Stanford

Christian Rose, MD

Assistant Professor of Emergency Medicine (Adult Clinical/Academic)

CLINICAL OFFICE (PRIMARY)

- **Stanford Dept of Emergency Medicine**

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ACADEMIC CONTACT INFORMATION

- **Administrative Contact**

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Bio

BIO

Dr. Christian Rose is a dual-boarded emergency physician and clinical informaticist specializing in the broad intersection of clinical medicine, informatics and innovation - specifically in machine learning, decision support, user-centered design and global health. He is particularly interested in the role of information systems to help to improve patient outcomes while allowing space for the human experience in medicine.

Dr. Rose began studying the effect of technology on the practice of medicine as part of his undergraduate degree in both Physics and Science, Technology and Society. As a medical student at Columbia University, with fantastic mentorship, he pursued numerous informatics projects including identifying alert fatigue in electronic ordering systems, gene discovery using big data and human-centered design for breast cancer decision aids and was awarded a Doris Duke Research Fellowship to pursue these interests as well as awards for his research in neoplastic disease and informatics.

He completed residency training at the University of California, San Francisco (UCSF), where he continued to broaden his scope of informatics interventions with projects ranging from radiology interface design to the development and deployment of a point-of-care decision aid to support the WHO’s Basic Emergency Care initiatives. He was selected as a chief resident in his final year leading to foundational experiences with data acquisition and analysis for continuous quality improvement initiatives.

Dr. Rose has since completed his informatics training at Stanford University where he had the opportunity to study the burgeoning field of deep learning and AI, exploring new methodologies for various clinical use cases and how they may be used to innovate clinical practice. However, it became clear that just because technologies are powerful and continually growing does not mean that they are the right solutions for every problem. Finding product fit and designing for the people that use these systems is ultimately necessary for their successful deployment.

In pursuing his goal of developing and implementing human-centered informatics solutions, Dr. Rose continues his innovative work here a Stanford where he works with an interdisciplinary team to develop and support the advancement of clinical practice through information technologies.

CLINICAL FOCUS

- Emergency Medicine
- Medical Informatics
- Machine Learning
- Humanism
- Decision Support Systems, Clinical
- Innovation
- Global Health

ACADEMIC APPOINTMENTS

- Assistant Professor - University Medical Line, Emergency Medicine
- Member, Wu Tsai Human Performance Alliance

HONORS AND AWARDS

- Donald A.B. Lindberg, MD Award for Excellence in Biomedical Informatics, Columbia University, College of Physicians & Surgeons (2013)
- Miriam Berkman Spotnitz Award for Excellence in Neoplastic Disease Research, Columbia University, College of Physicians & Surgeons (2013)
- Student Research Day Award, Columbia University, College of Physicians & Surgeons (2012)
- Lucy Kellogg English Prize for Excellence in Physics, Vassar College (2007)

BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- Member, Society for Academic Emergency Medicine (2013 - present)
- Member, American College of Emergency Physicians (2013 - present)
- Member, American Medical Informatics Association (2010 - present)

PROFESSIONAL EDUCATION

- Board Certification: Clinical Informatics, American Board of Preventive Medicine (2021)
- Board Certification: Emergency Medicine, American Board of Emergency Medicine (2018)
- Fellowship, Stanford/VA , Medical Informatics (2020)
- Residency, University of California, San Francisco , Emergency Medicine (2017)
- MD, Columbia University, College of Physicians and Surgeons (2013)

COMMUNITY AND INTERNATIONAL WORK

- Basic Emergency Care (BEC)

LINKS

- ChristianRoseMD.com: Http://www.christianrosemd.com

Research & Scholarship

RESEARCH INTERESTS

- Data Sciences
- Professional Development
- Science Education
- Technology and Education

CURRENT RESEARCH AND SCHOLARLY INTERESTS

Uncertainty permeates the practice of emergency medicine. There can be uncertainty in diagnosis: what causes particular symptoms, will they get worse, or what is the risk of a bad outcome? There can also be uncertainty in how to manage that diagnosis: should we watch and wait, attempt treatment A or B, and how do I decide which is best?

Attempting to answer these questions can help bring closure to patients and physicians alike, but at what cost? Testing can be expensive or even dangerous in the case of radiation exposure or stress testing. We all struggle to know more, to be more certain or less ambiguous, but little is known about the impact of things we cannot be certain about.

Ultimately, I want to answer the question: what do you do when you don't know what to do?

Teaching

COURSES

2022-23

- Intuitive Mathematics for Physicians and Bioscientists I: EMED 230 (Aut)

GRADUATE AND FELLOWSHIP PROGRAM AFFILIATIONS

- Clinical Informatics (Fellowship Program)

Publications

PUBLICATIONS

- **Diagnostic Dilemma: ChatGPT Can't Tell You What You Don't Already Know.** *Annals of emergency medicine*
  Preiksaitis, C., Rose, C.
  2024; 83 (3): 286-287
- **A Conference (Missingness in Action) to Address Missingness in Data and AI in Health Care: Qualitative Thematic Analysis.** *Journal of medical Internet research*
  Rose, C., Barber, R., Preiksaitis, C., Kim, I., Mishra, N., Kayser, K., Brown, I., Gisondi, M.
  2023; 25: e49314
- **Opportunities, Challenges, and Future Directions of Generative Artificial Intelligence in Medical Education: Scoping Review.** *JMIR medical education*
  Preiksaitis, C., Rose, C.
  2023; 9: e48785
- **ChatGPT is not the solution to physicians' documentation burden.** *Nature medicine*
  Preiksaitis, C., Sinsky, C. A., Rose, C.
  2023
- **Team is brain: leveraging EHR audit log data for new insights into acute care processes.** *Journal of the American Medical Informatics Association : JAMIA*
  Rose, C., Thombley, R., Noshad, M., Lu, Y., Clancy, H. A., Schlessinger, D., Li, R. C., Liu, V. X., Chen, J. H., Adler-Milstein, J.
  2022
- **Invisibility, cloaksand daggers: Balancing clinical hazards in the age of artificial intelligence.** *Journal of evaluation in clinical practice*
  Rose, C., Chan, T.
  2022
- **Addressing Medicine's Dark Matter.** *Interactive journal of medical research*
  Rose, C., Diaz, M., Diaz, T.
  2022; 11 (2): e37584

- **Signal from the Noise: A Mixed Graphical and Quantitative Process Mining Approach to Evaluate Care Pathways Applied to Emergency Stroke Care.** *Journal of biomedical informatics*
  Noshad, M., Rose, C. C., Chen, J. H.
  1800: 104004

- **Trial by fire: How physicians responding to the COVID-19 pandemic illuminated the need for digital credentials.** *Digital health*
  Brogan, J., Goodier, H., Nijjar, M., Rose, C.
  2022; 8: 20552076221084462

- **Developing machine learning models to personalize care levels among emergency room patients for hospital admission.** *Journal of the American Medical Informatics Association : JAMIA*
  Nguyen, M., Corbin, C. K., Eulalio, T., Ostberg, N. P., Machiraju, G., Marafino, B. J., Baiocchi, M., Rose, C., Chen, J. H.
  2021

- **ALiEM Connect: Large-Scale, Interactive Virtual Residency Programming in Response to COVID-19.** *Academic medicine : journal of the Association of American Medical Colleges*
  Rose, C. C., Haas, M. R., Yilmaz, Y., Alvarez, A., Mott, S. E., Landry, A. I., Gisondi, M. A., Ankel, F., Lin, M., Chan, T. M.
  2021

- **Am I Part of the Cure or Am I Part of the Disease? Keeping Coronavirus Out When a Doctor Comes Home.** *The New England journal of medicine*
  Rose, C.
  2020

- **Context is Key: Using the Audit Log to Capture Contextual Factors Affecting Stroke Care Processes.** *AMIA ... Annual Symposium proceedings. AMIA Symposium*
  Noshad, M., Rose, C. C., Thombley, R., Chiang, J., Corbin, C. K., Nguyen, M., Liu, V. X., Adler-Milstein, J., Chen, J. H.
  2020; 2020: 953–62

- **Thick Data Analytics (TDA): An Iterative and Inductive Framework for Algorithmic Improvement** *The American Statistician*
  Nguyen, M., Eulalio, T., Marafino, B. J., Rose, C., Chen, J. H., Baiocchi, M.
  2024

- **Ghost in the inbox: AI may help alleviate the burden of patient messages.** *Evidence-based nursing*
  Rose, C., Preiksaitis, C.
  2023

- **Mobile application adjunct to the WHO basic emergency care course: a mixed methods study.** *BMJ open*
  Tenner, A. G., Greenberg, A. L., Nicholaus, P., Rose, C. C., Addo, N., Shari, C. R., Friedman, A., George, U. N., Losak, M. J., Mfinanga, J. A., Sawe, H. R.
  2022; 12 (7): e056763

- **Journal update monthly top five.** *Emergency medicine journal : EMJ*
  Saxena, M., Altamirano, J., Rose, C., Bennett, C., Govindarajan, P., Lumba-Brown, A., Hirst, R.
  2022; 39 (7): 561-562

- **Congress Should Provide Student Debt Relief To Frontline Health Care Workers**
  Losak, M., Gowda, V., Rose, C.
  Health Affairs Forefront.
  2022

- **Professional development during a pandemic: a live virtual conference for emergency medicine chief residents.** *CJEM*
  Zaver, F., Battaglioli, N., Rose, C. C., Montrief, T., Alvarez, A., Lin, M.
  2021

- **Reaching further: Lessons from the implementation of the WHO Basic Emergency Care Course Companion App in Tanzania.** *African journal of emergency medicine : Revue africaine de la medecine d'urgence*
  Greenberg, A. L., Rose, C. C., Nicholaus, P., Mfinanga, J. A., Sawe, H. R., Tenner, A. G.
  2021; 11 (2): 325-330

- **Utilizing Lean software development strategies to improve global eHealth initiatives: viewpoint from a basic emergency care app.** *JMIR formative research*
  Rose, C., Nichols, T., Hackner, D., Chang, J., Straube, S., Jooste, W., Sawe, H., Tenner, A.

2021

- **Novel educational adjuncts for the World Health Organization Basic Emergency Care Course: A prospective cohort study** *AFRICAN JOURNAL OF EMERGENCY MEDICINE*
  Straube, S., Chang-Bullick, J., Nicholaus, P., Mfinanga, J., Rose, C., Nichols, T., Hackner, D., Murphy, S., Sawe, H., Tenner, A.
  2020; 10 (1): 30–34
- **Physically Distant, Educationally Connected: Interactive Conferencing in the Era of COVID-19.** *Medical education*
  Rose, C. n., Mott, S. n., Alvarez, A. n., Lin, M. n.
  2020
- **Spokes for Our Folks: Public Health Bike Tour.** *AEM education and training*
  Rose, C., Chang, B., Brown, J.
  2019; 3 (4): 393–95
- **Strategies to Enhance Wellness in Emergency Medicine Residency Training Programs** *ANNALS OF EMERGENCY MEDICINE*
  Ross, S., Liu, E., Rose, C., Chou, A., Battaglioli, N.
  2017; 70 (6): 891–97
- **Toward Precision Diagnostics** *ACADEMIC EMERGENCY MEDICINE*
  Rose, C. C., Rodriguez, R. M.
  2017; 24 (5): 644–46

PRESENTATIONS

- Audit Logs Offer New Insights into Care Processes and Outcomes. - American Medical Informatics Association
- Webinars, Zoom Meetings, and Distance Learning: Best Practices in Connecting Over the Ether. - American College of Emergency Physicians
- Connected Healthcare: Consumer to Clinician Connection through the IoT - Internet of Things - World
- The Effect of an Online Decision-aid for Genetic Testing on Low-numerate Women - American Medical Informatics Association
- Does Looking at Art Make Us Better Physicians? Visit This Online Museum to Learn More. - Society for Academic Emergency Medicine 2021 Virtual Annual Meeting (May 2021)
- Signal from the Noise: Quantitative Measures of Conformity and Variability From Process Mining Maps - American Medical Informatics Association Annual Symposium
- Enhancing Emergency Care Through Artificial Intelligence: Six Steps for Success - Society for Academic Emergency Medicine
- Ethical Challenges to Precision Care: Supporting Identity and Autonomy in the Emergency Department - Society for Academic Emergency Medicine
- Visualizing the Problem: A Mixed Methods Process Mining Approach to Illuminate and Compare Complex Care Pathways - American Medical Informatics Association
- Navigating Bias, Uncertainty, and Privacy in the Age of AI: Unintended Consequences. - American college of Emergency Physicians
- Ethics, Bias and Beyond De-biasing - American Medical Informatics Association