translation through commercialization. METHODS/STUDY POPULATION: The diverse, interdisciplinary team of investigators involved in this project span 9 CTSA Hubs, including UAB, Rockefeller, UC Denver, HMC-Penn State, UMass, UC Davis, Emory/Georgia Tech, Miami and Michigan. This team was funded by NCATS in 2015–2016 to participate in the CTSA I-Corps Train-The-Trainer Program in conjunction with the NIH-SBIR/STTR I-Corps national program. The goals were to observe the curriculum, interact with and learn from the NSF National Teaching Team and begin implementation of similar programs at our home institutions. Our I-Corps@NCATS team has been holding monthly, and more recently weekly, conference calls to discuss our experiences implementing local programs and to develop a strategy for expanding CTSA offerings that include innovation and entrepreneurship. Our experience revealed several challenges with the existing NSF/NIH I-Corps program offerings: (1) there is no standard curriculum tailored to academic clinical and translational research and biomedical innovations in the life sciences, and (2) the training process to certify instructors in the I-Corps methodology is a much more rigorous and structured process than just observing an I-Corps program (eg, requires mentored training with a national NSF I-Corps trainer). Our team is proposing to address these gaps by taking best practices from NSF I-Corps and adapting the program to create the I-Corps@NCATS Program, tailored to meet the needs of researchers and clinicians in academic medical centers. RESULTS/ANTICIPATED RESULTS: There are 3 primary anticipated results of our project. First, develop a uniform curriculum for the I-Corps@NCATS Program using the National Teaching Team of experts from the NIH's SBIR I-Corps program. Second, build the I-Corps@NCATS network capacity through a regional Train-The-Trainer Program. Third, develop a set of common metrics to evaluate the effectiveness and impact of the I-Corps@NCATS Program across the community of CTSA Hubs and their respective collaborative networks. DISCUSSION/SIGNIFICANCE OF IMPACT: Over the past 10 years, CTSA Hubs have accelerated science by creating/supporting programs that provide research infrastructure, informatics, pilot funding, education/training, and research navigator services to investigators. These investments help to ensure that we are "doing science right" using the best practices in clinical research. Even so, it is equally important to make investments to ensure that we are "doing the right science." Are our investigators tackling research problems that our stakeholders, patients, and communities want and need, to make sure that our investments in science have real-world impact? In order to accelerate discoveries toward better health, scientists need to have a better way to understand the needs, wants and desires of the people for whom their research will serve, and how to overcome key obstacles along the path of innovation and commercialization. To fill this gap, we propose that the CTSA Hubs should include in their portfolio of activities a hands-on, lean startup program tailored after the highly successful NSF Innovation Corps (I-Corps) program. We hypothesize that by adapting the NSF I-Corps program to create an I-Corps@NCATS program tailored to medical research, we will better prepare our scientists and engineers to extend their focus beyond the laboratory and broaden the impact of their research. Investigators trained through I-Corps@NCATS are expected to be able to produce more innovative ideas, take a more informed perspective about how to evaluate the clinical and commercial impact of an idea, and quickly prototype and test new solutions in clinical settings.

2409

Opportunities and challenges for precision medicine and biomarkers: A regulatory science case study

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OBJECTIVES/SPECIFIC AIMS: To develop a regulatory science case study as an educational resource to inform the regulatory science considerations in medical product development for a range of scientific priority areas and emerging technologies. METHODS/STUDY POPULATION: Precision medicine represents one of the major regulatory science priority areas and the use of biomarkers holds promise for predicting the response to individual treatment strategies. Although progress has been made toward developing biomarkers, the development and validation of clinically useful biomarkers has presented significant regulatory science challenges, including the utilization of biomarkers in predicting responses to different cancer therapies. This case study reviews the technical, regulatory, and policy issues related to the development and use of lung cancer drugs Opdivo® and Keytruda® and an understanding of the codevelopment and utilization of their associated biomarkers. RESULTS/ANTICIPATED RESULTS: A detailed instructor guide with extensive resources such as diagrams and timelines will accompany the case study and will be used to highlight the development and approval process of 2 competing drugs and their associated biomarkers. The resources will provide a better understanding of their progression through the FDA regulatory process and opportunities and challenges for their use. DISCUSSION/SIGNIFICANCE OF IMPACT: Building on the case study framework we have developed, the detailed timelines and a collection of available resources, an extensive and modular case study will be finalized and made available to academic institutions, industry, regulatory agencies, and the public. The full case study and links to a series of resources will be disseminated as a standalone resource for integration into courses or programs interested in learning about specific regulatory science needs and opportunities to enhance medical product development and approval.

DIGITAL HEALTH & SOCIAL MEDIA

2066

Television viewing: Associations with eating behavior and cravings in healthy, non-obese young adults

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OBJECTIVES/SPECIFIC AIMS: The majority of obese adults do not become obese until adulthood. Although adults spend the equivalent of a 40-hour work week in front of the television (TV), there are mixed data on whether the sedentary behavior of TV viewing is linked with weight gain during adulthood. The purpose of this study was to examine the associations among sedentary behavior, measured as TV viewing and TV in the bedroom, with eating behavior, eating attitudes and cravings, fat gain, and blood pressure in healthy young adults over a 2-year period. METHODS/STUDY POPULATION: The sample included 73 healthy, nonobese adults (56% women, 80% white) who were 26.8 ± 4.5 years of age with a body mass index of 22.9 ± 2.4 kg/m^2. Participants completed clinic visits at baseline and 2-years later (Year 2) which assessed weight, height, blood pressure, waist circumference, and total body fat measured by dual energy X-ray absorptiometry. A food frequency questionnaire was used to estimate dietary intake, and the eating inventory was used to assess dietary restraint, disinhibition, and hunger. At baseline, participants self-reported TV habits including number of hours/week of watching TV (including cable, VCR, DVD) and presence of a TV in the bedroom. For the analysis, participants were stratified by quartiles of TV viewing time. *T* tests were used to examine the association between TV viewing and bedroom TV. Linear regression models were used to examine the association between TV viewing and each anthropometric and body composition measure and change over the 2-year period, as well as with the dietary constructs. Models controlled for age, sex, and baseline body fat. Separate models were used to investigate the associations between bedroom TV and the same dependent variables. RESULTS/ANTICIPATED RESULTS: Participants reported an average of 13.3 ± 10.8 hours/week of TV viewing, with 33.3% reporting a TV in the bedroom. There were no differences in age, sex, or race among the quartiles of TV viewing or between those who did and did not have a bedroom TV. Adults with a bedroom TV did not differ in hours/week of TV viewing compared with those without a bedroom TV. Amount of TV viewing was associated with higher systolic blood pressure at baseline ($p = 0.05$) but with no other anthropometric or body composition indices nor with change in body composition over the 2-year period. Adults with a bedroom TV reported higher craving for sweets at baseline ($p = 0.03$). Amount of TV viewing was related to lower consumption of vegetables ($p = 0.04$) and fruit or fruit juice ($p = 0.03$) at Year 2, but there was no association with total calorie consumption. TV viewing and bedroom TV were not related to dietary restraint, disinhibition, or hunger at either time point. DISCUSSION/SIGNIFICANCE OF IMPACT: Adults who watched more TV consumed fewer fruits and vegetables, and those with a TV in the bedroom reported higher craving for sweets. Though there were no observed relationships between TV habits and body composition change, the associations with cravings and food consumption warrant further exploration. Querying young adults' TV and media use habits in clinical settings may alert physicians to those at risk of developing poor dietary habits.

2083

What factors explain failure to meet clinical recommendations for preschool children's screen-time?

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OBJECTIVES/SPECIFIC AIMS: The American Academy of Pediatrics (AAP) recommends that preschool-aged children spend no more than 2 hours/day

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using digital screens such as TVs. However, there is a proliferation of digital screens in children's daily lives both at school and at home. The purpose of this study was to examine factors that contribute to children's screen-time, including their demographic characteristics and whether or not they have screen-time at school. METHODS/STUDY POPULATION: In total, 59 children (3.3 ± 0.4 years of age; 47% female) enrolled in 3 child care centers participated. Center directors reported school screen-time; 1 center was classified as not providing screen-time and 2 centers were classified as providing screen-time. Parents reported child's age, sex, and maternal education as a proxy for socio-economic status. Parents reported child's out-of-school screen-time by responding to the question "During the past 30 days, on average how many hours per day did your child sit and watch TV or videos outside of school?" Additional questions queried how many hours per day did the child "use a computer or play computer games," "play video games," "use a smartphone," and "use an iPad or tablet." Children's height and weight were collected using standard clinic procedures and body mass index (BMI) was calculated. *T* tests were used to examine differences in screen-time by age, sex, and school screen-time. General linear models were used to examine the influence of school screen-time (1 = no screen-time, 0 = between 1 and 60 min/day of screen-time), age, BMI, and maternal education on out-of-school screen-time and time spent with each device. Logistic regression analysis was used to examine likelihood of meeting screen-time recommendations based on the same characteristics. RESULTS/ANTICIPATED RESULTS: Parent-reported total screen-time was 6.3 ± 3.6 hours/day (h/d); specifically, 2.5 ± 1.1 h/d watching TV, 1.5 ± 2.2 h/d using a smartphone, 1.1 ± 0.9 h/d using a tablet, 0.8 ± 1.0 h/d on a computer, and 0.5 ± 0.7 h/d playing video games. Based on total screen-time, 15% of children met AAP recommendations; based on TV viewing only, 52% met AAP recommendations. The 4-year-old children viewed more screen-time overall compared to the 3-year-old children including on TV, computer, and tablet ($p < 0.05$), but there were no sex differences. In fully adjusted linear models, out-of-school screen-time was lower among those who had no screen-time at school ($p = 0.02$) and higher among older children ($p < 0.01$). Computer use was higher among older children ($p = 0.02$). Older children and those with lower maternal education were less likely to meet clinical recommendations based on TV viewing ($p < 0.05$). There were no observed associations with likelihood of meeting clinical recommendations based on total screen-time. BMI was not a significant predictor of screen-time. DISCUSSION/SIGNIFICANCE OF IMPACT: The majority of children exceeded AAP screen-time limits, with screen-time sharply higher among older children, and the associations did not vary by weight status. Children who attended schools that allowed screen-time had higher amounts of out-of-school screen-time. Pediatricians and healthcare providers should query parents on children's screen-time practices at home and at school and offer strategies to help families meet the clinical recommendations.

2208

Patient satisfaction with the Michigan Surgical and Health Optimization Program (MSHOP): A mixed methods study

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OBJECTIVES/SPECIFIC AIMS: This project has 2 overarching objectives: (1) to investigate the acceptability of the Michigan Surgical and Health Optimization Program (MSHOP) among referred patients, and to describe individual motivations behind enrollment Versus nonenrollment; and (2) to identify patient and program related factors associated with adherence and LOS and readmission rates. METHODS/STUDY POPULATION: Hypothesis—(1) MSHOP participants will report overall satisfaction with the program. Individuals that are satisfied with the program will be likely to perceive the program as effective. Subjects that declined MSHOP will be more likely to perceive their outcomes as immutable. (2) MSHOP patients will have shorter hospital stays and fewer readmission compared with patients who declined MSHOP. Methods—this study will use both qualitative and quantitative methods to investigate patient experiences and program efficacy. First, a convenience sample of patients who were referred to the MSHOP within the previous 12 months will participate in structured interviews to assess program acceptability, patient satisfaction with individual components of MSHOP, and perception of program efficacy. Interviews will also include patients who declined to enroll in MSHOP. Interviews for these subjects will include questions that assess why patients chose to decline enrollment. Second, there will be a retrospective cohort study comparing hospital outcomes among patients who enrolled in MSHOP Versus those who chose not to enroll. Analysis—interviews will be recorded and transcribed for thematic analysis to identify patterns associated with satisfaction or dissatisfaction with the MSHOP. Multivariate regression will be used to determine effect of MSHOP participation on postsurgical length-of-stay and 30-day readmission rate. Demographics and procedure type will be included as covariates. RESULTS/ANTICIPATED RESULTS: In total, 28 interviews have been transcribed, and are in the initial stages of thematic analysis. Interviews have thus far suggested that patients have been satisfied with MSHOP and would recommend the intervention to other patients. Retrospective data regarding hospital length of stay for MSHOP patients from September 2014 to December 2016 has been acquired and is being processed. The characteristics of patients that tend to participate more actively in MSHOP will be explored. We anticipate that active participation in the MSHOP will be associated with shorter hospital stays and fewer readmissions. DISCUSSION/SIGNIFICANCE OF IMPACT: This study will be one of the first to characterize patient perception of MSHOP, in particular its use of tracking step counts and breathing exercises to promote a form of prehabilitation that is easier to integrate into daily life. This project will investigate MSHOP's effect on patient outcomes, as well as explore factors that may associate with better patient adherence and outcomes. This would help further optimize the MSHOP as an intervention.

2239

Mobile enhancement of motivation in schizophrenia: A pilot trial of a personalized text message intervention for motivation deficits

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OBJECTIVES/SPECIFIC AIMS: Motivation deficits are one of the strongest determinants of poor functional outcomes in people with schizophrenia. Mobile interventions are a promising approach to improving these deficits, as they can provide frequent cues and reinforcements that support goal-directed behavior. The objective of this study is to describe the intervention protocol and initial effectiveness of a personalized mobile text message intervention, Mobile Enhancement of Motivation in Schizophrenia (MEMS). METHODS/STUDY POPULATION: This pilot study will examine the effects of MEMS compared with a control group using a randomized design. Up to 40 outpatients with a schizophrenia-spectrum disorder will be recruited. All participants will set individualized recovery goals to complete over an 8-week period; those randomized to receive MEMS will also receive 3 sets of personalized, interactive text messages each weekday to reinforce and cue goal completion. Before and after the 8-week period, participants in both groups will complete validated measures of motivation, quality of life, and functioning. Both groups will also report their goal attainment after 8 weeks. RESULTS/ANTICIPATED RESULTS: It is anticipated that those in the MEMS group will demonstrate greater goal attainment and improvements in motivation, quality of life, and functioning compared with the control group. DISCUSSION/SIGNIFICANCE OF IMPACT: This project will test the initial effectiveness of a novel intervention for improving one of the most debilitating aspects of schizophrenia.

2253

An analysis of how consumer physical activity monitors (monitors) are used in biomedical research

Stephen P. Wright and Kathryn Sandberg

OBJECTIVES/SPECIFIC AIMS: To analyze how consumer physical activity monitors are currently used in biomedical research. METHODS/STUDY POPULATION: Searches were conducted in Ovid Medline, PubMed Medline, clinicaltrials.gov, and NIH RePORTER using search terms including Fitbit, Jawbone, Apple watch, Garmin, Polar, Microsoft band, Misfit, Nike, Withings, and Xiaomi. Results were quantitated by category: condition/topic, intervention, enrollment status, study type and design, age, grant mechanism, and primary outcome. RESULTS/ANTICIPATED RESULTS: Fitbit is used >80%. There are 127 clinical studies using Fitbit devices listed in clinicaltrials.gov. In total, 48 have been completed while 79 are ongoing. Some studies have already published their findings; 40 papers cited in Ovid MEDLINE report use of a Fitbit device. NIH is now funding research that uses consumer physical activity monitors, and the NIH RePORTER shows the number of grants using Fitbit is rapidly increasing. DISCUSSION/SIGNIFICANCE OF IMPACT: The current state and potential growth of this technology is transforming biomedical research and is enabling us to ask new and more granular questions about activity and sleep in health and disease.

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