



Scientific Assembly

B O S T O N
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OCTOBER 25-28, 2021



EMBED:

PRAGMATIC TRIAL OF USER-CENTERED CLINICAL DECISION
SUPPORT TO IMPLEMENT EMERGENCY DEPARTMENT-INITIATED
BUPRENORPHINE FOR OPIOID USE DISORDER

TED Melnick

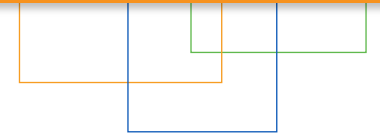


Yale University
School of Medicine



**Together
Again**
Boston
Convention
& Exhibition
Center





“This is part of emergency medicine now!”



1

The opioid crisis

- Overdose deaths soared to 93K in 2020 (70K opioid)
- >2M Americans have OUD

2

Medication treatment gaps

Less than 1 in 5 receive medication treatment

3

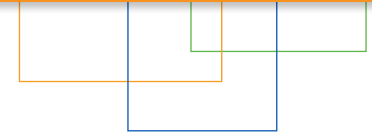
ED as critical access point

- 5% mortality 1 yr after overdose
- ED OUD visits still rising

4

BUP-initiation in the ED

- Safe & doubles engagement in treatment
- Multiple barriers to adoption



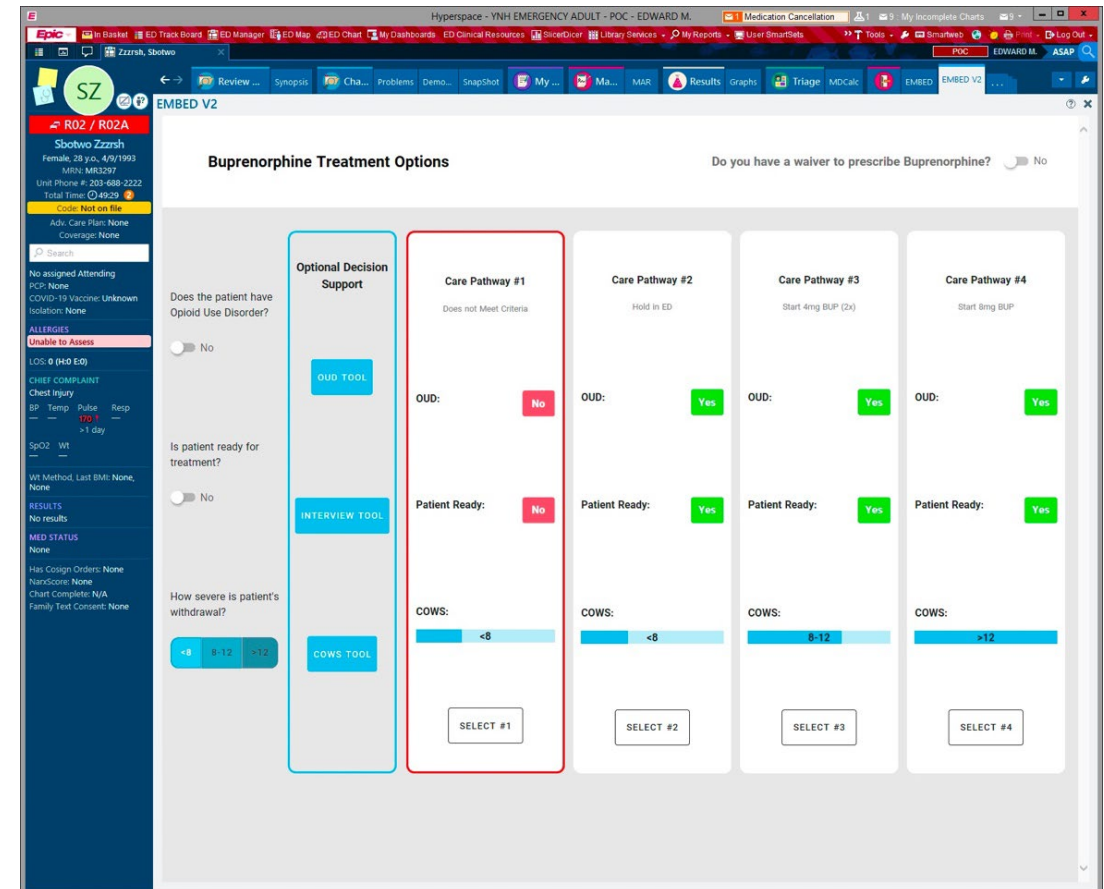
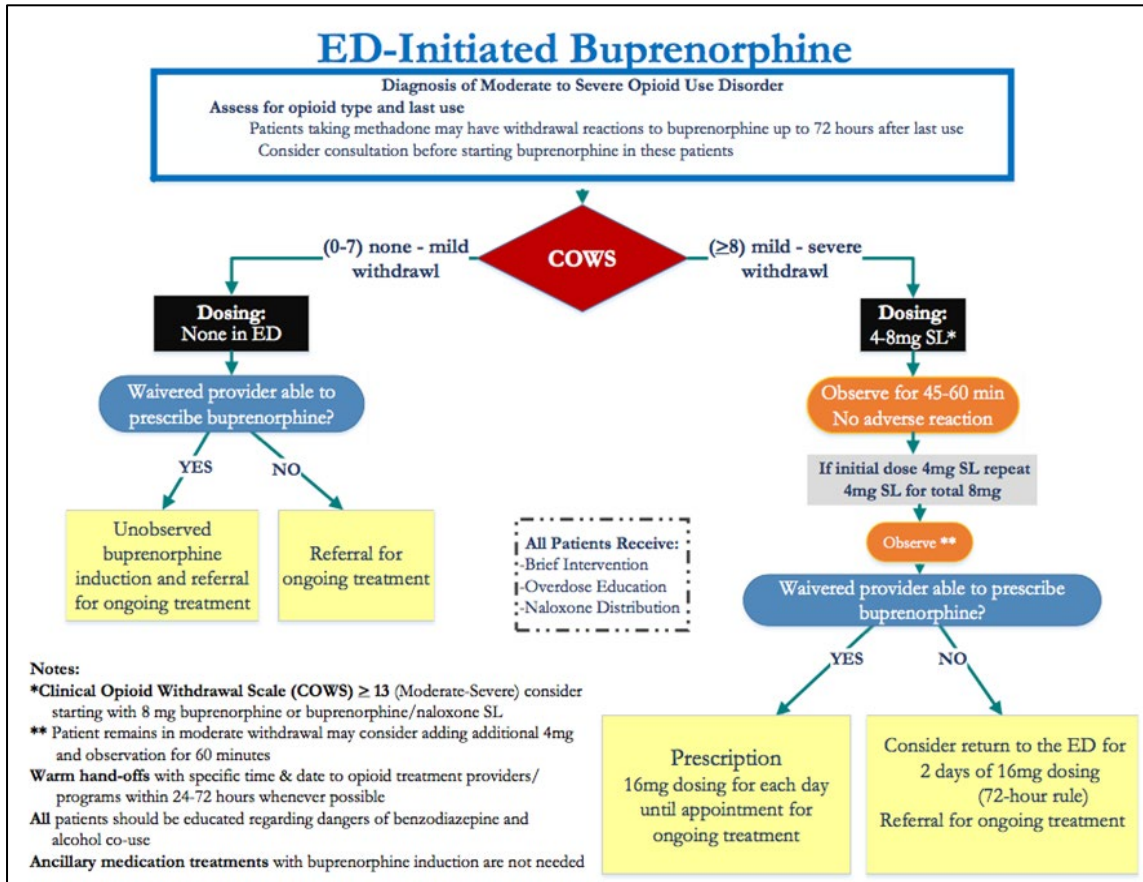
User-centered design to simplify the process...

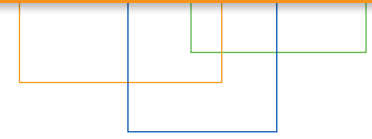
JMIR HF, 2019



From a complicated, unfamiliar practice...

...to a simple, automated application





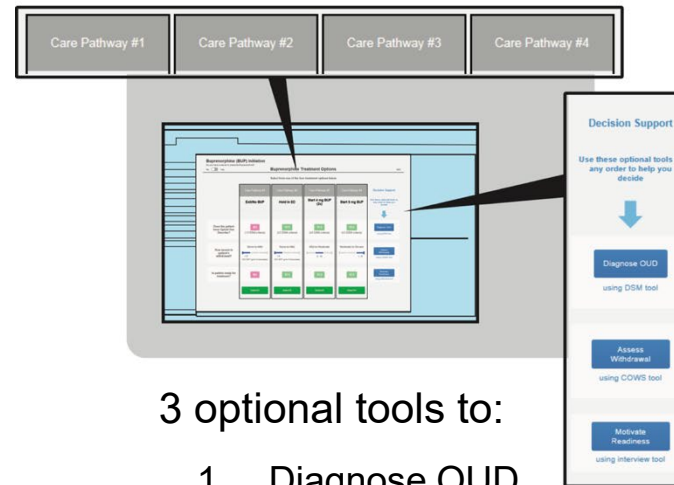
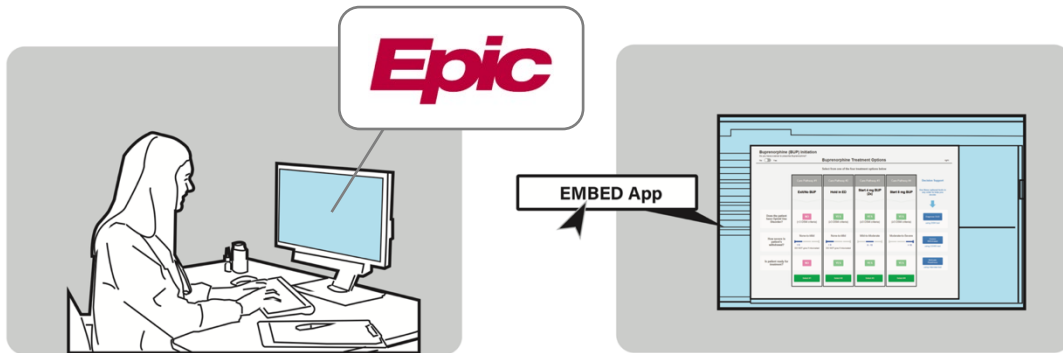
Automated workflow, never leaving the EHR

1) In patient's chart

2) Click the EMBED button

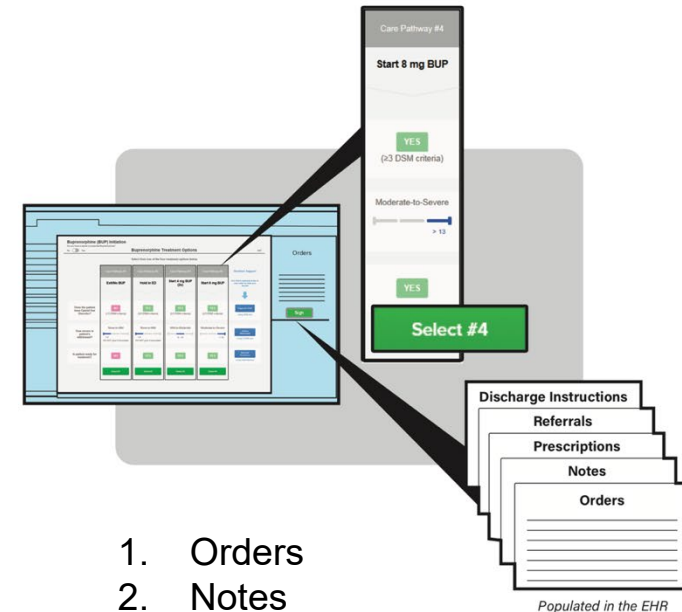
3) 1-click to launch
1 of 4
care pathways and/or

4) Automates EHR tasks



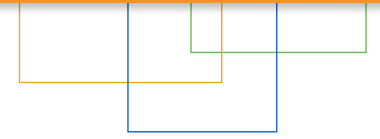
3 optional tools to:

1. Diagnose OUD
2. Assess withdrawal severity
3. Motivate readiness



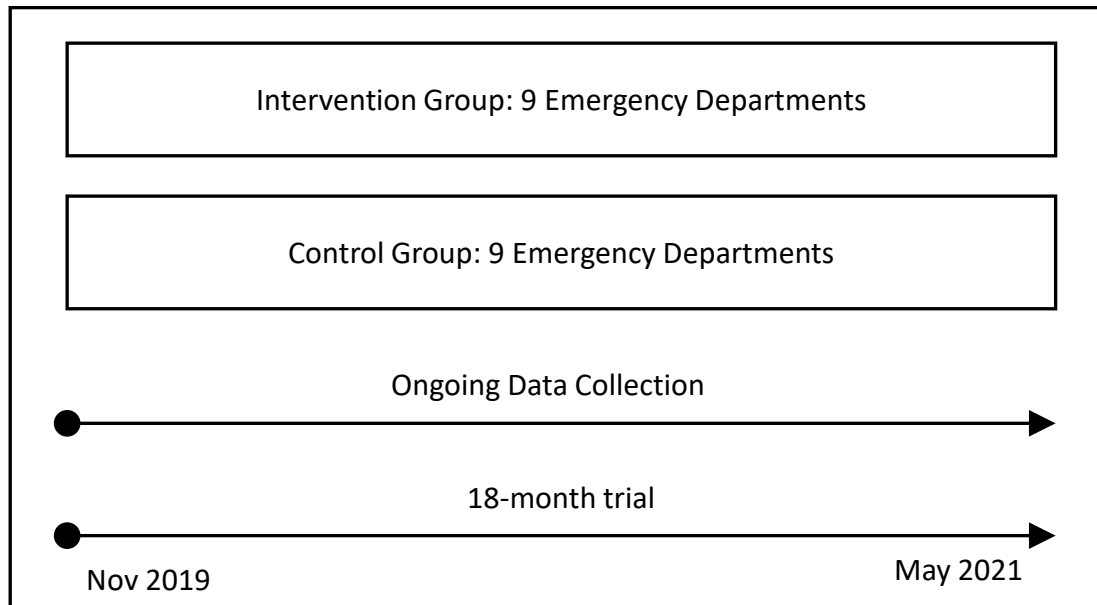
1. Orders
2. Notes
3. Prescriptions
4. Referral
5. Discharge instructions





- **18-month** pragmatic, parallel, group randomized trial
- **18 EDs in 5 healthcare systems**
- Allocation: 1:1 ratio to intervention & usual care arms with stratified covariate **constrained randomization**

- Participants: **adult ED OUD patients** meeting predetermined **EHR phenotype & attending emergency physicians** caring for them
- Control visits with attendings who practiced at both intervention & control sites excluded
- Intervention: CDS to support diagnosis & withdrawal assessment, motivate readiness & automate orders, notes, Rx, AVS, referral
- Outcomes: primary, initiation of BUP in ED; secondary, RE-AIM implementation outcome framework



Protocol.
BMJ Open, 2019

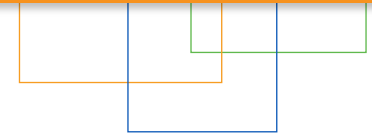


Trial Registration
NCT03658642



EHR Phenotype.
JMIR Med Inform, 2019



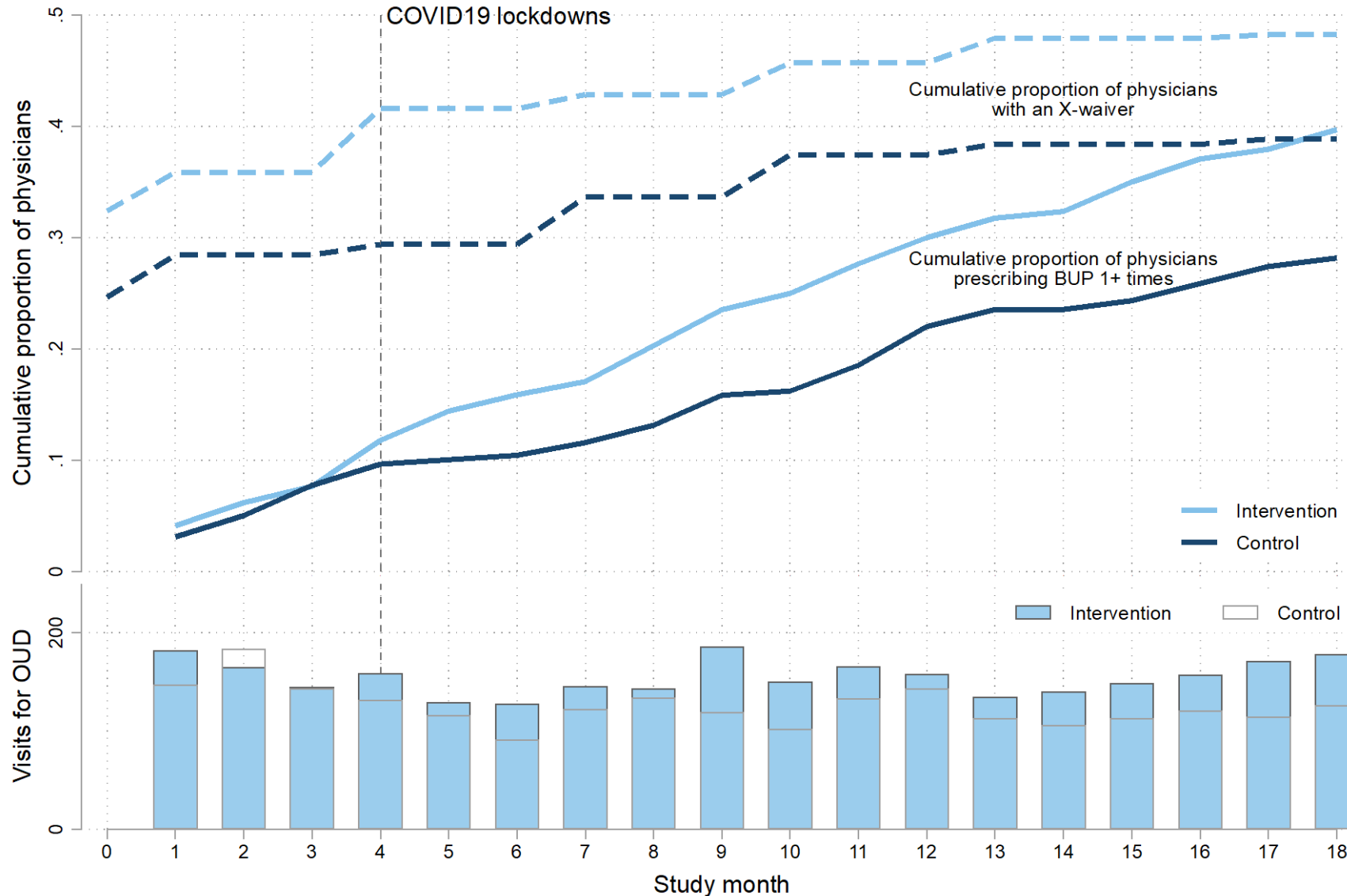
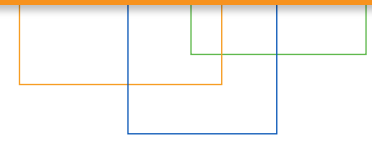


- 1,413,693 ED visits (775,873 intervention, 637,820 control) assessed for eligibility
- 5,047 OUD patients (2,787 intervention, 2,260 controls); 599 attendings (340 intervention, 259 control)
 - ▶ No difference in physician age or gender
- 37/340 intervention attendings initiated BUP 46 times after launching EMBED

Outcomes	Counts		Unadjusted		Adjusted**	
	Intervention N (%)	Control N (%)	Effect size OR (95% CI)	p-value	Effect size OR (95% CI)	p-value
Patients with BUP initiated*	233 (8.4)	193(8.5)	1.23 (0.57, 2.68)	0.59	1.17 (0.64, 2.14)	0.60
Unique attendings who initiated BUP	135 (39.7)	78 (30.1)	1.53 (1.08, 2.15)	0.02	1.86 (1.15, 3.00)	0.01
Attendings who obtained X-waiver during trial	50 (14.7)	30 (11.6)	1.33 (0.80, 2.20)	0.28	1.31 (0.69, 2.48)	0.42
Physician rate of BUP initiation per 100 OUD patients	9.2(7.7, 10.8)	7.6 (6.2, 9.2)	RR: 1.21 (0.93, 1.57)	0.15	1.14(0.90,1.44)	0.29



Temporal Trends

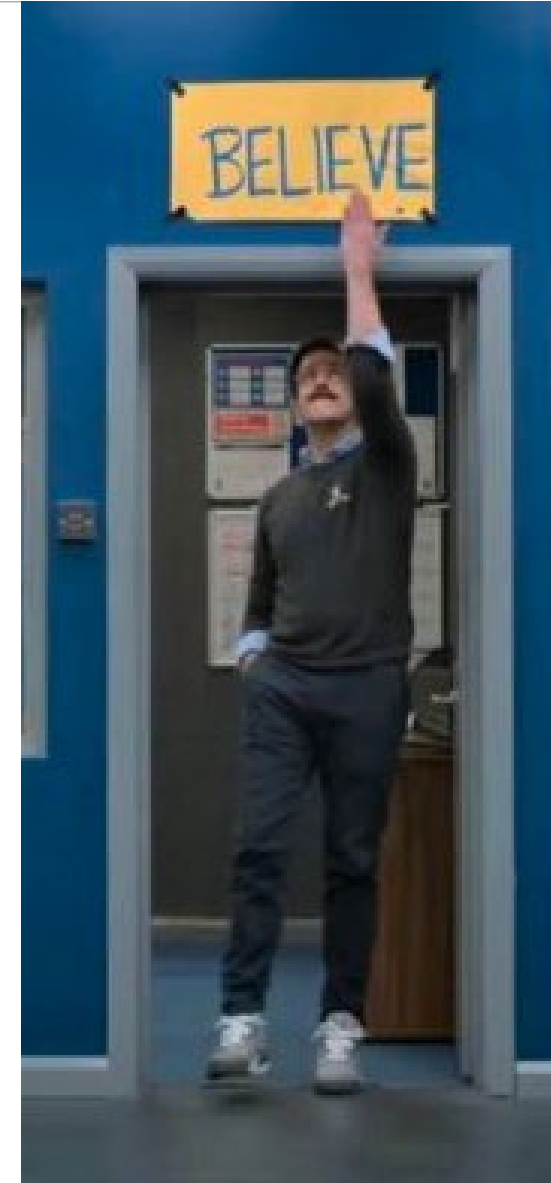
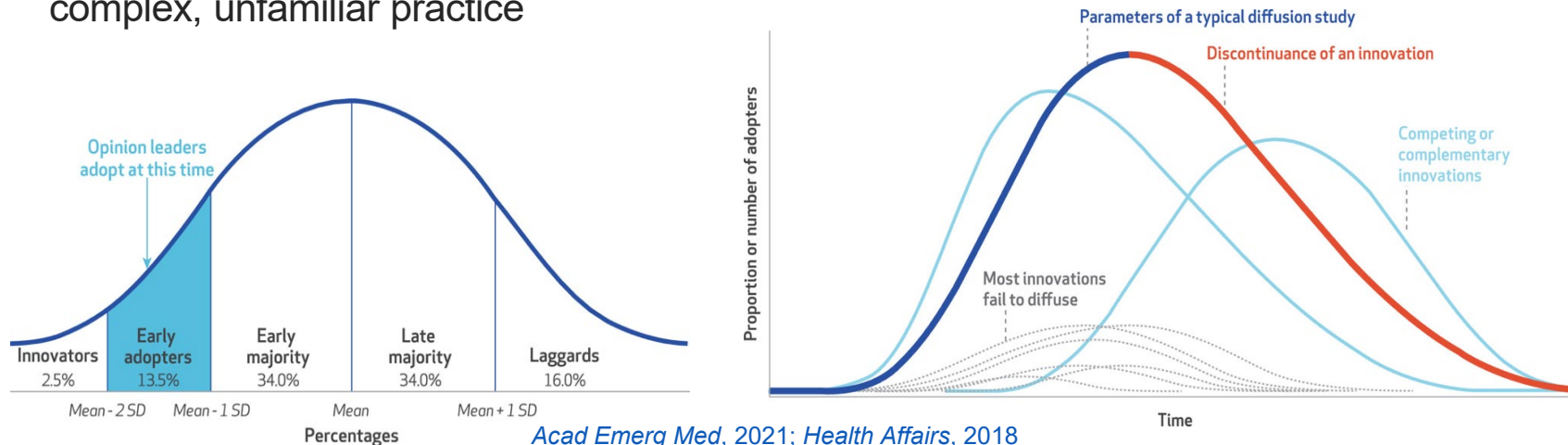


Take home points

- Higher proportion of intervention physicians waived and who adopted practice of ED initiation of BUP
- Waivered proportion increased at same rate across study arms
- Adoption of of ED initiation of BUP grew faster in intervention arm, diverging

Adoption of ED-initiation of BUP

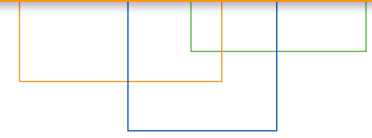
- Patient level: no change, limitations of data collection (e.g., methadone not in EHR)
- Physician level: EMBED intervention increased adoption
- Unobservable innovations may fail to diffuse or diffuse slowly. To accelerate adoption of this life-saving practice, we must:
 - ▶ Embrace treating addiction as part of routine emergency care
 - ▶ Implement user-centered CDS with automated EHR workflows to facilitate adoption of this complex, unfamiliar practice













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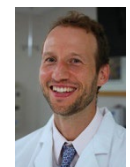
21 Thank you to the EMBED Team








MAYO CLINIC  

Baystate Health  

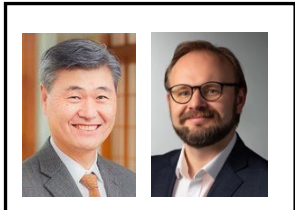
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UNC HEALTH CARE    

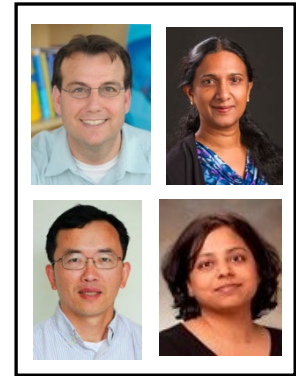
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UAB HEALTH SYSTEM
Knowledge that will change your world    

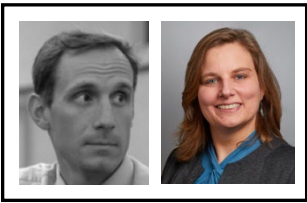
Yale
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Health
IT leads



Data Team



Design Team





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