

Stanford



David Scheinker

Clinical Professor, Pediatrics - Endocrinology and Diabetes

Bio

BIO

David Scheinker is the Executive Director of Systems Design and Collaborative Research at the Stanford Lucile Packard Children's Hospital. He is the Founder and Director of SURF Stanford Medicine, a group that brings together students and faculty from the university with physicians, nurses, and administrators from the hospitals. SURF has implemented and published dozens of projects demonstrating improvements to the quality and efficiency of care. His areas of focus include clinical care delivery, technical improvements to hospital operations, sensor-based and algorithm-enabled telemedicine, and the socioeconomic factors that shape healthcare cost and quality.

Before coming to Stanford, he was a Joint Research Fellow at The MIT Sloan School of Management and Massachusetts General Hospital. He received a PhD in theoretical math from The University of California San Diego under Jim Agler. He advises Carta Healthcare, a healthcare analytics company started by former students.

ACADEMIC APPOINTMENTS

- Clinical Professor, Pediatrics - Endocrinology and Diabetes

ADMINISTRATIVE APPOINTMENTS

- Executive Director of Systems Design and Collaborative Research, Lucile Packard Children's Hospital Stanford, (2015- present)
- Founder and Director, SURF Stanford Medicine, (2015- present)
- Faculty, Clinical Excellence Research Center (CERC), (2018- present)
- Faculty, Master of Science in Clinical Informatics Management (MCiM), (2020- present)
- Faculty, Clinical Excellence Leadership Training (CELT), (2016- present)

BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- Advisor, Carta Healthcare (2017 - present)

LINKS

- My Research Group: <https://surf.stanford.edu/>

Teaching

COURSES

2022-23

- Healthcare Operations Management: MS&E 263 (Win)
- Healthcare Systems Design: MS&E 463, PEDS 463 (Spr)

2021-22

- Healthcare Operations Management: MS&E 263, PEDS 263 (Win)
- Healthcare Systems Design: MS&E 463 (Spr)

2020-21

- Healthcare Operations Management: MS&E 263 (Win)
- Healthcare Systems Design: MS&E 463 (Spr)

2019-20

- Healthcare Operations Management: MS&E 263 (Win)
- Healthcare Systems Design: MS&E 463 (Spr)

STANFORD ADVISEES

Doctoral Dissertation Reader (NonAC)

Johannes Ferstad, Isha Thapa

Publications

PUBLICATIONS

- **Algorithm-Enabled, Personalized Glucose Management for Type 1 Diabetes at the Population Scale: Prospective Evaluation in Clinical Practice.** *JMIR diabetes*
Scheinker, D., Gu, A., Grossman, J., Ward, A., Ayerdi, O., Miller, D., Leverenz, J., Hood, K., Lee, M. Y., Maahs, D. M., Prahalad, P.
2022; 7 (2): e27284
- **The Dysfunctional Health Benefits Market and Implications for US Employers and Employees.** *JAMA*
Scheinker, D., Milstein, A., Schulman, K.
1800
- **Reducing administrative costs in US health care: Assessing single payer and its alternatives.** *Health services research*
Scheinker, D., Richman, B. D., Milstein, A., Schulman, K. A.
2021
- **The development and deployment of a model for hospital-level COVID-19 associated patient demand intervals from consistent estimators (DICE).** *Health care management science*
Yang, L., Zhang, T., Glynn, P., Scheinker, D.
2021
- **The design and evaluation of a novel algorithm for automated preference card optimization.** *Journal of the American Medical Informatics Association : JAMIA*
Scheinker, D., Hollingsworth, M., Brody, A., Phelps, C., Bryant, W., Pei, F., Petersen, K., Reddy, A., Wall, J.
2021
- **Differences in Central Line-Associated Bloodstream Infection Rates Based on the Criteria Used to Count Central Line Days.** *JAMA*
Scheinker, D., Ward, A., Shin, A. Y., Lee, G. M., Mathew, R., Donnelly, L. F.
2020; 323 (2): 183–85
- **Identification of Factors Associated With Variation in US County-Level Obesity Prevalence Rates Using Epidemiologic vs Machine Learning Models** *JAMA NETWORK OPEN*
Scheinker, D., Valencia, A., Rodriguez, F.
2019; 2 (4)
- **Trends in national and county-level Hispanic mortality in the United States, 2011-2020.** *Scientific reports*
Sarraju, A., Ngo, S., Ashland, M., Scheinker, D., Rodriguez, F.
2022; 12 (1): 11812

- **DRIVERS OF VARIATION IN TELEMEDICINE USE AT AN ACADEMIC CARDIOVASCULAR CENTER DURING THE COVID-19 PANDEMIC**
Koos, H., Parameswaran, V., Claire, S., Chen, C., Kalwani, N., Osmanlliu, E., Dash, R., Scheinker, D., Rodriguez, F.
ELSEVIER SCIENCE INC.2022: 2046
- **Performance of a Commonly Used Pressure Injury Risk Model Under Changing Incidence** *JOINT COMMISSION JOURNAL ON QUALITY AND PATIENT SAFETY*
Fleming, S., McFarlane, K., Thapa, I., Johnson, A. K., Kruger, J. F., Shin, A. Y., Scheinker, D., Donnelly, L. F.
2022; 48 (3): 131-138
- **Visualizing Opioid-Use Variation in a Pediatric Perioperative Dashboard.** *Applied clinical informatics*
Safraneck, C. W., Feitzinger, L., Joyner, A. K., Woo, N., Smith, V., Souza, E. D., Vasilakis, C., Anderson, T. A., Fehr, J., Shin, A. Y., Scheinker, D., Wang, E., Xie, et al
2022; 13 (2): 370-379
- **Changes in telemedicine use and ambulatory visit volumes at a multispecialty cardiovascular center during the COVID-19 pandemic.** *Journal of telemedicine and telecare*
Kalwani, N. M., Osmanlliu, E., Parameswaran, V., Qureshi, L., Dash, R., Heidenreich, P. A., Scheinker, D., Rodriguez, F.
1800: 1357633X211073428
- **Personalizing cholesterol treatment recommendations for primary cardiovascular disease prevention.** *Scientific reports*
Sarraj, A., Ward, A., Li, J., Valencia, A., Palaniappan, L., Scheinker, D., Rodriguez, F.
2022; 12 (1): 23
- **FACTORS ASSOCIATED WITH PROLONGED DISCHARGE DELAYS IN A PEDIATRIC ICU**
Ostberg, N., Winter, S., Ling, J., Cornell, T., Scheinker, D.
LIPPINCOTT WILLIAMS & WILKINS.2022: 158
- **Monitoring Approaches for a Pediatric Chronic Kidney Disease Machine Learning Model.** *Applied clinical informatics*
Morse, K. E., Brown, C., Fleming, S., Todd, I., Powell, A., Russell, A., Scheinker, D., Sutherland, S. M., Lu, J., Watkins, B., Shah, N. H., Pageler, N. M., Palma, et al
2022; 13 (2): 431-438
- **A personalized decision aid for prostate cancer shared decision making.** *BMC medical informatics and decision making*
Bagshaw, H. P., Martinez, A., Heidari, N., Scheinker, D., Pollack, A., Stoyanova, R., Horwitz, E., Morton, G., Kishan, A. U., Buyyounouski, M. K.
1800; 21 (1): 374
- **Workforce demographics and unit structure in paediatric cardiac critical care in the United States.** *Cardiology in the young*
Horak, R. V., Bai, S., Marino, B. S., Werho, D. K., Rhodes, L. A., Costello, J. M., Cabrera, A. G., Cooper, D. S., Tan, Y., Tabbutt, S., Krawczeski, C. D.
2021: 1-5
- **Teamwork, Targets, Technology, and Tight Control in Newly Diagnosed Type 1 Diabetes: Pilot 4T Study.** *The Journal of clinical endocrinology and metabolism*
Pralhad, P., Ding, V. Y., Zaharieva, D. P., Addala, A., Johari, R., Scheinker, D., Desai, M., Hood, K., Maahs, D. M.
2021
- **Machine learning approaches improve risk stratification for secondary cardiovascular disease prevention in multiethnic patients.** *Open heart*
Sarraj, A., Ward, A., Chung, S., Li, J., Scheinker, D., Rodriguez, F.
2021; 8 (2)
- **Effect of Time of Daily Data Collection on the Calculation of Catheter-associated Urinary Tract Infection Rates.** *Pediatric quality & safety*
Donnelly, L. F., Wood, M., Loh, L., Tekic, N., Shin, A. Y., Scheinker, D.
2021; 6 (5): e466
- **Prediction of Iron-related Adverse Donation Outcomes for Repeat Blood Donors Based on Donation Interval**
Russell, W., Scheinker, D., Custer, B.
WILEY.2021: 11A-12A
- **Population-level management of Type 1 diabetes via continuous glucose monitoring and algorithm-enabled patient prioritization: Precision health meets population health.** *Pediatric diabetes*
Ferstad, J. O., Vallon, J. J., Jun, D., Gu, A., Vitko, A., Morales, D. P., Leverenz, J., Lee, M. Y., Leverenz, B., Vasilakis, C., Osmanlliu, E., Prahalad, P., Maahs, et al

2021

- **Development and Implementation of a Real-time Bundle-adherence Dashboard for Central Line-associated Bloodstream Infections.** *Pediatric quality & safety*
Chemparathy, A., Seneviratne, M. G., Ward, A., Mirchandani, S., Li, R., Mathew, R., Wood, M., Shin, A. Y., Donnelly, L. F., Scheinker, D., Lee, G. M.
2021; 6 (4): e431
- **Extremum seeking for optimal control problems with unknown time-varying systems and unknown objective functions** *INTERNATIONAL JOURNAL OF ADAPTIVE CONTROL AND SIGNAL PROCESSING*
Scheinker, A., Scheinker, D.
2021; 35 (7): 1143-1161
- **Improved individual and population-level HbA1c estimation using CGM data and patient characteristics.** *Journal of diabetes and its complications*
Grossman, J., Ward, A., Crandell, J. L., Prahalad, P., Maahs, D. M., Scheinker, D.
2021: 107950
- **Prediction of Prolonged Opioid Use After Surgery in Adolescents: Insights From Machine Learning.** *Anesthesia and analgesia*
Ward, A., Jani, T., De Souza, E., Scheinker, D., Bambos, N., Anderson, T. A.
2021
- **Modeling Intraoperative Opioid Administration Variation: A Single-Center Retrospective Cohort Study of Children**
Safranek, C., Poole, S., De Souza, B., Hong, T., Wang, E., Scheinker, D., Anderson, T. A.
LIPPINCOTT WILLIAMS & WILKINS.2021: 795-797
- **Quantifying Pediatric Intensive Care Unit Staffing Levels at a Pediatric Academic Medical Center: A Mixed Methods Approach.** *Journal of nursing management*
Ostberg, N., Ling, J., Winter, S. G., Som, S., Vasilakis, C., Shin, A. Y., Cornell, T. T., Scheinker, D.
2021
- **Racial and Ethnic Disparities in Household Contact with Individuals at Higher Risk of Exposure to COVID-19.** *Journal of general internal medicine*
Kong, S. T., Lee, R. Y., Rodriguez, F., Scheinker, D.
2021
- **County-Level Factors Associated With Cardiovascular Mortality by Race/Ethnicity.** *Journal of the American Heart Association*
Zuma, B. Z., Parizo, J. T., Valencia, A., Spencer-Bonilla, G., Blum, M. R., Scheinker, D., Rodriguez, F.
2021: e018835
- **The Hispanic paradox in the prevalence of obesity at the county-level.** *Obesity science & practice*
Valencia, A., Zuma, B. Z., Spencer-Bonilla, G., López, L., Scheinker, D., Rodriguez, F.
2021; 7 (1): 14-24
- **Quantifying Electronic Health Record Data: A Potential Risk for Cognitive Overload.** *Hospital pediatrics*
Gal, D. B., Han, B., Longhurst, C., Scheinker, D., Shin, A. Y.
2021
- **Clinically serious hypoglycemia is rare and not associated with time-in-range in youth with new-onset type 1 diabetes.** *The Journal of clinical endocrinology and metabolism*
Addala, A., Zaharieva, D. P., Gu, A. J., Prahalad, P., Scheinker, D., Buckingham, B., Hood, K. K., Maahs, D. M.
2021
- **Assessment of physician training and prediction of workforce needs in paediatric cardiac intensive care in the United States.** *Cardiology in the young*
Horak, R. V., Marino, B. S., Werho, D. K., Rhodes, L. A., Costello, J. M., Cabrera, A. G., Cooper, D. S., Bai, S., Tabbutt, S., Rao, I., Scheinker, D., Shin, A. Y., Krawczeski, et al
2021: 1-6
- **Individualized risk trajectories for iron-related adverse outcomes in repeat blood donors.** *Transfusion*
Russell, W. A., Scheinker, D., Custer, B.
2021
- **Application of the Quadruple Aim to evaluate the operational impact of a telemedicine program.** *Healthcare (Amsterdam, Netherlands)*
Kalwani, N. M., Wang, K. M., Johnson, A. N., Deb, J. D., Gold, T., Maddukuri, A. K., Savage, E. G., Parameswaran, V., Dash, R., Scheinker, D., Rodriguez, F.

2021; 9 (4): 100593

- **Multimethod, multidataset analysis reveals paradoxical relationships between sociodemographic factors, Hispanic ethnicity and diabetes.** *BMJ open diabetes research & care*
Knight, G. M., Spencer-Bonilla, G., Maahs, D. M., Blum, M. R., Valencia, A., Zuma, B. Z., Prahalad, P., Sarraju, A., Rodriguez, F., Scheinker, D.
2020; 8 (2)
- **The Hispanic paradox in the prevalence of obesity at the county-level** *OBESITY SCIENCE & PRACTICE*
Valencia, A., Zuma, B. Z., Spencer-Bonilla, G., Lopez, L., Scheinker, D., Rodriguez, F.
2020
- **Target Based Care: An Intervention to Reduce Variation in Postoperative Length of Stay.** *The Journal of pediatrics*
Shin, A. Y., Rao, I. J., Bassett, H. K., Chadwick, W., Kim, J., Kipps, A. K., Komra, K., Loh, L., Maeda, K., Mafla, M., Presnell, L., Sharek, P. J., Steffen, et al
2020
- **Uninterrupted Continuous Glucose Monitoring Access is Associated with a Decrease in HbA1c in Youth with Type 1 Diabetes and Public Insurance.** *Pediatric diabetes*
Addala, A., Maahs, D. M., Scheinker, D., Chertow, S., Leverenz, B., Prahalad, P.
2020
- **Clinically Significant Hypoglycemia Is Rare in Youth with T1D during Partial Clinical Remission**
Addala, A., Gu, A., Zaharieva, D., Prahalad, P., Buckingham, B. A., Scheinker, D., Maahs, D. M.
AMER DIABETES ASSOC.2020
- **The Association between Time-in-Range, Mean Glucose, and Incidence of Hypoglycemia in Youth with Newly Diagnosed T1D**
Gu, A., Prahalad, P., Maahs, D. M., Addala, A., Scheinker, D.
AMER DIABETES ASSOC.2020
- **A Telemedicine-CGM Recommendation System for Personalized Population Health Management**
Vallon, J., Ward, A. T., Prahalad, P., Hood, K. K., Maahs, D. M., Scheinker, D.
AMER DIABETES ASSOC.2020
- **Newly Diagnosed Pediatric Patients with Type 1 Diabetes Show Steady Decline in Glucose Time-in-Range (TIR) over 1 Year: Pilot Study**
Zaharieva, D., Prahalad, P., Addala, A., Scheinker, D., Desai, M., Hood, K. K., Leverenz, B., Maahs, D. M.
AMER DIABETES ASSOC.2020
- **Early CGM Initiation Improves HbA1c in T1D Youth over the First 15 Months**
Prahalad, P., Ding, V., Addala, A., New, C., Conrad, B. P., Chmielewski, A., Geels, E., Leverenz, J., Martinez-Singh, A., Sagan, P., Senaldi, J., Freeman, A., Scheinker, et al
AMER DIABETES ASSOC.2020
- **Implementing Analytics Projects in a Hospital: Successes, Failures, and Opportunities** *INTERFACES*
Scheinker, D., Brandeau, M. L.
2020; 50 (3): 176–89
- **COUNTY-LEVEL FACTORS ASSOCIATED WITH CARDIOVASCULAR MORTALITY DISAGGREGATED BY RACE/ETHNICITY**
Zuma, B., Valencia, A., Spencer-Bonilla, G., Blum, M. R., Knight, G., Scheinker, D., Rodriguez, F.
ELSEVIER SCIENCE INC.2020: 1884
- **PERSONALIZED INTER-DONATION INTERVALS TO MANAGE RISK OF IRON-RELATED ADVERSE EVENTS IN REPEAT BLOOD DONORS**
Russell, W., Scheinker, D., Custer, B.
SAGE PUBLICATIONS INC.2020: E111–E112
- **Machine learning and atherosclerotic cardiovascular disease risk prediction in a multi-ethnic population.** *NPJ digital medicine*
Ward, A., Sarraju, A., Chung, S., Li, J., Harrington, R., Heidenreich, P., Palaniappan, L., Scheinker, D., Rodriguez, F.
2020; 3 (1): 125
- **Extremum Seeking for Creating Optimal Feedback Controls of Unknown Systems by Tuning Basis Functions**
Scheinker, A., Scheinker, D., IEEE
IEEE.2020: 44–49

- **Baseline creatinine determination method impacts association between acute kidney injury and clinical outcomes.** *Pediatric nephrology (Berlin, Germany)*
Russell, W. A., Scheinker, D. n., Sutherland, S. M.
2020
- **Machine learning and atherosclerotic cardiovascular disease risk prediction in a multi-ethnic population.** *NPJ digital medicine*
Ward, A. n., Sarraju, A. n., Chung, S. n., Li, J. n., Harrington, R. n., Heidenreich, P. n., Palaniappan, L. n., Scheinker, D. n., Rodriguez, F. n.
2020; 3: 125
- **Improving Clinical Outcomes in Newly Diagnosed Pediatric Type 1 Diabetes: Teamwork, Targets, Technology, and Tight Control-The 4T Study.** *Frontiers in endocrinology*
Pralhad, P. n., Zaharieva, D. P., Addala, A. n., New, C. n., Scheinker, D. n., Desai, M. n., Hood, K. K., Maahs, D. M.
2020; 11: 360
- **Improving the efficiency of the operating room environment with an optimization and machine learning model** *HEALTH CARE MANAGEMENT SCIENCE*
Fairley, M., Scheinker, D., Brandeau, M. L.
2019; 22 (4): 756–67
- **Practice Characteristics of Board-certified Pediatric Anesthesiologists in the US: A Nationwide Survey** *CUREUS*
Muffly, M., Scheinker, D., Muffly, T., Singleton, M., Agarwal, R., Honkanen, A.
2019; 11 (9)
- **Practice Characteristics of Board-certified Pediatric Anesthesiologists in the US: A Nationwide Survey.** *Cureus*
Muffly, M., Scheinker, D., Muffly, T., Singleton, M., Agarwal, R., Honkanen, A.
2019; 11 (9): e5745
- **Personalized Diabetes Management Using Data from Continuous Glucose Monitors**
Miller, D. R., Ward, A. T., Maahs, D. M., Scheinker, D.
AMER DIABETES ASSOC.2019
- **Non-clinical delays in transfer out of the surgical ICU are associated with increased hospital length of stay and delayed progress of care** *JOURNAL OF CRITICAL CARE*
Safavi, K., Furtado, J., Langle, A., Scheinker, D., Schmidt, U., Daily, B., Levi, R., Dunn, P.
2019; 50: 126–31
- **Identification of Factors Associated With Variation in US County-Level Obesity Prevalence Rates Using Epidemiologic vs Machine Learning Models.** *JAMA network open*
Scheinker, D. n., Valencia, A. n., Rodriguez, F. n.
2019; 2 (4): e192884
- **Hospitalization Patterns for Inpatient Surgery and Procedures in California:2000 – 2016** *Anesthesia and Analgesia*
Muffly, M. K., Honkanen, A., Scheinker, D., Wang, T., Saynina, O., Singleton, M. A., Wang, C. J., Sanders, L. M.
2019
- **Anesthesiologist Surgery Assignments Using Policy Learning**
Ward, A., Zhou, Z., Bambos, N., Scheinker, D., Wang, E., IEEE
IEEE.2019
- **CGM Initiation Soon After Type 1 Diabetes Diagnosis Results in Sustained CGM Use and Wear Time.** *Diabetes care*
Pralhad, P. n., Addala, A. n., Scheinker, D. n., Hood, K. K., Maahs, D. M.
2019
- **Hemoglobin A1c Trajectory in Pediatric Patients with Newly Diagnosed Type 1 Diabetes.** *Diabetes technology & therapeutics*
Pralhad, P. n., Yang, J. n., Scheinker, D. n., Desai, M. n., Hood, K. n., Maahs, D. M.
2019
- **A Retrospective Review of a Bed-mounted Projection System for Managing Pediatric Preoperative Anxiety.** *Pediatric quality & safety*
Caruso, T. J., Tsui, J. H., Wang, E., Scheinker, D., Sharek, P. J., Cunningham, C., Rodriguez, S. T.
2018; 3 (4): e087
- **The Pediatric Anesthesiology Workforce: Projecting Supply and Trends 2015-2035** *ANESTHESIA AND ANALGESIA*

Muffly, M. K., Singleton, M., Agarwal, R., Scheinker, D., Miller, D., Muffly, T. M., Honkanen, A.
2018; 126 (2): 568–78

- **Constrained extremum seeking stabilization of systems not affine in control** *INTERNATIONAL JOURNAL OF ROBUST AND NONLINEAR CONTROL*
Scheinker, A., Scheinker, D.
2018; 28 (2): 568–81
- **Promise and Perils of Big Data and Artificial Intelligence in Clinical Medicine and Biomedical Research.** *Circulation research*
Rodriguez, F. n., Scheinker, D. n., Harrington, R. A.
2018; 123 (12): 1282–84
- **A quality improvement initiative to optimize dosing of surgical antimicrobial prophylaxis.** *Paediatric anaesthesia*
Caruso, T. J., Wang, E., Schwenk, H. T., Scheinker, D., Yeverino, C., Tweedy, M., Maheru, M., Sharek, P. J.
2017; 27 (7): 702-710
- **Detecting Inaccurate Predictions of Pediatric Surgical Durations**
Zhou, Z., Miller, D., Master, N., Scheinker, D., Bambos, N., Glynn, P., IEEE
IEEE.2016: 452–57