management is inhibited. The only method of HIV disease management is patient adherence to ARTs. Patients taking less effective medications increase the development of comorbidities from toxic treatments, magnifying the cost of HIV care.

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Quantitative Analysis of FDA Warning Letters Related to the Use of Social Media Sites in Product Misbranding for the Treatment, Prevention, or Diagnosis of COVID-19

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OBJECTIVES/GOALS: Food and Drug Administration (FDA) warning letters regarding misbranding of products intended to treat, prevent, or diagnose COVID-19 were used as a proxy for assessing misinformation on social media. The FDA database of Warning Letters was used to identify the largest misinformation contributor. METHODS/STUDY POPULATION: On November 9, 2022, the full dataset of warning letters dating back to January 1, 2018 was extracted from the FDA website. Separate datasets were also extracted using the search terms: Facebook', Twitter', YouTube', and Instagram'. The data entries were organized by issuing office and subject. The subjects were then filtered to only include letters related to misbranding of products for COVID-19. Letters regarding medical devices, manufacturing practices, and adulterated products were excluded from the analysis. Cumulative totals were collected for the number of letters issued for each search term. These totals were stratified by year and scaled by platform size for relative comparison. RESULTS/ANTICIPATED RESULTS: The FDA's Center for Drug Evaluation and Research issued the most letters related to misbranding of COVID-19 products, 153 out of the 2798 entries in the complete dataset. Analysis of the datasets by search term show: 53, 18, 24, and 17 letters were related to Facebook, Twitter, YouTube, and Instagram respectively. Forty-one letters were related to other non-social media sources. Facebook had the most letters issued, however when scaled to account for the size of each respective platform's approximate user base, Twitter had the largest proportional amount of misinformation regarding agents for the management of COVID-19, followed by Facebook, then Instagram. Most letters were issued in 2020. DISCUSSION/SIGNIFICANCE: In light of COVID-19, many social media sites adopted policies to limit inaccurate information. The success of these efforts have been variable. Although Facebook is the largest absolute contributor assessed, greater attention should be given to the policies of other platforms utilized by the industry.

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Regulations and Marketing of Energy Drinks in the United States: A Survey of University Student Beliefs about Caffeine Consumption

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OBJECTIVES/GOALS: To understand how energy drinks are marketed and regulated and the effects of these policies on adolescent consumption and perceptions of the product. METHODS/STUDY POPULATION: A review of research studies using the PubMed database (PubMed.gov); clinical trials (clinicaltrials.gov); FDA Recall, Market Withdrawals, and Safety Alerts (FDA.gov); and emergency department (ED) visits from reports from the Drug Abuse Warning Network (DAWN) were conducted. A survey is being designed and will be sent to undergraduate and graduate university students through advertised QR codes and university email chains sent out to student organizations and courses. The survey will determine the percentage of respondents who consume caffeine, the frequency in which individuals consume caffeine, and reasons for consuming caffeine. The survey also seeks to understand perceptions and thoughts on energy drinks and caffeine regulation and consumption. RESULTS/ANTICIPATED RESULTS: From January 1st, 2000, to August 5th, 2022, 112 research studies investigated the physiological impact of energy drinks on adolescents, and 13 clinical trials from the age group of 0-17 were conducted. No FDA recalls have been observed for energy drinks or the top 4 brands within the US (by sales; Red Bull, Monster, Bang Energy, Rockstar), though some recalls regarding container manufacturing were made outside the US. ED visits from energy drinks doubled from 2007 to 2011 with 1/10 of them resulting in hospitalization. 58% of the total ED visits were exclusively related to energy drinks. It is anticipated that survey results will indicate trends of frequent caffeine/energy drink consumption among college students for studying, but students will not have a clear understanding of recommended caffeine intake. DISCUSSION/SIGNIFICANCE: Due to the lack of regulations and studies surrounding energy drinks, the dangers (as seen from ER visits) to public health are concerning. Regulatory agencies should invest in developing new protocols or regulations regarding the content of energy drinks as well as find ways to monitor the marketing strategies more closely behind them.

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Researcher Perceived Barriers in Translational Research

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OBJECTIVES/GOALS: To identify, categorize, and streamline the wide range of commonly encountered barriers in translational research that prevent studies from progressing along the translational research spectrum through a comprehensive needs assessment survey. Results will be utilized to institute potential solutions to overcome these identified barriers. METHODS/STUDY POPULATION: The comprehensive survey consisted of three sections, Demographics and Background, Self-Reporting of Barriers, and Comments and Feedback. An extensive literature review was conducted to develop and compile questions and barrier categories for the survey. The survey content was derived from primary literature sources and supplemented with the NCATS Translational Science course material. The target population for the survey included all researchers engaged in translational research at the NJ ACTS CTSA hub. The hub includes Rutgers, Princeton, and NJIT and all of their affiliated institutions and partnered healthcare systems, such as Robert Wood Johnson Barnabas Health and University Hospital. Results will be analyzed according to the type of research conducted and stage of translation research (T0-T4). RESULTS/ANTICIPATED RESULTS: Examples of the survey barrier categories being analyzed include Regulatory/IRB, Funding, Collaborations and Networking, and Training. Initial analysis (N=106) consisted of these top barriers in the NJ ACTS CTSA hub: obtaining timely IRB approval, inadequate staffing for the research team, and lack of holistic institutional support. After

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completion of data collection, the survey results will be further analyzed to determine common barriers and patterns in barrier type across the different institutions, schools, positions/roles in research, and translational research stages. Given that the Comments and Feedback section of the survey entailed ranking the top three barriers across the entire survey as a whole, the results will also indicate the relative prevalence of specific barriers and categories. DISCUSSION/SIGNIFICANCE: The impact of the survey and its results is to develop feasible institutional solutions to overcome the prevalent barriers and improve efficiency in all parts of the research process. Possible solutions encompass accessible resources for researchers, longitudinal training programs, consultative services, and workshops for investigators.

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The development of a digital game to prevent suicide in youth who misuse substances

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OBJECTIVES/GOALS: Suicide is the second leading cause of death in teens. Substance misuse, including opioids, is a risk factor for suicidal thoughts and behaviors among teens. School-based approaches are promising, yet they lack evidence on their effectiveness. To fill this gap, we created supportED, a digital game to prevent suicide in youth who misuse substances. METHODS/STUDY POPULATION: We conducted focus groups and interviews to inform the development of the digital game and discuss approaches to enhance user experiences, acceptability, and feasibility of the intervention. A semi-structured focus group/interview guide was developed, pilot tested, and used in focus groups/interviews. The guides aligned with constructs from a safety planning intervention, a well-recognized, evidence-based suicide prevention intervention, to identify potential warning signs of emotional distress, coping strategies, and resources for seeking help to prevent suicidal thoughts and behaviors. Focus groups/interviews were led by a facilitator, who is also a certified school counselor and licensed professional counselor, and a co-facilitator who took field notes and provided debrief summaries. RESULTS/ANTICIPATED RESULTS: A total of 35 participants, including 10 high-school-aged teens [aged 16-19], 10 college-aged youth [aged 18-22], 10 school-based providers, and five interviews with adults who had experience with opioids in their youth informed the development stage. Of the focus group participants, 25.7% identify as female (n=23), 71.4% identify as male (n=6), and 2.9% do not identify as male or female (n=1); 60% identify as White (n=18), 20% identify as multi-racial (n=6), 10% identify as Black (n=3), 3.3% identify as Asian (n=1), and 6.7% identify as race unknown (n=2); and, 37.1% (n=13) identify as Hispanic/Latinx. Salient themes that emerged focused on opioids, substance misuse, mental health, bullying, grief, family, identity, and stigma to create six distinct narratives in the digital game. DISCUSSION/SIGNIFICANCE: Findings informed the development of a digital game to prevent suicide among adolescents who misuse substances. The digital game is currently being evaluated in a pilot RCT to assess the preliminary efficacy of the intervention, user experience, usability, and feasibility of delivering the intervention and protocols among 60 youth.

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Exploring the Diversity of Expanded Access Patients at Michigan Medicine

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OBJECTIVES/GOALS: Lack of diversity within clinical trials is well known, but there is little data on the use of investigational products through other pathways, such as expanded access. This project sought to determine the demographic diversity of patients benefiting from expanded access at Michigan Medicine. METHODS/STUDY POPULATION: Previous quality improvement reviews provided the list of 271 patients for whom a single-patient, expanded access request had been approved by the FDA and University of Michigan IRBMED between 2005 and 2021. Demographic information was collected through the EMERSE tool, including age, legal sex, race, ethnicity, and zip code. These data were cross-referenced with available regulatory documentation on product requested, treatment area, and date of request. Descriptive statistics were performed using Excel. RESULTS/ANTICIPATED RESULTS: Patients who were approved to use an investigational product through expanded access at Michigan Medicine showed a wide geographic distribution, including 48 Michigan counties, 20 states, and 1 province. All age groups were served, with those between 30-49 underrepresented and those under 10 and over 60 overrepresented. Race data generally followed the proportions of the Michigan state census, including 76% white and 14% black or African American (expected: 79% and 14%) and 48% female (expected: 50%). On further breakdown, populations differed by specialty and county. DISCUSSION/SIGNIFICANCE: The distribution of Michigan Medicine patients with approved expanded access requests was similar to the population of Michigan with respect to age, sex, and race. Further research is needed to determine if this reflects equitable use or if these results are generalizable to other institutions.

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Creating a Dashboard to Increase Efficiency in Tracking and Reporting on Research Data Requests

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OBJECTIVES/GOALS: The purpose of the project was to create a Tableau dashboard to track metrics on requests for research data at Atrium Health Wake Forest Baptist. The objectives included: 1) define and identify request fulfillment metrics, 2) build a dashboard to capture metrics, and 3) integrate the dashboard into metrics tracking and reporting activities. METHODS/STUDY POPULATION: Project managers and team leaders in the Office of Informatics collaborated to determine which measures would be most relevant and impactful to report on. Metrics that were

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