



PROGRAM IN OPIOID AND PAIN INNOVATION



OVERVIEW

The aftermath of COVID-19 has cautioned providers and community leaders to zoom in on the rise in fentanyl and opioid use deaths.

Amongst adolescents, between 2019 and 2020, opioid overdose mortality increased by 94.03% and from 2020 to 2021 by 20.05%

Drug overdose death rates among Black people living in the United States rose significantly from 2019 to 2020, outpacing the overdose death rates of White people for the first time in over 20 years.

Massachusetts has suffered from opioid use disorder (OUD) disproportionately. Every year, over 2,000 people have died from an opioid-related overdose in our state each year for the past several years.

Opioid-related deaths outnumber any other type of accidental death, including from motor vehicle accidents. The number of lost lives is just a small fraction of the morbidity associated with opioids; our communities are in crisis – a crisis that affects young and old, rich, and poor, and all races.

The Program in Opioid and Pain Innovation (POPI) at Brigham and Women's Hospital (BWH) offers a unique approach to solving the opioid crisis by leveraging the talent of its researchers who have a focus in opioid use disorder, chronic pain, and its cooccurring disorders such as mental health disorder.

POPI supports its innovators in developing and advancing innovative solutions that help mitigate the opioid use disorder epidemic and improve patient outcomes and pain management. The overall goal of POPI is to serve as a resource hub to scientists, researchers, and clinicians via funding for research, providing opportunities for collaboration and offering a continued means for professional development.

HISTORY

The idea to form POPI started with a group of scientists and physicians at Brigham and Women's Hospital (BWH) who saw a need to **break down the silos** in the opioid and pain space at BWH and **offer resources** for innovators who work in this space. After hiring a Program Director in the late summer of 2019, POPI innovators were met with individually and briefly interviewed. To initiate the program, they were asked how such a program could benefit them individually along with the BWH community. From these interviews a few key needs/themes were noted, such as **a need for funding, a need for research assistants and fellows and a platform for collaboration opportunities**. This information aided in the creation of an infrastructure for the program.

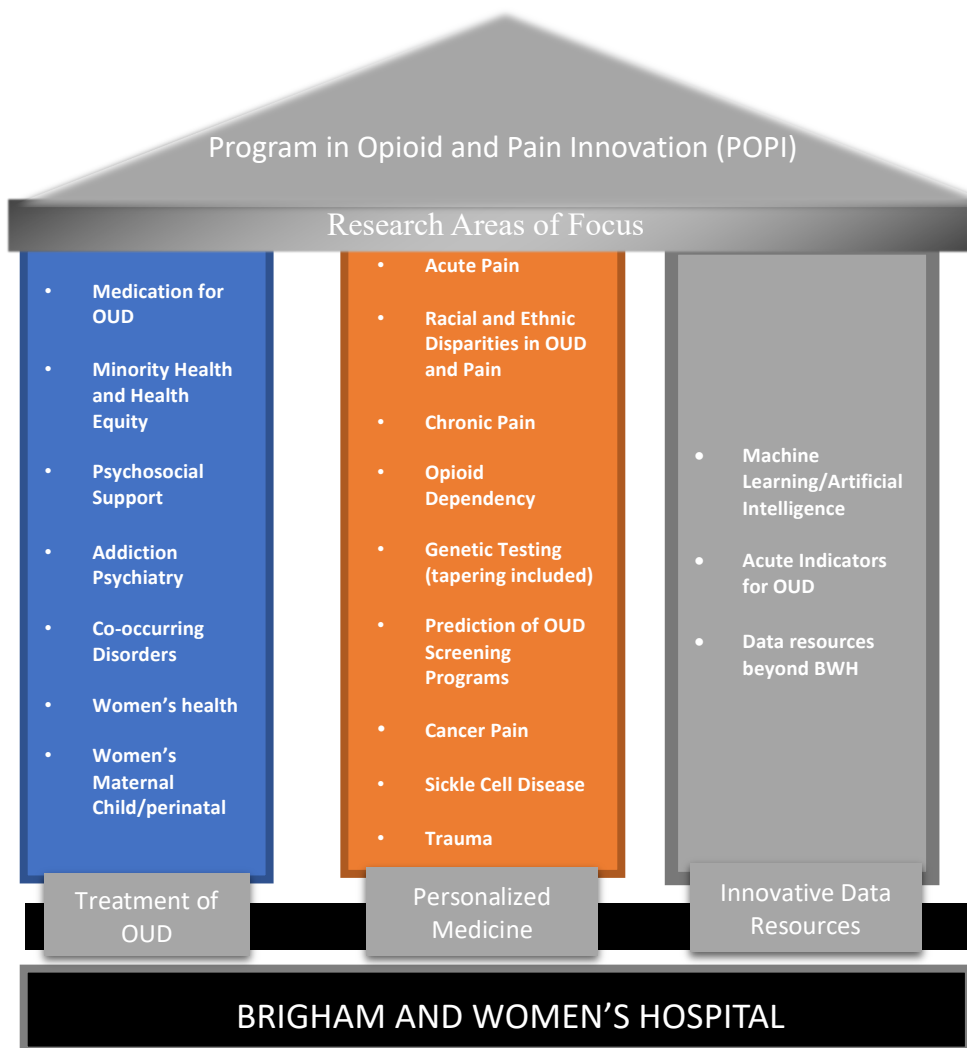
Currently POPI hosts a network of 60+ innovators consisting of physicians, scientists, researchers, nurse practitioners and other MGB employees interested in opioid and pain innovation. There is continuous engagement with these innovators with the goal of keeping the cohort abreast of opioid and pain related **collaboration opportunities, opportunities for scientific and research advancement, breaking down silos within the institution and executing ideas that aid in mitigating OUD and chronic pain**.

QUARTERLY MEETINGS

Innovators meet four times per year to discuss collaboration opportunities and introduce new concepts and other research/education opportunities. Guest innovators are invited to share their work and gain input from the group. There is also a discussion of program progress, activities, and other opportunities for program's advancement at each meeting.



Since its inception in 2019 POPI innovators have established the following focus areas for research:



Additionally, POPI's innovators identified long-term overarching objectives for the program:

Fostering innovative interdisciplinary research	Enabling/promoting career development and education	Outreach – communicating and fundraising
<ul style="list-style-type: none"> • Create opportunities for collaboration <ul style="list-style-type: none"> ○ Functional working group ○ Events (workshops, poster sessions, retreats) • Develop scientific projects <ul style="list-style-type: none"> ○ Support efforts for pilot grants/projects, collective projects, funding young investigators, seed grants - obtaining and administering, etc. • Develop infrastructure/resources 	<ul style="list-style-type: none"> ▪ Recognize excellence <ul style="list-style-type: none"> ○ Poster awards ○ Best paper awards ○ Travel awards ▪ Train/mentor <ul style="list-style-type: none"> ○ Mentoring programs ○ Training grants ○ Provide platforms for junior investigators to present research ▪ Seed grants 	<ul style="list-style-type: none"> ▪ Communication <ul style="list-style-type: none"> ○ BWH website ○ Find a Researcher profiles ○ Symposium for external community ○ Reach out to clinicians and researchers • Funding and fundraising <ul style="list-style-type: none"> ○ Work with development on funding activities ○ Seek other sources of external funding (ex interactions with industry)



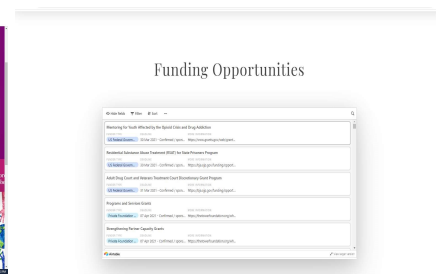
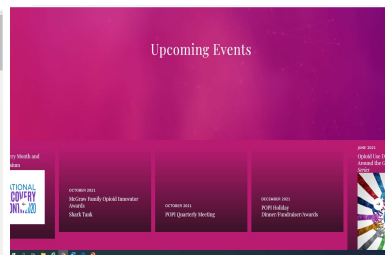
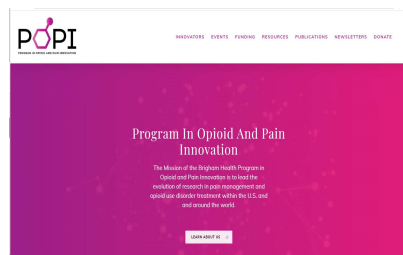
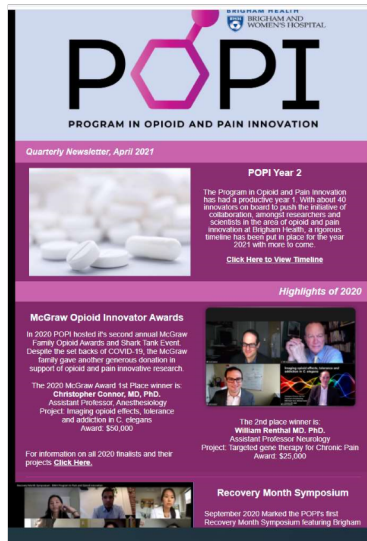
COMMUNICATION/BREAKING DOWN SILOS

POPI produces newsletters quarterly that consist of any cutting-edge information within the infrastructure of MGB and beyond regarding opioid, pain, or mental health. It features exclusive and relevant funding opportunities, current innovator publications and announcements of any related program activities and educational opportunities.

POPI launched its website in winter of 2020. The website features profiles of current innovators, past and current events, annual program reports, newsletters past and current, innovator publications, funding opportunities, events/activities past and present and an option to donate. The website is continuously updated to reflect current website development trends.

POPI aims to utilize Facebook and Twitter to connect with other internal and external programs and organizations within the opioid and pain space. The social media pages highlight MGB innovator publications along with program events and activities.

POPI routinely sends emails to both the Brigham Research Institute (BRI) and POPI email list with current/relevant funding opportunities and program meetings and events.





FUNDING

POPI prides itself in making funding resources and opportunities available to interested innovators.

Annual McGraw Opioid Innovator Awards and Shark Tank (Late Fall)



Since 2019, POPI has awarded over \$350,000 to innovators via donations from the McGraw Family Foundation and other private donations. Each year, POPI announces a request for Letter of Intent and administers an Request for Application process for innovators to apply for this funding. Criteria for applying and receiving the award includes **requiring projects to be innovative with benefits to areas such as improving patient care and special considerations for ideas that focus on racial and ethnic disparities. Applicants are MGB affiliated and may cross several functions within the organization such as Junior Faculty members, Nurse Practitioners, Researchers and Physicians.**

To offer a unique and interesting approach to awarding innovators with this funding, each fall POPI facilitates an awards program and live event titled *The McGraw Opioid Innovator Awards and Shark Tank*. A review board consisting of distinguished members across disciplines at BWH along with friends/constituents of BWH review applications and select finalists to compete at this event. The finalists pitch their ideas for funding and two innovators are selected to receive an award. Each recipient of the McGraw Opioid Innovator Award is required to submit biannual reports with the progress and findings of their work.

POPI is proud to have funded the following projects over the past 4 years:

2019

Joji Suzuki, MD, Director, Division of Addiction Psychiatry

Project: *Cannabidiol as an adjunct to sublingual buprenorphine for the treatment of opioid use disorder: An exploratory double-blind placebo-controlled trial* – Awarded: **\$50,000**

Athena Petrides, PhD, Director of Pathology Informatics

Project: *Automated Result Interpretation of Opioid Drug Testing Panel for Clinicians to Improve Interpretation and Communication of Urine Drug Toxicology Results*– Awarded: **\$50,000**

2020

Christopher Connor, MD, PhD, Attending, Anesthesiology

Project: *Pan-neuronal imaging of pain, opioid effects, tolerance, and addiction in C. elegans*– Awarded: **\$50,000**

Andrew Goldsmith, MD, MBA, Director of Emergency Ultrasound, Emergency

Project: *Ultrasound-guided transgluteal sciatic nerve block in patients with sciatic radiculopathy: A new method to improve patients pain in the emergency department*– Awarded: **\$25,000**



2021

Primavera Spagnolo, MD, PhD, Department of Psychiatry & Connors Center for Women's Health and Gender Biology

Project: *Endocannabinoids and Opioids: Investigating the effects of palmitoylethanolamide in stress-induced craving, hyperalgesia, and negative affect in opioid use disorder— Awarded: **\$50,000***

Anupama Mehta, MD, Medical Director, Burn Program

Project: *Can Olfactory Virtual Reality reduce opioid consumption and improve tolerance in burn patients undergoing dressing changes? A pilot study — Awarded: **\$25,000***

2022

Giovanni Traverso, MD, PhD, Department of Medicine, Division of Gastroenterology

Project: *AI-powered implantable overdose reversal system— Awarded: **\$25,000***

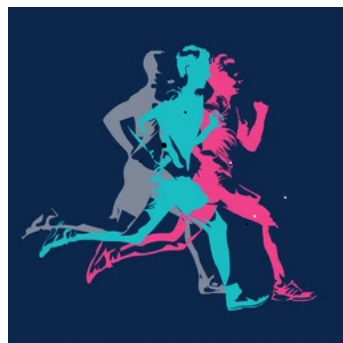
Wenyu Song, PhD, M.B.I., Division of General Medicine and Primary Care

Project: *Using Clinical and Genetic Information to Predict Dynamic Post-Surgical Pain Status and Inform Personalized Opioid Prescribing— Awarded: **\$25,000***

In addition to the Shark Tank, POPI secured a **\$50,000** award/donation from a private donor developed to launch new research to transform the treatment of OUD with an opportunity to fund one of 3 potential pilot projects. The award helped to fund the project ***“Music Therapy for Pain Intervention and Management”*** - a study hosted by collaborating physicians in the BWH Emergency Department, *assessing the impact of a novel, machine learning-based music intervention “tuned” to improve an individual’s response to pain while measuring their changing sensitivity to pain.* POPI hopes for a continued relationship with this donor.

POPI also provides a platform for innovators to collaborate on funding opportunities. Innovators have joined forces to established funding mechanisms through means such as NIH R25 funding and NIH R34 funding. Successful funding collaborations include a partnership between the leaders of the Clinical Research department and leaders of the Anesthesiology Perioperative and Pain Medicine group at BWH. This collaboration was inspired by a grant opportunity listed via POPI’s communication channels - emails and newsletters. The innovators were awarded NIH funding to study interventions to *reduce persistent opioid use in post-orthopedic surgery patients.*

5K Walk for POPI (Spring 2022)



POPI hosted its inaugural **5K Walk for POPI on April 30th, 2022, at Boston’s Historic Franklin Park.** The goal of the walk is to support POPI in its efforts to end suffering from OUD and chronic pain. This year over **\$4,000** was raised from the walk. Funding from the walk is allocated towards innovative research projects/ideas, support for research assistance and fellowships across relative disciplines along with supporting administrative costs for the



POPI program. Participants were encouraged to start a team, join a team, or walk on their own virtually or in person. Participants were encouraged to **raise \$100 or more** to benefit POPI with registration options for \$25 and \$50. Participants received POPI branded T-Shirts and or Keychains as a thank you for participating. POPI hopes to garner more participation in the walks to come and secure more corporate sponsorships to help with fundraising.

With very limited manpower and resources, POPI works tirelessly to secure new funding opportunities that will help solidify the program infrastructure and sustain program objectives such as offering endless support, resources, and assistance to BWH innovators in the OUD and pain Space.

UNIQUE EDUCATIONAL OPPORTUNITIES

Among its cyclic programs, meetings, and other events POPI has hosted the following:

Opioid Innovation and Recovery Symposium (Fall 2020)



After a lull in activity due to COVID, September 17th of 2020 marked POPI's first virtual event post the onset of COVID-19. In honor of National Recovery Month, POPI hosted the Opioid Innovation Recovery Symposium which featured BWH clinicians and partners who discussed OUD and its co-existence with COVID-19, Women's Health issues, Trauma, and Health Disparities.

OUD Around the Globe: A Speaker Series (Summer 2021)



Each Tuesday in June of 2021 this virtual workshop, hosted jointly by the Harvard Medical School Center for Global Health Delivery and BWH Program in Opioid and Pain Innovation (POPI), brought together stakeholders and scientists from different countries to examine and showcase several practice-based approaches and public health policies from around the world that address opioid use disorder and opioid-related overdoses and deaths. Distinguished guests and speakers for the event represented **Canada, Germany, United Arab Emirates, Australia, Malaysia, Vietnam, Portugal, South Africa, and The United States**. Recordings, detailed proceedings, and findings were established from this workshop which can be utilized to inform and further innovative research within BWH and beyond. For the workshop speakers, details and recordings visit: <https://ghdcenter.hms.harvard.edu/oud-around-globe> For workshop proceedings visit https://ghdcenter.hms.harvard.edu/files/ghd_dubai/files/oud_digital.pdf



***The Annual National Opioid and Substance
Awareness Day (NOSAD)
(Early Fall)***



POPI hosted its 3rd annual [National Opioid and Substance Awareness Day \(NOSAD\)](https://popi.bwh.harvard.edu/national-opioid-and-substance-awareness-day-nosad/) on **Tuesday September 13th 2022 from Noon- 3p.m.** This virtual live-streamed event featured a panel discussion from HHS, CDC and SAMSHA. Partners included The Kennedy Forum, Shatterproof, AAP and SAMSHA. Topics for the day were the HHS Overdose Prevention Strategy, Medication Assisted Treatment, Screening Tools for Substance Misuse and Behavioral Health along with vignettes for persons with lived experience. Last year's event had more than **1000 registrations** and this year's event garnered more than 300 views on Youtube. For an overview of the day's event visit: <https://popi.bwh.harvard.edu/national-opioid-and-substance-awareness-day-nosad/> To view the history and resources for the event visit: <https://opioidscreening.org/nosad-2022/>. To watch the live stream of the event visit: <https://www.youtube.com/watch?v=cPcNAK4jQ74>

***Purple Flag Exhibit for Lives Loss to OUD
(Early Fall)***



For the second year in a row, POPI supported the SOAR foundation's Purple Flag exhibit, in which more than 2100 purple flags were exhibited on the 15 Francis Street lawn of BWH for one week to honor those who have lost their lives to opioid overdose in Massachusetts in the past year. The ceremony hosted a nice media presence with brief talks from hospital leadership, recovery coaches, family members of someone who was lost to overdose, and a patient in recovery.

THE FUTURE OF POPI

As POPI enters year 4 it will:

- Implement a more focused strategy to leverage the support of internal programs such as the Brigham Research Institute.
- Solicit support from external entities such as corporate sponsors for the 5K Walk for POPI in the Fall of 2023.
- Welcome more BWH/MGB community engagement opportunities such as spearheading programs that offer grant writing, publication writing, resources, and training for Jr. Faculty members.
- Create a stronger focus on the important work of innovators across disciplines related to OUD and Pain such as Orthopedics, Toxicology, Community Health and other MGB affiliated departments and programs.
- Continue to offer educational and issue focused programming throughout the year.



- Continue to promote the need for private and institutional funding support towards the development of the program
- Disseminate funding opportunities and host funding programs for innovative research in the OUD and pain space.
- Continue to provide a platform for collaboration and education via its quarterly meetings and communication channels.
- Build on its newly established internship program offering health program management skills to undergraduate and graduate students with an interest in Public Administration and Public Health.