In September 2016, the GE Foundation and Massachusetts General Hospital (MGH) Global Health convened over 260 global health innovators and experts at District Hall in Boston for a hack-a-thon to address challenges in prevention, treatment, and recovery of opioid addiction. Clinicians, community members, public health experts, engineers, designers and entrepreneurs joined forces to develop new opioid-related technologies, business models, and process innovations addressing opioid addiction. Over the course of the weekend, the innovators pitched 70 challenges, formed 18 teams, and presented their innovations to a panel of expert judges. Five winning teams received awards of $1,000.
On Friday before the hack-a-thon, clinicians, government representatives, public health experts and affected community members gathered from across Massachusetts and across the United States to attend the Challenge Summit. The Summit facilitated a discussion of challenges faced in opioid addiction and provided critical insight into the epidemic. Challenges varied from addressing the stigma surrounding the opioid crisis to increasing availability to suboxone treatment. Prior to each panel, participants heard personal stories from individuals in recovery and affected family members. The Challenge Summit consisted of four panels and included a Challenge Identification and Prioritization Workshop, which allowed participants to discuss the issues addressed during each panel and to begin brainstorming solutions.

<table>
<thead>
<tr>
<th>Panel</th>
<th>Panelists</th>
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</table>
| **Scope of the Problem**                        | Moderator: Sarah Wakeman, Medical Director, MGH Substance Use Disorder Initiative  
Colleen Labelle, Program Director, BU Opioid Treatment Program  
Dr. Monica Bharel, Commissioner, Mass Dept. of Public Health  
Dr. Jeffrey Samet, Chief, BU General Internal Medicine Professor of Medicine and Public Health |
| **Community/Public Health Innovations & Challenges, Prevention, Laws/Law Enforcement** | Moderator: Monica Valdes-Lupi, Executive Director, Boston Public Health Commission  
Brian Larkin, Lieutenant Det., Boston Police Dept. Drug Control Unit  
Jody Rich, Director, Brown University Center for Prisoner Health & Human Rights  
Leo Beletsky, Northeastern Professor of Law |
| **Novel Strategies for Overdose Prevention and Response** | Moderator: Dr. Alex Walley, Medical Director, Boston Public Health Commission Opioid Treatment Program  
Sarah Mackin, Program Manager, AHOPE Needle Exchange Program  
Dr. Jessie Gaeta, Chief Medical Officer, Boston Health Care for the Homeless Program  
Dr. Traci Green, Associate Professor, Emergency Medicine, BU School of Medicine |
| **Approaches to Clinical Care, Treatment & Recovery** | Moderator: Dr. Jim Gessner, President, Mass Medical Society  
Dr. Miriam Komaromy, Associate Director, Project ECHO  
Dr. Emma Stanton, Associate Chief Medical Officer, Beacon Health  
Dr. Colleen Barry, Director, Johns Hopkins Center for Mental Health and Addiction Policy Research |

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**Friday Keynote Speakers**

- **Governor Charlie Baker**, State of Massachusetts
- **Michael Botticelli**, Director, White House National Drug Control Policy
- **Megan Smith**, Chief Technology Officer, White House Office of Science & Technology Policy
- **Chris Herren**, Founder, The Herren Project
Innovation Showcase

During the Friday evening reception, four groups showcased their innovative technologies designed to address various aspects of the opioid epidemic. The featured innovations were:

- Hey, Charlie
- Shatterproof
- Project Echo
- Column Health

Pitching Challenges

In addition to the challenges identified by experts in the field (See appendix), participants pitched 70 self-identified “pain points” at the start of the hack-a-thon. These challenges became the foundation of team formation and hacking solutions through the weekend. Some sample pitches:

- Community members need more immediate access to Naloxone
- How do we reach those who are at a high risk of fatal overdose?
- Transportation is often unavailable to and from treatment centers
- Social isolation is perpetuated by stigma, discrimination and access barriers
- Addiction leads to isolation and isolated injection leads to death

A Look at our Mentors

CAMTech recruited 45 multi-disciplinary mentors to support teams throughout the 48 hours of the hack-a-thon. Mentors played a vital role by sharing their expertise in government, public health, law enforcement, community engagement, engineering and/or business to aid in the development of innovative solutions and technologies.

Brad Greenstein  
New England Center for Addiction Medicine

Grace Sweeney  
Magyar, Bogle, and O’Hara LLP

Jody Rich  
Brown University Center for Prisoner Health and Human Rights

Sarah Mackin  
AHOPE Needle Exchange Program

Kevin Woghiren  
GE

Jessie Gaeta, MD  
Boston Health Care for the Homeless Program

Saturday Keynote Speakers

Secretary Marylou Sudders,  
Health and Human Services,  
State of Massachusetts

Pat Doust, Associate Director  
for Nursing, MGH Global Health
The Judges

CAMTech selected six judges with expertise in substance abuse, business, healthcare, nursing, and public health to review the final presentations. The judges evaluated and measured all innovations based on set criteria with the goal to reward projects that not only addressed prevention, treatment, or recovery but were also technically-disruptive and rapidly-implementable.

<table>
<thead>
<tr>
<th>Category</th>
<th>Description of Category</th>
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<tbody>
<tr>
<td>Challenge Addressed</td>
<td>Shows innovation is addressing one of the challenges identified or a clear public health need</td>
</tr>
<tr>
<td>Public Health Impact</td>
<td>Demonstrates potential for widespread public health impact and addresses the wellbeing of the patients</td>
</tr>
<tr>
<td>Technology Innovation</td>
<td>Offers new and creative technology or process innovation solution (‘better/faster/cheaper’)</td>
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<tr>
<td></td>
<td>Provides convincing rationale for why this unique approach has the potential to work (if not already developed)</td>
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<td></td>
<td>Addresses significant technical or process issues relevant for the users and implementation setting</td>
</tr>
<tr>
<td>Sustainable Business Model</td>
<td>Demonstrates strong demand (social, clinical and/or economic impact)</td>
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<tr>
<td></td>
<td>Feasible to partner with organizations to disseminate technology/process</td>
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<tr>
<td></td>
<td>High success for implementation</td>
</tr>
<tr>
<td>Team</td>
<td>Brings cross-disciplinary expertise in technology/process development, clinical medicine and business/implementation</td>
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<tr>
<td></td>
<td>Incorporates end-user input/feedback</td>
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<tr>
<td>Pitch</td>
<td>Demonstrates the prototype or solution</td>
</tr>
<tr>
<td></td>
<td>Clearly articulates the problem the technology/process proposes to address</td>
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<tr>
<td></td>
<td>Documents plan to work in the field and continually incorporate end-user feedback</td>
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</tbody>
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The Teams

Eighteen cross-disciplinary teams formed to co-create innovations that address the prevention, treatment, and recovery of opioid addiction.

The Prizes

The GE Foundation and CAMTech offered prizes totaling $5,000 were awarded to the following:

**The Innovation Award ($1,000) - Team RxReturn:** a notification system that reminds patients to dispose of expired medications through label, light, and text messages

**The Anti-Stigma Award ($1,000) - Team Ally:** a social innovation that de-stigmatizes opioid use and enables community responders to make naloxone quickly available when and where it is needed

**The Tech Solution Award ($1,000) - Team ReadyACCESSviaSMS:** an anonymous, SMS-based system that increases access to life-saving resources and information

**The Treatment On-Demand Award ($1,000) - Team MATMobile:** a mobile van with treatment on-demand for those struggling with opioid use disorder

**The Community Building Award ($1,000) - Team The 3rd Place:** a meeting and activity space that acts as a “hub” for those in recovery and offers a safe, welcoming environment

**Post-Hack Prize:** The GE Foundation and CAMTech will offer a $10,000 prize to the team that makes the most progress on their innovation in the 90 days after the event.

Press Highlights

**A Glance at More Innovations**

- **ReLive:** A wristband monitor which detects overdose in real-time and automatically injects an appropriate dose of naloxone
- **GEMS Boxes:** Narcan in remotely unlocked boxes to turn bystanders into first-responders
- **GAATE:** An app that streamlines access to addiction treatment resources
- **Canary Analytics:** Predictive analytics solution that calculates an adolescent addiction risk score used to catalyze interventions by providers and payers
- **HORSE:** Equine assisted psychotherapy program located in the city of Boston
- **Angel Wings Rescue Pack:** Innovative packaging system for opioid prescriptions that integrates a naloxone rescue injector
# Appendix: Clinical Challenges

<table>
<thead>
<tr>
<th>Category</th>
<th>Description of Challenge</th>
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| Prevention    | Efforts focused aimed at identifying and intervening with high risk individuals including children, adolescents, and young adults are critical as are efforts aimed at opioid prescribers and pharmaceutical companies.  
What are some new ways to approach prevention? |
| Overdose      | Currently, drug overdose is the leading cause of accidental death in the US.  
There is an urgent need to find ways to prevent and treat this fatal sequelae of addiction. |
| Treatment     | Acknowledging addiction as a chronic disease, treatments including medications are available for individuals.  
How do we improve their efficacy and availability? How do we address the addiction-related stigma that acts as a barrier to treatment?  
How do we identify individuals early in need of treatment?  
Are there innovative ways we can work together to reduce the harm of ongoing use both to the individual and the community?  
Can we identify easily accessible, acceptable, and effective means of addressing overdoses? |
| Recovery      | Those in recovery often face it as a battle taken “one day at a time”.  
Are there innovative ways to support these individuals in their struggle to fight against the triggers for relapse and build the support and strength to make it through today? |
| Family & Friends | Addiction affects not only the individual but their loved ones as well. They suffer not only from the complications of the addiction but also the stigma society places around addictions. Are there ways we can help support them? |