streamline the study design and statistical analysis workflows and processes. As a first step we met with key stakeholders to understand the current practices by eliciting example statistical projects, and then developed process information models for different types of statistical needs using Lucidchart. We then reviewed these with the Foundation's leadership and the Standards Committee to come up with ideal workflows and model, and defined key measurement points (such as those around study design, analysis plan, final report, requirements for quality checks, and double coding) for assessing reproducibility. As next steps we are using our finding to embed analytical and infrastructural approaches within the statisticians' workflows. This will include data and code dissemination platforms such as Box, Bitbucket, and GitHub, documentation platforms such as Confluence, and workflow tracking platforms such as Jira. These tools will simplify and automate the capture of communications as a statistician work through a project. Data-intensive process will use process-workflow management platforms such as Activiti, Pegasus, and Taverna. RESULTS/ANTICIPATED RESULTS: These strategies for sharing and publishing study protocols, data, code, and results across the spectrum, active collaboration with the research team, automation of key steps, along with decision support. DISCUSSION/SIGNIFICANCE OF IMPACT: This analysis of statistical methods and process and computational methods to automate them ensure quality of statistical methods and reproducibility of research.

2476

Identifying strangulated small bowel obstruction with machine learning

Samuel David Zetumer and Hobart Harris

OBJECTIVES/SPECIFIC AIMS: Historically, logistic regression algorithms (LRAs) have failed to differentiate strangulated small bowel obstructions (SBOs) from nonstrangulated SBOs. Our hypothesis is that a machine learning algorithm (MLA) can differentiate strangulated from simple SBOs better than an LRA can. METHODS/STUDY POPULATION: We used records of patients presenting with acute SBO and managed with exploratory laparotomy to test and train algorithms. We compared MLA to LRA via area under the receiver operating characteristic curve (AUROC) and cut-off points maximizing sensitivity and specificity. RESULTS/ANTICIPATED RESULTS: With 192 patient records, the AUROC of the MLA was 0.85. At the sensitivity cutoff, the MLA had 100% sensitivity and 55% specificity. At the specificity cutoff, the MLA had 45% sensitivity and 100% specificity. We anticipate improvements as more records are incorporated, and that LRA will underperform MLA across all measures. DISCUSSION/SIGNIFICANCE OF IMPACT: Our MLA represents a significant improvement over past LRAs, and may provide decision assistance to surgeons managing SBO. If this MLA maintains its high sensitivity, it may be used in the future to prevent unnecessary surgeries.

2492

Leveraging CTSA informatics capacity to expand global health engagement and research capacity in Latin America and the Pacific

Timothy De Ver Dye, Thomas Fogg, Margaret Demment, José Pérez-Ramos, Scott McIntosh, Deborah Ossip, Angela Sy, Carmen Velez Vega, Karen Peters and Haq Nawaz
University of Rochester Medical Center, Rochester, NY, USA

OBJECTIVES/SPECIFIC AIMS: The objective of this partnership was to create a global network of clinical and public health researchers and communities conducting technology-assisted research in noncommunicable disease. METHODS/STUDY POPULATION: The University of Rochester's Clinical and Translational Science Institute (CTSI) has successfully leveraged the informatics core's capacity into an emerging network of organizations that focus on technology and health in settings outside of the mainland United States. The CTSI coordinated with another NIH-funded infrastructure program [the RCMI Translational Research Network (RTRN)] to identify partner institutions interested in technology and health. RTRN identified the University of Puerto Rico and the University of Hawaii, both of which serve as hubs for common research interests in technology and health throughout the Caribbean and the Pacific. This network was formalized as the CDC's Coordinating Center for its Global and Territorial Health Research Network (the "Global Network"), with additional US partners (Yale, University of Illinois at Chicago, University of North Caroline Chapel Hill, and the University of South Florida) within a wider scope of the CDC's Prevention Research Centers (PRC) program. RESULTS/ANTICIPATED RESULTS: Through combining 2 main NIH-funded research

infrastructure networks (CTSA and RTRN), with a large CDC-funded PRC, the University of Rochester's Informatics Core was successful in establishing a new productive global health network throughout Latin America and the Caribbean, and in the Pacific, garnering additional research support from NIH Fogarty and other programs. The resulting network not only supports locally-important research in technology and health on compelling health issues (eg, diabetes, ZIka, participation in research), but also facilitates community engagement through local partnerships and the cores of the involved networks. In addition, much of the information and communications technology (ICT)-related research and learnings from the Global Network activity is immediately applicable to populations in the United States, served by the various collaborative networks. In total, while new, the Global Network supports a wide range of projects and engagements throughout the world that expand local informatics capacity and use of technology in the research process and to address global health problems, further enhancing the CTSI's informatics core to serve the needs of its own constituency and promote research engagement with technology within this population. Local research collaborative projects reinforce the utility of the network and its resources, evidenced by tools, publications, partnerships, and conference presentations that have arisen. Lessons to date from this Global Network collaboration include: specific global research projects provide opportunities for partnership building and meaningful collaboration, team science is of central importance in distributing the work of the network, synergy is multidirectional with expertise and need flowing in all directions, and project team members in all locales learned and contributed substantially in ways that carried into their other responsibilities. DISCUSSION/SIGNIFICANCE OF IMPACT: The overall partnership has created opportunity for South-South collaboration, for adaptation of projects among locales, and has helped boost reputational value for all partners involved. Implications for other CTSA awardees include: global collaboration can serve core research and technical needs for the CTSA itself and its local partners, CTSA status can be leveraged to access resources to support local research, and collaboration in other federally-funded research networks helps expand the insight, scope, and potential for new research.

2498

Individual patient outcome predictions using supervised learning methods

Abiel Roche-Lima, Patricia Ordoñez, Nelson Schwarz, Adnel Figueroa-Jiménez and Leonardo A. Garcia-Lebron
University of Puerto Rico-Medical Sciences Campus, San Juan, Puerto Rico

OBJECTIVES/SPECIFIC AIMS: To learn the edit distance costs of a symbolic univariate time series representation through a stochastic finite-state transducer to predict patient outcomes in intensive care units. METHODS/STUDY POPULATION: High frequency data of patients in intensive care units were used as a data set. The nearest neighbor method with edit distance costs (learned by the FST) were used to classify the patient status within an hour after 10 hours of data. Several experiments were developed to estimate the parameters that better fit the model regarding the prediction metrics. RESULTS/ANTICIPATED RESULTS: Different metrics were obtained for the several parameters. These metrics were metrics (ie, accuracy, precision, and F-measure). DISCUSSION/SIGNIFICANCE OF IMPACT: Our best results are compared with published works, where most of the metrics (ie, accuracy, precision, and F-measure) were improved.

2505

Understanding quality of life transitions for women: Assessing the impact of EPIC decision support tools to address untreated menopausal symptoms on women's quality of life and provider workflow

Margaret Demment, Ivelisse Rivera, Morgan Pratte, Miriam Weber, Chris Morley and Tim Dye
University of Rochester Medical Center, Rochester, NY, USA

OBJECTIVES/SPECIFIC AIMS: The goal of this study is to assess how quality of life scores change in menopausal women before and after implementation of this aid. In addition, we are also interested in 2 process evaluation objectives: (1) determine if MyChart, the patient portal, is an effective way for this patient population to provide insight their quality of life to their providers and (2) to evaluate providers use of and reactions to the decision support tool. METHODS/STUDY POPULATION: This project is a collaboration between University of Rochester Medical Center and S.U.N.Y. Upstate Medical

University. Participants were recruited through Upstate's Family Medicine and OB/GYN practices via a MyChart invitation sent by the practices. Participating patients will be asked to complete a survey, through MyChart, every 3 months for 18 months. Participating health providers will be trained to use the decision support tool and participate in 3 interviews with the researchers to gain insight into the usefulness and effectiveness of the tool. RESULTS/ANTICIPATED RESULTS: Of the 465 eligible women, 117 women responded to our MyChart invitation to join our study. Of these, 105 agreed to participate and 98 met eligibility criteria. Only half of the women currently enrolled in our study had spoken to a provider about menopause related symptoms (56.1%) prior to study enrollment. DISCUSSION/SIGNIFICANCE OF IMPACT: The goal of this study is to improve menopause related symptoms in women, thus increasing their quality of life, but it will also provide important process evaluation for using EPIC and MyChart for future research studies.

2506

Using Amazon's Mechanical Turk as a tool for a global survey: Lessons learned from a large-scale implementation

Margaret Demment, Diana Fernandez, Dongmei Li, Susan Groth, Ann Dozier, Jack Chang and Tim Dye
University of Rochester Medical Center, Rochester, NY, USA

OBJECTIVES/SPECIFIC AIMS: To share lessons learned from implementing a health survey to a global sample of mTWs. METHODS/STUDY POPULATION: mTWs were paid $0.50 for taking a 15 minute survey to ascertain attitudes and intentions toward participating in genetic research. Two phases included: pilot survey targeting 7 global regions and a large-scale implementation in English in United States, India, and other countries and in Spanish in Spanish speaking countries. Administrative and descriptive information were collected and analyzed by region/country including: completions by location, demographics, time to complete, and survey satisfaction. RESULTS/ANTICIPATED RESULTS: There are 4 key lessons: (1) MTurk is fast. The US sample (n = 505) accrual took <2 days and the Indian sample (n = 505) took 11 days, while the response from other countries (n = 118) generally exceeded 30 days. (2) Using Amazon country specification was the best way to ensure responses from specific countries and regions. (3) Demographic differences exist in mTWs between countries. For example, US mTWs were significantly more likely female (60.1%) compared with India (30.2%) and other countries (34.2%). (4) mTWs found the survey understandable/acceptable. mTWs reported high understandability and acceptability of the survey, which did not vary significantly across countries or by language. DISCUSSION/SIGNIFICANCE OF IMPACT: mTurk provides an efficient platform for survey research from diverse US and Indian samples. In other countries and in Spanish, the mTurk mechanism yielded a smaller sample more slowly but was still effective.

2507

Towards a scalable informatics platform for enhancing accrual into clinical research studies

Ram Gouripeddi, Elizabeth Lane, Randy Madsen, Ryan Butcher, Bernie LaSalle, Katherine Sward, Julie Fritz, Julio C. Facelli, Mollie Cummins, Jianyin Shao and Rob Singleton
The University of Utah School of Medicine, Salt Lake City, NY, USA

OBJECTIVES/SPECIFIC AIMS: Issues with recruiting the targeted number of participants in a timely manner often results in underpowered studies, with more than 60% of clinical studies failing to complete or requiring extensions due to enrollment issues. The objective of this study is to develop and implement a scalable, organization wide platform to enhance accrual into clinical research studies. METHODS/STUDY POPULATION: We are developing and evaluating an informatics platform called Utah Utility for Research Recruitment (U2R2). U2R2 consists of 2 components: (i) Semantic Matcher: an automated trial criterion to patient matching component that also reports uncertainty associated with the match, and (ii) Match Delivery: mechanisms to deliver the list of matched patients for different research and clinical settings. As a first step, we limited the Semantic Matcher to utilize only structured data elements from the patient record and trial criteria. We are now including distributional semantic methods to match complete patient records and trial criteria as documents. We evaluated the first phase of U2R2 based on a randomized trial with a target enrollment of 220 participants that compares 2 treatment strategies for managing back pain (physical therapy and usual care) for individuals consulting a nonsurgical provider and symptomatic <90 days. RESULTS/ANTICIPATED RESULTS: U2R2 identified 9370 patients from the University of Utah Hospitals and Clinics as potential matches. Of these 9370, 1145 responded to the Back Pain study research team's email or phone

communications, and were further screened by phone. In total, 250 participants completed a screening visit, resulting in the current study enrollment of 130 participants. Forty-three of 1145 patients refused to participate, and 50 participants no-showed their screening visit. DISCUSSION/SIGNIFICANCE OF IMPACT: A recruitment platform can enhance potential participant identification, but requires attention to multiple issues involved with clinical research studies. Clinical eligibility criteria are usually unstructured and require human mediation and abstraction into discrete data elements for matching against patient records. In addition, key eligibility data are often embedded within text in the patient record. Distributional semantic approaches, by leveraging this content, can identify potential participants for screening with more specificity. The delivery of the list of matched patient results should consider characteristics of the research study, population, and targeted enrollment (eg, back pain being a common disorder and the possibility of the patient visiting different types of clinics), as well as organizational and socio-technical issues surrounding clinical practice and research. Embedding the delivery of match results into the clinical workflow by utilizing user-centered design approaches and involving the clinician, the clinic, and the patient in the recruitment process, could yield higher accrual indices.

2510

QIPR: Creating a Quality Improvement Project Registry

Amber L. Allen[1], Christopher Barnes[1], Kevin S. Hanson[1], David Nelson[1], Randy Harmatz[1], Eric Rosenberg[1], Linda Allen[1], Lilliana Bell[1], Lynne Meyer[2], Debbie Lynn[2], Jeanette Green[2], Peter Iafrate[1], Matthew McConnell[1], Patrick White[1], Samantha Davuluri[1] and Tarun Gupta Akirala[1]
[1] University of Florida Clinical and Translational Science Institute, Gainesville, FL, USA; [2] UF Health Sebastian Ferrer, Gainesville, FL, USA

OBJECTIVES/SPECIFIC AIMS: To create a searchable public registry of all Quality Improvement (QI) projects. To incentivize the medical professionals at UF Health to initiate quality improvement projects by reducing startup burden and providing a path to publishing results. To reduce the review effort performed by the internal review board on projects that are quality improvement Versus research. To foster publication of completed quality improvement projects. To assist the UF Health Sebastian Ferrero Office of Clinical Quality & Patient Safety in managing quality improvement across the hospital system. METHODS/STUDY POPULATION: This project used a variant of the spiral software development model and principles from the ADDIE instructional design process for the creation of a registry that is web based. To understand the current registration process and management of quality projects in the UF Health system a needs assessment was performed with the UF Health Sebastian Ferrero Office of Clinical Quality & Patient Safety to gather project requirements. Biweekly meetings were held between the Quality Improvement office and the Clinical and Translational Science – Informatics and Technology teams during the entire project. Our primary goal was to collect just enough information to answer the basic questions of who is doing which QI project, what department are they from, what are the most basic details about the type of project and who is involved. We also wanted to create incentive in the user group to try to find an existing project to join or to commit the details of their proposed new project to a data registry for others to find to reduce the amount of duplicate QI projects. We created a series of design templates for further customization and feature discovery. We then proceed with the development of the registry using a Python web development framework called Django, which is a technology that powers Pinterest and the Washington Post Web sites. The application is broken down into 2 main components (i) data input, where information is collected from clinical staff, Nurses, Pharmacists, Residents, and Doctors on what quality improvement projects they intend to complete and (ii) project registry, where completed or "registered" projects can be viewed and searched publicly. The registry consists of a quality investigator profile that lists contact information, expertise, and areas of interest. A dashboard allows for the creation and review of quality improvement projects. A search function enables certain quality project details to be publicly accessible to encourage collaboration. We developed the Registry Matching Algorithm which is based on the Jaccard similarity coefficient that uses quality project features to find similar quality projects. The algorithm allows for quality investigators to find existing or previous quality improvement projects to encourage collaboration and to reduce repeat projects. We also developed the QIPR Approver Algorithm that guides the investigator through a series of questions that allows an appropriate quality project to get approved to start without the need for human intervention. RESULTS/ANTICIPATED RESULTS: A product of this project is an open source software package that is freely available on GitHub for distribution to other health systems under the Apache 2.0 open source license. Adoption of the Quality Improvement Project Registry and promotion of it to the intended audience are important factors for the success of this registry. Thanks goes to the UW-Madison