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.

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.

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.

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