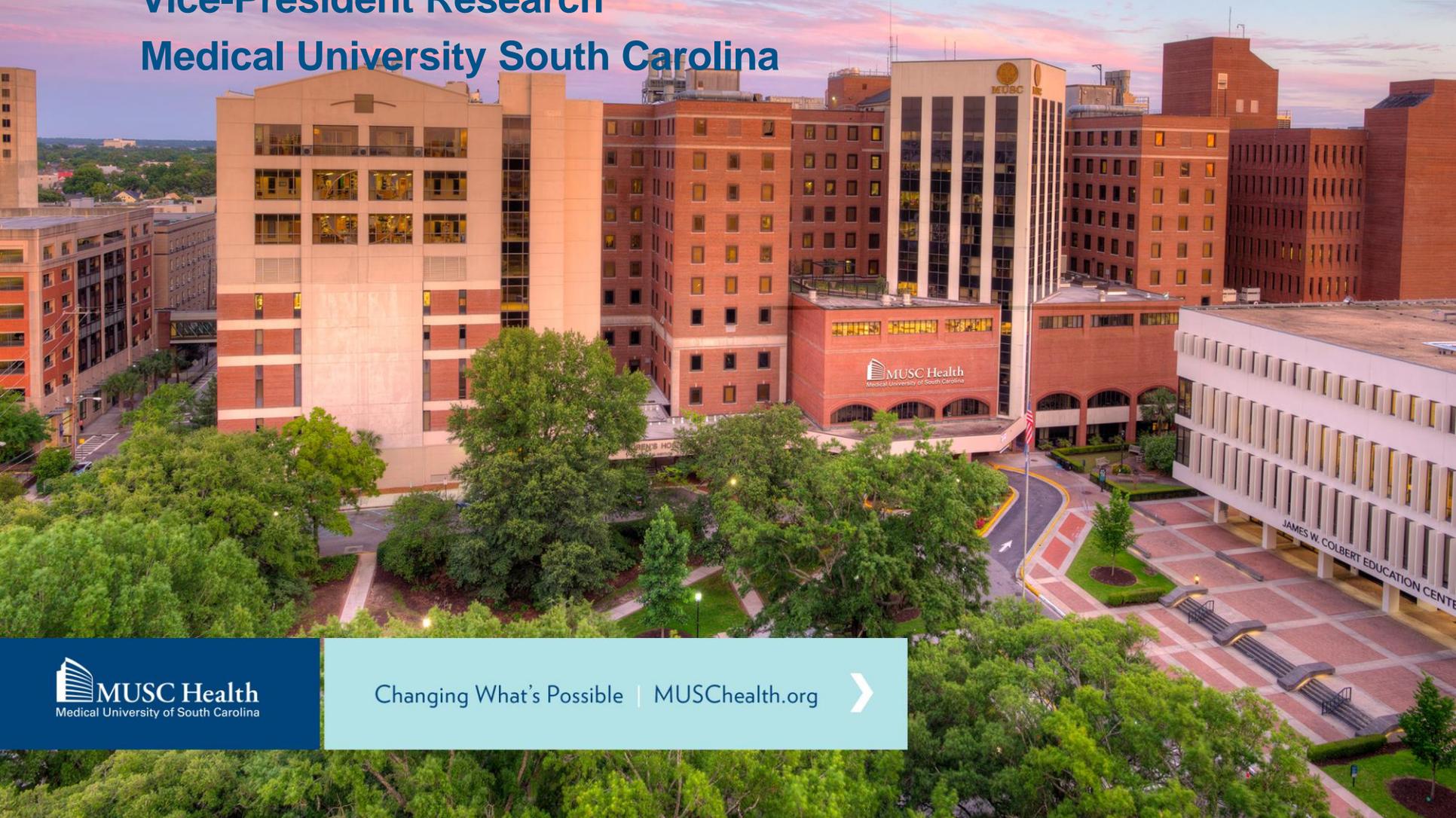


# OPIOID USE DISORDER IN SOUTH CAROLINA: WHAT CAN WE DO???

Kathleen Brady, MD, PhD  
Vice-President Research  
Medical University South Carolina



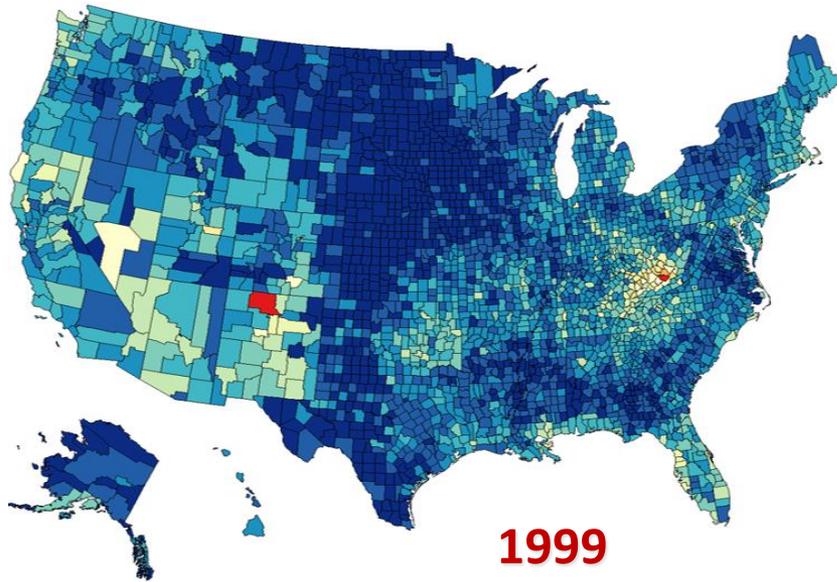
Changing What's Possible | [MUSChealth.org](https://MUSChealth.org)



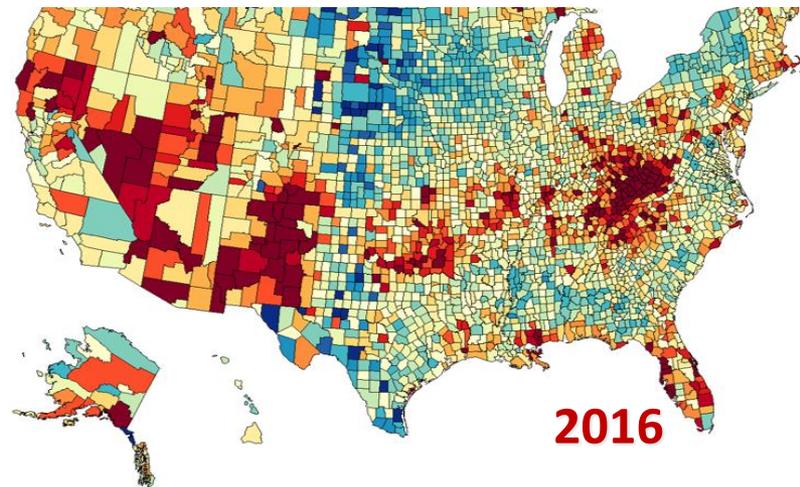
# Drug Overdose Rates are Increasing:

Estimated Age-adjusted Death Rates per 100,000 for Drug Poisoning by County

Nationally deaths decreased by 3% in 2018  
SC had 9% increase in overdose deaths in 2018



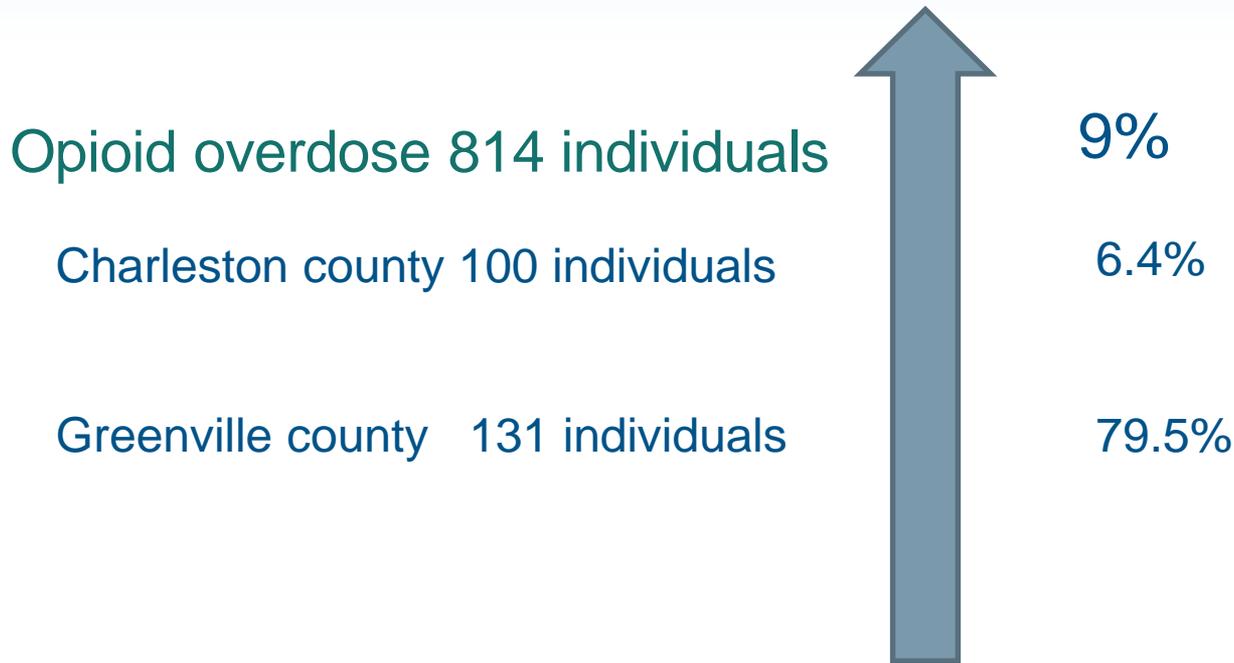
**70,237 Deaths in 2017**  
**(47,600 from Prescription and Illicit Opioids)**



Source: <https://www.cdc.gov/nchs/data-visualization/drug-poisoning-mortality/index.htm>



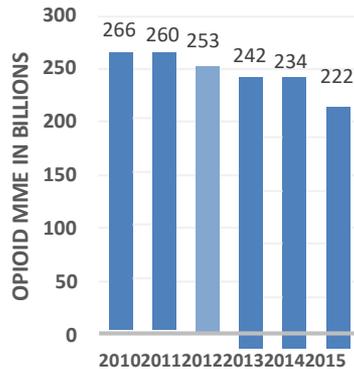
# Opioid Overdose Deaths Increasing in South Carolina 2018



# CHANGING FACE OF OPIOID EPIDEMIC

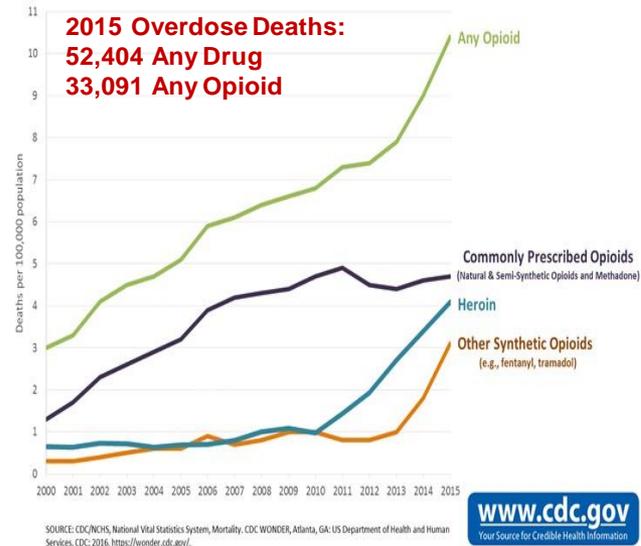
Opioid *Prescriptions are Decreasing* but Opioids *Fatalities are still Increasing*

Opioid morphine milligram equivalents (MME) dispensed fell by over 15% from 2010-2015



Source: IMS Health, U.S. Outpatient Retail Setting

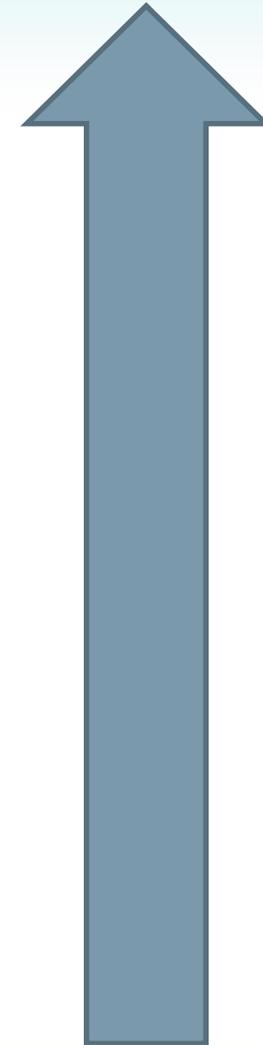
Opioid OD Deaths US, 2000-2015



# Overdose Deaths Increasing in South Carolina 2018

Prescription drugs #863 :	10%
Heroin #168 individuals:	17%
Fentanyl #460 individuals:	27%
Cocaine #254 individuals:	8%
Amphetamines #242 individuals:	25%**

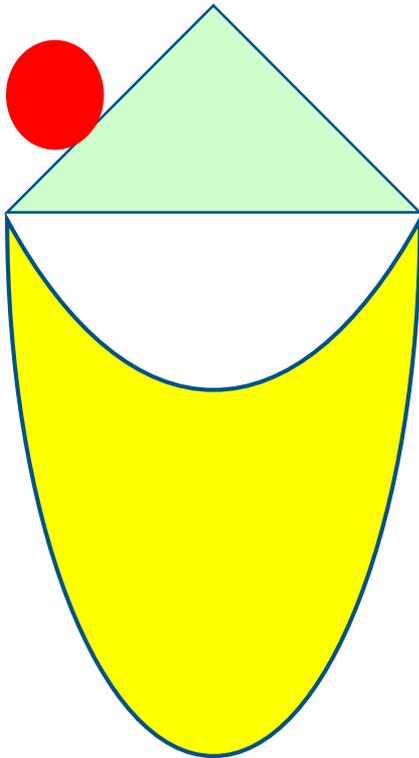
**\*\* 88% increase since 2016**



# Medication Assisted Treatment (MAT) in Opioid Dependence: Lifesaving!!!!

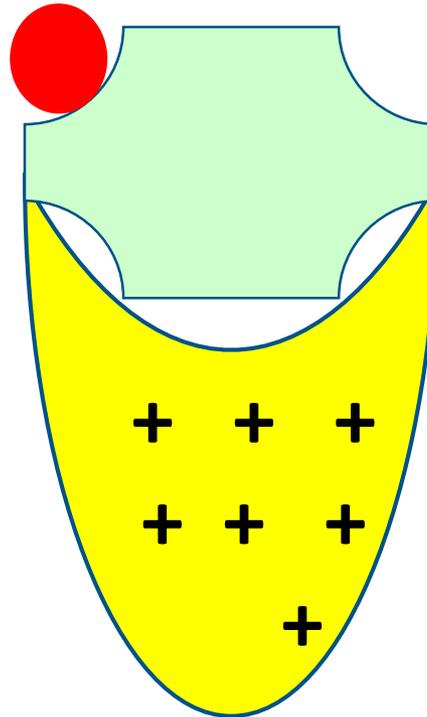
## Naltrexone

Antagonist



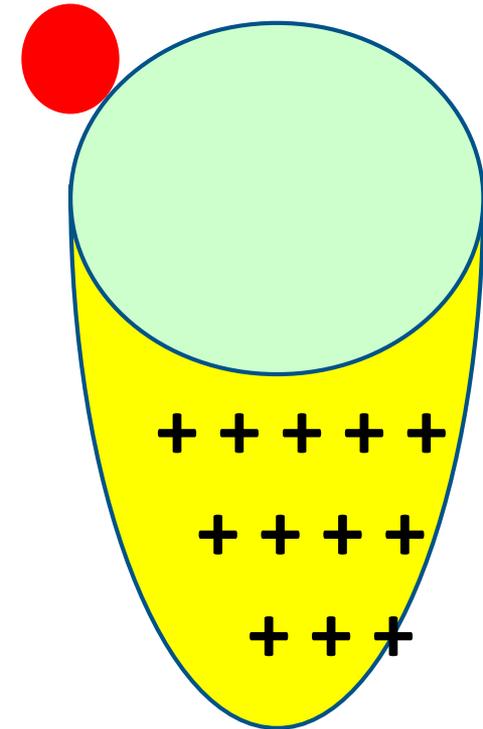
## Buprenorphine

Partial Agonist



## Methadone

Agonist



# 21<sup>st</sup> Century Cures Act



Enacted Dec 2016, included:

- › **Landmark mental health reform bill**
  
- › **Monies for states to fight opioid epidemic**
  - › **Emphasis on MAT**
  - › **PDMP**
  - › **Primary care involvement**
  - › **Train in best practices**
  - › **Prevention**

# SC MAT ACCESS

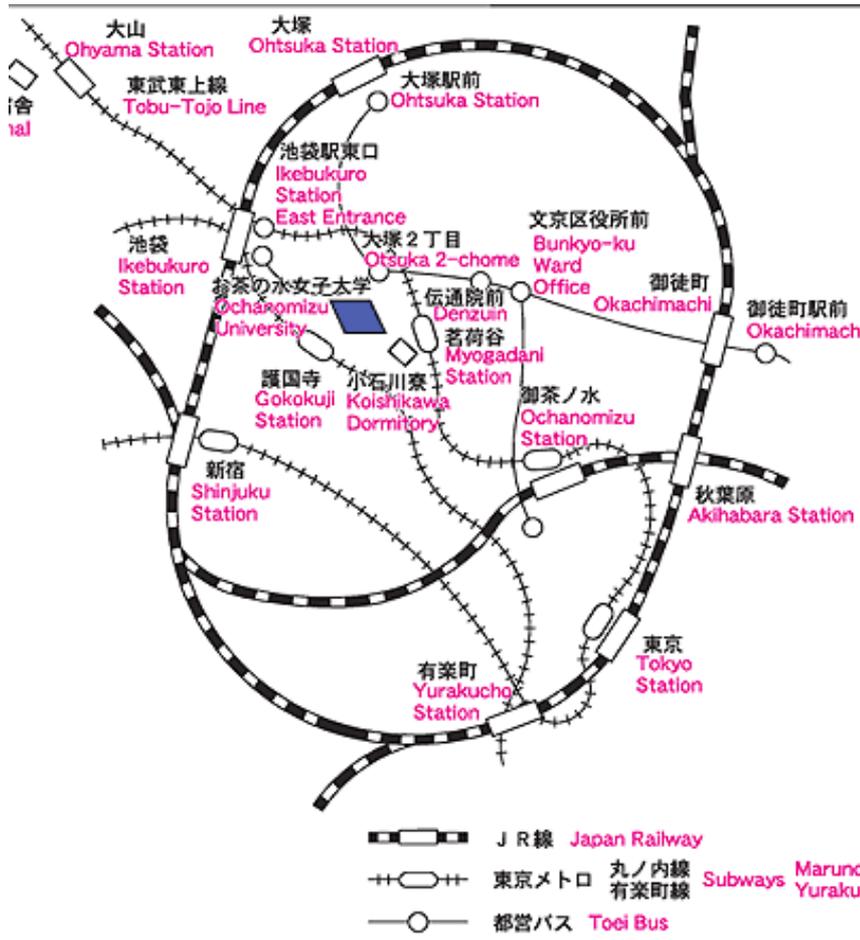
South Carolina Medication Assisted Treatment  
Academic Community Capacity Expansion for Sustainable Success



- ❑ A Partnership between MUSC and the Department of Alcohol and Other Drug Services and DHHS
- ❑ Improve access to evidence-based treatments for opioid dependence throughout SC



# Complex Problem: Multi-Pronged Approach



## SUPPLY SIDE

- regulatory initiatives
- practitioner education
- law enforcement
- criminal justice
- surveillance / illicit supply

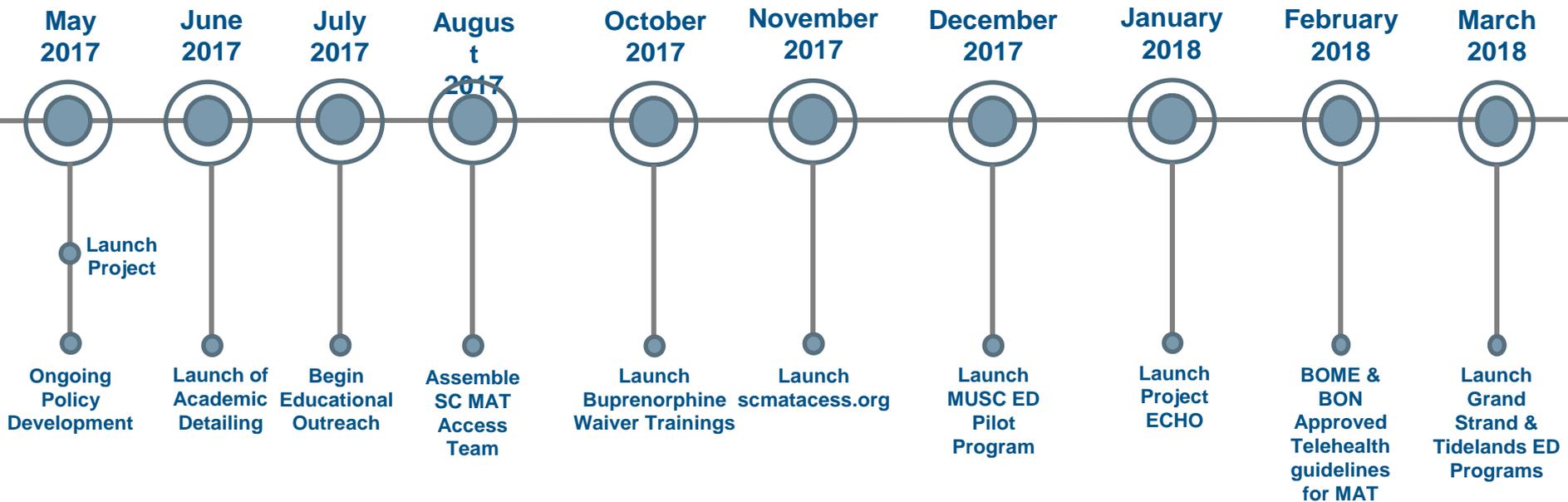
## DEMAND REDUCTION

- consumer education
- prevention efforts
- access to treatment
- alternative pain treatments



# MAT ACCESS Major Initiatives

## Year 1



# ?? Response of the Healthcare System???

STOP CONTRIBUTING TO  
THE PROBLEM !!!!

PDMP's

Responsible opioid  
prescribing

ENSURE APPROPRIATE  
TREATMENT

Screen/identify

Refer

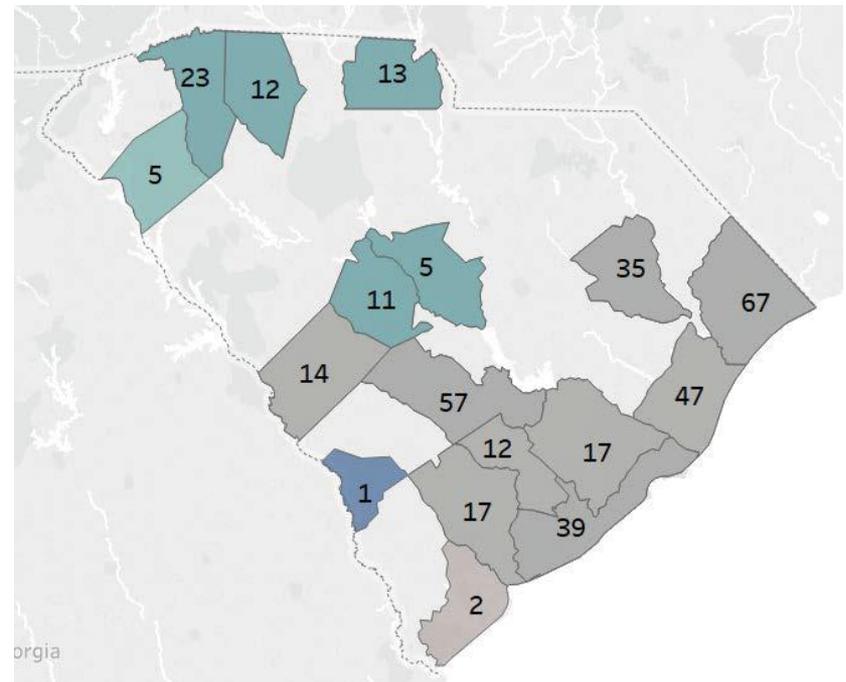
Access

EDUCATE NEXT GENERATION OF  
PROVIDERS

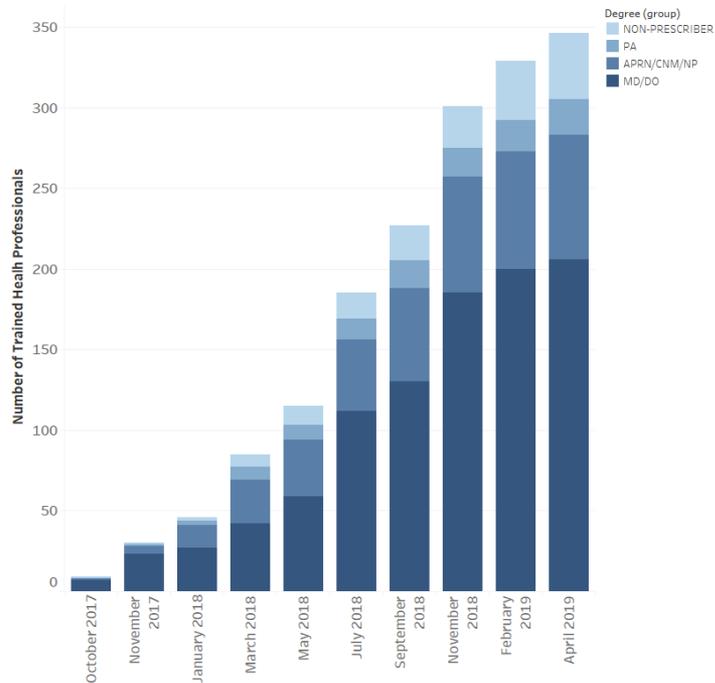


# ACADEMIC DETAILING

- University or non-commercial based educational outreach to physicians and their staff
  - Face to face education
  - Delivered by trained healthcare professionals
  - Structured visits
- Topics
  - Responsible opioid prescribing
  - Risk mitigation strategies
  - Screening, brief intervention, and referral to treatment (SBIRT)
  - Becoming a MAT provider



# Buprenorphine Waiver Trainings



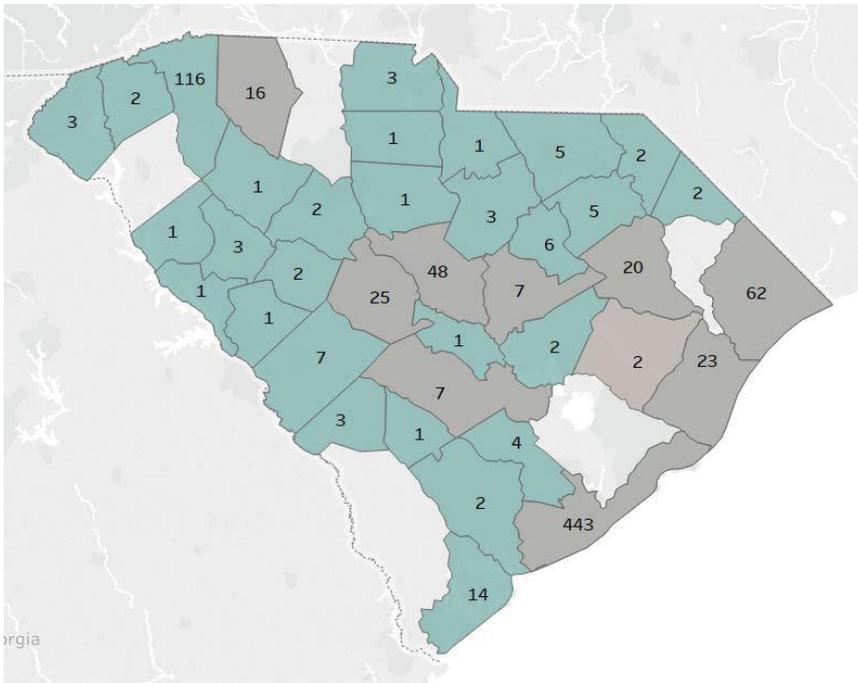
Practitioners are required to have extra training to prescribe buprenorphine

In 2016, ### waived providers in SC; 2018, ### waived providers

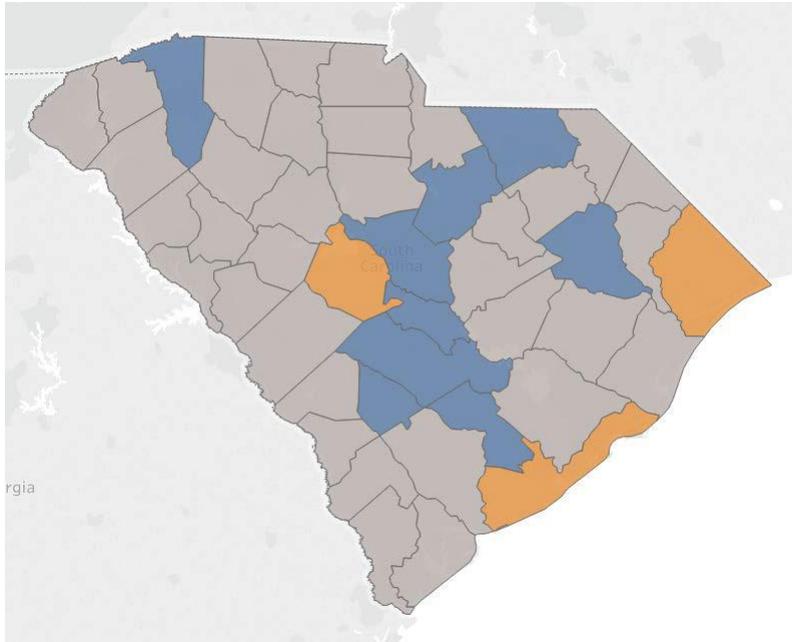


# Tele-Mentoring for Newly-Waivered Practitioners

Practice locations of ECHO participants. New locations in Year 2 are highlighted in blue.



# Tele-MAT



**Needs assessment in 2016 red that only 20% of county SUD treatment agencies had a medical provider**

**In spite of trainings, shortage of MAT providers in many rural areas of SC**

**Worked with state Medical Board to establish SOP's for delivery of MAT via telehealth**

**>500 visits in 2018**



# Opioid Overdose in the Emergency Room

Emergency rooms give glimpse into evolving edge of epidemic

More fentanyl, carfentanyl, illicit opioids

10.0% of those who present with non-fatal overdose dead within a year

15% have repeat non-fatal OD within 2 years



# Emergency Room Program

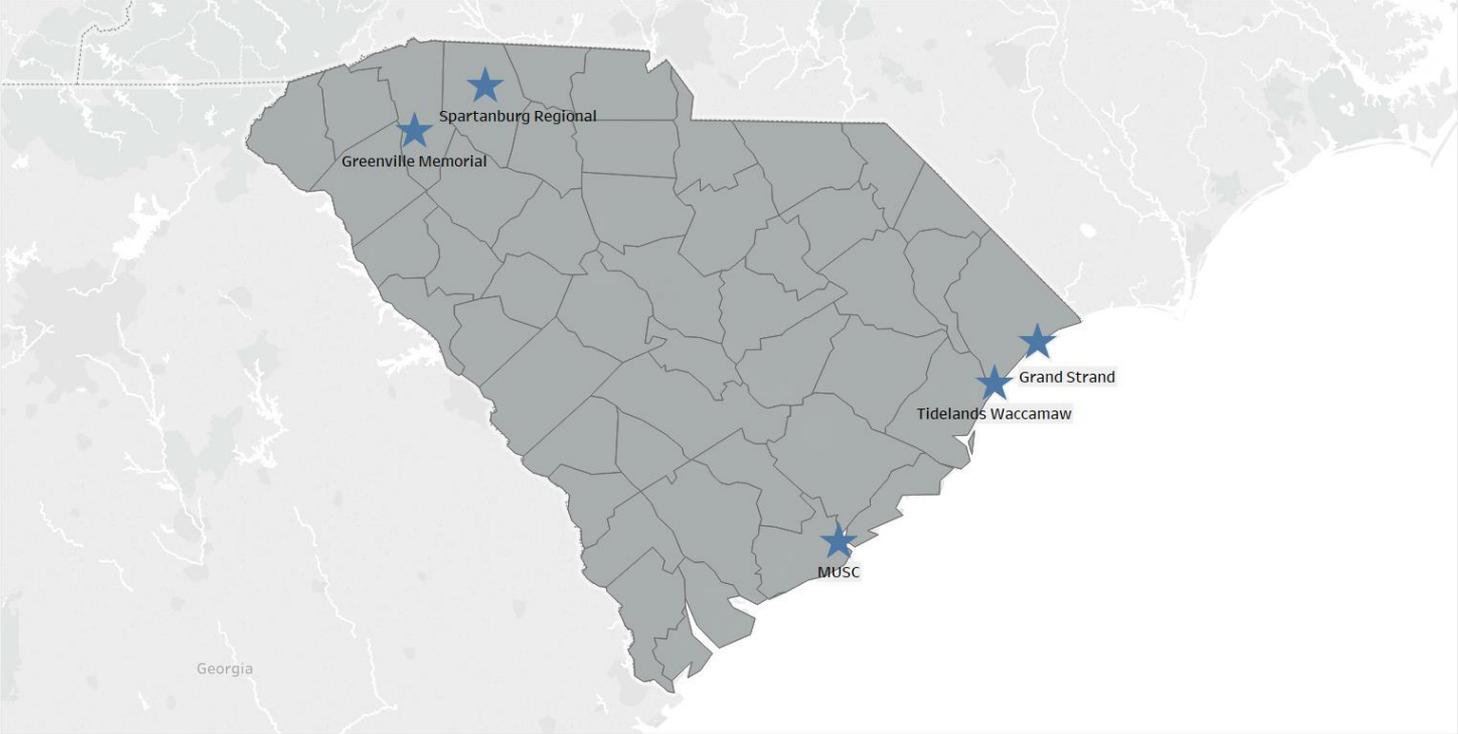
Study demonstrated buprenorphine initiation in ER with next day follow-up improved outcomes – 80% engaged in treatment at 1 month

Replicated in 4 sites in SC:

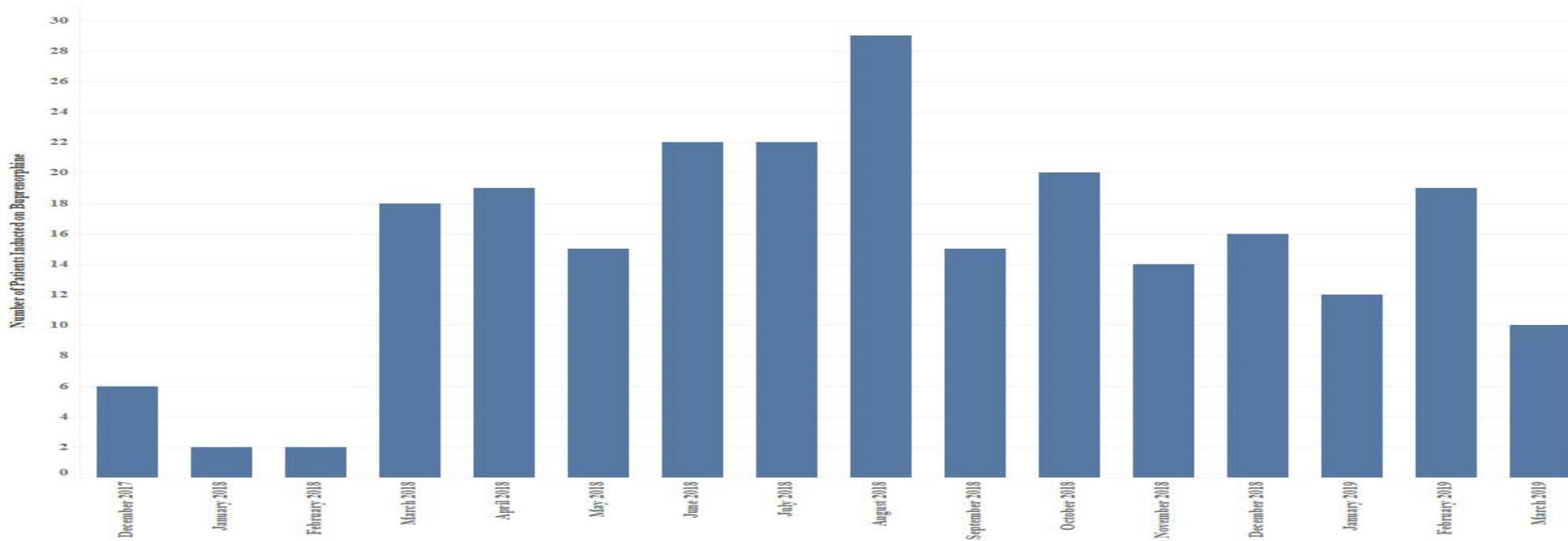
- Over 3000 patients formally screened for SUD
- 180 inducted onto buprenorphine and referred
- 75% successfully linked to next day treatment service



# MUSC Emergency Room MAT Sites

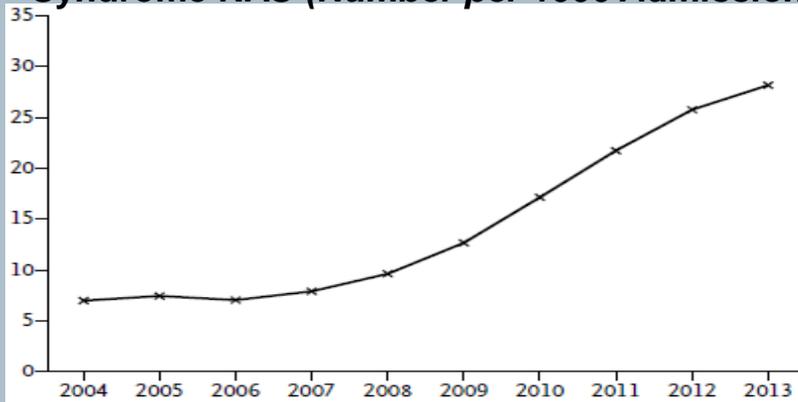


# Number of ED Patients Initiated on MAT



# Opioid Use and Misuse During Pregnancy

NICU Admissions for Neonatal Abstinence Syndrome NAS (Number per 1000 Admissions)

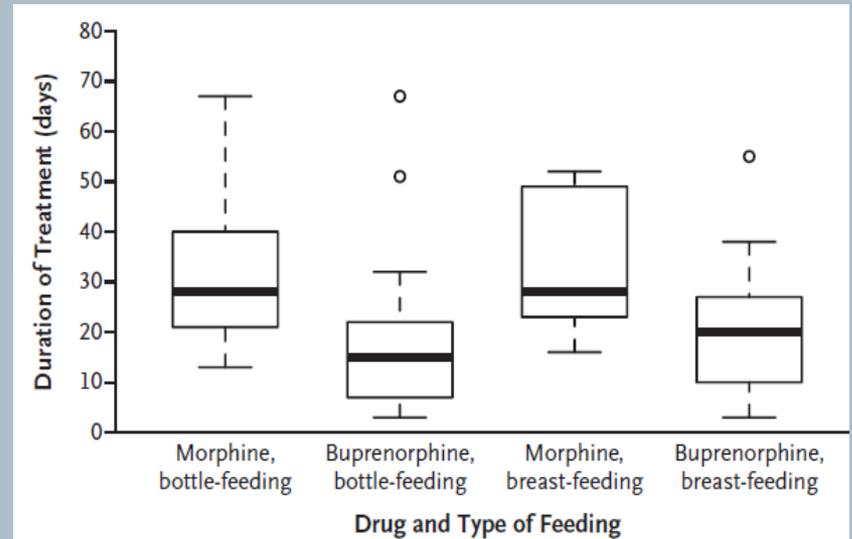


Source: Tolia VN, Patrick SW, et al., NEJM 2015;372:2118-2126.



17% of pregnant women are prescribed an opioid during pregnancy

Buprenorphine for NAS Tx

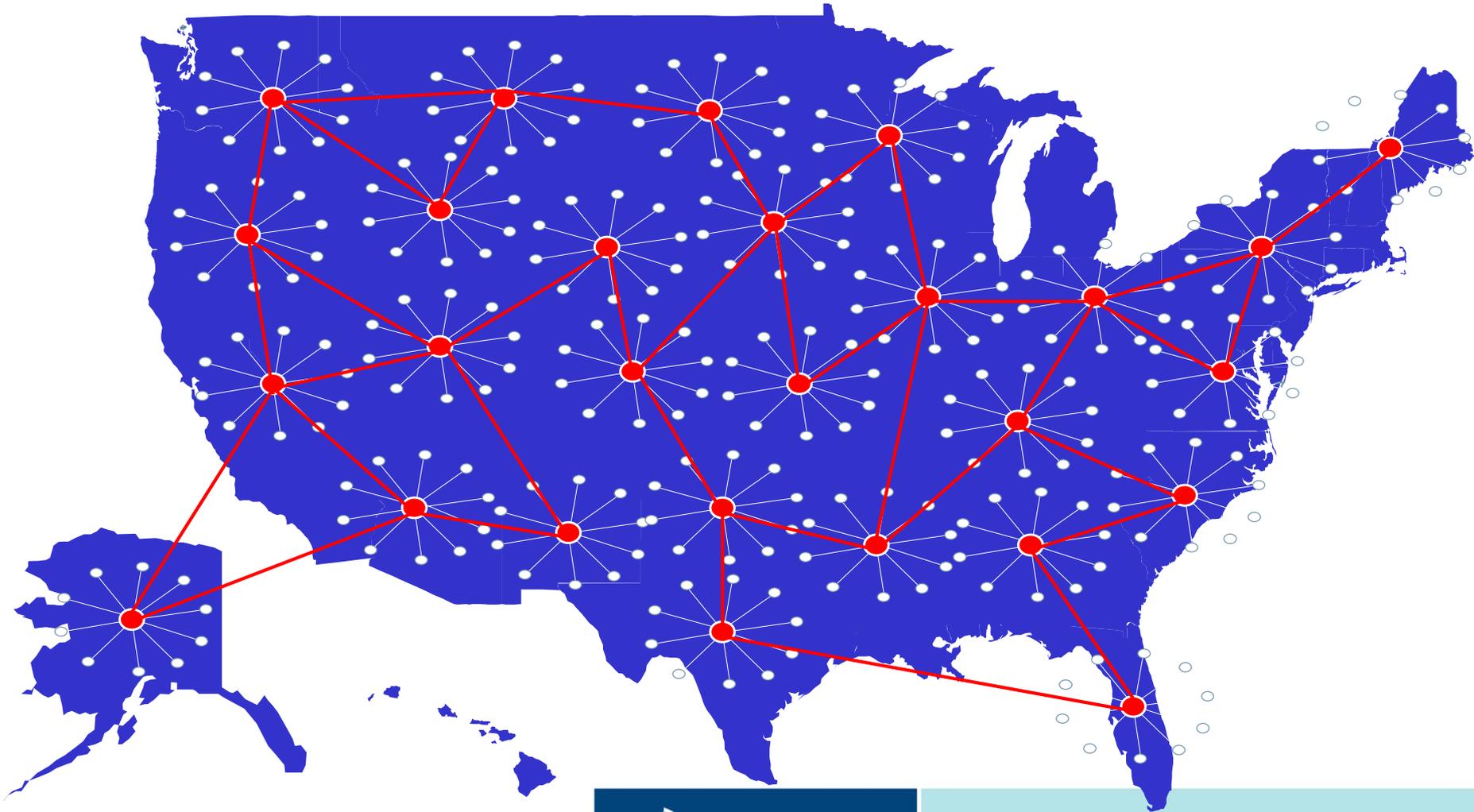


**Buprenorphine** resulted in a **shorter duration of NAS treatment** and **length of hospital stay** than treatment with morphine

Kraft WK et al., N Engl J Med 2017;376:2341-2348.

# NIDA Clinical Trials Network

South Carolina has been part of this Network for 20 years



# CTN Trial: Optimal Treatment for Pregnancy/ OUD

Comparison of  
sublingual to injection  
buprenorphine

Maternal outcomes

relapse

anxiety, mood, pain

Neonatal outcomes

withdrawal sx

time in hospital

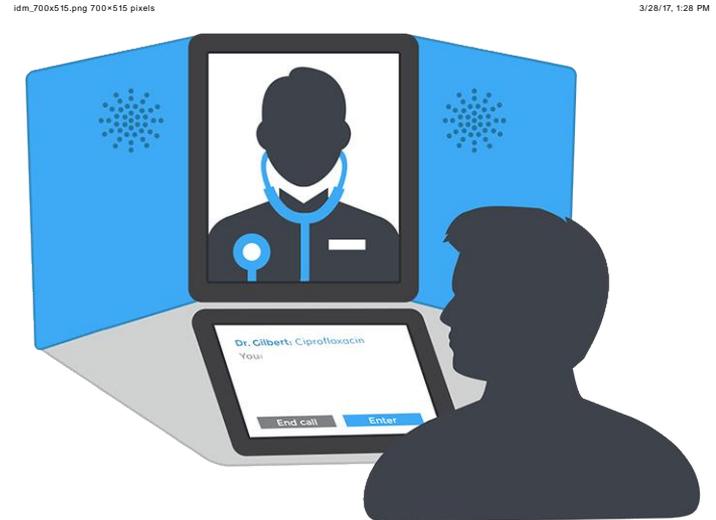


# CTN Trial: Best Practices in Rural MAT Delivery

Telehealth to primary care

Telehealth to local SUD treatment programs

SL versus Injection Buprenorphine



[https://blog.pokildok.com/wp-content/uploads/2016/04/idm\\_700x515.png](https://blog.pokildok.com/wp-content/uploads/2016/04/idm_700x515.png)

Page 1 of 1



# CTN Future Studies: Peer Outreach to Overdose Victims in ER

Overdose victims often have naloxone reversal

In withdrawal, often not interested in treatment

Peer contact more acceptable

Greenville-FAVOR ER program successful in engaging OD victims

Model for CTN future study



# CTN Future Study - Effectiveness Trial: Improve Adherence to Buprenorphine and Naltrexone Test Strategies for Opioid Taper Timing for MAT Taper

Sublingual Buprenorphine dose (16mg vs 32mg)

Injection extended-release buprenorphine

Behavioral Intervention

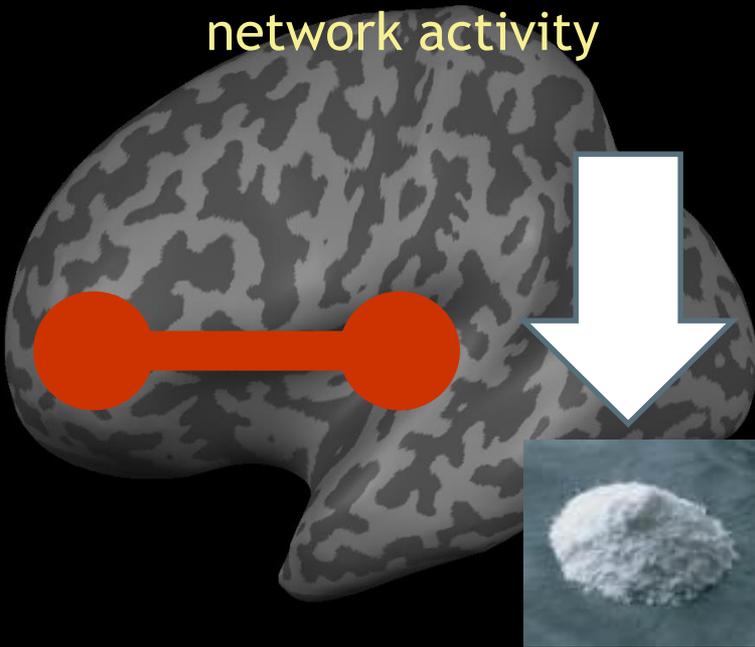
- › Incentives
- › Assertive case management with patient-navigators to track down dropouts and try to re-engage

Tapering Strategies/Timing

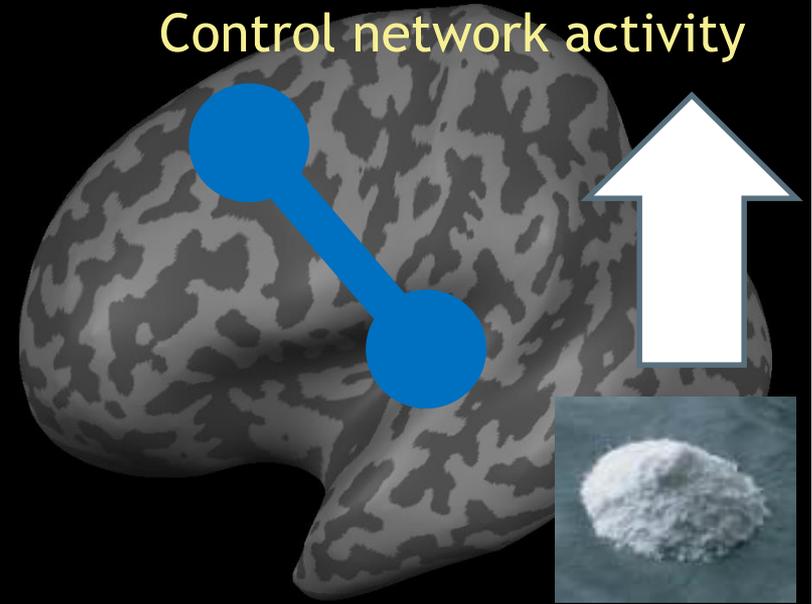


# Theoretical Constructs for Treating Addiction with TMS

Decrease limbic network activity



Increase cognitive Control network activity



# rTMS studies in Addiction

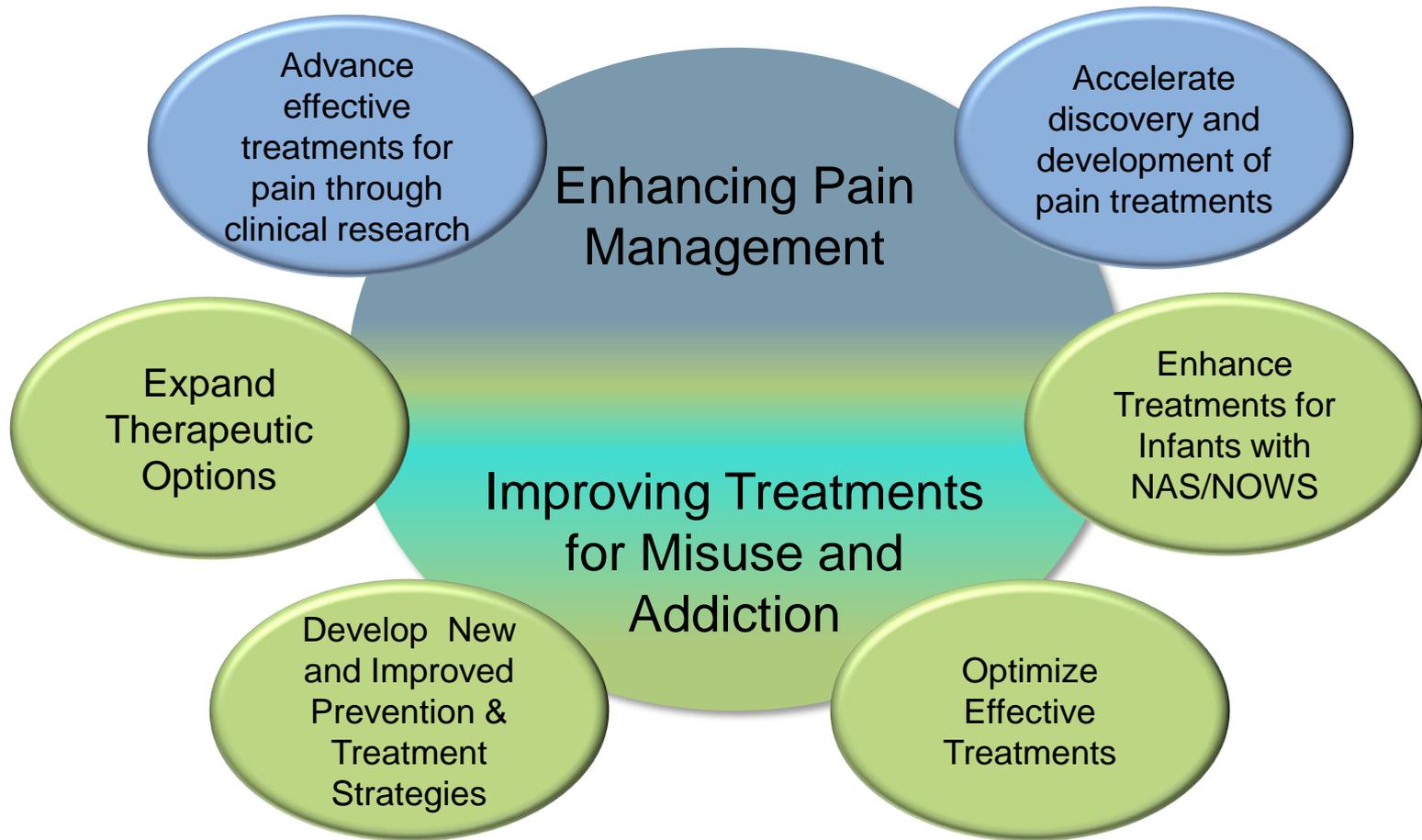
First Author	Year	Drug of Abuse	Sample (real TMS)	Site of TMS	Frequency	Sessions (real TMS)	Sham Control	Effect on Craving
De Ridder	2011	alcohol	1	ACC	1-35 Hz	25	no	yes down
Herremans	2011	alcohol	36	R DLPFC	20 Hz	1	yes, within	no
Herremans	2013	alcohol	29	R DLPFC	20 Hz	2	yes, within	no
Hoppner	2011	alcohol	10	L DLPFC	20 Hz	10	yes, between	no
Mishra	2010	alcohol	30	R DLPFC	10 Hz	10	yes, between	yes down
Hanlon	under review	alcohol	20	L MPFC (BA 10)	cTBS	1	yes, within	yes down
Camprodon	2007	cocaine*	6	R DLPFC	10 Hz	1	no	yes down
Camprodon	2007	cocaine*	6	L DLPFC	10 Hz	1	no	no
Politi	2008	cocaine	36	L DLPFC	15 Hz	10	no	yes down
Hanlon	2015	cocaine	15	L MPFC (BA 10)	cTBS	1	yes, within	yes down
Terraneo (Bonci)	2015	cocaine	16	L DLPFC	15 Hz	8	no	yes down
Li	2013	meth.	10	L DLPFC	1 Hz	1	yes, within	yes up
Amiaz	2009	nicotine	22	L DLPFC	10 Hz	10	yes, between	yes down
Eichhammer	2003	nicotine	14	L DLPFC	20 Hz	2	yes, between	no
Li	2013	nicotine	16	L DLPFC	10 Hz	2	yes, within	yes down
Pripfl	2014	nicotine	14	L DLPFC	10 Hz	1		yes down
Rose	2011	nicotine <sup>^</sup>	15	SFG	10 Hz	1	no	yes up
Rose	2011	nicotine <sup>^</sup>	15	SFG	1 Hz	1	no	no
Wing	2012	nicotine	6	L&R DLPFC	20 Hz	20	yes	yes down
Uher	2005	food#	13	L DLPFC	10 Hz	1		yes down
Van den Eynde	2010	food#	17	L DLPFC	10 Hz	1		yes down

\*R DLPFC decreased craving but L DLPFC stimulation did not reduce craving. <sup>^</sup>This study performed 10Hz TMS on the superior frontal gyrus (SFG) and found an increase in craving but did not find a decrease in craving with 1Hz to the SFG. # although 'food addiction' is not universally accepted, it likely involves similar neural circuitry. Therefore, to be inclusive these two studies were added to the table. [ACC = Anterior cingulate cortex, DLPFC = dorsolateral prefrontal cortex, L = left, R = Right, meth = methamphetamine, BA = Brodmann 10)]



Hanlon et al  
2015; Brain  
Research

# HEAL Initiative Research



# Priorities in Research to Enhance Pain Management

Understand the biological underpinnings of chronic pain

Accelerate discovery and development of non-addictive pain treatments

Advance new non-addictive pain treatments through the clinical pipeline

Establish best management strategies for acute and chronic pain conditions



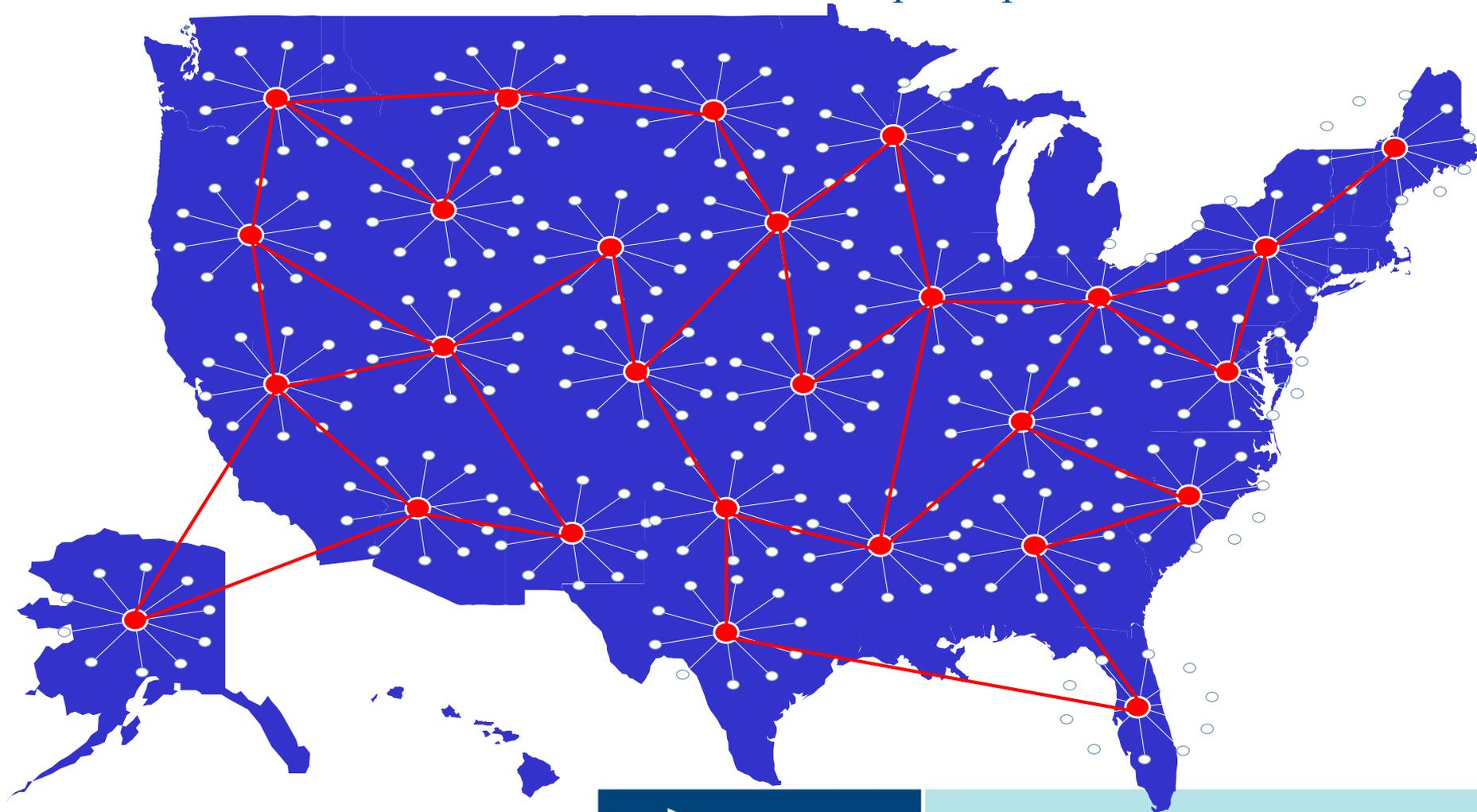
Read about the 2019 research plan:

[www.nih.gov/heal-initiative](http://www.nih.gov/heal-initiative)

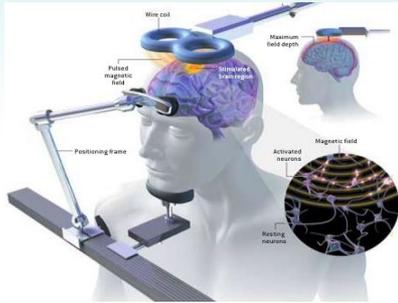


# NIH-Funded Clinical Trial Network for New Pain Therapeutics

MUSC selected as participant in first round

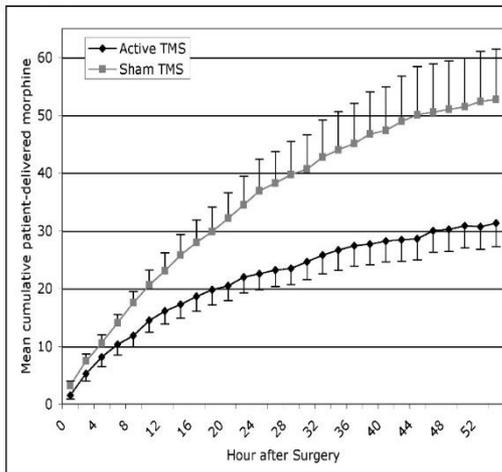


# Treatment for Chronic Pain: Transcranial Magnetic Stimulation (TMS)

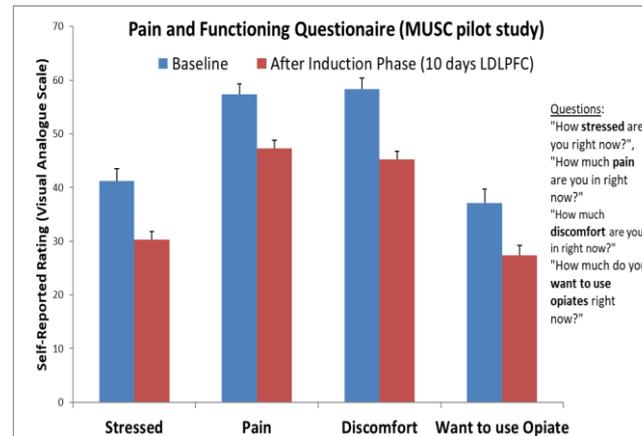


Hanlon Borckardt

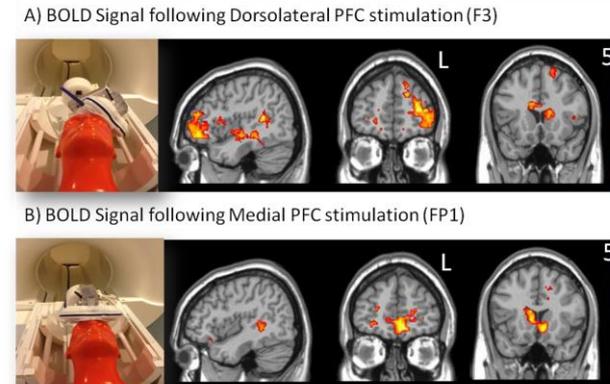
**1. Inpatient – TMS decreases morphine use by bariatric surgery patients during hospital stay (Borckardt et al Pain 2006, 2010)**



**2. Outpatient pain management – TMS as a tool to decrease pain and desire for opiates among chronic pain patients (Hanlon, Brady, CTN pilot)**



**3. Outpatient– Evaluating TMS as a tool for pain and opiate sparing in Chronic Lower Back Pain patients: double blind RCT (NIH R21DA044503 Hanlon)**



# Future Directions

Need for improved approaches to the treatment of OUD

Need to improve access to treatment – recognition and treatment across medical settings

Need to improve retention in treatment

Need to improve pain treatment and management strategies

