Stanford

N. Lance Downing

Clinical Assistant Professor, Medicine

CLINICAL OFFICE (PRIMARY)

- **Interactive Wellness**
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Bio

BIO

I am board-certified internal medicine and clinical informatics. I am a primary care physician and teaching hospitalist. I have published work in the New England Journal of Medicine, Health Affairs, Annals of Internal Medicine, and the Journal of the American Medical Informatics Association. My primary focus throughout my career has been to deliver personalized and compassionate care that incorporates the latest advancements in medical science. I aim to help all of my patients maximize their healthspan and age with the best quality of life possible.

CLINICAL FOCUS

- Internal Medicine
- Primary Care

ACADEMIC APPOINTMENTS

- Clinical Assistant Professor, Medicine
- Member, Cardiovascular Institute

ADMINISTRATIVE APPOINTMENTS

- Medical Informatics Director, Stanford Health Care, (2017-2019)
- Program Director, Partnership in AI-assisted Care (PAC, Clinical Effectiveness Research Center (CERC), (2017-2020)

PROFESSIONAL EDUCATION

- Fellowship: Stanford Hospitals and Clinics (2016) CA
- Residency: Stanford University Internal Medicine Residency (2014) CA
- Board Certification: Clinical Informatics, American Board of Preventive Medicine (2017)
- Medical Education: Case Western Reserve School of Medicine (2011) OH
- Board Certification: Internal Medicine, American Board of Internal Medicine (2014)

LINKS

- My practice site: https://www.interactivewellness.com/
- Heal AI site: https://heal-ai.stanford.edu/

Research & Scholarship

CLINICAL TRIALS

- Study of an Electronic Health Record-embedded Severe Sepsis Early Warning Alert, Not Recruiting
- Virtual Hypertension Management Pilot, Not Recruiting

Teaching

GRADUATE AND FELLOWSHIP PROGRAM AFFILIATIONS

- Clinical Informatics (Fellowship Program)

Publications

PUBLICATIONS

- **User-centred design for machine learning in health care: a case study from care management.** *BMJ health & care informatics*
  Seneviratne, M. G., Li, R. C., Schreier, M., Lopez-Martinez, D., Patel, B. S., Yakubovich, A., Kemp, J. B., Loreaux, E., Gamble, P., El-Khoury, K., Vardoulakis, L., Wong, D., Desai, et al
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- **Assessing the impact of the COVID-19 pandemic on clinician ambulatory electronic health record use.** *Journal of the American Medical Informatics Association : JAMIA*
  Holmgren, A. J., Downing, N. L., Tang, M., Sharp, C., Longhurst, C., Huckman, R. S.
  2021
- **Differences in Total and After-hours Electronic Health Record Time Across Ambulatory Specialties.** *JAMA internal medicine*
  Rotenstein, L. S., Holmgren, A. J., Downing, N. L., Bates, D. W.
  2021
- **Technology-Enabled Consumer Engagement: Promising Practices At Four Health Care Delivery Organizations.** *Health affairs (Project Hope)*
  Tai-Seale, M., Downing, N. L., Jones, V. G., Milani, R. V., Zhao, B., Clay, B., Sharp, C. D., Chan, A. S., Longhurst, C. A.
  2019; 38 (3): 383–90
- **Improving palliative care with deep learning.** *BMC medical informatics and decision making*
  Avati, A., Jung, K., Harman, S., Downing, L., Ng, A., Shah, N. H.
  2018; 18 (Suppl 4): 122
- **Physician Burnout in the Electronic Health Record Era: Are We Ignoring the Real Cause?** *ANNALS OF INTERNAL MEDICINE*
  Downing, N., Bates, D. W., Longhurst, C. A.
  2018; 169 (1): 50-+
- **Bedside Computer Vision - Moving Artificial Intelligence from Driver Assistance to Patient Safety.** *The New England journal of medicine*
  Yeung, S. n., Downing, N. L., Fei-Fei, L. n., Milstein, A. n.
  2018; 378 (14): 1271–73
- **Mitigating Bias in Sepsis Risk Prediction Models: Insights from a Stakeholder-Based Ethical Assessment.** *The American journal of bioethics : AJOB*
  Djiberou Mahamadou, A. J., Trotsyuk, A. A., Downing, N. L., Char, D., Mello, M. M.
  2026; 26 (2): 124-126
- **Standing on FURM Ground: A Framework for Evaluating Fair, Useful, and Reliable AI Models in Health Care Systems** *NEJM CATALYST INNOVATIONS IN CARE DELIVERY*

Callahan, A., McElfresh, D., Banda, J. M., Bunney, G., Char, D., Chen, J., Corbin, C. K., Dash, D., Downing, N. L., Jain, S. S., Kotecha, N., Masterson, J., Mello, et al
2024; 5 (10)

- **Design and Implementation of an Electronic Health Record-Integrated Hypertension Management Application.** *Journal of the American Heart Association*
  Funes Hernandez, M., Babakhanian, M., Chen, T. P., Sarraju, A., Seninger, C., Ravi, V., Azizi, Z., Tooley, J., Chang, T. I., Lu, Y., Downing, N. L., Rodriguez, F., Li, et al
  2024; 13 (2): e030884
- **Hepatitis C Screening in Post-Baby Boomer Generation Americans: One Size Does Not Fit All.** *Mayo Clinic proceedings*
  Sripongpun, P., Udompap, P., Mannalithara, A., Downing, N. L., Vidovszky, A. A., Kwong, A. J., Goel, A., Kwo, P. Y., Kim, W. R.
  2023; 98 (9): 1335-1344
- **Assessing the impact of the COVID-19 pandemic on clinician ambulatory electronic health record use (vol 29, pg 453, 2022)** *JOURNAL OF THE AMERICAN MEDICAL INFORMATICS ASSOCIATION*
  Holmgren, A., Downing, N., Tang, M., Sharp, C., Longhurst, C., Huckman, R. S.
  2022; 29 (4): 749
- **Association between state-level malpractice environment and clinician electronic health record (EHR) time.** *Journal of the American Medical Informatics Association : JAMIA*
  Holmgren, A. J., Rotenstein, L., Downing, N. L., Bates, D. W., Schulman, K.
  2022
- **Targeted Electronic Patient Portal Messaging Increases Hepatitis C Virus Screening in Primary Care: a Randomized Study.** *Journal of general internal medicine*
  Halket, D., Dang, J., Phadke, A., Jayasekera, C., Kim, W. R., Kwo, P., Downing, L., Goel, A.
  2022
- **Instability in clinical risk stratification models using deep learning**
  Lopez-Martinez, D., Yakubovich, A., Seneviratne, M., Lelkes, A. D., Tyagi, A., Kemp, J., Steinberg, E., Downing, N., Li, R. C., Morse, K. E., Shah, N. H., Chen, M.
  edited by Parziale, A., Agrawal, M., Joshi, S., Chen, I. Y., Tang, S., Oala, L., Subbaswamy, A.
  JMLR-JOURNAL MACHINE LEARNING RESEARCH.2022: 552-565
- **Differences in Clinician Electronic Health Record Use Across Adult and Pediatric Primary Care Specialties.** *JAMA network open*
  Rotenstein, L. S., Holmgren, A. J., Downing, N. L., Longhurst, C. A., Bates, D. W.
  2021; 4 (7): e2116375
- **Assessment of electronic health record use between US and non-US health systems (vol 181, pg 251, 2021)** *JAMA INTERNAL MEDICINE*
  Holmgren, A. J., Downing, N. L., Bates, D. W.
  2021; 181 (2): 296
- **Assessment of Electronic Health Record Use Between US and Non-US Health Systems.** *JAMA internal medicine*
  Holmgren, A. J., Downing, N. L., Bates, D. W., Shanafelt, T. D., Milstein, A., Sharp, C. D., Cutler, D. M., Huckman, R. S., Schulman, K. A.
  2020
- **Electronic health record-based clinical decision support alert for severe sepsis: a randomised evaluation** *BMJ QUALITY & SAFETY*
  Downing, N., Rolnick, J., Poole, S. F., Hall, E., Wessels, A. J., Heidenreich, P., Shieh, L.
  2019; 28 (9): 762–68
- **A crisis within an epidemic: critical opioid shortage in US hospitals.** *Postgraduate medical journal*
  Wang, B., Downing, N. L.
  2019
- **Electronic health record-based clinical decision support alert for severe sepsis: a randomised evaluation.** *BMJ quality & safety*
  Downing, N. L., Rolnick, J., Poole, S. F., Hall, E., Wessels, A. J., Heidenreich, P., Shieh, L.
  2019
- **A computer vision system for deep learning-based detection of patient mobilization activities in the ICU.** *NPJ digital medicine*

Yeung, S., Rinaldo, F., Jopling, J., Liu, B., Mehra, R., Downing, N. L., Guo, M., Bianconi, G. M., Alahi, A., Lee, J., Campbell, B., Deru, K., Beninati, et al
2019; 2: 11

- **Physician Burnout in the Electronic Health Record Era RESPONSE** *ANNALS OF INTERNAL MEDICINE*
  Downing, N., Bates, D. W., Longhurst, C. A.
  2019; 170 (3): 216–17
- **Improving palliative care with deep learning**
  Avati, A., Jung, K., Harman, S., Downing, L., Ng, A., Shah, N. H.
  BMC.2018
- **Occupational exposures and asthma prevalence among US farmworkers: National Agricultural Workers Survey, 2003-2014.** *The journal of allergy and clinical immunology. In practice*
  Arroyo, A. J., Robinson, L. B., Downing, N. L., Camargo, C. A.
  2018
- **Health information exchange policies of 11 diverse health systems and the associated impact on volume of exchange.** *Journal of the American Medical Informatics Association*
  Downing, N. L., Adler-Milstein, J., Palma, J. P., Lane, S., Eisenberg, M., Sharp, C., Longhurst, C. A.
  2017; 24 (1): 113-122
- **Improving palliative care with deep learning.** *IEEE International Conference on Bioinformatics and Biomedicine*
  Avati, A., Jung, K., Stephanie, H., Lance, D., Ng, A., Shah, N.
  2017
- **Electronic Health Record-Enabled Research in Children Using the Electronic Health Record for Clinical Discovery.** *Pediatric clinics of North America*
  Sutherland, S. M., Kaelber, D. C., Downing, N. L., Goel, V. V., Longhurst, C. A.
  2016; 63 (2): 251-268
- **Validation of Test Performance and Clinical Time Zero for an Electronic Health Record Embedded Severe Sepsis Alert.** *Applied clinical informatics*
  Rolnick, J., Downing, N. L., Shepard, J., Chu, W., Tam, J., Wessels, A., Li, R., Dietrich, B., Rudy, M., Castaneda, L., Shieh, L.
  2016; 7 (2): 560-572
- **An Exponential Increase in Regional Health Information Exchange With Collaborative Policies and Technologies.** *Studies in health technology and informatics*
  Downing, N. L., Lane, S., Eisenberg, M., Sharp, C., Palma, J., Longhurst, C.
  2015; 216: 931-?
- **An Exponential Increase in Regional Health Information Exchange With Collaborative Policies and Technologies**
  Downing, N., Lane, S., Eisenberg, M., Sharp, C., Palma, J., Longhurst, C., Northern Calif HIE Working Grp
  edited by Sarkar, I. N., Georgiou, A., Marques, P. M.
  IOS PRESS.2015: 931
- **COMPARISON OF EARLY REPOLARIZATION IN INFERIOR AND LATERAL LEADS** *61st Annual Scientific Session and Expo of the American-College-of-Cardiology (ACC)/Conference on ACC-i2 with TCT*
  Downing, N. L., Abhimanyu, Uberoi, M., Sallam, K., Sadik, J., Adhikarla, C., Froelicher, V.
  ELSEVIER SCIENCE INC.2012: E1940–E1940
- **In Regards to: Dr. N. Lance Downing et al. (Int J Radiat Oncol Biol Physics 2009;75:1064-1070) IN RESPONSE TO DR. H. CHRISTIANSEN ET AL.** *INTERNATIONAL JOURNAL OF RADIATION ONCOLOGY BIOLOGY PHYSICS*
  Downing, L., Wolden, S., Le, Q.
  2010; 76 (5): 1601
- **COMPARISON OF TREATMENT RESULTS BETWEEN ADULT AND JUVENILE NASOPHARYNGEAL CARCINOMA** *INTERNATIONAL JOURNAL OF RADIATION ONCOLOGY BIOLOGY PHYSICS*
  Downing, N. L., Wolden, S., Wong, P., Petrik, D. W., Hara, W., Le, Q.
  2009; 75 (4): 1064-1070

- **Framing physical activity as a distinct and uniquely valuable behavior independent of weight management: A pilot randomized controlled trial for overweight and obese sedentary persons** *EATING AND WEIGHT DISORDERS-STUDIES ON ANOREXIA BULIMIA AND OBESITY*
  Mascola, A. J., Yiaslas, T. A., Meir, R. L., McGee, S. M., DOWNING, N. L., Beaver, K. M., CRANE, L. B., Agras, S.
  2009; 14 (2-3): E148-E152

- **Prognostic value of age in nasopharyngeal carcinoma patients: A single institution analysis**
  Downing, N. L., Wong, P., Petrik, D., Hara, W., Le, Q.
  AMER SOC CLINICAL ONCOLOGY.2007

- **Towards Vision-Based Smart Hospitals: A System for Tracking and Monitoring Hand Hygiene Compliance** *Proceedings of the 2nd Machine Learning for Healthcare Conference*
  Haque, A., Guo, M., Alahi, A., Luo, Z., Rege, A., Jopling, J., Downing, L., Beninati, W., Singh, A., Platchek, T., Milstein, A., Fei-Fei, L.
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