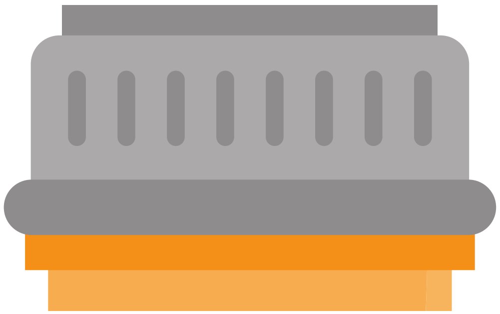

ABSTRACT

Approximately 250 million prescriptions for opioids are written each year in the US. 25% of those prescribed opioids misuse them, 10% develop an opioid use disorder, and 5% transition to heroin. In 2017, there were over 47,000 opioid-related overdose deaths. Over 50% of those misusing opioids have not sought treatment due to lack of insurance coverage for and/or availability of alternative pain therapy and treatment, lack of social support, limited knowledge of addiction and treatment, lack of transportation, and cost. In North Carolina, overdose deaths have increased by over 580% between 1999 and 2017, averaging five overdose deaths every day. The purpose of this project was to analyze More Powerful NC, a state-wide opioid awareness campaign sponsored by North Carolina State Attorney General Josh Stein, and the North Carolina Department of Health and Human Services. The Health Belief Model and the Transtheoretical Model served as theoretical frameworks for this analysis. This analysis showed that the campaign struggled to communicate the aspects of the Health Belief Model necessary to prompt behavior change, particularly perceived barriers. This analysis also showed that the campaign neglected communication regarding relapse, a pillar of the Transtheoretical Model, and something experienced by roughly half of those in recovery. Finally, this analysis showed, through both theoretical lenses, that the campaign did not adequately tailor messaging to promote the suggested behavior shifts within rural communities, where barriers to change are more significant and where almost half of North Carolinians reside. This project concludes with suggestions for campaign improvement.

Evaluating a State-Wide Opioid Campaign Using the Health Belief Model and the Transtheoretical Model

SARAH RATHJE
COLLEGE OF ARTS, MEDIA, AND DESIGN

Opportunity: About the Opioid Epidemic

statistics

- Approximately 250 million prescriptions for opioids are written each year in the US. 25% of those prescribed opioids misuse them, 10% develop an opioid use disorder, and 5% transition to heroin.
- In 2017, the average number of overdose deaths in the 10 most affected states was 1 In 4,700, with 2,168 in MA (1 in 3,500) and 2,414 in NC (1 in 4,000)
- 5.72x more overdose deaths in white pop. than African American pop., 8.04x more overdose deaths In white pop. than non-white Hispanic pop.

risk factors

- pregnant women, involvement with criminal justice system, adolescents
- genetics
- personal or family history of substance misuse
- chronic pain
- poor social support
- psychological stress/trauma
- co-occuring mental & medical disorders
- preadolescent sexual abuse
- high opioid dose
- opioid dose In combination with benzodiazepines or anti-depressants
- unemployment
- opioid naivety
- recent release from absitence-based addiction treatment

history

- 1990's expansion of marketing of opioids from elderly cancer patients to wider range of ages and conditions
- misleading/untruthful marketing: "less than 1% of opioid patients become addicted" was used In various commercials despite being untrue
- widely prescribed by doctors
- regulatory systems fail to see warning signs of mass addiction and over-prescribing
- lack of media coverage and statements by distributors alerting the public to dangers of opioid misuse and addiction until decades later

symptoms

physical
under-active, repetitive speech patterns, dilated pupils, red eyes, excessive sniffing/runny nose, pale or undernourished appearance, weight loss, change In eating habits, unusual body odor/lack of personal hygiene

behavioral
missing work/school, work/school problems, missing Important engagements, isolating/secretive tendencies, disrupted sleep patterns, legal problems, financial problems, relational problems, conversations dominated by drug-related topics

emotional
irritability/argumentativeness, defensiveness, Inability to deal with stress, loss of interest in activities/relationships, obnoxious, silly, confused easily, denial, rationalization, minimization, blaming

consequences

- familial: childhood mental illness and trauma, childhood difficulty in school, familial financial hardship, elder financial abuse
- financial problems
- legal problems
- inability to maintain employment
- health: spread of infectious diseases such as HIV and Hepatitis C, GI issues, lasting damage to heart and brain functioning, high chance of overdose, high risk of morbidity

treatment

- naloxone (Narcan)
- methadone
- buprenorphine (Subutex)
- naloxone + buprenorphine (Suboxone)
- Vivitrol
- Antabuse
- medication assisted treatment: therapy, 12-step recovery program, sober living, IOP
- in-patient treatment/rehab

barriers to treatment

- insurance companies don't cover alternative pain therapies
- pain treatment alternatives not readily available (esp. in rural areas)
- social bonds with other opioid users
- high cost of treatment
- confusion about available government funded treatment programs
- lack of knowledge of treatment options
- lack of transportation to treatment
- under-utilization of overdose-reversal drugs
- lack of safe, effective, non-addictive strategies for pain management
- stigma of addiction

more than 1/2 of those misusing opioids or with OUD have not sought medical treatment

benefits of treatment

- rebuilding social bonds
- reduced risk of fatality, overdose, cardiac events, liver failure
- increased probability of successful treatment of co-occurring mental illness
- increased likelihood of financial wellness
- improved cognitive functioning

Opportunity: Opioids in North Carolina and *More Powerful NC*

The Epidemic in North Carolina

- since 1999, the number of medication and drug poisoning deaths in North Carolina has increased more than 580%, from 363 to 2,474 In 2017
- on average, 5 North Carolinians die of an overdose every day

More Powerful NC

who
North Carolina State Attorney General Josh Stein, North Carolina DHHS Secretary Mandy Cohen, Atrium Health, BlueCross BlueSheild of North Carolina, and various corporate partners

what
- billboards: series of 5, rolled out In sets of 6-48 panels In NC's 7 most densely populated regions
- television ads: set of 4, played on local television stations as well as streaming sites like Hulu and Youtube
- website
- media coverage

Campaign Goals

- focus on educating public and empowering people to take action In their homes and communities
- encourage those with substance use disorders to connect with treatment/resources and to offer support and assistance to their families
- reduce stigma by communicating facts/debunking myths associated with treatment and recovery
- encourage safe disposal of leftover opioid pain medication by connecting NC residents with safe medication disposal locations
- promote doctor-patient dialogue about alternative pain management strategies
- increase awareness about NC's Good Samaritan law and therefore encourage reporting of overdoses to emergency response teams
- increase awareness of Nalaxone, how to obtain it, and how to administer it

Billboards

Approach

Health Belief Model

The Health Belief Model theorizes that an individual's perception of his or her vulnerability— his or her perception of the severity of the consequences of a particular behavior or condition combined with his or her susceptibility to those consequences—can be used to predict the likelihood of a behavioral shift. For a behavioral shift to occur, this perceived threat must be combined with a belief that 1) behavioral change is possible (a belief of self-efficacy) and 2) a belief that there are benefits of the behavioral change, and all of these factors must outweigh any barriers to the behavioral change

1. perceived susceptibility
2. perceived severity
3. perceived benefits
4. perceived barriers
5. cues to action
6. self-efficacy

1+2= perceived threat, which must be significant to prompt behavioral shift

3>4 to prompt behavioral shift

Transtheoretical Model

The Transtheoretical Model posits that there are seven stages of behavioral change: precontemplation, contemplation, preparation, action, maintenance, relapse, and termination.

precontemplation — not interested in making a change (defined as within the next 6 months) and sometimes not even aware that a change should be made

contemplation — more open to the behavioral change and intends to make the change within the next six months, but struggles with ambivalence

preparation — preparing to make a change within the next 30 days, believes the benefits of behavior change outweigh the negative aspects of changing the behavior and has an overall belief that this change will lead to positive outcomes

action — newly adopted the changed behavior and intends to maintain the behavior long term

relapse — individual returns to the initial unhealthy behavior

maintenance — established a pattern of engaging in the healthy behavior and plans to continue engaging in the healthy behavior

exit and re-enter at any stage

Results: Analysis of *More Powerful NC* Using the Health Belief Model

"Anthem Video" Ad

what it gets right

- "normal family" → increasing perceived threat
- statistics
  - targeting parents
- direction to return unused pills → cue to action

what it gets wrong

- generalized statistics do not refer to a specific demographic ✗ increasing perceived susceptibility
- does not address: poverty, rural populations, lack of transportation, lack of internet access ✗ reducing perceived barriers, increasing self-efficacy

Billboards

what they get right

- "opioid overdoses end more lives than car wrecks" → increasing perceived threat

what they get wrong

- "take back opioids, take back our communities" ✗ highlighting perceived benefits, clear call to action
- "together we're stronger than the opioid crisis" ✗ improving self efficacy, highlighting perceived benefits

Results: Analysis of *More Powerful NC* Using the Transtheoretical Model

Precontemplation

what they get right
- persuasive nature of the campaign: ads in a variety of formats
- generalized statements plant seeds of concern

what they get wrong
- weak appeal to perceived threat does not provide enough incentive to transition individuals from the precontemplation stage to the contemplation stage

Contemplation

What They Get Right
- cue to visit website
- website is user-friendly, ideal for ambivalent browsing

Preparation

what they get right
- easy access to information about pill drop-off locations
- information about treatment and recovery services available in the state
- stories of successful recovery

what they get wrong
- no positive reinforcement
- recovery stories hidden deep in the website

Action, Relapse, and Maintenance: What They Get Wrong

- no relapse related encouragement or information, which is especially discouraging in messaging about drug misuse-- 50% of people in recovery relapse
- "support for those in recovery" tab on the website does not actually offer support for those in recovery, only generalized information for their families

Impact: Value Proposition

Drafting An Opioid Campaign to Reach Those Who Need it Most

Consider Demographics In Relation to Perceived Barriers

Rural Populations and Lack of Access: Using North Carolina as an Example

a. residents of rural areas are 50% more likely to die of an overdose
b. Almost 50% of North Carolinians live in rural areas
c. maps show that a large portion of these rural areas exist inside connectivity deserts-- internet availability is low
d. maps show that high prescribing of opiates happens more frequently in rural areas
e. maps (provided by NCDHHS and *More Powerful*) show that safe-disposal locations primarily exist in more densely populated regions
f. those living in these areas are primarily lower-middle class and Impoverished, many of whom do not have reliable access to transportation
g. Some of the most common barriers to treatment/qualities of someone in the precontemplation stage of recovery are 1) lack of transportation to treatment and 2) lack of knowledge about available resources

solution

- employ social marketing campaign similar to "Ride Crew" in Wisconsin, providing transportation to treatment and to safe- disposal locations
- focus billboard ads in LESS densely populated areas as opposed to more densely populated areas where they stand now

Communication that Considers Relapse

a. half of those in recovery from substance misuse relapse at least once
b. communication about relapse should focus on encouraging people to keep trying to embrace the behavioral change

solution

- utilize model from "Every Try Counts" smoking cessation campaign that reduces discouragement and stigma of relapse, successfully employs Transtheoretical framework
- partner with preexisting services and non-profits to make new attempts seem more feasible, like the Pennsylvania "Positive Recovery Solutions," a mobile RV unit that will drive to meet individuals and administer the Vivitrol (blocks effects of opiates) shot at low or no cost

Impact: Problem Addressed

Drafting An Opioid Campaign to Reach Those Who Need it Most

- ineffective state messaging regarding opiate addiction: states struggle to provide clear and useful communication about how to seek help with opiate addiction
- this analysis can be adopted and used by states to draft campaigns that
  - consider the populations that they address-- are you targeting rural populations? urban populations? what are some of the barriers they may experience
  - consider the barriers to treatment and reasons for ambivalence towards or disinterest in recovery and specifically provide responses and resources for these factors
  - provide clear directions and solutions that build feelings of self efficacy
  - help public understand the dangers of opiate addiction while making sure to balance these with information about the benefits of receiving treatment
- state departments of public health should understand that adopting these theoretical principles does not require much, if any, additional funding for campaign design or implementation
  - i.e., it is unnecessary to sacrifice efficacy to stay on budget
- more generally, this analysis-- if adopted by states in campaign messaging-- could save lives

References

Baldini, A., Von Korff, M., & Lin, E. H. B. (2012). A Review of Potential Adverse Effects of Long-Term Opioid Therapy: A Practitioner's Guide. Retrieved from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3466038/.
Bruce, R. D. (2018, September). Opioid addiction, opioid addiction treatment, and HIV infection. Retrieved from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6291298/.
Bunting, A. M., Oser, C. B., Staton, M., Eddens, K. S., & Knudsen, H. (2018). Clinician identified barriers to treatment for individuals in Appalachia with opioid use disorder following release from prison: a social ecological approach. *Addiction Science & Clinic Practice*, *13*(1).
Centers for Disease Control and Prevention (2017). Rural America in Crisis: The Changing Opioid Overdose Epidemic. Atlanta, GA: USDHHS.
Centers for Disease Control and Prevention (2019) *Overview of the Drug Overdose Epidemic: Behind the Numbers*. Atlanta, GA: USDHHS.
Centers for Disease Control and Prevention (2019). US County Prescribing Rates, 2017. Atlant GA: USDHHS.
Corcoran, N. (2007). Theories and models in communicating health messages. In *Communicating Health: Strategies for Health Promotion* (pp. 5–31). London: Sage Publications.
Finegeld, D. L., Wongvatunyu, S., Conn, V. S., Grando, V. T., & Russell, C. L. (2003). Health Belief Model and Reversal Theory: a comparative analysis. *Journal of Advanced Nursing*, *43*(3), 288–297. doi: 10.1046/j.1365-2648.2003.02712.x
Genetics Home Reference (2019). *Opioid Addiction*. Bethesda, Maryland: National Library of Medicine.
HBO. (2016, October 23). Drugs. *Last Week Tonight with John Oliver*. New York, New York.
HBO. (2019, April 14). Opioids II. *Last Week Tonight with John Oliver*. New York, New York
Hefner, J., & Eisenberg, D. (2009). Social Support and Mental Health Among College Students. *American Journal of Orthopsychiatry*, *79*(4), 491–499.
Home. (2018, September 6). Retrieved from https://www.morepowerfulnc.org/
Combating the International Dimensions of the Opioid Crisis. (2019). Retrieved from https://www.usglc.org/combating-the-international-dimensions-of-the-opioid-crisis/.
Identifying Addiction. (n.d.). Retrieved from https://www.marrinc.org/signs-and-symptoms/.
Janz, N. K., & Becker, M. H. (1984). The Health Belief Model: A Decade Later. *Health Education Quarterly*, *11*(1), 1–47. doi: 10.1177/109019818401100101
Jeong, J.-Y., & Ham, S. (2018). Application of the Health Belief Model to customers use of menu labels in restaurants. *Appetite*, *123*, 208–215. doi: 10.1016/j.appet.2017.12.012
Juergens, J. (2019, October 30). What Happens if I Relapse? Retrieved from https://www.addictioncenter.com/rehab-questions/what-happens-if-i-relapse/.
Kaiser Family Foundation. (2019, January 16). Opioid Overdose Deaths by Race/Ethnicity. Retrieved from https://www.kff.org/other/state-indicator/opioid-overdose-deaths-by-raceethnicity/?activeTab=graph&currentTimeframe=0&startTimeframe=18&selectedDistributions=total&selectedRows={"wrapups":{"united-states":{}}}&sortModel={"colId":"Location","sort":"asc"}.
Khazan, O. (2018, September 18). Being Black in America Can Be Hazardous to Your Health. Retrieved from https://www.theatlantic.com/magazine/archive/2018/07/being-black-in-america-can-be-hazardous-to-your-health/561740/.
Kreiter, Suzanne. "New Study Says Opioid Addiction in Mass. Is Much Worse than Thought. BostonGlobe.com. October 25, 2018.
Lamorte, W. W. (2019, September 9). Behavioral Change Models: The Transtheoretical Mod (Stages of Change). Retrieved from http://sphweb.bumc.bu.edu/otlt/MPH-Modules/SB/BehavioralChangeTheories/BehavioralChangeTheories6.html.
Lamorte, W. W. (2019, September 9). Behavioral Change Models: The Health Belief Model. Retrieved from http://sphweb.bumc.bu.edu/otlt/MPH-Modules/SB/BehavioralChangeTheories/BehavioralChangeTheories2.html.
Lee-Lin, F., Nguyen, T., Pedhiwala, N., Dieckmann, N. F., & Menon, U. (2015). A Longitud Examination of Stages of Change Model Applied to Mammography Screening. *Weste Journal of Nursing Research*, *38*(4), 441–458. doi: 10.1177/0193945915618398
Levin, D. (2019, June 1). 'Become My Mom Again': What It's Like to Grow Up Amid the Opioid Crisis. *The New York Times*, p. 1. Retrieved from https://www.nytimes.com/2019/05/31/us/opioid-children-addiction.html
Levy, S. (2019). Youth and the Opioid Epidemic. *Pediatrics*, *143*(2). Retrieved from https://pediatrics.aappublications.org/content/143/2/e20182752..info
More Powerful NC. (2019). Anthem Video [Television commercial]. Retrieved from https://www.morepowerfulnc.org/about/the-campaign/
More Powerful NC. (2019). Billboards [Advertisement]. Retrieved from https://www.morepowerfulnc.org/about/the-campaign/
National Institute on Drug Abuse (2019). *Opioid Overdose Crisis*. Bethesda, MD: National Institutes of Health.
National Institute on Drug Abuse (2019). *Overdose Death Rates*. Bethesda, MD: National Institutes of Health.
Netflix. (2019, June 16). Why Your Internet Sucks. Patriot Act with Hasan Minhaj. Los Gato California.
North Carolina Department of Health and Human Services (2019). More Powerful NC Campaign Launches in Effort to Educate Public About Opioids. Raleigh, NC: NCDHHS.
North Carolina Department of Health and Human Services (2019). North Carolina Injury and Violence Prevention Branch: Poisoning Data. Raleigh, NC: NCDHHS.
North Carolina Department of Insurance (2019). Operation Medicine Drop: Drop Boxes Near You. Raleigh, NC: NCDOI.
North Carolina Department of Justice (2018). NCDOJ Opioid Campaign Media Plan. Raleigh, NC: Ferebee
North Carolina League of Municipalities (2019). Resolution Supporting the More Powerful NC Campaign. Raleigh, NC: NCLM.
North Carolina Office of State Budget and Management (2019). The Urban and Rural Faces of North Carolina. Raleigh, NC: NCOSBM.
Rosenstock, I. M. (1974). Historical Origins of the Health Belief Model. Health Education Monographs, 2(4), 328–335. doi: 10.1177/109019817400200403
Nunes, E. V., Gordon, M., Friedmann, P. D., Fishman, M. J., Lee, J. D., Chen, D. T., … Obrien, C. P. (2018). Relapse to opioid use disorder after inpatient treatment: Protective effect of injection naltrexone. *Journal of Substance Abuse Treatment*, *85*, 49–55. doi: 10.1016/j.jsat.2017.04.016
Opioid crisis: Only a US phenomenon? (2019, March 12). Retrieved from https://www.sciencedaily.com/releases/2019/03/190312123716.htm.
Phillips, J. K., Ford, M. A., & Bonnie, R. J. (Eds.). (2017, July 13). Trends in Opioid Use, Harms, and Treatment. Retrieved from https://www.ncbi.nlm.nih.gov/books/NBK458661/.
Polcin, D. L., Korcha, R., Bond, J., & Galloway, G. (2010, December). What did we learn from our study on sober living houses and where do we go from here? Retrieved from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3057870/.
Prochaska, J. O., & Norcross, J. C. (2001). Stages of change. *Psychotherapy: Theory, Research, Practice, Training*, *38*(4), 443–448. doi: 10.1037/0033-3204.38.4.443
Rosenstock, I. M. (1974). Historical Origins of the Health Belief Model. *Health Education Monographs*, *2*(4), 328–335. doi: 10.1177/109019817400200403
Singletary, M. (2019, June 17). How the opioid crisis is leading to elder financial abuse. *The Washington Post*. Retrieved from https://www.washingtonpost.com/business/2019/06/17/how-opioid-crisis-is-leading-elder-financial-abuse/
Sontag, S. (1991). Illness as metaphor ; and, Aids and its metaphors ; Aids and its metaphors. London: Penguin.
Theories & Approaches: How Can I Use the Health Belief Model in My Setting? (2007). Retrieved from http://recapp.etr.org/recapp/index.cfm?fuseaction=pages.theoriesdetail&PageID=13
Wagenaar, A. C., Gehan, J. P., Jones-Webb, R., Toomey, T. L., Forster, J. L., Wolfson, M., & Murray, D. M. (1999). Communities mobilizing for change on alcohol: Lessons and results from a 15-community randomized trial. *Journal of Community Psychology*, *27*(3), 315–326. doi: 10.1002/(sici)1520-6629(199905)27:3<315::aid-jcop6>3.3.co;2-t
Webster, L. R. (2017). Risk Factors for Opioid-Use Disorder and Overdose. *Anesthesia & Analgesia*, *125*(5), 1741–1748. Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/29049118
What's the Best Way to Deal with a Relapse? (2019, June 13). Retrieved from https://americanaddictioncenters.org/treat-drug-relapse.