

Spring 2019

## Opioid use Treatment via Telemedicine: Treatment Options for Rural Maine

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### Recommended Citation

Knapp, Benjamin, "Opioid use Treatment via Telemedicine: Treatment Options for Rural Maine" (2019). *Thinking Matters Symposium*. 216.  
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# Opioid Use Treatment via Telemedicine

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## Abstract

The ongoing opioid crisis has overwhelmed the traditional opioid use disorder (OUD) treatment resources across America. The treatment resources in rural communities have been especially hard hit as geographic and financial barriers limit service capacity. Telemedicine, or medicine delivered via remote means, has been proposed as a potential solution to the lack of conventional opioid treatment resources in rural Maine. Current legalities in the US prohibit telemedicine being used to prescribe opioid agonist drugs, and insurance reimbursement for telemedicine remains a major barrier. This qualitative content analysis looks at the existing research on telemedicine's treatment efficacy for use with OUD as well as the logistical strengths and challenges inherent in the implementation of telemedicine for rural communities. Peer reviewed academic journal articles from the past five years were selected based on their inclusion of content directly related to remotely delivered OUD treatment. Thematic analysis was used to identify key themes in the existing use of telemedicine for OUD treatment delivery. These findings expose the limited data available on telemedicine as an independent OUD treatment modality, but also highlight the strengths of using telemedicine in support of traditional care.

## Introduction or Background

Opioid drug use has been one of the most widespread drug epidemics in American history culminating in 72,000 deaths in 2017 alone (NIH, 2018). In the state of Maine, the effects of opioid drugs have been especially hard felt. The rate of opioid deaths in Maine surpassed automobile accidents in 2012, and reached nearly twice the national average in 2013 (Diomed, 2015). One proposed method to increase treatment access for rural Mainers with opioid use disorder is the use of telemedicine as a treatment delivery modality (Cairns, 2018; Kapiloff, 2018; Perry, 2018). Telemedicine is defined as any medical service where there is physical distance between the provider and patient (Wootton, 2001).

## Research Question

An inductive content analysis was used to analyze the existing academic and professional literature relevant to the research questions; what are the strengths and barriers to the application of telemedicine as an intervention modality for substance use disorder in areas of rural Maine affected by the opioid epidemic? To answer this question in totality two major areas needed to be addressed; treatment efficacy, and logistical feasibility. A complete diagram of the expected codes is included below, as well as the eventual thematic framework.

## Methods

### Inductive Content Analysis

- This research project has been IRB reviewed, but is not IRB approved due to being “non-human” research.
- Inclusion/Exclusion Criteria for articles
  - Peer reviewed professional journal articles.
  - Published within the past ten years, or 2009-present.
  - Subject matter directly related to opioid use disorder (OUD) treatment via remote means (telemedicine).
  - Subject matter directly related to substance use disorder treatment via remote means.

All Articles were sourced from the University of Maine's electronic library system using the following key word search;

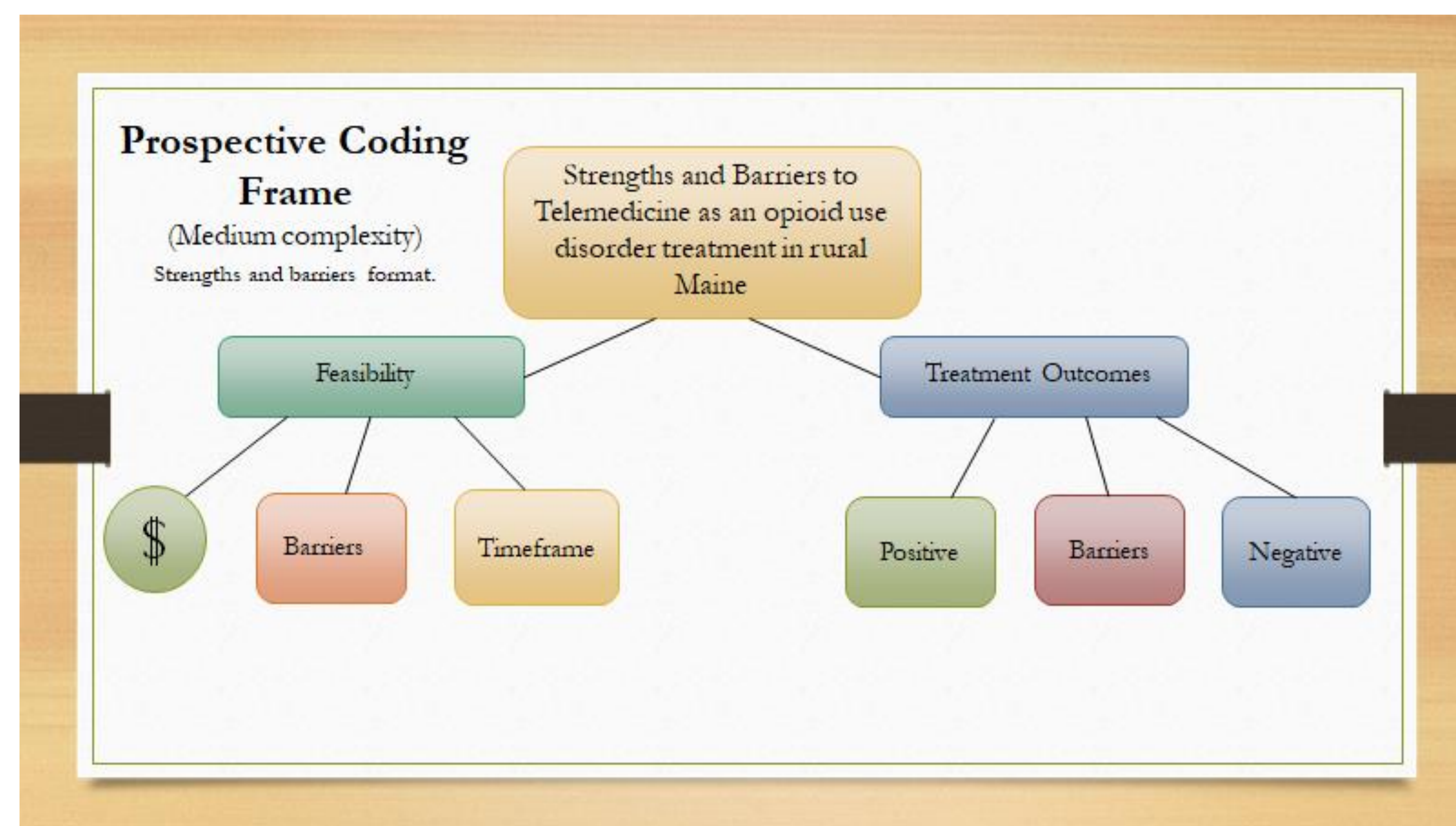
- Tele + opioid
- Telemedicine + opioid use disorder
- Telemedicine + opioid
- Telebuprenorphine + opioid
- Tele + substance use disorder
- Tele + substance use treatment

A further six articles were sourced from reputable journalism publications as the articles reported on the current, unfolding political and legal changes which are critical to the adoption and effectiveness of telemedicine OUD treatment.

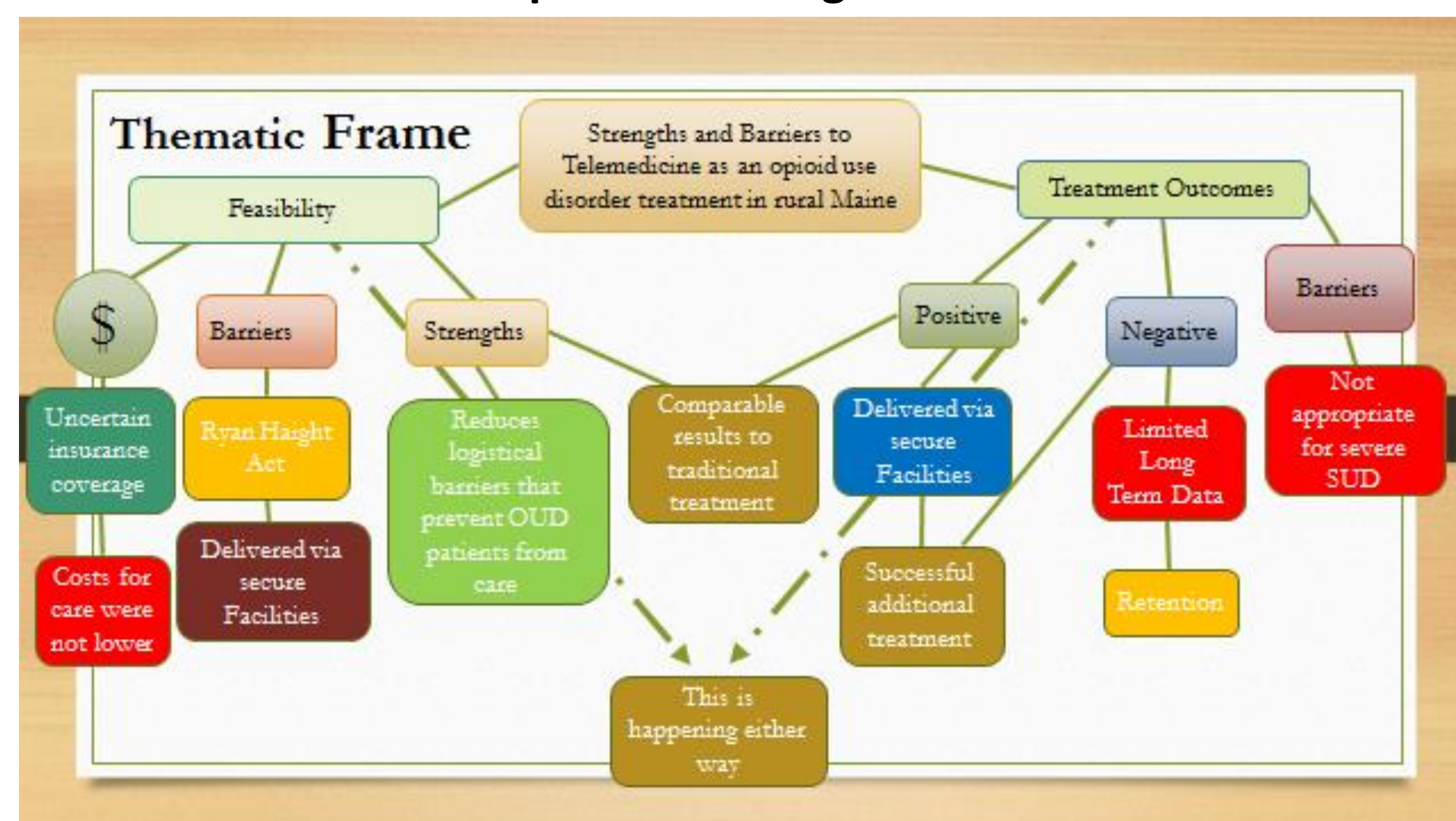
Data analysis was completed using an excel spreadsheet organized by the expected coding, for the initial review. Coding and Thematic Frame's shown in the tables to the right.

- A second review was used to create an inductive thematic framework
- A third review was used to ensure accuracy.

29 of the initial 40 articles ultimately matched all inclusion criteria and relevant subject matter.



Prospective Coding Frame



Resulting Thematic Frame

## Results

- Telemedicine may not reduce costs for the patients as has been suggested (Huskamp et al., 2018; Ingrid, 2013).
- Recent changes in Medicare reimbursement have allowed for telemedicine to be reimbursable, but only if the patient lives in a “rural” area which must meet predetermined criteria (Mahmoud & Vogt, 2018).
- Telemedicine in Northern Ontario saves patients an estimated \$25 million in annual travel expenses (LaBelle et al., 2018).
- The majority of articles promote the utilization of telemedicine for OUD being delivered via secure facilities citing the Ryan Haight Act. This law was put in place following the tragic death of Ryan Haight who overdosed as the result of ordering pharmaceuticals from a doctor he had never met, over the internet (Weintraub et al., 2018).
- Treatment outcomes are noted as comparable or improved, in terms of clean urinalysis, retention, and medication compliance compared to traditional care (Boudreaux, Haskins, Harralson, & Bernstein, 2015; Campbell et al., 2014; Eibl et al., 2017; Moore et al., 2013; Rakita et al., 2016; Ruetsch, Tkacz, McPherson, & Cacciola, 2012; Schwager, 2012; Weintraub et al., 2018).
- Three articles further note that OUD patients receiving treatment via telemedicine are more likely to voluntarily participate in additional treatment, such as 12 step support groups (Huskamp et al., 2018; Ruetsch et al., 2012; Zheng et al., 2017).
- The next major drawback noted with telemedicine use for OUD treatment delivery is the lack of long-term data.

## Acknowledgements

Thanks to Dr. Shanti, Alex, Tori and Holly for your help and guidance. Most of all thanks to my amazing wife for making all of this possible.

## Discussion

Despite the limitations in the current quantity of data, advances in telemedicine are developing rapidly. Based on the available data at the time of this content analysis, it appears that the American ideal of telemedicine treatment delivered via your mobile phone is still some years off. However, telemedicine treatment of OUD, when delivered at secure facilities, as a supplement to peer support, medication management and physical healthcare is a current reality and proven approach. The advances in technology and growth of telemedicine in other countries should be seen as a cautious sign of hope, and while there is unlikely to be any single “cure” to the opioid epidemic, telemedicine is another quality tool for providers to utilize. While there are more questions yet to be answered, telemedicine for OUD treatment stands as a viable option that deserves further study.

## References

Abbasi, J. (2019). Opioid epidemic in appalachia receives USDA telemedicine funding. *Jama*, 316(8), 808.

Allen, A. (2018, September). Opioid bill moves forward with eHealth measures. *Politico LLC*. Retrieved from <https://search-proquest-com.ursus-proxy-1.ursus.maine.edu/docview/2101245134?pq-origsite=summon>

Bandawar, M., Narasimha, V. & Chand, P. (2018). Use of digital technology in addiction disorders. *Indian Journal of Psychiatry*, 60(8), 534-547. Doi: 10.4103/psychiatryindian/psychiatry\_21\_18

Boudreaux, E. D., Haskins, B., Harralson, T. & Bernstein, E. (2015). The remote brief intervention and referral to treatment model: Development, functionality, acceptability, and feasibility. *Drug and Alcohol Dependence*, 155(2015), 236-242. Doi:10.1016/j.drugalcdep.2015.07.014

Bureau of Justice Statistics (BJS)(2018, November). *Drugs and Crime Facts: Substance Dependence, Abuse, and Treatment of Jail Inmates*. Retrieved from <https://www.bjs.gov/content/content/ocr/duc.cfm>

Cairns, T. (2018, September). Federal officials meet with Maine leaders to discuss opioid crisis. *Bangor Daily news*. Retrieved from <https://wgme.com/news/local/federal-officials-meet-with-maine-leaders-to-discuss-opioid-crisis>

Campbell, A. N., Nunes, E. V., Matthews, A., Stitzer, M., Miele, G. M., Pisky, D., Ghizza, U. E. (2014). Internet-delivered treatment for substance abuse: A multisite randomized controlled trial. *American Journal of Psychiatry*, 171(6), 683-670.

Conn, B.K. & Marks, A. K. (2017). An ecological approach to understanding adolescent prescription drug misuse. *Journal of Adolescent Research*, 32(2), 183-204. doi:10.1177/0743558415589369

Diego, M. A., Field, T., Hernandez-Reif, M., Schanberg, S., Kuhn, C., & Gonzalez-Quintero, V.H. (2009). Prenatal depression restricts fetal growth. *Early Human Development*, 85(1), 65-70. doi:10.1016/j.earhudevdev.2008.07.002

Diomed, T. (2015). *State epidemiological outcomes workgroup (SEOW) special report: Heroin, opioids, and other drugs in Maine*. Department of Health and Human Services. Retrieved from: <https://www.maine.gov/dhs>

Dube, S. R., Felitti, V. J., Dong, M., Chapman, D. P., Giles, W. H. & Anda, R. F. (2003). Childhood abuse, neglect, and household dysfunction and the risk of illicit drug use: The adverse childhood experiences study. *Pediatrics*, 111(3), 564-72. doi:10.1542/peds.111.3.564

Edwards, M. A. & Patel, A. C. (2003). Telemedicine in the state of Maine: A model for growth driven by rural needs. *Telemedicine Journal and e-Health*, 9(1), 25-40. doi:10.1089/1530620376317620

Eibl, J. K., Gauthier, G., Pellegrini, D., Daiter, J., Varenbut, M., Hogenbirk, J. C. & Marsh, D. C. (2017). The effectiveness of telemedicine-delivered opioid agonist therapy in a supervised clinical setting. *Drug and Alcohol Dependence*, 176(2017), 133-138. doi:10.1016/j.drugalcdep.2017.01.048

Federal Bureau of Prisons (2018, October). *Federal Bureau of Prisons: Inmate statistics*. Retrieved from: <https://www.bop.gov/about/statistics/>

Fergusson, D. M. & Woodward, L. J., (2002). Mental health, education, and social role outcomes of adolescents with depression. *Archives of General Psychiatry*, 59(3), 225-231. doi:10.1001/archpsyc.59.3.225

Fiellin, D. A. (2008). Treatment of adolescent opioid dependence: No quick fix. *American Medical Association*, 300(17), 2057-2059. doi:10.1001/jama.2008.567

Ghodsian, S., Brady, T., Eller, K., Madover, S., Beeson, D. & Marchand, D. (2018). Telemedicine detoxification treatment for alcohol, opioid, or relative-use, hypnotic-use, or anxiolytic-use disorders. *Addictive Disorders & Their Treatment*, 17(3), 143-146. Doi 10.1097/ADT.0000000000000138

Grant, B. F., & Dawson, D. A. (1997). Age at onset of alcohol use and its association with DSM-IV alcohol abuse and dependence: Results from the national longitudinal alcohol epidemiologic survey. *Journal of Substance Abuse*, 9(1997), 103-110. doi:10.1016/S0899-3289(97)90009-2

Hornby Zeller Associates (2017). *Substance abuse trends in Maine: State epidemiological profile 2015*. Maine Department of Health and Human Services, State Epidemiological Outcomes Workgroup (SEOW), 2015, 1-132. Retrieved from <http://www.maine.gov/dhs/>

Hornby Zeller Associates (2017). *Substance abuse trends in Maine: State epidemiological profile 2017*. Maine Department of Health and Human Services, State Epidemiological Outcomes Workgroup (SEOW), 2017, 1-114. Retrieved from <http://www.maine.gov/dhs/>

Hubbard, R. L., Leimberger, J. D., Haynes, L. H., Palfay, A. A., Holter, J., Liepmann, M. R., Hasson, A. (2007). Telephone enhancement of long-term engagement (TELE) in continuing care for substance abuse treatment: A NIDA clinical trials network (CTN) study. *The American Journal on Addictions*, 16, 495-502. doi:10.1080/10550490701641678

Huskamp, H. A., Busch, A. B., Souza, J., Usher-Pines, L., Rose, S., Wilcock, A., Mehrota, A. (2018). How is telemedicine being used in opioid and other substance use disorder treatment? *Health Affairs*, 37(12), 1940-1947. doi: 10.1377/hlthaff.2018.05.134

Helzlsouer, D. M. (2008). Treatment of opioid dependence via home-based telepsychiatry. *Psychiatric Services* 59(10), 1218-1219.

Ingrid, C. (2013, December). *The rise of telemedicine. Benefits Selling. Breaking News; New York*. Retrieved from <https://libray.ursus.maine.edu/auth/EZproxy/test/authej.asp?url=/docview/1465510142?accountid=8120>

Jiang, S., Wu, L., & Gao, X. (2017). Beyond face-to-face individual counseling: A systematic review on alternative modes of motivational interviewing in substance abuse treatment and prevention. *Addictive Behaviors*, 73(2017), 2016-2035. doi:10.1016/j.addbeh.2017.05.023

Kaiser, S. L. (2016, September). *Opioid crisis in rural areas may be tackled through telemedicine*. *Washington Post*. Retrieved from <https://search-proquest-com.ursus-proxy-1.ursus.maine.edu/docview/1823788482?pq-origsite=summon>

Kandel, D., Johnson, J., Bird, H., & Camino, G. (1997). Psychiatric disorders associated with substance use among children and adolescents: Findings from the methods for epidemiology of child and adolescent mental disorders (MECA) study. *Journal of Abnormal Child Psychology*, 25(2), 121-132. doi:10.1023/A:1025779412167

Kapiloff, A. (2018, September). *U.S. Secretary of agriculture discusses opioid crisis in Farmington*. *Daily Bulldog*. Retrieved from: <http://www.dailybulldog.com/db/features/u-s-secretary-of-agriculture-discusses-opioid-crisis-in-farmington/>

Kolivoski, K. M., Weaver, A. & Constance-Huggins, M. (2014). Critical race theory: Opportunities for application in social work practice and policy. *Families in Society: The Journal of Contemporary Social Services*, 95(4), 269-276. doi:10.1606/1044-3894.2014.95.36

LaBelle, B., Franklyn, A. M., Nguyen, V., Anderson, K. E., Eibl, J. K. & Marsh, D. C. (2018). Characterizing the use of telepsychiatry for patients with opioid use disorder and co-occurring mental health disorders in Ontario, Canada. *International Journal of Telemedicine and Applications*, 2018(7937610), 1-7. doi: 10.1155/2018/7937610

Leach, D. (2018, December). *Investment in telemedicine helps rural Iowa*. *Corn & Soybean Digest*. Retrieved from <http://www.penton.com/>

Maag, J. & Irvin, D. (2005). Alcohol use and depression among African-American and Caucasian adolescents. *Sociology Collection*, 40(157), 87-102. Retrieved from [http://link.galegroup.com.ursus-proxy-1.ursus.maine.edu/apps/doc/A131363629/ITOF?ui=maine\\_usm&id=ITOF&id=11670401](http://link.galegroup.com.ursus-proxy-1.ursus.maine.edu/apps/doc/A131363629/ITOF?ui=maine_usm&id=ITOF&id=11670401)

Ma, N., Liu, Y., Fu, X., Li, N., Wang, C., Zhang, H., ...Zhang, D. (2011). Abnormal brain default-mode network functional connectivity in drug addicts. *PLOS One*, 6(1), e1850. doi: 10.1371/journal.pone.0018560

Mahmoud, H. & Vogt, E. (2018). Telepsychiatry: an innovative approach to addressing the opioid crisis. *The Journal of Behavioral Health Services & Research*, 2018, 1-5. doi:10.1007/s11414-018-9611-1

Marjot, D. (2008). *An Attachment Theory of Addiction*, Society for the Study of Addiction, 12(103), 2065-2067. doi:10.1111/j.1360-0443.2008.02356.x

Boudreaux, E. D., Haskins, B., Harralson, T. & Bernstein, E. (2015). The remote brief intervention and referral to treatment model: Development, functionality, acceptability, and feasibility. *Drug and Alcohol Dependence*, 155(2015), 236-242. Doi:10.1016/j.drugalcdep.2015.07.014

Miller, K. & Thistle, S., (2018). *Next Maine governor to face opioid crisis*. *Lewiston Sun Journal*, 3-6. Retrieved from: <http://www.sunjournal.com>

Bureau of Justice Statistics (BJS)(2018, November). *Drugs and Crime Facts: Substance Dependence, Abuse, and Treatment of Jail Inmates*. Retrieved from <https://www.bjs.gov/content/content/ocr/duc.cfm>

Mohana, R. (2018, September). *Big wins for EHR's, PDMs and telemedicine in Senate opioid package*. *Politico LLC*. Retrieved from <https://search-proquest-com.ursus-proxy-1.ursus.maine.edu/docview/2108179193?accountid=8120>

Cairns, T. (2018, September). *Federal officials meet with Maine leaders to discuss opioid crisis*. *Bangor Daily news*. Retrieved from <https://wgme.com/news/local/federal-officials-meet-with-maine-leaders-to-discuss-opioid-crisis>

Mohana, R. (2018, July). *Telemedicine, opioid response tech get a boost in CMS payment proposal*. *Politico LLC*. Retrieved from <https://library.ursus.maine.edu/auth/EZproxy/test/authej.asp?url=/docview/2068884598?accountid=8120>

Moffenter, T., Boyle, M., Holloway, D. & Zwick, J. (2015). Trends in telemedicine use in addiction treatment. *Addiction Science & Clinical Practice*, 10(14), 1-9. doi:10.1186/s13722-015-0035-4

Morreira, T. C., Signor, L., Figueiredo, L. R., Fernandes, S., Bortolan, C. B., Benchaya, M. C., ...Barros, H. M. (2014). Non-adherence to telemedicine interventions for drug users: Systematic review. *Rev Saude Publica*, 48(3), 521-531. doi:10.1590/S0034-8910.2014048005130

Moore, S. C., Crompton, K., Gooten, S. V., Bree, M. V., Bunney, J. & Lydal, E. (2013). A feasibility study of a short message service text messaging as a surveillance tool for alcohol consumption and vehicle for interventions in University students. *BMC Public Health*, 13(1), 1011-1031. doi:10.1186/s13722-013-1011-1

Diomed, T. (2015). *State epidemiological outcomes workgroup (SEOW) special report: Heroin, opioids, and other drugs in Maine*. Department of Health and Human Services. Retrieved from: <https://www.maine.gov/dhs>

Moore, B. A., Fazzino, T., Declan, B. T., Fiellin, D. A., Cutter, C. J., Schottenfeld, R. S. & Ball, S. A. (2013). The recovery line: A pilot trial of automated, telephone-based treatment for continued drug use in methadone maintenance. *Journal of Substance Abuse Treatment*, 45(2013), 63-69. doi:10.1016/j.jsat.2012.12.011

National Institute on Drug Abuse (NIH) (2018, August). *Overdose death rates*. Retrieved from <https://www.drugabuse.gov/related-topics/trends-statistics/overdose-death-rates>

Netherland, J. & Hansen, H., (2016). *The war on drugs that wasn't: Wasted whiteness, "dirty doctors," the race in media coverage of prescription opioid misuse*. *Cult Med Psychiatry*, 40(2016), 664-686. doi:10.1007/s11013-016-9496-5

Perry, D. M. (2018, September). *USDA secretary, congressman hear needs of rural Maine*. *Kennebec Journal and Morning Sentinel*. Retrieved from <https://www.centralmaine.com/2018/09/19/usda-secretary-congressman-hear-needs-of-rural-maine/>

Pittman, D. (2017, March). *No sign yet of telemedicine in ACA replacement bill*. *Politico LLC*. Retrieved from <https://search-proquest-com.ursus-proxy-1.ursus.maine.edu/docview/204422724?accountid=8120>

Pittman, D. (2017, April). *Justice slow to help opioid crisis with telemedicine*. *Politico LLC*. Retrieved from <https://search-proquest-com.ursus-proxy-1.ursus.maine.edu/docview/2042673914?accountid=8120>

Travis, J., Western, B. & Redburn, S. (2014). *The Growth of Incarceration in the United States: Exploring causes and consequences*. Washington, D.C: The National Academies Press.

Rakita, U., Giacobbe, P., & Cavalcoti, C. (2016). *Opioid use disorder patients' perceptions of healthcare delivery platforms*. *SAGE Open Medicine*, 4, 1-4. doi:10.1177/2050312116670405

Rigg, K. K., Monnat, S. M., & Chavez, M. N. (2018). *Opioid-related mortality in rural America: Geographic heterogeneity and intervention strategies*. *International Journal of Drug Policy*, 57(2018), 119-129.

Rubin, A., Weiss, E., Coll, J. (2013). *Handbook of military social work*. New Jersey: John Wiley & Sons, Inc.

Ruetsch, C., Tkacz, J., McPherson, T. L. & Cacciola, J. (2012). *The effect of telephonic patient support on treatment for opioid dependence: Outcomes at one year follow-up*. *Addictive Behaviors*, 37(2012), 686-689. doi:10.1016/j.addbeh.2012.01.013

Schwager, H. A. (2012). *Treatment of opioid dependence using a telepsychiatry model*. *European Psychiatry*, 27(1), 1. doi:10.1016/S0924-9338(12)73982-2

Simon, S. C. (2014). *Access to treatment for opioid dependence in rural America: Challenges and future directions*. *JAMA Psychiatry* 71(4), 359-360.

Substance Abuse and Mental Health Services Administration (SAMSHA), (2015, October). *Substance Use Disorder*, Department of Health and Human Resources. [Data File]. Retrieved from <https://www.samhsa.gov/disorders/substance-use>

Selta, J. (2012). *Reclaiming Family Privilege*. *Reclaiming Family Privilege*, 2(21), 34-39. Retrieved from <https://www.reclaimingjournal.com>

Stanton-Tindall, M., Wahler, E., Webster, M. J., Godlaski, T., Freeman, R., & Leukfeld, C. (2012). *Telemedicine-based alcohol services for rural offenders*. *American Psychological Association*, 9(3), 298-309. doi:10.1037/a0026772

Turner, A. P., Sloan, A. P., Kivlahan, D. R. & Haselkorn, J. K. (2014). *Telephone counseling and home telehealth monitoring to improve medication adherence: Results of a pilot trial among individuals with multiple sclerosis*. *Rehabilitation Psychology*, 59(2), 126-146. doi:10.1037/a0036322

Tofighi, B., Grossman, E., Bereket, S. & Lee, J. D. (2016). *Text message content preferences to improve buprenorphine maintenance treatment in primary care*. *Journal of Addictive Diseases*, 35(2), 92-100. doi:10.1080/10550887.2015.1127716

Weintraub, E., Greenblatt, A. D., Chang, J., Himehock, S. & Welsh, C. (2018). *Expanding access to buprenorphine treatment in rural areas with the use of telemedicine*. *American Journal on Addictions*, 27(8), 612-617. doi:10.1111/ajad.12805

Wellmer, A. (2014). *On critical theory*. *Social Research*, 81(3), 705-733. doi:10.1353/sor.2014.0045

Wootton, R. A. (2001). *Recent advances; Telemedicine*. *British Medical Journal*, 323(7312), 557-560. doi:10.1136/bmj.323.7312.557

Yang, T. Y., Weintraub, E. & Haffajee, R. (2018). *Telemedicine's role in addressing the opioid epidemic*. *Mayo Clinic Proceedings*, 93(9), 1177-1180. doi:10.1016/j.mayocp.2018.07.001

Zheng, W., Nickasch, M., Lander, L., Wen, S., Xiao, M., Marshalek, P., ...Sullivan, C. (2017). *Treatment outcome comparison between telepsychiatry and fac-to-face buprenorphine medication-assisted treatment for opioid use disorder: A 2-year retrospective data analysis*. *Journal of Addiction Medicine*, 11(2), 138-144. doi:10.1099/ADM.0000000000000287

Zhu, F., Yan, C., Wen, Y., Wang, J., Bi, J., Zhao, Y., ...Li, S. (2013). *Dopamine d1 receptor gene variation modulates opioid dependence risk by affecting transition to addiction*. *PLOSone*, 8(8), 1-11. doi:10.1371/journal.pone.0070805