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Integrating a Learning Health System Framework Into a Large Academic Medical Center

Namita Azad, Elisabeth Swift DiMaria
Columbia University

OBJECTIVES/GOALS: The Learning Health System (LHS) framework at Columbia University Irving Medical Center (CUIMC) aims to optimize health system performance through enhancing the patient and care team experience, reducing inequities, costs and improving population health outcomes, through a collaborative, interdisciplinary and data driven approach. METHODS/STUDY POPULATION: In alignment with the Quintuple Aim, the LHS program at CUIMC is composed of five critical components: data integration (particularly using Epic EHR and real-time informatics data), utilization of evidence-based practices, a methodology for continuous improvement, and leadership commitment. Our methodology incorporates an iterative process improvement project cycle into an integrated infrastructure and governance of an academic medical center and its hospital partners to fulfill rapid project design and implementation. The LHS at CUIMC aims to bring a cultural shift through stakeholder engagement, symposia, training, accelerated pilot award opportunities, and building external partnership engagement. RESULTS/ANTICIPATED RESULTS: At CUIMC, our definition of a successful integration of a LHS framework is a cultural shift in thinking, method, and continuous improvement. The LHS program has developed multidisciplinary teams that are involved in defining and sharing data, design, and project management resources. In 2021, the first annual symposium was launched and brought together over 200 stakeholders from across the organization to support continuous education, training, and scaling of the framework. As a result of this foundation, two pilot initiatives have been funded and launched, the innovation accelerator model developed and is supporting over ten unique innovative and transformative clinical and operational programs, and several research grant applications have been submitted citing learning health system methodologies. DISCUSSION/SIGNIFICANCE: Our LHS framework has broken down silos and institutional barriers, creating a network of stakeholder groups. Our interdisciplinary approach has enabled us to create sustainable processes, resources and training on rapid, rigorous design, evaluation and implementation of interventions using real-time informatics data and digital health tools.

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Living Review of World Trade Center Health Effects

Alan Katruska, Albeliz Santiago-Colón, Kristen Iker
National Institute for Occupational Safety and Health, World Trade Center Health Program

OBJECTIVES/GOALS: The goal of this project is to develop a strategy to collect and extract published evidence in real time and to house and model these data for efficient downstream application to Program activities such as targeted reviews, grant evaluation and partner engagement. METHODS/STUDY POPULATION: We created the World Trade Center Health Effects Library in 2016. Today, this living review is ongoing and is fueled by daily systematic searches of online publication databases. Each day we screen new references for health effects of 9/11. The publication must include measurements, reports, or discussion of 9/11 health effects. If a publication meets these criteria, it is categorized by outcome and funding category. Primary outcome category data, reference meta-data, and funding data are then made immediately available for programmatic analysis. All reference data are entered into a data pipeline and modelled for targeted reviews. RESULTS/ANTICIPATED RESULTS: The WTC Health Effects Library curates 1932 references and adds an average of 60 new references each year on a wide range of study populations, exposures, and conditions. The completeness of the library has been verified by comprehensive literature searches for 9/11 health outcomes conducted externally and by CDC Library staff. As a result, the curated library is a proven alternative to a lengthy literature search and allows the Program and stakeholders to explore the data and engage immediately in targeted reviews on curated topics. The data that are collected in the screening and categorization process are merged with publication metadata and funding data to inform a data pipeline that supports outputs such as interactive visuals, charts, reports, and curated bibliographies for structured review. DISCUSSION/SIGNIFICANCE: This living review allows the Program to rapidly conduct focused reviews, to evaluate grants, and to communicate accurate data to partners. By using the curated data, we have reduced the time required to perform mandated evidence reviews by weeks, have conducted two structured reviews, and defined gaps in research maturity and health equity.

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Moving from observational studies to a clinical trial: the impact of obesity and surgical weight loss on breast imaging, tissue, and cancer screening experience: the B-BRITE study

Elle N Clelland[1], Judy Gonzalez-Vargas[2], Sarah G Palilla[3], Suneil K Koliwad[2], Heather I Greenwood[4], Christopher J Schwartz[5], Chris C. Benz[6], Diana L Alba[2], Rita A Mukhtar[2]
[1]School of Medicine, University of California, San Francisco, San Francisco, CA, USA [2]Department of Medicine, University of California, San Francisco, San Francisco, CA, USA [3]Department of Surgery, University of California, San Francisco, San Francisco, CA, USA [4]Depart of Radiology, University of California, San Francisco, San Francisco, CA, USA [5]Department of Pathology, University of California, San Francisco, San Francisco, CA, USA [6]Buck Institute for Research on Aging, Novato, CA, 94945, USA

OBJECTIVES/GOALS: Obesity is associated with increased incidence of breast cancer (BC), yet is not included in many lifetime-risk calculators. Obesity may impact breast cancer screening sensitivity. Retrospective studies show that bariatric surgery is associated with a lower risk of BC, but the effects of surgical weight loss on breast tissue are poorly understood. METHODS/STUDY POPULATION: We proposed a mixed-methods before and after study design to investigate the effects of surgical weight loss on breast tissue via pre- and post-weight loss breast tissue biopsies and imaging. In addition, we aimed to better understand barriers to BC screening for patients with obesity by conducting qualitative interviews. With institutional review board approval, we have begun recruiting 14 cisgender women who plan to undergo Roux-en-Y gastric bypass or sleeve gastrectomy. Participants must be at least 40 years old, with no prior history of breast biopsies or breast cancer and will undergo comprehensive breast cancer screening including mammography with quantitative density assessment, breast MRI, as well as breast core biopsies. RESULTS/ANTICIPATED RESULTS: We hypothesize that obesity and its associated metabolic changes lead to altered breast stroma, including increased inflammation, and tissue stiffness, with subsequent risk of carcinogenesis. If true, we expect to find