

**OBJECTIVES/SPECIFIC AIMS:** To build a multisite de-identified database of female adolescents, aged 12–21 years (January 2011–December 2012), and their subsequent offspring through 24 months of age from electronic health records (EHRs) provided by participating Community Health. **METHODS/STUDY POPULATION:** We created a community-academic partnership that included New York City Community Health Centers ( $n=4$ ) and Hospitals ( $n=4$ ), The Rockefeller University, The Sackler Institute for Nutrition Science and Clinical Directors Network (CDN). We used the Community-Engaged Research Navigation model to establish a multisite de-identified database extracted from EHRs of female adolescents aged 12–21 years (January 2011–December 2012) and their offspring through 24 months of age. These patients received their primary care between 2011 and 2015. Clinical data were used to explore possible associations among specific measures. We focused on the preconception, prenatal, postnatal periods, including pediatric visits up to 24 months of age. **RESULTS/ANTICIPATED RESULTS:** The analysis included all female adolescents ( $n=122,556$ ) and a subset of pregnant adolescents with offspring data available ( $n=2917$ ). Patients were mostly from the Bronx; 43% of all adolescent females were overweight (22%) or obese (21%) and showed higher systolic and diastolic blood pressure, blood glucose levels, hemoglobin A1c, total cholesterol, and triglycerides levels compared with normal-weight adolescent females ( $p < 0.05$ ). This analysis was also performed looking at the nonpregnant females and the pregnant females separately. Overall, the pregnant females were older (mean age = 18.3) compared with the nonpregnant females (mean age = 16.5), there was a higher percentage of Hispanics among the pregnant females (58%) compared with the nonpregnant females (43.9%). There was a statistically significant association between the BMI status of mothers and infants' birth weight, with underweight/normal-weight mothers having more low birth weight (LBW) babies and overweight/obese mothers having more large babies. The odds of having a LBW baby was 0.61 (95% CI: 0.41, 0.89) lower in obese compared with normal-weight adolescent mothers. The risk of having a preterm birth before 37 weeks was found to be neutral in obese compared with normal-weight adolescent mothers (OR = 0.81, 95% CI: 0.53, 1.25). Preliminary associations are similar to those reported in the published literature. **DISCUSSION/SIGNIFICANCE OF IMPACT:** This EHR database uses available measures from routine clinical care as a "rapid assay" to explore potential associations, and may be more useful to detect the presence and direction of associations than the magnitude of effects. This partnership has engaged community clinicians, laboratory, and clinical investigators, and funders in study design and analysis, as demonstrated by the collaborative development and testing of hypotheses relevant to service delivery. Furthermore, this research and learning collaborative is examining strategies to enhance clinical workflow and data quality as well as underlying biological mechanisms. The feasibility of scaling-up these methods facilitates studying similar populations in different Health Systems, advancing point-of-care studies of natural history and comparative effectiveness research to identify service gaps, evaluate effective interventions, and enhance clinical and data quality improvement.

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### A mixed-methods evaluation to improve sustainability of community health coalition partnerships, activities, and impact on county-level health

Jennifer Mansfield, Donna Vandergraff, Krystal Lynch, Douglas Miller and Dennis Savaiano

Indiana University School of Medicine

**OBJECTIVES/SPECIFIC AIMS:** Community health coalitions (CHC) aim to improve local cultures of health, health behaviors, and health outcomes. However, challenges sustaining partnerships and activities limit CHC impact. Traditional CHC evaluations survey members about perceived effectiveness, failing to capture underlying network structures and community health outcomes. Thus, we applied a mixed-methods evaluation in eight rural Indiana CHC, triangulating social network analysis [(SNA), conducted in 2017], functioning effectiveness [Coalition Self-Assessment Survey (CSAS), also 2017], and latest county health statistics (2015–2016) to assess existing CHC building efforts, inform best practices, and facilitate the adoption of evidence-based programming. **METHODS/STUDY POPULATION:** Across the eight rural Indiana CHC, relationships between the three evaluation components were analyzed using Pearson's correlations. We are now collaborating with Purdue's Nutrition Education Program Community Wellness Coordinators to scale up evaluation efforts throughout Indiana. **RESULTS/ANTICIPATED RESULTS:** CHC effectiveness was positively correlated with the average number of connections CHC members held in the network (mean indegree) and negatively correlated with the presence of a network broker (eigenvector centrality). However, effective leadership was positively correlated with opioid

deaths and treatment, food insecurity, smoking during pregnancy, lack of healthcare coverage, and fair/poor health status, and negatively correlated with prenatal care. Effective operating norms was positively correlated with smoking during pregnancy and preterm births, and negatively correlated with prenatal care. Effective action outcomes was positively correlated with opioid deaths and treatments, smoking during pregnancy, preterm births, and fair/poor health status, and negatively correlated with respondents reporting they had no personal doctor. **DISCUSSION/SIGNIFICANCE OF IMPACT:** Interestingly, CHC effectiveness was positively correlated with poor county health outcomes related to infant well-being. Thus, CHC may develop in counties with a high unmet need for effective pregnancy and infant services. Alternatively, the prevalent CHC focus on obesity prevention may eclipse programmatic efforts to improve infant well-being. Longitudinal evaluations and scaling up evaluation efforts across Indiana are being pursued to clarify trajectories and inform best practices, which in turn should provide recommendations for network structures to improve CHC effectiveness and county health.

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### A multi-stakeholder analysis on preparing future pediatricians to improve the mental health of children

Cori M. Green, John Walkup and William Trochim

New York Presbyterian Hospital, Weill Cornell Medicine

**OBJECTIVES/SPECIFIC AIMS:** (1) Develop a concept map of ideas from diverse stakeholders on how to best improve training programs. (2) Assess the degree of consensus amongst stakeholders regarding importance and feasibility. (3) Identify which ideas are both important and feasible to inform policy and curricular interventions. **METHODS/STUDY POPULATION:** Concept mapping is a 4 step approach to data gathering and analysis. (1) Stakeholders [pediatricians (peds), MH professionals (MHPs), trainees, parents] were recruited to brainstorm ideas in response to this prompt: "To prepare future pediatricians for their role in caring for children and adolescents with mental and behavioral health conditions, residency training needs to...". (2) Content analysis was used to edit and synthesize ideas. (3) A subgroup of stakeholders sorted ideas into groups and rated for importance and feasibility. (4) A large group of anonymous participants rated ideas for importance and feasibility. Multidimensional scaling and hierarchical cluster analysis grouped ideas into clusters. Average importance and feasibility were calculated for each cluster and were compared statistically in each cluster and between subgroups. Bivariate plots were created to show the relative importance and feasibility of each idea. The "Go-Zone" is where statements are feasible and important and can drive action planning. **RESULTS/ANTICIPATED RESULTS:** Content analysis was applied to 497 ideas resulting in 99 that were sorted by 40 stakeholders and resulted in 7 clusters: Modalities, Prioritization of MH, Systems-Based, Self-Awareness/Relationship Building, Clinical Assessment, Treatment, and Diagnosis Specific Skills. In total, 216 participants rated statements for importance, 209 for feasibility: 17% MHPs, 82% peds, 55% trainees. There was little correlation between importance and feasibility for each cluster. Compared with peds, MHPs rated Modalities, and Prioritization of MH higher in importance and Prioritization of MH as more feasible, but Treatment less feasible. Trainees rated 5 of 7 clusters higher in importance and all clusters more feasible than established practitioners. **DISCUSSION/SIGNIFICANCE OF IMPACT:** Statements deemed feasible and important should drive policy changes and curricular development. Innovation is needed to make important ideas more feasible. Differences between importance and feasibility in each cluster and between stakeholders need to be addressed to help training programs evolve.

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### An application of the payback framework to evaluate the outcomes of pilot projects supported by the Georgia Clinical and Translational Science Alliance from 2007 to 2014

Latrice Rollins<sup>1</sup>, Nicole Llewellyn<sup>1</sup>, Eric Nehl<sup>1</sup> and Astrid Sosa<sup>2</sup>

<sup>1</sup> Morehouse School of Medicine; <sup>2</sup> Emory University

**OBJECTIVES/SPECIFIC AIMS:** We will use a structured evaluation framework, the payback framework, to document the outcomes of 15 case studies of pilot projects supported by Georgia CTSAs from 2007 to 2014. **METHODS/STUDY POPULATION:** We will use a case study approach including bibliometric analyses of publications associated with the selected projects, document review (e.g., investigator curriculum vitae, biannual project reports) and investigator interviews. **RESULTS/ANTICIPATED RESULTS:** We will document outcomes in 5 "payback categories": (1) knowledge, (2) research targeting, capacity

building, and absorption, (3) policy and product development, (4) health benefits, and (5) broader economic benefits. **DISCUSSION/SIGNIFICANCE OF IMPACT:** This study will aid in characterizing the returns resulting from this research funding and identify its strengths and weaknesses. This study will inform our understanding of the diversity and breadth of outcomes resulting from Georgia CTSA-supported research, and the value pilot projects provide to clinical and translational science and the broader community.

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### Assessing research impact: It takes a team

Ashley Dunn and Michelle B. Bass

Stanford University School of Medicine

**OBJECTIVES/SPECIFIC AIMS:** Dissemination of research findings through the published literature is a complex but critical part of the scholarly communication process. Additionally, this time point on the translational spectrum is a key objective of the National Clinical Association for Advancing Translational Sciences (NCATS). Tracking the dissemination of research outputs can be difficult to identify and evaluate. The purpose of this case study was 2-fold: (1) identify tools and resources available freely to the public and through university subscriptions used to assess research output; and (2) compare the effectiveness of these tools on tracking output at different levels of granularity. **METHODS/STUDY POPULATION:** The authors, Spectrum staff (D.A.) and School of Medicine librarian (M.B.), attended webinars hosted by other Academic Medical Center libraries conducting work on impact tracking and learned from vendor product managers about available tools and resources during on-site campus visits. Publications from Stanford's Clinical and Translational Science Award (CTSA) were used to track the diffusion of research outputs (e.g., number of citations, document types, research areas, relative citation ratio, CTSA collaboration) via library subscription services (e.g., Web of Science and Scopus) and freely available tools (e.g., iCite and PubMed). **RESULTS/ANTICIPATED RESULTS:** The authors found certain tools were more inclusive in retrieving grant funded research outputs. For example, in the case of ULI grant (UL1TR001085, UL1TR000093, UL1RR025744), on a grant-level output, there were discrepancies in the number of publications retrieved: (1) PubMed found 644 outputs; (2) Web of Science found 497 outputs; and (3) Scopus found 190 outputs. After de-duplication, the search across Web of Science (WoS), Scopus, and PubMed yielded 899 publications. In total, 389 outputs were unique to PubMed; 165 were unique to WoS; and 90 were unique to Scopus. Future analysis will be conducted to identify the source of unique outputs from each database (e.g., conference proceeding, specific journals). Additional analysis based on other units of research outputs (e.g., author-level outputs and article-level outputs) are expected to yield similar discrepancies. **DISCUSSION/SIGNIFICANCE OF IMPACT:** Citation analysis is a valuable method of assessing research output and, to a larger extent, research impact in a given field. It can help investigators illustrate qualifications for undertaking new projects, highlight collaborations across schools and departments, justify a grant renewal, and/or highlight accomplishments for promotion. However, systematic and comprehensive evaluations are needed in tandem with citation analysis/bibliometric analysis to assess the translation and uptake of research outputs and activities that result in research impact. Furthermore, both investigators and staff need adequate time and training to process research outputs/activities and to effectively organize them in easily understood visualizations.

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### Attitudes and preferences for return of results from next-generation sequencing

Matthew Neu, Jaimie Richards and Sara J. Knight

University of Alabama at Birmingham

**OBJECTIVES/SPECIFIC AIMS:** Objectives: Decreasing costs and increasing evidence for clinical utility have contributed to whole genome sequencing (WGS) becoming a clinical reality. While previous studies have surveyed the attitudes of patients and community members towards specific gene tests, an emerging literature has begun to describe the preferences of diverse recipients for WGS results. In this study, we sought to identify and synthesize the quantitative evidence on preferences for results from WGS using a systematic review of the literature. **METHODS/STUDY POPULATION:** We conducted a search of articles on PubMed including subject index terms WGS, whole exome sequencing, genome sequencing, secondary findings, incidental findings, attitudes, preferences, choices, utilities, stated-preferences, discrete choice experiment, and willingness-to-pay. We conducted 11 formal searches to refine the strategy and conducted a final search in December 2017. Duplicates were eliminated and a title and abstract review was conducted to select articles meeting inclusion criteria. **RESULTS/ANTICIPATED RESULTS:** Our search

strategy identified 79 publications meeting initial search criteria with 30 manuscripts meeting inclusion criteria. Of these, most studies were conducted with patient-participants enrolled in existing sequencing studies, while few engaged members of the general public. Of the studies conducted on patients, most were on the medical setting of cancer and related syndromes. The earliest publication date of a manuscript meeting our inclusion criteria was in 2012, yet the majority were published in 2015 or later. **DISCUSSION/SIGNIFICANCE OF IMPACT:** Between 2012 and 2015, we saw an increasing focus in the medical literature on understanding public and patient preferences for return of results from WGS and WES. Both public and patient populations participating in surveys expressed preferences for receiving results from next-generation sequencing, even if the results are secondary or incidental findings unrelated to the primary indication for sequencing. A primary factor related to patient interest in incidental or secondary findings is the extent to which these results can inform medical intervention. Few studies surveyed representative population-based samples, and this may be an area for future investigation.

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### Balancing patient-centeredness and patient safety in the hospitals: The case of pain care and patient satisfaction

Olena Mazurenko<sup>1</sup>, Basia Andraka-Christou<sup>2</sup>, Matthew Bair<sup>3</sup>, Areeba Kara<sup>3</sup> and Christopher A. Harle<sup>3</sup>

<sup>1</sup> Indiana University School of Medicine; <sup>2</sup> Florida University; <sup>3</sup> Indiana University

**OBJECTIVES/SPECIFIC AIMS:** This study seeks to understand the relationship between opioid prescribing and patient satisfaction among non-surgical, hospitalized patients. As part of this study, we qualitatively examined challenges in delivering safe and patient-centered care through voices of physicians', and nurses.' **METHODS/STUDY POPULATION:** We collected data through in-person interviews using semi-structured guides tailored to the informant roles. Study participants came from 1 healthcare system located in a mid-Western state. Each interview lasted 30–45 minutes, was audio-recorded with consent, and transcribed for analysis. Two researchers each coded 17 transcripts for discussions around patient-centeredness (including patient satisfaction, patient experiences), and patient safety for hospitalized patients experiencing pain. Analysis followed a general inductive approach, where researchers identified themes related to the research questions using an open coding technique. They discussed and reached consensus on all codes, and extracted several preliminary themes. The analysis was supported by NVivo software. **RESULTS/ANTICIPATED RESULTS:** The following themes emerged: (1) complex decision-making process to prescribe opioids for hospitalized patients; (2) the role of objective findings in prescribing decisions; (3) bargaining process in prescribing opioids; (4) balancing patient-centeredness and patient safety for selected populations; (5) opioids are the predominant medications for pain care. **DISCUSSION/SIGNIFICANCE OF IMPACT:** Clinicians' decision to prescribe opioids for nonsurgical hospitalized patients is based on multiple factors, including patient's condition, patient's preference for pain medications, or standard hospital's pain care regimen. Interventions that improve clinicians' ability to prescribe opioids may be needed to improve delivery of patient-centered and safe pain care.

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### Cost effectiveness analysis of operative versus antibiotic management for uncomplicated appendicitis

Eric Stulberg<sup>1</sup>, Alexander Zheutlin, Raymond Strobel, Katherine He<sup>2</sup> and Adelyn Beil<sup>2</sup>

<sup>1</sup> Northwestern University; <sup>2</sup> University of Michigan School of Medicine

**OBJECTIVES/SPECIFIC AIMS:** (1) Evaluate the relative incremental cost-effectiveness [cost per quality-adjusted life year (QALY) gained] of antibiotics, laparotomy, and laparoscopy for the initial treatment of uncomplicated appendicitis. (2) Detect if the relative incremental cost-effectiveness of each treatment differs by age, namely in pediatric patients, adult patients, and geriatric patients. (3) Use deterministic and probabilistic sensitivity analyses to assess the robustness of our findings when varying multiple model parameters. **METHODS/STUDY POPULATION:** Study Population and Analytic Approach: The population under analysis is a simulated population of those aged 1–90 diagnosed with uncomplicated appendicitis with computed tomography (CT) in the emergency department. Pregnant women and those younger than 1 year old were excluded from our analysis. We simulated our population through a Markov state-transition simulation model. Using this model, we estimated the lifelong costs and effects on QALYs from the use of antibiotics, laparoscopy, and