Stanford



Christine Kee Liu

Associate Professor of Medicine (Primary Care and Population Health)

Medicine - Primary Care and Population Health

NIH Biosketch available Online

Bio

BIO

Dr. Liu and her research program are dedicated to improving the lives of older adults with kidney disease. Currently her research focuses on mobility, which is the ability to move safely and reliably from one place to another. In older adults, poor mobility strongly predicts future disability and death. Retaining mobility has been cited by older adults as fundamental to quality to life; yet many older persons with kidney disease, especially those with late stage chronic kidney disease or outright kidney failure, have trouble just walking across the room or transferring to a chair. Dually trained in geriatric medicine and epidemiology, Dr. Liu also has significant expertise in older adult clinical trials, including safety trials of novel agents as well as intervention studies to reduce infections in older populations.

ACADEMIC APPOINTMENTS

- Associate Prof-Univ Med Line, Medicine - Primary Care and Population Health

BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- Long-Term Care Reopening Workgroup, Executive Office of Health and Human Services, Commonwealth of Massachusetts (2020 - 2020)
- Associate Editor, BMC Nephrology (2019 - present)

PROFESSIONAL EDUCATION

- Fellow, Boston University School of Medicine , Geriatric Medicine (2011)
- MS, Boston University School of Public Health , Epidemiology (2011)
- Resident, Boston University School of Medicine , Internal Medicine/Primary Care (2008)
- MD, Temple University School of Medicine , Medicine (2005)
- BA, Brown University , Biology (1996)

Research & Scholarship

CLINICAL TRIALS

- Virtually Supervised Exercise for Kidney Transplant Candidates, Not Specified

Publications

PUBLICATIONS

- **Using Natural Language Processing to Improve Fall Documentation in VA Nursing Home Residents.** *Journal of the American Medical Directors Association*
  Graham, L. A., Liu, X., Jing, B., Lee, S. J., Steinman, M. A., Liu, C. K., Dave, C. V., Li, Y., Fung, K., Odden, M. C.

2026: 106189

- **Frailty and outcomes in VA long-term care residents.** *The journals of gerontology. Series A, Biological sciences and medical sciences*
  Li, Y., Steinman, M. A., Lee, S. J., Graham, L. A., Jing, B., Dave, C., Liu, X., Liu, C. K., Fung, K. Z., Odden, M. C.
  2026; 81 (2)

- **Interdisciplinary Care for Geriatric Syndromes in Chronic Kidney Disease: A Qualitative Study.** *Clinical journal of the American Society of Nephrology : CJASN*
  Subash, A., Levinson, M., Bonnet, K., Hall, R. K., Saeed, F., Liu, C. K., Chatterjee, T. S., Mixon, A. S., Gould, E. R., Horst, S. N., Umeukeje, E. M., Burdick, R. A., Taylor, et al
  2025

- **Diagnosis and Management of Dementia for the Nephrology Clinician.** *American journal of kidney diseases : the official journal of the National Kidney Foundation*
  Liu, C. K., Cheung, K. L., Tamura, M. K.
  2025

- **Estimating the Benefit of Transplant Over Dialysis in Candidates Over 55 Years.** *Kidney360*
  Stedman, M. R., Ahearn, P. C., Liu, C. K., Chertow, G. M., Tan, J. C.
  2025

- **Antihypertensive Deprescribing and Functional Status in VA Long-Term Care Residents With and Without Dementia.** *Journal of the American Geriatrics Society*
  Liu, X., Graham, L. A., Jing, B., Dave, C. V., Li, Y., Kurella Tamura, M., Steinman, M. A., Lee, S. J., Liu, C. K., Abdel Magid, H. S., Manja, V., Fung, K., Odden, et al
  2025

- **Establishing Research Priorities in Geriatric Nephrology: A Delphi Study of Clinicians and Researchers.** *American journal of kidney diseases : the official journal of the National Kidney Foundation*
  Butler, C. R., Nalatwad, A., Cheung, K. L., Hannan, M. F., Hladek, M. D., Johnston, E. A., Kimberly, L., Liu, C. K., Nair, D., Ozdemir, S., Saeed, F., Scherer, J. S., Segev, et al
  2024

- **Evaluation Of Physical Function Using Self-reported Vs Objective Measures In Older Adults Receiving Hemodialysis**
  Balantrapu, S., Bryan, R., Alfaro, A., Myers, J., Liu, C. K.
  LIPPINCOTT WILLIAMS & WILKINS.2024: 835-836

- **Deprescribing of Antihypertensive Medications and Cognitive Function in Nursing Home Residents.** *JAMA internal medicine*
  Jing, B., Liu, X., Graham, L. A., Dave, C. V., Li, Y., Fung, K., Liu, C. K., Abdel Magid, H. S., Growdon, M. E., Deardorff, W. J., Boscardin, W. J., Lee, S. J., Steinman, et al
  2024

- **Physical function and mortality in older adults with chronic kidney disease.** *Clinical journal of the American Society of Nephrology : CJASN*
  Liu, C. K., Parvathinathan, G., Stedman, M. R., Seliger, S. L., Weiner, D. E., Tamura, M. K.
  2024

- **Complex Patterns of Antihypertensive Treatment Changes in Long-Term Care Residents.** *Journal of the American Medical Directors Association*
  Liu, X., Jing, B., Graham, L. A., Liu, C. K., Lee, S. J., Steinman, M. A., Dave, C. V., Manja, V., Li, Y., Fung, K., Odden, M. C.
  2024: 105119

- **Frailty in Kidney Disease: A Comprehensive Review to Advance Its Clinical and Research Applications.** *American journal of kidney diseases : the official journal of the National Kidney Foundation*
  Nair, D., Liu, C. K., Raslan, R., McAdams-DeMarco, M., Hall, R. K.
  2024

- **Going From Point A to Point B: Changes in the Mobility of Older Persons With CKD.** *American journal of kidney diseases : the official journal of the National Kidney Foundation*
  Alfaro, A. J., Liu, C. K.
  2024

- **Effects of residential socioeconomic polarization on high blood pressure among nursing home residents.** *Health & place*
  Abdel Magid, H. S., Jaros, S., Li, Y., Steinman, M. A., Lee, S., Peralta, C., Jing, B., Fung, K., Liu, C. K., Liu, X., Graham, L. A., Odden, M. C.
  2024; 87: 103243

- **Ripple Effects: CKD and Physical Function.** *Kidney medicine*
  Alfaro, A. J., Liu, C. K.
  2024; 6 (2): 100786

- **Statins, Mortality, and Major Adverse Cardiovascular Events Among US Veterans With Chronic Kidney Disease.** *JAMA network open*
  Barayev, O., Hawley, C. E., Wellman, H., Gerlovin, H., Hsu, W., Paik, J. M., Mandel, E. I., Liu, C. K., Djoussé, L., Gaziano, J. M., Gagnon, D. R., Orkaby, A. R.
  2023; 6 (12): e2346373

- **FRAILTY AND COGNITIVE IMPAIRMENT: RESULTS FROM A DIVERSE SAMPLE OF OLDER PERSONS RECEIVING HEMODIALYSIS**
  Alfaro, A., Bryan, R., Balantrapu, S., Liu, C.
  OXFORD UNIV PRESS.2023: 1045

- **Structured Moderate Exercise and Biomarkers of Kidney Health in Sedentary Older Adults: The Lifestyle Interventions and Independence for Elders Randomized Clinical Trial.** *Kidney medicine*
  Sheshadri, A., Lai, M., Hsu, F. C., Bauer, S. R., Chen, S. H., Tse, W., Jotwani, V., Tranah, G. J., Lai, J. C., Hallan, S., Fielding, R. A., Liu, C., Ix, et al
  2023; 5 (11): 100721

- **Stakeholder Perspectives on Factors Related to Deprescribing Potentially Inappropriate Medications in Older Adults Receiving Dialysis.** *Clinical journal of the American Society of Nephrology : CJASN*
  Hall, R. K., Rutledge, J., Lucas, A., Liu, C. K., St Clair Russell, J., St Peter, W., Fish, L. J., Colón-Emeric, C.
  2023

- **Immunogenicity of adjuvanted versus high-dose inactivated influenza vaccines in older adults: a randomized clinical trial.** *Immunity & ageing : I & A*
  Schmader, K. E., Liu, C. K., Flannery, B., Rountree, W., Auerbach, H., Barnett, E. D., Schlaudecker, E. P., Todd, C. A., Poniewierski, M., Staat, M. A., Harrington, T., Li, R., Broder, et al
  2023; 20 (1): 30

- **Decision-making about dialysis: Beyond just dialysis or death.** *Journal of the American Geriatrics Society*
  Liu, C. K., Taffel, L., Russell, M., Wong, S. P., Russell, H., Vig, E. K.
  2023

- **Geriatric syndromes and health-related quality of life in older adults with chronic kidney disease.** *Kidney360*
  Liu, C. K., Miao, S., Giffuni, J., Katzel, L. I., Fielding, R. A., Seliger, S. L., Weiner, D. E.
  2023

- **Effect of Long-term Exercise Training on Physical Performance and Cardiorespiratory Function in Adults With CKD: A Randomized Controlled Trial.** *American journal of kidney diseases : the official journal of the National Kidney Foundation*
  Weiner, D. E., Liu, C. K., Miao, S., Fielding, R., Katzel, L. I., Giffuni, J., Well, A., Seliger, S. L.
  2022

- **Mobility and What Matters: Moving Kidney Care Toward the 4Ms of an Age-Friendly Health System.** *Kidney medicine*
  Liu, C. K.
  2022; 4 (6): 100481

- **Pilot study of autologous fecal microbiota transplants in nursing home residents: Feasibility and safety.** *Contemporary clinical trials communications*
  Liu, C. K., Seo, J., Pravodelov, V., Frazier, S., Guy, M., Concilio, K., Lau-Ng, R., Brandeis, G., Watson, J., van der Velde, J., Olesen, S. W., Budree, S., Njenga, et al
  2022; 27: 100906

- **The Impact of Care Partners on the Mobility of Older Adults Receiving Hemodialysis.** *Kidney medicine*
  Liu, C. K., Seo, J., Lee, D., Wright, K., Tamura, M. K., Moye, J., Weiner, D. E., Bean, J. F.
  2022; 4 (6): 100473

- **Trends in blood pressure diagnosis, treatment, and control among VA nursing home residents, 2007-2018.** *Journal of the American Geriatrics Society*
  Odden, M. C., Li, Y., Graham, L. A., Steinman, M. A., Marcum, Z. A., Liu, C. K., Jing, B., Fung, K. Z., Peralta, C. A., Lee, S. J.
  2022
- **Effect of Structured, Moderate Exercise on Kidney Function Decline in Sedentary Older Adults: An Ancillary Analysis of the LIFE Study Randomized Clinical Trial.** *JAMA internal medicine*
  Shlipak, M. G., Sheshadri, A., Hsu, F., Chen, S., Jotwani, V., Tranah, G., Fielding, R. A., Liu, C. K., Ix, J., Coca, S. G., LIFE Investigators, Pahor, M., Guralnik, J. M., et al
  2022
- **Conservative Care for Kidney Failure-The Other Side of the Coin.** *JAMA network open*
  Liu, C. K., Kurella Tamura, M.
  2022; 5 (3): e222252
- **Noncancerous Genitourinary Conditions as a Public Health Priority: Conceptualizing the Hidden Burden.** *Urology*
  Brady, S. S., Bavendam, T. G., Bradway, C. K., Conroy, B., Dowling-Castronovo, A., Epperson, C. N., Hijaz, A. K., Hsi, R. S., Huss, K., Kim, M., Lazar, J., Lee, R. K., Liu, et al
  2021
- **Mobility in Older Adults Receiving Maintenance Hemodialysis: A Qualitative Study.** *American journal of kidney diseases : the official journal of the National Kidney Foundation*
  Liu, C. K., Seo, J., Lee, D., Wright, K., Tamura, M. K., Moye, J. A., Bean, J. F., Weiner, D. E.
  2021
- **Safety, Reactogenicity, and Health-Related Quality of Life After Trivalent Adjuvanted vs Trivalent High-Dose Inactivated Influenza Vaccines in Older Adults: A Randomized Clinical Trial.** *JAMA network open*
  Schmader, K. E., Liu, C. K., Harrington, T., Rountree, W., Auerbach, H., Walter, E. B., Barnett, E. D., Schlaudecker, E. P., Todd, C. A., Poniewierski, M., Staat, M. A., Wodi, P., Broder, et al
  2021; 4 (1): e2031266
- **COVID-19 Infection Risk Among Hemodialysis Patients in Long-term Care Facilities.** *Kidney medicine*
  Liu, C. K., Ghai, S., Waikar, S. S., Weiner, D. E.
  2020; 2 (6): 810–11
- **Muscle strength is increased in mice that are colonized with microbiota from high-functioning older adults.** *Experimental gerontology*
  Fielding, R. A., Reeves, A. R., Jasuja, R., Liu, C., Barrett, B. B., Lustgarten, M. S.
  2019; 127: 110722
- **Effect of Losartan and Fish Oil on Plasma IL-6 and Mobility in Older Persons. The ENRGISE Pilot Randomized Clinical Trial.** *The journals of gerontology. Series A, Biological sciences and medical sciences*
  Pahor, M., Anton, S. D., Beavers, D. P., Cauley, J. A., Fielding, R. A., Kritchevsky, S. B., Leeuwenburgh, C., Lewis, K. H., Liu, C. K., Lovato, L. C., Lu, J., Manini, T. M., McDermott, et al
  2019; 74 (10): 1612-1619
- **Progressive Resistance Training Improves Torque Capacity and Strength in Mobility-Limited Older Adults.** *The journals of gerontology. Series A, Biological sciences and medical sciences*
  Englund, D. A., Price, L. L., Grosicki, G. J., Iwai, M., Kashiwa, M., Liu, C., Reid, K. F., Fielding, R. A.
  2019; 74 (8): 1316-1321
- **Translating the Lifestyle Interventions and Independence for Elders Clinical Trial to Older Adults in a Real-World Community-Based Setting.** *The journals of gerontology. Series A, Biological sciences and medical sciences*
  Reid, K. F., Laussen, J., Bhatia, K., Englund, D. A., Kirn, D. R., Price, L. L., Manini, T. M., Liu, C. K., Kowaleski, C., Fielding, R. A.
  2019; 74 (6): 924-928
- **Effect of 24-month physical activity on cognitive frailty and the role of inflammation: the LIFE randomized clinical trial** *BMC MEDICINE*
  Liu, Z., Hsu, F., Trombetti, A., King, A. C., Liu, C. K., Manini, T. M., Fielding, R. A., Pahor, M., Newman, A. B., Kritchevsky, S., Gill, T. M., LIFE Study Investigators
  2018; 16
- **Evidence-based nutritional and pharmacological interventions targeting chronic low-grade inflammation in middle-age and older adults: A systematic review and meta-analysis.** *Ageing research reviews*

Custodero, C., Mankowski, R. T., Lee, S. A., Chen, Z., Wu, S., Manini, T. M., Hincapie Echeverri, J., Sabbà, C., Beavers, D. P., Cauley, J. A., Espeland, M. A., Fielding, R. A., Kritchevsky, et al

2018; 46: 42-59

- **A Comparison of Self-report Indices of Major Mobility Disability to Failure on the 400-m Walk Test: The LIFE Study** *JOURNALS OF GERONTOLOGY SERIES A-BIOLOGICAL SCIENCES AND MEDICAL SCIENCES*

  Chen, H., Rejeski, W., Gill, T. M., Guralnik, J., King, A. C., Newman, A., Blair, S. N., Conroy, D., Liu, C., Manini, T. M., Pahor, M., Ambrosius, W. T., Miller, et al

  2018; 73 (4): 513–18

- **Effect of Physical Activity on Frailty Secondary Analysis of a Randomized Controlled Trial** *ANNALS OF INTERNAL MEDICINE*

  Trombetti, A., Hars, M., Hsu, F., Reid, K. F., Church, T. S., Gill, T. M., King, A. C., Liu, C. K., Manini, T. M., McDermott, M. M., Newman, A. B., Rejeski, W., Guralnik, et al

  2018; 168 (5): 309-+

- **ENabling Reduction of Low-grade Inflammation in SEniors Pilot Study: Concept, Rationale, and Design.** *Journal of the American Geriatrics Society*

  Manini, T. M., Anton, S. D., Beavers, D. P., Cauley, J. A., Espeland, M. A., Fielding, R. A., Kritchevsky, S. B., Leeuwenburgh, C., Lewis, K. H., Liu, C., McDermott, M. M., Miller, M. E., Tracy, et al

  2017; 65 (9): 1961-1968

- **Exercise's effect on mobility disability in older adults with and without obesity: The LIFE study randomized clinical trial** *OBESITY*

  Kritchevsky, S. B., Lovato, L., Handing, E. P., Blair, S., Botoseneanu, A., Guralnik, J. M., Liu, C., King, A., Marsh, A. P., Pahor, M., Rejeski, W., Spring, B., Manini, et al

  2017; 25 (7): 1199–1205

- **The Effect of Chronic Kidney Disease on a Physical Activity Intervention: Impact on Physical Function, Adherence, and Safety.** *Journal of clinical nephrology and renal care*

  Liu, C. K., Milton, J., Hsu, F. C., Beavers, K. M., Yank, V., Church, T., Shegog, J. D., Kashaf, S., Nayfield, S., Newman, A., Stafford, R. S., Nicklas, B., Weiner, et al

  2017; 3 (1)

- **Effect of a Long-Term Physical Activity Intervention on Resting Pulse Rate in Older Persons: Results from the Lifestyle Interventions and Independence for Elders Study.** *Journal of the American Geriatrics Society*

  Ó Hartaigh, B., Lovato, L. C., Pahor, M., Buford, T. W., Dodson, J. A., Forman, D. E., Buman, M. P., Demons, J. L., Santanasto, A. J., Liu, C., Miller, M. E., McDermott, M. M., Gill, et al

  2016; 64 (12): 2511-2516

- **Effect of Structured Physical Activity on Respiratory Outcomes in Sedentary Elderly Adults with Mobility Limitations.** *Journal of the American Geriatrics Society*

  Vaz Fragoso, C. A., Beavers, D. P., Anton, S. D., Liu, C. K., McDermott, M. M., Newman, A. B., Pahor, M., Stafford, R. S., Gill, T. M.

  2016; 64 (3): 501-509

- **Biomarkers of oxidative stress are associated with frailty: the Framingham Offspring Study.** *Age (Dordrecht, Netherlands)*

  Liu, C. K., Lyass, A., Larson, M. G., Massaro, J. M., Wang, N., D'Agostino, R. B., Benjamin, E. J., Murabito, J. M.

  2016; 38 (1): 1

- **Sedentary time is associated with the metabolic syndrome in older adults with mobility limitations - The LIFE Study** *EXPERIMENTAL GERONTOLOGY*

  Mankowski, R. T., Aubertin-Leheudre, M., Beavers, D. P., Botoseneanu, A., Buford, T. W., Church, T., Glynn, N. W., King, A. C., Liu, C., Manini, T. M., Marsh, A. P., McDermott, M., Nocera, et al

  2015; 70: 32-36

- **Effect of Structured Physical Activity on Sleep-Wake Behaviors in Sedentary Elderly Adults with Mobility Limitations.** *Journal of the American Geriatrics Society*

  Vaz Fragoso, C. A., Miller, M. E., King, A. C., Kritchevsky, S. B., Liu, C. K., Myers, V. H., Nadkarni, N. K., Pahor, M., Spring, B. J., Gill, T. M.

  2015; 63 (7): 1381-1390

- **The Vitality, Independence, and Vigor in the Elderly 2 Study (VIVE2): Design and methods.** *Contemporary clinical trials*

  Kirn, D. R., Koochek, A., Reid, K. F., von Berens, Å., Travison, T. G., Folta, S., Sacheck, J., Nelson, M., Liu, C., Phillips, E., Åberg, A. C., Nydahl, M., Gustafsson, et al

  2015; 43: 164-71

- **Combined Reduced Forced Expiratory Volume in 1 Second (FEV1) and Peripheral Artery Disease in Sedentary Elders With Functional Limitations** *JOURNAL OF THE AMERICAN MEDICAL DIRECTORS ASSOCIATION*
  Fragoso, C. A., Hsu, F., Brinkley, T., Church, T., Liu, C. K., Manini, T., Newman, A. B., Stafford, R. S., McDermott, M. M., Gill, T. M.
  2014; 15 (9): 665-670

- **Effect of Structured Physical Activity on Prevention of Major Mobility Disability in Older Adults The LIFE Study Randomized Clinical Trial** *JAMA-JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION*
  Pahor, M., Guralnik, J. M., Ambrosius, W. T., Blair, S., Bonds, D. E., Church, T. S., Espeland, M. A., Fielding, R. A., Gill, T. M., Groessl, E. J., King, A. C., Kritchevsky, S. B., Manini, et al
  2014; 311 (23): 2387-2396

- **Respiratory Impairment and Dyspnea and Their Associations with Physical Inactivity and Mobility in Sedentary Community-Dwelling Older Persons** *JOURNAL OF THE AMERICAN GERIATRICS SOCIETY*
  Fragoso, C. A., Beavers, D. P., Hankinson, J. L., Flynn, G., Berra, K., Kritchevsky, S. B., Liu, C. K., McDermott, M., Manini, T. M., Rejeski, W. J., Gill, T. M.
  2014; 62 (4): 622-628

- **Chronic kidney disease defined by cystatin C predicts mobility disability and changes in gait speed: the Framingham Offspring Study.** *The journals of gerontology. Series A, Biological sciences and medical sciences*
  Liu, C. K., Lyass, A., Massaro, J. M., D'Agostino, R. B., Fox, C. S., Murabito, J. M.
  2014; 69 (3): 301-7

- **The impact of sarcopenia on a physical activity intervention: the Lifestyle Interventions and Independence for Elders Pilot Study (LIFE-P).** *The journal of nutrition, health & aging*
  Liu, C. K., Leng, X., Hsu, F. C., Kritchevsky, S. B., Ding, J., Earnest, C. P., Ferrucci, L., Goodpaster, B. H., Guralnik, J. M., Lenchik, L., Pahor, M., Fielding, R. A.
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  Wei, G., Liu, C. K., Atwood, W. J.
  2000; 6 (2): 127-36

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  Liu, C. K., Wei, G., Atwood, W. J.
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- **The human polyomavirus, JCV, does not share receptor specificity with SV40 on human glial cells.** *Journal of neurovirology*
  Liu, C. K., Hope, A. P., Atwood, W. J.
  1998; 4 (1): 49-58