

impact. While researchers almost always described their motivation as connected to improved patient care, their ideas of impact were commonly described as research products or outputs, and there was little attention to planning and executing for real-world use. Researchers spoke about challenges related to competing career demands, institutional barriers, organizational culture, and lack of connections. Strategies to address these challenges included mentorship, collaboration, and policy work. **DISCUSSION/SIGNIFICANCE OF IMPACT:** The disconnect between researchers' ideas of output and impact was notable, and while researchers sometimes mentioned dissemination via publications and committees, use of dissemination and implementation frameworks were very infrequent. Fragmented approaches and implementation science gaps remain significant barriers to health impact.

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### Challenges of monitoring drug use trends and communicating results: Solutions from the National Drug Early Warning System (NDEWS)

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**OBJECTIVES/GOALS:** To discuss the challenges faced by National Drug Early Warning System (NDEWS; PI Cottler) in monitoring emerging drug trends and disseminating data to maximize public health impact. Drug trends are constantly in flux, with various communities facing different harms. To provide salient information, NDEWS must triangulate data from multiple sources. **METHODS/STUDY POPULATION:** In 2020, NDEWS was funded at University of Florida through a cooperative agreement with NIDA. A Scientific Advisory Group meets regularly for overall guidance, and 17 Sentinel Sites provide local perspectives. Now in its fifth year, NDEWS has utilized traditional data such as death reporting and drug seizures and has launched several novel surveillance components. Rapid Street Reporting conducts anonymous surveys of drug use in a Sentinel Site or hotspot each month. Machine learning methods applied to Reddit reveal new trends and novel substances. County-level alerts are generated by analysis of 911-dispatch data accessed through biospatial.io. Wastewater-based epidemiology provides city-level data. Findings are disseminated primarily through email weekly briefings and by peer-reviewed articles. **RESULTS/ANTICIPATED RESULTS:** In its first iteration, NDEWS has expanded available data sources and worked to integrate data to reveal trends that impact communities across the USA. These patterns vary substantially over time and by region and population, complicating analysis, but inclusion of multiple data sources is imperative for a full understanding of the landscape. NDEWS continues to explore novel routes of disseminating information to those who need it, including contacting local health departments with high overdose rates. Establishing networks for bidirectional communication with stakeholder groups such as toxicologists and educational affiliates is underway. NDEWS seeks to deepen ties with survivors unions (those with lived experience) and harm reduction organizations, which can be difficult due to mistrust of research.

**DISCUSSION/SIGNIFICANCE OF IMPACT:** Monitoring the rapidly changing drug landscape in the USA is challenging, and its importance has only grown in recent years as new substances arise and adulterated drug supply has become the norm, promulgating the rise of dangerous substances such as fentanyl and xylazine. Ensuring that information filters out to those who use substances is critical.

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### A supervised strength and outpatient exercise regimen in pediatric patients with acute lymphoblastic leukemia (STRONGER ALL)

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**OBJECTIVES/GOALS:** To assess the feasibility, safety, and preliminary efficacy of implementing a supervised, outpatient aerobic and strength exercise regimen in newly diagnosed pediatric patients with acute lymphoblastic leukemia (ALL). We hypothesize that early implementation of exercise is feasible and may prevent well-known cardiometabolic late effects. **METHODS/STUDY POPULATION:** We will enroll 10–20 children (both males and females) with newly diagnosed ALL between the ages of 11–21 years to participate in a 12-month supervised, structured outpatient exercise regimen (STRONGER ALL). This regimen will consist of low- to moderate-intensity aerobic and strength exercises (either in person or coached virtually per patient preference) 3 times a week. This study will include 2 physical fitness assessments: 1) baseline and 2) end of study. Assessments will include resting energy expenditure, peak oxygen uptake, bone density, upper and lower extremity strength, flexibility, and questionnaires (feasibility and quality of life). Additionally, blood and urine specimens will undergo metabolomic analysis to identify biomarkers predictive of future cardiometabolic outcomes. **RESULTS/ANTICIPATED RESULTS:** We expect that early implementation of STRONGER ALL in children undergoing chemotherapy will be feasible and preliminarily effective at mitigating risk factors for long-term cardiometabolic outcomes in survivors. Feasibility will be defined by recruitment capability (at least 50% of eligible patients agree to enroll), acceptance/compliance (at least 50% of participants complete the program with participation in at least 50% of sessions), data acquisition (collection and outcomes measures are appropriate), and practicability (program shows promise of being successful with pediatric ALL patients as measured by validated surveys administered to patients and caregivers). We anticipate that ALL patients participating in STRONGER ALL will have improved fitness and quality of life. **DISCUSSION/SIGNIFICANCE OF IMPACT:** Evidence on the benefits of physical activity for ALL patients has not changed clinical practice. We aim to overcome the translational science barrier of patient- and system-level blockade in implementation of exercise in children with ALL. The evidence generated from this research may also be generalizable to other childhood cancer survivors.