

What is ACCORDS?

ACCORDS conducts pragmatic research in real-world settings to improve health care and outcomes, by providing:

- A multi-disciplinary, collaborative research environment to catalyze innovative and impactful research
- Strong methodological cores and programs, led by national experts
- Consultations & team-building for grant proposals
- Mentorship, training & support for junior faculty
- Extensive educational offerings, both locally and nationally



ACCORDS Upcoming Events

April 20, 2022 12:00-1:00 PM MT	Qualitative and Mixed Methods Research Mini-Series: <i>Rapid Qualitative Analysis: Techniques for Rigor and Impact</i> <i>Presented by: Karen Albright, PhD</i>
May 9, 2022 12:00-1:00 PM MT	Learning Health Systems: <i>Models & Methods for Embedded Research</i> <i>The Swiss Learning Health System: A National Initiative to Support Evidence Uptake in Policy and Practice</i> <i>Presented by: Stefan Boes, PhD</i>
May 18, 2022 3:00-4:00* PM MT *note time change	Qualitative and Mixed Methods Research Mini-Series: <i>Dissemination of Qualitative Research</i> <i>Presented by: Allison Tong</i>
May 23, 24, & 25 10:00 -3:00 PM MT	COPRH Con 2022: Disseminating, Scaling and Sustaining Pragmatic Research <i>Registration NOW OPEN; visit COPRHCon.com</i>



Learning Health Systems:
Models & Methods for Embedded Research
2021-2022 Seminar Series

Colorado-based Learning Health Systems
Models: The Experience of Kaiser Permanente
Colorado, Denver Health, and NavLab

*Presented by: Michael Ho, MD, PhD; John
Steiner, PhD; Laura Jean Podewils, PhD*





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FOR LIFE'S JOURNEY

Denver Health's Learning Health System Journey

Laura Jean Podewils, PhD
Associate Director, Learning Health Systems & Evaluation
Office of Research

Our Journey as an LHS



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FOR LIFE'S JOURNEY

- Academic, urban, safety-net institution
- Office of Research
- Recent focus on LHS
 - Generating data, research, rigorous quality improvement (QI) & evaluation
 - Dissemination and translating evidence into practice

Unique Qualities



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FOR LIFE'S JOURNEY



**Diverse
Patient
Population**



**Hospital,
Community
Clinics/FQHCs,
School-Based
Health Clinics**



**EPIC & Data
Exchange w/
Community
Partners**



**Anchor
Institution**



**Community
Engagement
Committees**



**Quality
Improvement
Review
Committee**



**Pilot Grant
Funding**



**National
Learning
Health
Systems Panel**



**LEAN
Continuous
Improvement**

Current Work & Future Direction



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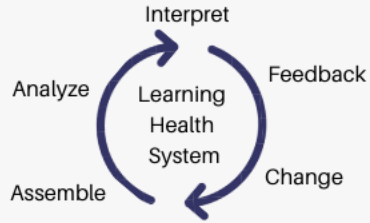
FOR LIFE'S JOURNEY

- Continue to support independent clinical research, program evaluation, and QI
- Integrating evidence into our healthcare delivery system
 - Healthcare and social needs for persons with housing instability or who are unhoused
- Evaluation of key organizational initiatives
 - Equity Blueprint
 - Pipeline programs
 - Health-related social needs
- Future direction
 - Expand capacity for community-based participatory research and stakeholder engagement
 - Continue work with AHRQ to identify topics for evidence-based syntheses
 - Refine approaches to prioritize and implement practice changes through collaboration



Mission: Partner with UCHealth to perform rigorous and timely evaluation, implement and disseminate new knowledge and innovation, and engage relevant stakeholders within a Learning Health Systems (LHS) framework.

The NavLab Work



Consultation

Define Measurable Questions & Outcomes
Evaluate Best Methodology
Perform Feasibility Testing

Pragmatic Trials

Design, Implement & Test Interventions
Provide Scalable & Sustainable Systemwide Solutions
User-Centered Design

Program Evaluation

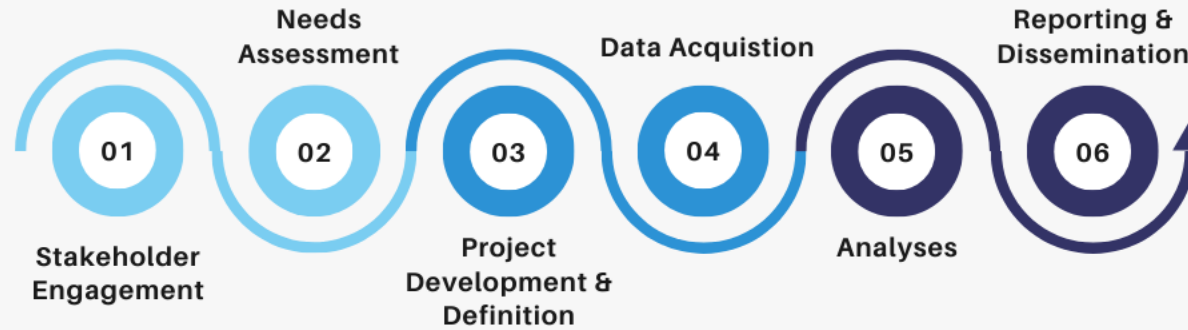
Quantitative Methods
Qualitative Methods
Root Cause Analyses
Cost Effectiveness, ROI

Predictive Modeling

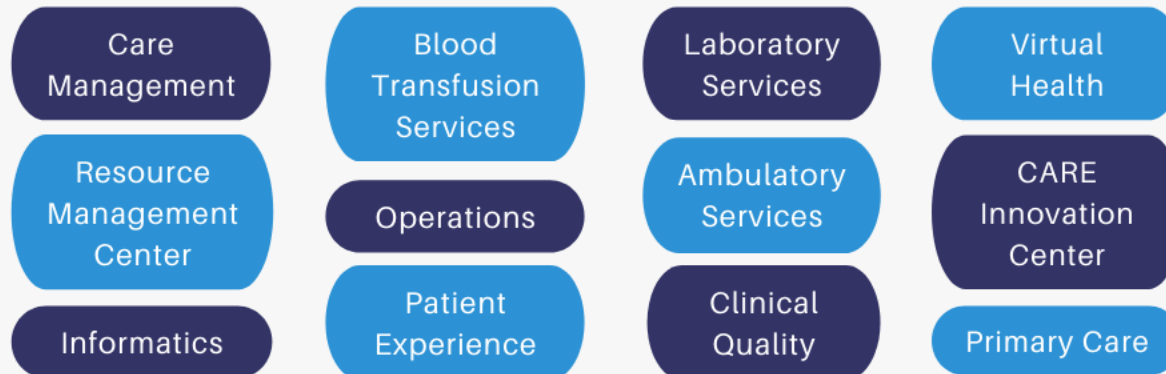
Predict Data-Driven Outcomes
Operationalize Results via User-Friendly Tools

Collaborating with the NavLab

The Project Process



UCHealth-NavLab Partnerships



The NavLab Team



Health Systems Evaluation & Research

NavLab Director: Michael Ho, MD, PhD
Tyler Anstett, DO
Blake Jones, MD



Biostatistics & Predictive Modeling

Evan Carey, PhD
Vanessa Richardson, MS



Health Economics

Richard Lindrooth, PhD
Richard Adjei-Boateng, MS



User-Centered Design & Qualitative Analytics

Brad Morse, PhD
Juliana Barnard, MA



Clinical Informatics

Jonathan Pell, MD



Program & Project Management

Sharon Pincus, MA



Inpatient Nurse Staffing Float Pool Utilization Prediction

GOAL/AIM

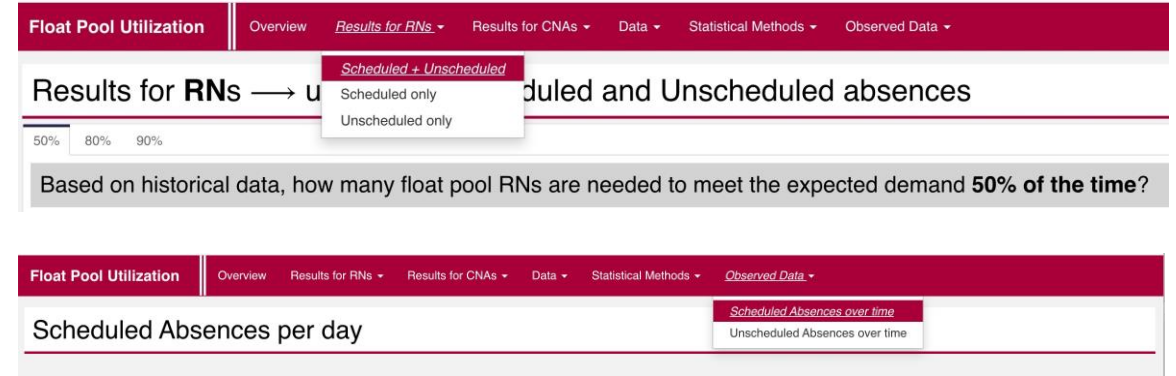
Using data-driven statistical modeling, estimate the appropriate size of the UCH float pools to meet the expected future demand for staffing inpatient RNs and CNAs.

BACKGROUND

- Staffing inpatient nurses is challenging due to variability in planned and unplanned nurse absences.
- Float pool coverage reduces overtime expenses for core staff, avoids diversion, and improves patient outcomes.

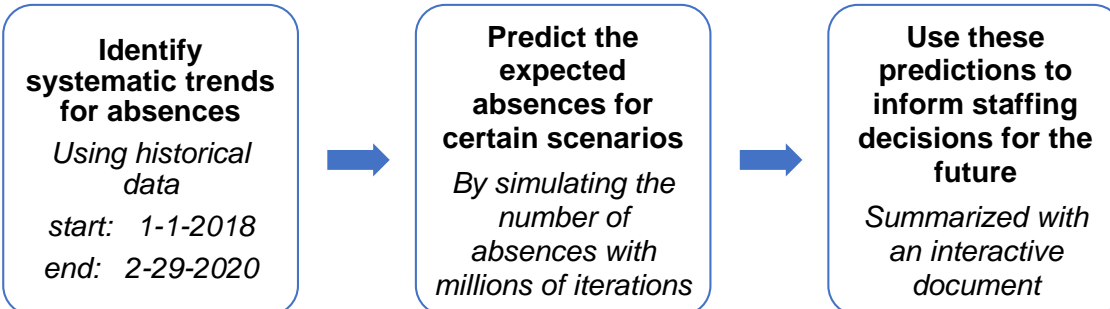
EVALUATION

- Used **variability** in historical staff absences to predict float pool utilization to optimize staffing levels.
- Many approaches estimate nurse absences using only historical averages (middle estimates).



FINDINGS/RESULTS

- Contrary to long-held assumptions, weekends are not the primary time of unplanned call-in absences.
- UCH changed the number of RN and CNA shifts allowed as planned PTO.
- Michelle Feller, the UCH Dir. of Nurse Resource Center, hopes to use the tool in the future to help determine the correct size of the both float pools and core staff.
- If the use of the NavLab Dashboard provides 15% reduction in the use of TASC and Overtime hours for core staff, annual savings would be approximately \$200K at UC Hospital only.
- Operationalizing the prediction tool has been limited because data is from pre-COVID-19 period.





Too Much of a Good Thing

Saving Blood, Reducing Risk, Lowering Costs

BACKGROUND

- Excess blood transfusions are costly and can harm patients.
- UCH and UCHealth practices are not consistent with evidence-based transfusion guidelines.



~\$700

Cost Per Unit

10,250 pRBC units transfused at UCHospital

Red Blood Cell (pRBC) Transfusion Recommendations

pRBCs are most likely APPROPRIATE in the following clinical scenarios:

- Hgb < 7 g/dL OR Hgb < 8 with CV disease AND symptoms
- Hemodynamically unstable patient with an acute bleed
- Perioperative acute blood loss anemia with expected Hgb < 7
- Cytotoxic chemotherapy with expected Hgb < 7
- Anemia with symptoms that are intolerable without transfusion

Transfuse 1 unit at a time unless Hgb <6.0 or bleeding out

UCHEALTH BLOOD TRANSFUSIONS*

University of Colorado Hospital

- **44%** of pRBC transfusions Hgb \geq 7
- **24%** of pRBC transfusions of 2+ units Hgb \geq 6
- Highest utilizer at UCHealth
- **5,096 (50%)** DO NOT meet guidelines

**Findings are based on NavLab analyses of UCH Inpatient Transfusions Patients > 17 years old (Feb 2019 – Jan 2020) at 5 hospitals: MCR, MHC, MHN, PVH, UCH.*

EVALUATION

- EHR blood order does not direct providers to guidelines.
- Strategies for improving accordance with guidelines have been utilized by other health systems successfully.

INTERVENTION

- A randomized trial of EHR blood order-sets to ‘nudge’ providers to follow guidelines at UCHospital. Best version to be implemented system-wide.
 - Arm 1 = general improvements
 - Arm 2 = non-interruptive in-line help text
 - Arm 3 = interruptive alert



GOAL/AIM

Achieve a 20% reduction in the total number of pRBC units transfused by decreasing non-guideline-concordant orders.

Estimated cost savings \$1.55M annually.







The Learning Health System in Kaiser Permanente Colorado

ACCORDS LHS Series, April 11 2022

John F. Steiner MD, MPH

Institute for Health Research, Kaiser Permanente Colorado

KPCO assets that support a learning health system

-  **“Embedded” research department**
 - Fosters a sense of inter-dependence with health care system
 - Mix of internal (30%) and extramural (70%) funding
-  **Denominated population of >500,000 adult and child members**
 - Users and non-users of care
-  **Clinicians who exclusively serve this population**
 - Studies of clinician behavior change
-  **Comprehensive research data warehouse with >15 years of data**
 - Facilitates building study datasets

Innovative Methods Promoting Regional Operational Value and Efficiency (IMPROVE) Program

- **Successor to program established in 2015**
 - Most researchers have long-standing collaborations with the delivery system
- **Broad array of topics/departments**
 - “Hard” problems cross departmental lines
- **Core funding for leader (JFS) and project manager**
- **Prioritization process for new requests**
- **Some funding for approved projects**
 - Leverage additional internal or external funding
 - Portfolio of \approx 10 projects at any time
- **Project designs**
 - Secondary data analyses (predictive analytics)
 - limited primary data collection (mixed-method, member surveys)
 - Interventions (pragmatic trials, interrupted time series designs...)

Creative tensions in IMPROVE (and LHS generally)

- **The funding “dance” between research and operations**
 - Researchers: Fund us and then we will demonstrate our value.
 - Operational leaders: Demonstrate your value and then we will fund you.
- **Selecting simple or complex problems**
 - quick “wins” vs. high impact
- **Rigor of results**
 - Sufficient to support timely leadership decisions vs. publishable
- **Adaptability**
 - Inflexible research designs vs. changing organizational demands
- **Level of engagement of system partners**
 - Early and continued vs. sporadic or retrospective
- **Selecting sites**
 - Pilot testing vs. implementation at scale