

ACCELERAT Training Activities

Learning Health System Didactics and Training Workshops

Didactic sessions include a core learning health system (LHS) curriculum plus tailored programs with select additional coursework. Core curriculum includes regular didactic seminars and training workshops addressing each of the LHS core competencies. Experts from the Department of Medical Social Science, divisions of the Institute for Public Health and Medicine (IPHAM), the Center for Health Information Partnerships (CHIP), the Buehler Center for Health Policy and Economics, the Division of Implementation Research Methodology, and broader resources from across NU are deployed to assure comprehensive and state-of-the art training.

I. Systems Science

Topical lectures and workshops discuss conceptual models and applications of systems science in ongoing research by diverse NU faculty. Guided by the target competencies, didactic sessions address systems theory as applied to complex health care organizations and public health systems. Issues of organizational behavior, quality and outcomes of care, and cost and utilization from diverse perspectives are discussed. Examples of barriers and facilitators to healthcare access as drawn from the literature and the Chicago region are discussed. In addition to K12 training, the NU Institute for Public Health and Medicine (IPHAM) offers regular grand rounds that address health system issues and are a resource for all scholars. Individual scholars may enroll in specialized courses across NU Schools and Colleges to expand knowledge and develop skills in systems science and its application in research.

II. Research Questions/Standards of Evidence

Defining a feasible and significant health system research or improvement question is a foundational skill for LHS scholars. Scholars are often prepared for K12 training after completing graduate courses in epidemiology and biostatistics (e.g., MPH or equivalent degrees). The ACCELERAT curriculum reviews key concepts in defining a problem using a comprehensive review of published literature, state and local public health data, and local health system data from the electronic data warehouse or other accessible clinic data. The rationale and methods for defining and refining priority research problems in collaboration with stakeholders, clinicians, and patients will be reviewed. See further details in Domain 7 below.

III. Research Methods

The LHS research methods series will include illustrations of how qualitative, quantitative, and community-based research methods are integrated to support successful large-scale LHS research. Scholars participate in a series of seminars and workshops discussing both qualitative and quantitative methods, including dissemination and implementation methods and patient-reported measure development. Experts from Medical Social Science, divisions of IPHAM, the Buehler Center for Health Policy and Economics, and the Center for Prevention Implementation Methodology of the Department of Psychiatry are engaged in the sessions to augment both qualitative and quantitative skills.

Qualitative Methods:

An introductory overview to qualitative methods including types of qualitative data, tool creation, data collection methods, and analysis provide opportunities to apply this learning through practice. The sessions

will focus on qualitative methods most relevant in medical social sciences so there will be a heavy focus on interviews and focus groups. Opportunities to learn from practice experience are provided.

Quantitative Methods:

Quantitative study design and analytic methods will be drawn from the fields of biostatistics and epidemiology, health policy research, and implementation science. For example, quantitative analytic methods using administrative datasets will be discussed from both the informatics and health policy perspectives. In collaboration with the Center for Prevention Implementation Methodology and NUCATS, the NU clinical translational research program, ACCELERAT will sponsor a 10-session reading course on dissemination and implementation research methods.

Developing Patient-Reported Outcomes (PROs):

The department of Medical Social Sciences houses international experts in PRO and performance measure development. The lectures will include sessions presenting quantitative validation methods and psychometrics, qualitative methods for instrument development and validation (such as concept elicitation, cognitive debriefing, and focus groups), and translation and cross-cultural validation.

PCOR and Complex Health Interventions:

In addition, an overview of patient-centered outcomes research and associated methods to implement and evaluate complex health interventions will be presented. Scholars will be introduced to the methodological resources developed by the PCORI methods experts, including the PCORI methods standards and other engagement resources.

Graduate Courses in Health Services and Outcomes Research:

NU offers multiple graduate degree programs at the master's and doctoral levels. Courses address methods of research design, data analyses, informatics, leadership, health systems and policy issues, and other key LHS competencies. Scholars are encouraged to enroll in relevant courses to augment the foundational education described here. Scholars are encouraged to identify and participate in these or comparable educational initiatives.

IV. Informatics

The informatics didactic series will consist of four seminars: "Introduction to EHRs - the good, the bad, and the ugly", "Standards and Interoperability", "Data Phenotypes", and "Data Privacy" and various LHS use cases. Lessons will be drawn from the Chicago Area Patient-Centered Outcomes Research Network (CAPriCORN). Research applications of electronic data from local and regional Electronic Health Record (EHR) data warehouses will be discussed including high throughput phenotyping, cohort discovery, estimating population level disease burden, and quality improvement. Faculty in CHIP and CAPriCORN will lead sessions on data integration, case finding, and research data with the electronic data warehouse.

V. Ethics of Health Systems Research/Implementation

Responsible Conduct of Research (RCR) Course:

The RCR is a course designed for postdoctoral fellows and junior faculty who are recipients of National Institutes of Health or other training awards that require training in Responsible Conduct of Research. The course covers the principles and expectations for conducting biomedical research ethically and responsibly, but will go one-step further to guide participants in teaching others for whom they are responsible. Each course meeting features participating instructors that include senior faculty and institutional experts.

Ethics Seminar Series:

The ACCELERAT program will also host a lecture series on medical ethics and justice with experts from NU and the affiliated Lurie Children's Hospital.

VI. Improvement and Implementation Science:

Scholars will participate in a 10-session reading course on implementation science methods (see above; Research Methods) and will be enrolled in the Northwestern Medicine Improvement Leader Training (ILT), detailed below. The ILT is a program designed for clinicians preparing to lead embedded quality improvement activities within the Northwestern Medicine health center. Training includes the details of quality improvement (QI) methods, leadership coaching to present a QI initiative to health system leadership, and methods to define the QI initiative scope and manage its progress. Additional research sessions will illustrate the integration of improvement and implementation science.

VII. Engagement, Leadership, and Research Management

The ILT program includes coaching in the principles of team leadership, particularly as relates to initiating and sustaining system re-design and quality improvement. Beyond this focused training, health system and NU clinical and research leaders will present leadership examples where new programs, departments, and services were developed to enhance health system impact. National LHS leaders will present special lectures to scholars across all funded K12 programs to illustrate the varied research and health system leadership careers open to the LHS scientist.

VIII. Health Equity and Justice

The ACCELERAT Equity and Justice speaker series will feature LHS leaders addressing inequity in various populations. Topics will include: Racial justice, LGBTQ health, inequity in total joint replacement, community health equity, and women's health justice and access. Speakers will be drawn from the NUCATS Center for Community Health as well as Chicago-area public health institutions. Implications of the COVID epidemic on health equity will be highlighted.

Mentored Research

Mentored LHS research is the primary opportunity for ACCELERAT scholars to develop and refine core competencies. Each scholar identifies and works with a mentoring team to complete their research. The mentoring team consists of the following roles:

Primary Mentor: This person will have content experience in LHS research methods and practice, as well as strong mentoring experience. Primary mentors will have responsibility for oversight of the Scholar's program and progress. Scholars should plan to meet regularly with their primary mentor, or mentors, to discuss research progress and development.

Health Systems Navigator: This mentor plays a pivotal role in the mentoring team, and will primarily provide guidance on embedding the research within a learning health system. The navigator may be a clinician, researcher, or health system administrator with an appointment as a leader in the health system with the authority to assist the scholar in successfully implementing his/her research embedded in the health system. Scholars meet monthly with the Health Systems Navigator.

Scholars will also have access to resource faculty who can provide training and expertise in particular areas and assistance. Resource faculty include ACCELERAT faculty and those from NUCATS, an established infrastructure to support the development of independent research.

Works in Progress Sessions: Each scholar will be expected to share their research in three works in progress sessions per year. These may cover K12 progress related to the research project, manuscripts, grant applications, and other work relevant to the K12. Scholars will summarize their research progress to date,

LHS core competency development, LHS integration, current successes and obstacles, and acknowledgement of research team and mentors.

Grant Writing: The grant writing sessions, held during the second year of the ACCELERAT program, will be an iterative process in which scholars' aims, approach, and significance will be continually reviewed and refined based on group feedback. The grant writing sessions are co-facilitated by Rick McGee, PhD and Patricia Franklin, MD, MPH. Upon completion, scholars will prepare and submit an independent K award or an initial R award

Additional (Optional) LHS Science Training: Scholars are encouraged to identify and participate in other educational initiatives.

LHS Improvement Leader Training

In the second year of the program, scholars will participate in Northwestern Medicine's Improvement Leader Training (ILT). The goal of this program is to develop, equip, and empower LHS leaders through both:

- Training on Define, Measure, Analyze, Improve and Control (DMAIC) methodology, lean thinking, and change management principles.
- Application of these concepts to lead a project and achieve measurable results.

The program consists of the following training workshops:

- **Chartering Webinar:** A charter is a key deliverable in the define-project phase; this webinar trains participants on the elements of a charter and how to create one for ILT
- **Project Boot Camp:** Project boot camp is a two-day training that covers the first three phases of DMAIC methodology and project management tools, templates, and methodology. It leverages working sessions and activities for reinforcement
- **Change Management:** An Academy lead session focused on the people side of change and how to incorporate the Awareness, Desire, Knowledge, Ability, and Reinforcement (ADKAR) methodology to promote effective sponsorship and manage resistance
- **Excel for DMAIC:** This course provides tools to analyze data and create graphical visualizations; topics include v-lookups, pivot tables, and Pareto charts
- **Lean:** A course centered around applying lean principles to make processes safe and efficient; topics include waste identification, mistake and error proofing, and visual management
- **Improve and Control:** This course covers the last two phases of the DMAIC methodology (improve and control) that leverages working sessions and activities for reinforcement

Scholars will also work with a Performance Improvement Coach as a source of methodology and system knowledge to help participants navigate their projects. ILT coaches facilitate monthly small group sessions to provide feedback on project barriers and progress. Project updates will be presented at Improvement Councils three times over the ILT year. Improvement councils provide participants with a chance to present their hard work to leaders, garner their insights, and help them break down barriers. The ILT program is led by Cindy Barnard, and the Performance Improvement Coach is Claire Knotten.