* 2:80-81, 1974.
2. G. Rhoads, K. L. Klein, K. Yano and H. Preston: The ear lobe crease-a sign of obesity in middle aged Japanese men. *Hawaii Med. J.* 36:74-77, 1977.
3. R. M. Friedler, W.J. Kreusser, C. Descoudres, K. L. Klein, K. Kurokawa and S.G. Massry: Effect of renal vasodilatation on renal cyclic AMP (abstract) *Clin. Res.* 25: 165A, 1977.
4. L.R. O'Connor, K. L. Klein, and J.L. Bethune: Hyperphosphatemia in lactic acidosis. *N. Engl. J. Med.* 197:707-709, 1977.
5. O'Connor LR, Klein KL, Bethune JE: Effect of hypophosphatemia on myocardial performance in man. *N Engl J Med* 1977; 297: 707-709 .
6. R. M. Friedler, W.J. Kreusser, C. Descoudres K. L. Klein and S.G. Massry: Effect of renal vasodilation on renal cyclic AMP. *Mineral and Electrolyte Metabolism.* 1:216-224, 1978.
7. R. M. Friedler, K. L. Klein, S. Tuma and H. Leibovici: Renal cyclic AMP after volume expansion during vena cava constriction. *Clin. Res.* 27:92A, 1979.
8. K. L. Klein, M.S. Wang, S. Torikai, and K. Kurokawa: Substrate decarboxylation in isolated proximal convoluted tubules and thick medullary ascending loop of Henle of rat kidney. *Int. J. Biochem.* 1979. Presented at 5th International Symposium on Biochemical Aspects of Kidney Function, Oxford, England. September 16-19, 1979.
9. K. Kurokawa, F. J. Silverblatt, K. L. Klein, M.S. Wang and R. L. Lerner: Binding of ¹²⁵I-Insulin to the isolated glomeruli of rat kidney. *J. Clin. Investigation* 64:1357-1364, 1979.

10. K. L. Klein, M.S.Wang, S. Torikai, W. Davidson, and K. Kurokawa: Substrate Oxidation by defined single nephron segments of rat kidney. In *Biochemical Aspects of Renal Function*. Eds B.D. Ross and W.G. Guder (Pergamon Press Pub.) 1980.
11. Kurokawa, K. F. J. Silverblatt, and K. L. Klein: Insulin Receptors of rat glomeruli. In: *Biochemical Aspects of Renal Function*. Eds B.D. Ross and W.G. Guder (Pergamon Press Pub.) 1980.
12. K. L. Klein, M.S.Wang, S. Torikai, W. Davidson, and K. Kurokawa: Substrate Oxidation by the proximal convoluted tubules, cortical and medullary-thick ascending limb of Henle's loop in rats. *Kidney Int.* 20:29-35, 1981.
13. Torikai, S. K. L. Klein, and K. Kurokawa: Effects of parathyroid hormone, calcitonin, and vasopressin on adenylate cyclase and cyclic AMP levels of cortical thick ascending limb of Henle's loop of rat kidney. *Kidney Int.* 16:841, (1979)
14. W. Davidson, K. L. Klein, M.S. Wang, S. Torikai, L. Fine, and K. Kurokawa: Instantaneous and continuous measurement of ¹⁴C labelled substrate oxidation to ¹⁴C¹⁴O₂ by isolated segments of the nephron: An ionization chamber method. *Kidney Int.* 16:865, 1979. (abstract).
15. . Torikai, S. K. L. Klein, and K. Kurokawa: Effects of parathyroid hormone, calcitonin, and vasopressin on adenylate cyclase -cyclic AMP systems in Cortical Thick Ascending Limb of Henle's Loop of Rats (abstract). *Kidney Int.* 16:841, (1979).
16. . K. L. Klein, M. S. Wang, S. Torikai, W. Davidson, and K. Kurokawa: Intranephron Metabolic Heterogeneity: Oxidation of Metabolic Substrates by Rat Proximal Convolution, Medullary and Cortical Thick Ascending Limb of Henle's Loop. *Clin. Res.* 28:87A, 1980.
17. Kurokawa, K. F. J. Silverblatt, and K. L. Klein: Insulin Receptors of Isolated Glomeruli. *Int. J. Biochem.* 12:185-190, 1980.
18. K. L. Klein, M.S. Wang, S. Torikai, W. Davidson, K. Kurokawa: Substrate Oxidation by defined single nephron segments of rat kidney. *Int. J. Biochem.* 12,5354, 1980.
19. 24. Friedler, R. M., K. L. Klein, S. Tuma, H. Leibovici, and S.G. Massry: Effect of Volume Expansion on Nephrogenous Cyclic AMP during Vena Cava Constriction in the Dog. *Nephron* 26:73-77, 1980.

20. Davidson, W.D., K. L. Klein, K. Kurokawa and A. H. Soll. Instantaneous and Continuous Measurement of ¹⁴C-labelled Substrate Oxidation to ¹⁴CO₂ by Minute Tissue Specimens: An Ionization Chamber Method. *Metabolism* 30:596-600, 1981.
21. Y. Katoh; K.L. Klein, R.A. Kaplan, W.G. Sanborn and K. Kurokawa: Parathyroid Hormone has a direct positive inotropic action in the rat. *Endocrinology* 109:2232-2254, 1981.
22. K.L. Klein. M.S. Wang, L. Greenwald and K. Kurokawa: Glucose metabolism in medullary thick ascending loop of Henle of rat kidney. Studies with ¹⁴C and ³H glucose. Eight International Congress of Nephrology, Athens, Greece. June 7-12,1981.
23. K.L. Klein, M. S. Wang and L. Greenwald and K. Kurokawa: Glycolysis is the major pathway of glucose metabolism in rat medullary thick ascending loop of Henle (MTAL: Studies with ¹⁴C and ³H-glucose. *Am. Federation for Clinical Research*, 1981.
24. K. Kurokawa, S. Torikai, M. S. Wang, K.L. Klein, H. Kawashima: Metabolic Heterogeneity of the Nephron. Editorial, *Mineral Electrolyte Metab.* 7:224-236, 1982.
25. E. S. Ricanati, S. M. Ott, K.L. Klein, M. Lam, N. L. Miller, A. C. Alfrey, E. Slatopolsky, D. J. Sherrard, J. W. Coburn: Aluminum Related Bone Disease Arising from Dialysate Aluminum: Evolution Following Water Purification
26. B.S. Levine, D. Yamaguchi, and K. L. Klein: Disorders of Calcium, Phosphorus, and Magnesium. In: *Current Nephrology*, Vol.X IV, Ed. by H. Gonick, Houghton Mifflin Pub. 1991
27. K.L. Klein and S. F. Franklin: Acute renal failure: fluid-electrolyte and acid-base complications. *Clinical Disorders of Fluid and Electrolyte Metabolism*, 5th Ed.,, Eds M. H. Maxwell, C. Kleeman and R. Narins
28. K.L. Klein, Mark Pimental, MD, Lisa Radtke, RPh, Stephanie Sanders, MS, RD, CNSD, Graham Woolf, MD, Don Yeoh, RN: The MST/Nutrition Manual, Cedars Sinai Medical Center 1999.
29. Darbepoetin alfa Effectively Treats Anemia in Patients with Chronic Kidney Disease With De Novo Every-other week Administration.; participant in research trials. Corresponding author: Robert D. Toto; Department of Internal Medicine, Division of Nephrology, Univ. of Texas Southwestern Medical School, Dallas, Tx 75390; American J Kidney Disease, August 21, 2003

Chapters

1. S.G. Massry and K. L. Klein: Effect of bile duct ligation on renal function. *Proceedings of Symposium on Kidney in Liver Disease*, November 12-13, 1976, Miami, Florida, Ed. M. Epstein, Plenum Publishing Company.
2. . K. L. Klein and K. Kurokawa: Metabolic and endocrine alterations in end-stage renal failure. *Postgraduate Medicine* 64:99-108, 1978.
3. Kurokawa, K., K. L. Klein, and D. L. Hartenbower: Disorders of calcium and phosphorus metabolism. In: *Current Nephrology*, Vol. III, Ed. by H. Gonick, Houghton Mifflin Pub. 1979.
4. K. L. Klein, J. Kraut, U. Gafter, and K. Kurokawa: Metabolism and Action of Parathyroid Hormones, Hypercalcemia Disorders, and Nephrolithiasis. In *Current Nephrology*, Vol IV. Ed. by J. Gonick, Houghton Mifflin Publishers.
5. K. Kurokawa, K.L. Klein, M. S. Wang and L. Greenwald: Oxidation of glutamine, glutamate and alpha-ketoglutarate by proximal convoluted tubules and thick ascending loops of Henle of rat kidney. Substrate interactions. *Second International Workshop on Ammoniogenesis*, Athens, Greece. June 7-12,1981.
6. . K.L. Klein: Diabetic Nephropathy: A major cause of chronic renal failure. *The Kidney: Diagnosis and Management*, Eds N. S. Bricker and M. S. Kirschenbaum, John Wiley & Sons, Inc., 1984.
7. K.L. Klein and M. H. Maxwell: Renal Osteodystrophy. *Orthopedic Clinics of North America* 15:687-695,1984
8. 35. K.L. Klein and S. F. Franklin: Acute renal failure: fluid-electrolyte and acid-base complications. *Clinical Disorders of Fluid and Electrolyte Metabolism*, 4th Ed., pp967-984, Eds M. H. Maxwell, C. Kleeman and R. Narins.