Twenty-first century society exposes us to media and technology the majority of our waking hours. Social media, internet, television, film, music, video games, and advertisements abound.

Studies suggest that some of these exposures negatively influence key health behaviors such as substance use and diet and exercise patterns. However, other media messages—such as those from public service announcements or health-promoting smartphone applications—may improve health outcomes. Better understanding of how media, technology, and health outcomes interact will empower us to develop educational and policy-related interventions which encourage the positive and lessen the negative.

With this in mind, the first focus of the Center is to investigate associations between media messages, technological innovations, and health outcomes. In particular, we focus our interest on topics relating to substance use (such as tobacco and alcohol), mental health, and communications between patients and healthcare providers.

Second, we aim to improve health outcomes via developing, implementing, and evaluating interventions related to media messages and technological advances. Interventions may involve policy implementation, education, or other organizational or procedural change.

We also provide research mentoring and experience to trainees throughout the University of Pittsburgh.
DIRECTOR’S MESSAGE

MEET DR. PRIMACK

Dr. Brian Primack is the Director of the Center for Research on Media, Technology, and Health and Assistant Vice Chancellor for Research on Health and Society.

After graduating Yale University with degrees in English and Mathematics, Dr. Primack spent four years teaching adolescents and studying human development for his master’s degree, which he received from Harvard University. He subsequently graduated first in his class from Emory Medical School and trained in Family Medicine in Pittsburgh.

WELCOME

In 2015, for the first time in history, the Oxford English Dictionary’s “Word of the Year” was not a word. It was the “laughing while crying” emoji pictured to the left. This movement from words to social media based images represents how quickly our society is changing. Our Center keeps up with this rapid movement to a technology based culture and studies the implications for health.

For example, 2015 saw a rapid shift related to tobacco—which is still the leading cause of preventable death in the U.S. For the first time in modern history, prevalence of e-cigarette use and hookah smoking were both higher than cigarette use among U.S. high school students. Some see this as a potential benefit; perhaps the technology and marketing behind e-cigarettes are helping smokers reduce the toxins to which they are exposed. On the other hand, large numbers of non-smokers are now using e-cigarettes and hookahs. Therefore, these vehicles may represent pathways to tobacco and nicotine use among many people who otherwise would not have been exposed.

In November of 2015, our lead article in JAMA Pediatrics added a piece to this puzzle. It represented the first longitudinal, national data to substantiate what many had feared—that the growing cohort of never-smokers who experiment with e-cigarettes tend to progress to traditional cigarette smoking, even if they did not ever intend on smoking regular cigarettes in the first place.

But this represented the tip of the proverbial iceberg for us. Since 2010, our studies have been cited over 2000 times, and the UPMC Media Relations office estimates that press related to our work in 2015 alone reached 23,000,000 impressions. This year’s publications represented an exciting mix of topics (effectiveness of media literacy, proliferation of alcohol-related messages on YouTube, policy around new forms of tobacco and nicotine) and of methodology (a randomized crossover trial, longitudinal cohorts qualitative analyses, and a meta-analysis).

Please enjoy perusing this annual report. We welcome any feedback or suggestions.
THE PEOPLE OF CRMTH

Jaime E. Sidani, PhD, MPH, CHES
Assistant Director

Dr. Sidani joined the Center in 2011 after practicing as a university health educator for five years. After graduating from the University of Rochester with a BA in Health & Society, she completed a Master of Public Health Degree from the Northwest Ohio Consortium for Public Health and a PhD in Health Education from the University of Toledo. Her main research interests include adolescent health behavior and tobacco use prevention, with a specific focus on media and technology.

Ariel Shensa, MA
Statistician and Data Manager

Ms. Shensa joined the Center in 2010 and is responsible for all aspects of data management and analysis. Ariel received her Bachelor of Arts in Psychology from Chatham University and Master of Arts in Research Methodology from the University of Pittsburgh. Her interests include structural equation modeling, social media use and addiction, media literacy, and tobacco use prevention.

Leila Giles, BS
Communications Officer

Ms. Giles came to CRMTH in 2015 from a digital media role at a non-profit involved in substance use topics. She graduated from Indiana University of Pennsylvania with a degree in Communications Media. She focuses on the Center’s communications and media activities.

Allison Raithel-Ghirardi, AA
Research Assistant

Ms. Ghirardi-Raithel was previously in a health education and promotion role at the University of Pittsburgh’s Student Health Center. She joined CRMTH in 2015. She focuses on assisting various projects and promoting the mission of the Center.
The Center for Research on Media, Technology, and Health juggles an ambitious collection of projects. Hookahs, electronic cigarettes, alcohol, Twitter, Yelp, Tumblr, and YouTube all feature on the regular agenda. As such, it’s fortunate that CRMTH has the skills of Program Coordinator Jason Colditz.

Since joining the team in 2012, he has been involved in five ongoing projects regarding media messages and their influence on health. His research on these topics has earned him numerous authorships. His first-author publication analyzing policy gaps related to waterpipe tobacco smoking will soon be appearing in the *American Journal of Health Promotion*. As part of his role with CRMTH, he mentors both undergraduate and graduate students in development of research projects.

CRMTH is not Mr. Colditz’s first exposure to the University of Pittsburgh. He earned his Master’s in Education in 2012 from Pitt, studying social and comparative analysis in education. His undergraduate degrees in communications and psychology are also from Pitt.

In addition to his many Pitt projects, Jason finds the time to volunteer with and serve on the boards of local non-profit organizations. He also enjoys gardening, woodworking, and tinkering with electronics.
Mary Carroll, BA, BSN
Triage nurse, Squirrel Hill Health Center
CRMTH mentee, 2006-2013

Mary Carroll accomplished much during her six years as a CRMTH mentee. She joined us in her sophomore year of college, and during her time with the Center co-authored nine papers and took the role of lead author on a tenth. She presented on hookahs and internet video at the Society for Adolescent Health and Medicine Annual Meeting in New Orleans, where she won a student research scholarship.

Amid her many research projects, she also took two years to work in Turkmenistan with the Peace Corps, developing health education classes for children and for pregnant mothers.

Since her time at CRMTH, Mary received her BSN degree from University of Pittsburgh and began to work as a triage nurse at the Squirrel Hill Health Center. She applies her linguistic skills at the federally qualified health center, using Arabic and American Sign Language to help their refugee, immigrant, and deaf patients. Much of her day involves patient education and coordination of their OB/GYN program.

“My experience at CRMTH inspired me to get into healthcare in family practice where I can be actively involved in health education and preventive medicine,” Mary said. Looking forward, she hopes to further her education in advanced practice nursing and to continue to be involved in healthcare research.

Laura Lin, BA
Medical student, University of Pittsburgh
CRMTH mentee, 2014-present

Laura’s year-long fellowship with CRMTH allowed her to become deeply involved with a project on associations between social media and mental health issues. Her lead author publication will soon appear in the high-impact journal Depression and Anxiety.

Laura’s abstract on this work also earned her a place presenting at the 2015 Society of General Internal Medicine meeting in Toronto. She also worked with the rest of the CRMTH team on three other presentations given at the same conference. She is also a co-author on an article about social media and emotional support which was recently published in the Journal of Community Health.

As she continues through her fourth year of medical school, Laura is applying for a residency in combined family medicine and psychiatry.
University of Pittsburgh students thrive at CRMTH. The Center offers students guidance and direction, work experience, and insight into the world of academic research. The following showcases our students in 2015 and their research topics.

**STUDENTS**

**MEDICAL STUDENTS**

Jamil Alhassan and Simon Yohannes  
_An after-school program focusing on health, social, and environmental issues among urban, at-risk youth_

Mercy Baffour  
_Social media and eating disorders_

Bethany Corbin  
_Prescription education for medical students_

Beth Hoffman  
_Literature review on medical television_

Laura Lin  
_Social media and mental health (See spotlight)_

Erin Whaite  
_Social media and mental health, Facebook ‘likes’_

**MASTERS IN PUBLIC HEALTH STUDENTS**

Priam Chakrabouti  
_Analysis of Twitter data on HPV vaccines_

Ravi Choudhuri  
_Pennsylvania policy on alternative tobacco products_

Jacquelynn Jones  
_Social media and mental health_

Mara Leff  
_Using social marketing and participatory action research to increase hand washing in India_

Joy Xu  
_Statistical analysis of media data_

**UNDERGRADUATE STUDENTS**

Maharsi Naidu  
_Data visualization, social media data_

Christine Stanley  
_Project coordination assistance_

Nancy Adkins, Paige Haring, Molly March-Steinman, Gabrielle Scherer, and Sarah Whyler  
_Assessment of data on Twitter related to alternative tobacco and nicotine sources_
CRMTH is positioned across the health sciences, which includes the University of Pittsburgh schools of medicine, public health, nursing, pharmacy, rehabilitation sciences, and dental medicine. We also work with many researchers outside of health sciences, including the schools of social work and arts and sciences. The following are some of our key collaborators within Pitt and their particular areas of expertise.

**Michael Fine, MD, MSc**  
Medicine, Clinical and Translational Research, Health Disparities

**A. Everette James, JD, MBA**  
Health Policy and Government

**Wishwa Kapoor, MD, MPH**  
Medicine, Outcomes and Effectiveness Research

**Kevin Kraemer, MD, MSc**  
Alcohol Use, Clinical Medicine

**Steven Martino, PhD,**  
RAND, Health Psychology

**Kathleen McTigue, MD, MPH, MS**  
Epidemiology, Prevention, Obesity

**Elizabeth Miller, MD, PhD**  
Pediatrics, Adolescent Medicine, Community-Based Research

**Gordon Mitchell, PhD**  
Communication

**Brooke Molina, PhD**  
Psychiatry, Psychology, Youth Development, Substance Use

**Ana Radovic, MD**  
Adolescent Medicine

**Daniel Rosen, PhD**  
Social Work, Substance Use, Aging, Technology, Business

**William Shadel, PhD**  
RAND, Health Psychology, Media Messages, Substance Use

**Galen Switzer, PhD**  
Medicine, Psychiatry, and Psychometrics

**John Wallace, PhD**  
Health Disparities, Social Work, Urban Education

**Charles Wessel, MLIS**  
Library Science, Systematic Reviews
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<tr>
<th>Publication</th>
<th>Journal</th>
<th>Status</th>
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<tbody>
<tr>
<td>Shensa A, Sidani JE, Lin L, Bowman ND, Primack BA. Social media use and perceived emotional support among US young adults.</td>
<td><em>Journal of Community Health</em></td>
<td>In press</td>
</tr>
<tr>
<td>Primack BA, Carroll MV, Davis W, Shensa A, Levine MD. Hookah-related images posted by and about females on Tumblr.</td>
<td><em>Journal of Health Communication</em></td>
<td>In press</td>
</tr>
<tr>
<td>Phelps-Tschang J, Miller E, Rice K, Primack BA. Web-based media literacy to prevent tobacco use among high school students.</td>
<td><em>Journal of Media Literacy Education</em></td>
<td>In press</td>
</tr>
<tr>
<td>Primack BA, Soneji S, Stoolmiller M, Fine MJ, Sargent JD. Progression to traditional cigarette smoking after electronic cigarette use among US adolescents and young adults.</td>
<td><em>JAMA Pediatrics</em></td>
<td></td>
</tr>
<tr>
<td>Soneji S, Sargent JD, Tansky SE, Primack BA. Associations between initial waterpipe tobacco smoking and snus and subsequent cigarette smoking: Results from a longitudinal study of US adolescents and young adults.</td>
<td><em>JAMA Pediatrics</em></td>
<td></td>
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<tr>
<td>Primack BA, Colditz JB, Pang K, Jackson KM. Portrayal of alcohol intoxication on YouTube.</td>
<td><em>Alcoholism: Clinical and Experimental Research</em></td>
<td></td>
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<tr>
<td>Shensa A, Phelps-Tschang JS, Miller E, Primack BA. A randomized crossover study of Web-based media literacy to prevent smoking.</td>
<td><em>Health Education Research</em></td>
<td></td>
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</tbody>
</table>


Primack BA, Mah J, Shensa A, Rosen D, Yonas MA, Fine MJ. Associations between race, ethnicity, religion, and waterpipe tobacco smoking. *Journal of Ethnicity in Substance Abuse.*


Alzoubi KH, Khabour OF, Azab M, Shqair DM, Shihadeh A, Primack BA, Eissenberg T. Carbon monoxide exposure and puff topography are associated with the Lebanese Waterpipe Dependence Scale score. *Nicotine & Tobacco Research.*
BY THE NUMBERS

Citations since 2010: 2,127*
Publications since 2010: 58

News articles on CRMTH in 2015: 884†
Total audience reached in 2015: 23,300,000†

* Google Scholar estimate
† Estimates provided by University of Pittsburgh Medical Center Media Relations Office

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<tr>
<th>CRMTH's Top Five Most Cited Publications</th>
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<tr>
<td>Prevalence of and associations with waterpipe tobacco smoking among US university students&lt;br&gt;Annals of Behavioral Medicine, 2008</td>
<td>222</td>
</tr>
<tr>
<td>Role of video games in improving health-related outcomes: A systematic review&lt;br&gt;American Journal of Preventive Medicine, 2012</td>
<td>119</td>
</tr>
<tr>
<td>Association between media use in adolescence and depression in young adulthood: A longitudinal study&lt;br&gt;Archives of General Psychiatry, 2009</td>
<td>118</td>
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<tr>
<td>College students and use of K2: an emerging drug of abuse in young persons&lt;br&gt;Substance Abuse Treatment, Prevention, and Policy, 2011</td>
<td>101</td>
</tr>
<tr>
<td>Water-pipe tobacco smoking among middle and high school students in Arizona&lt;br&gt;Pediatrics, 2009</td>
<td>93</td>
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CURRENT GRANTS

**Waterpipe Tobacco Smoking among Adolescents and Young Adults in the United States**
National Cancer Institute (NCI R01)
2010–2017

**Emergence of Gender Inequitable Practice in Adolescence**
National Institute of Child Health and Human Development (NICHD R24)
2013–2015

**Alcohol-Related Messages in Social Media**
ABMRF Alcohol Research Foundation (ABMRF)
2013–2015

**Exploring Sex Differences in Waterpipe Tobacco Smoking**
NIH Office of Women’s Health (NIH R01 supplement)
2014–2016

**Sponsored Health Information Technology and Evidence-Based Prescribing among Medical Residents**
Agency for Healthcare Research and Quality (AHQR R21)
2014–2016

**Improving US Health Policy Regarding Water-pipe Tobacco Smoking**
National Cancer Institute (NCI R21)
2014–2016

**Alcohol Marketing and Underage Drinking**
National Institute of Alcohol Abuse and Alcoholism (NIAAA R01)
2014–2017

**Cessation in Non-Daily Smokers: An RCT of NRT with Ecological Momentary Assessment**
National Institute on Drug Abuse (NIDA R01)
2014-2018
The faculty and staff of The Center for Research on Media, Technology, and Health represented the University of Pittsburgh with six poster and four oral presentations on a variety of topics at the Society of General Internal Medicine’s annual conference in Toronto this April. A summary of the presentations follows.

Brian Primack:
- Systematic Review And Meta-Analysis Of Inhaled Toxicants From Waterpipe And Cigarette Smoking.
- Initiation of Cigarette Smoking after Electronic Cigarette Use: A National Study of Young Adults.
- Waterpipe Tobacco Smoking among US Young Adults Both in And Not in School: A Nationally-Representative Study.

Jaime Sidani:
- Associations Between Social Media Use and Eating Disorder Risk Among US Young Adults.
- Waterpipe Tobacco Smoking Dependence among US Young Adults.

Jason Colditz:

Ariel Shensa:
- Associations between Social Media Use and Perceived Emotional Support among a Nationally-Representative Cohort of Young Adults.

Laura Lin:
- Associations between Social Media Use and Depressive Symptoms among US Young Adults.

Beth Hoffman:
- The Use of Fictional Medical Television in Medical Education: A Systematic Review.
- Exposure to Fictional Medical Television and Patients’ Health: A Systematic Review.
The World Health Organization guides public health policy and best practices for health internationally. In 2015, they released the second edition of their advisory note on waterpipe tobacco use. WHO had issued their first report on the topic in 2005. This second edition was three times the length of the original, and it cited CRMTH research.

In particular, their report titled “Waterpipe tobacco smoking: health effects, research needs and recommended actions for regulators” cited our manuscript published in *JAMA Pediatrics* to support the association between hookah use and subsequent other tobacco exposure.

Pennsylvania is currently the only state that has not set an age limit on the sale of electronic cigarettes. This gives minors easy access to these nicotine products.

However, some local ‘vape shops’ have cited CRMTH research in their decision to voluntarily institute an age limit to their stores as a matter of policy.
Multiple CRMTH studies made their media mark in 2015. Leading substance use journal *Alcoholism* published “Portrayal of alcohol intoxication on YouTube” in April. The manuscript summarized characteristics of popular online videos featuring colloquial keywords such as ‘drunk’ or ‘hammered.’

Dozens of newspapers, radio stations, television networks, and online news sites took interest in the research. U.S. sources included The Atlantic, NPR, and Huffington Post. The research reached an international audience through outlets such as the Daily Mail of Great Britain, the French Tribune, and The Times of India.
In November 2015, *JAMA Pediatrics* published an article which CRMTH researchers wrote in partnership with Dartmouth’s Geisel School of Medicine. “Progression to Traditional Cigarette Smoking After Electronic Cigarette Use Among US Adolescents and Young Adults” was the first longitudinal study to examine progression to traditional cigarettes in a national sample.

Articles about the study appeared in *Time, The Washington Post, LA Times, and US News and World Report*, for a total of 336 news outlets. This included an *NPR* interview with Dr. Primack on Essential Pittsburgh and another for *NPR Boston*, two of sixteen radio pieces on the subject.

To the right is the publication’s Altmetric score. This graphic quantifies the amount of public exposure the article has received. A score of 279 puts the article in the top 5% of all Altmetric, and the top 3% of *JAMA Pediatrics* articles. Each color in the wheel signifies a media category; the widest, blue section indicates prevalent shares occurring on Twitter.
Associations between initial waterpipe tobacco smoking and snus and subsequent cigarette smoking: Results from a longitudinal study of US adolescents and young adults. *JAMA Pediatrics.*

**Medical News Today:**
Young users of hookah and snus 'more likely to take up cigarettes'

**Medical Daily:**
Hookah leads to smoking cigarettes in teens: Why FDA needs to move forward with regulations

**United Healthcare:**
Teens who use hookahs more likely to start smoking cigarettes, study says
For more information about the Center, visit:
http://www.crmth.pitt.edu/

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