Improving care for patients with Infective Endocarditis (IE) related to Intravenous drug use (IDU)

Project Leads:

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Project Team Members:

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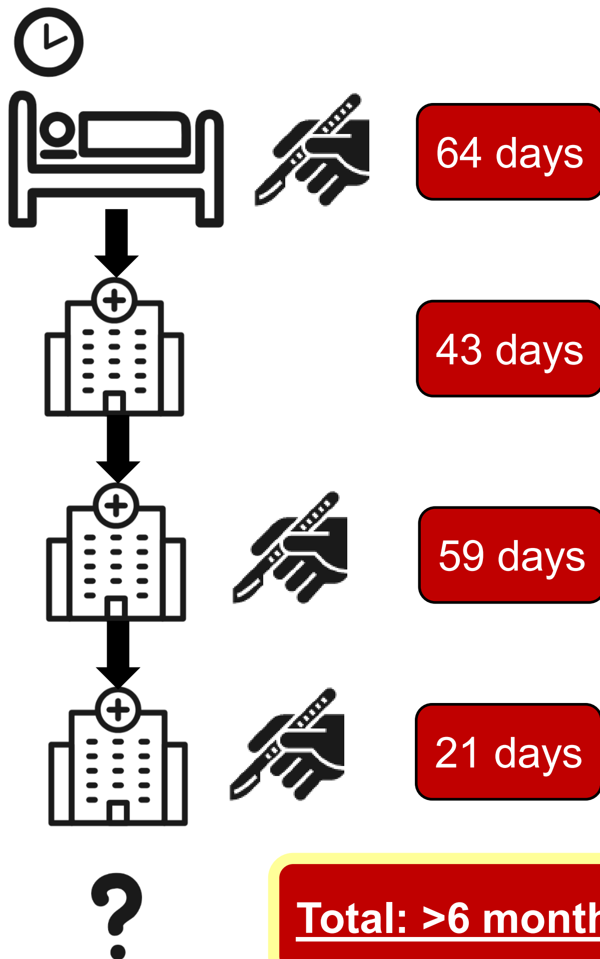
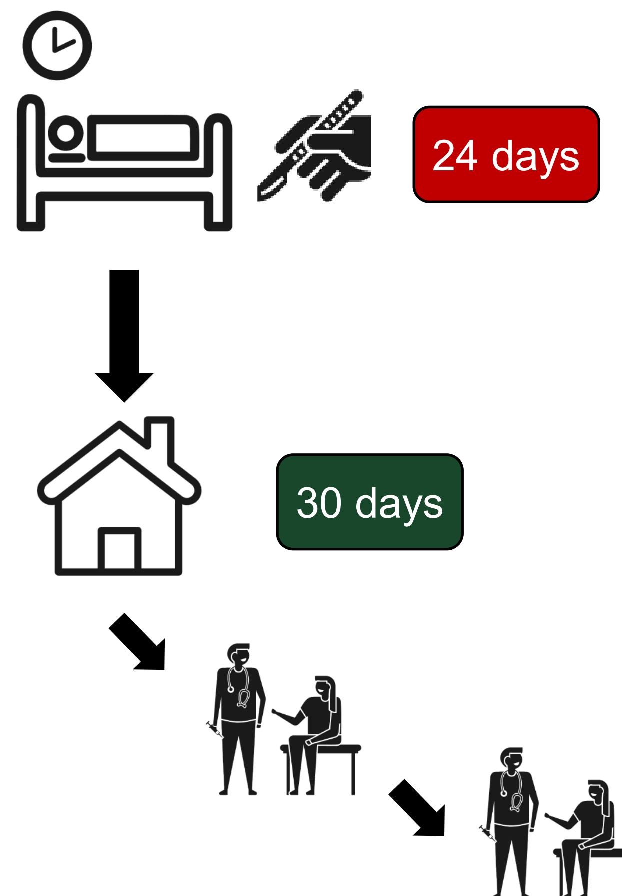
UNC
INSTITUTE FOR HEALTHCARE
QUALITY IMPROVEMENT

01.31.2020

A Tale of Two Patients

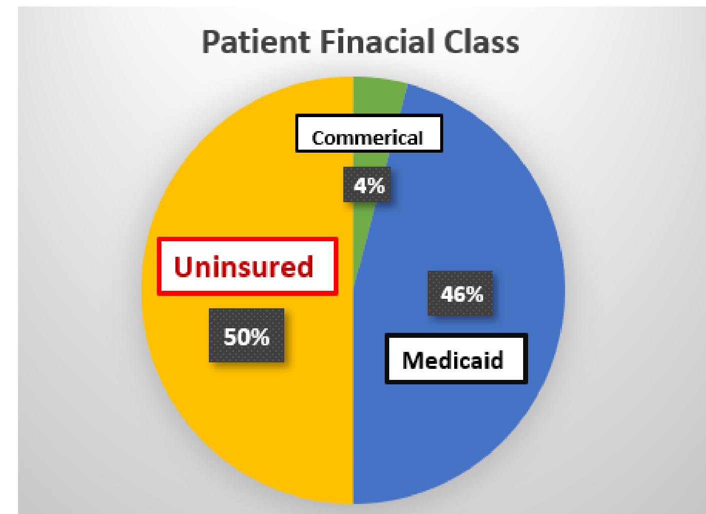




Importance

- Caring for patients with **IE-IDU** is **COSTLY**

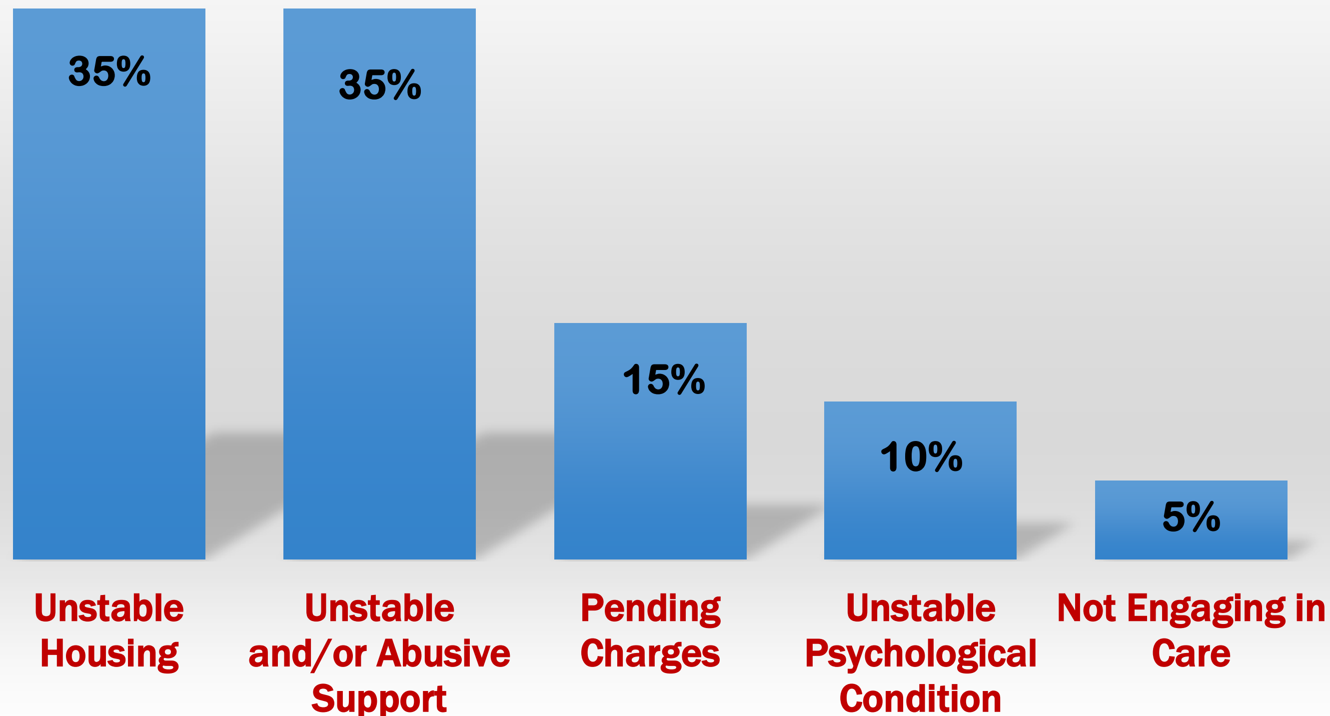
At UNC, the **total cost of care** (lost opportunity + cost of care) for **patients undergoing surgery for IE- IDU was $358,000 per patient**



- **Care is INEFFICIENT**
  - **Weeks to months of in-hospital IV antibiotics**

- **Outcomes are POOR**
  - [3] Patients with untreated addiction have **higher** rates of **readmission & mortality**

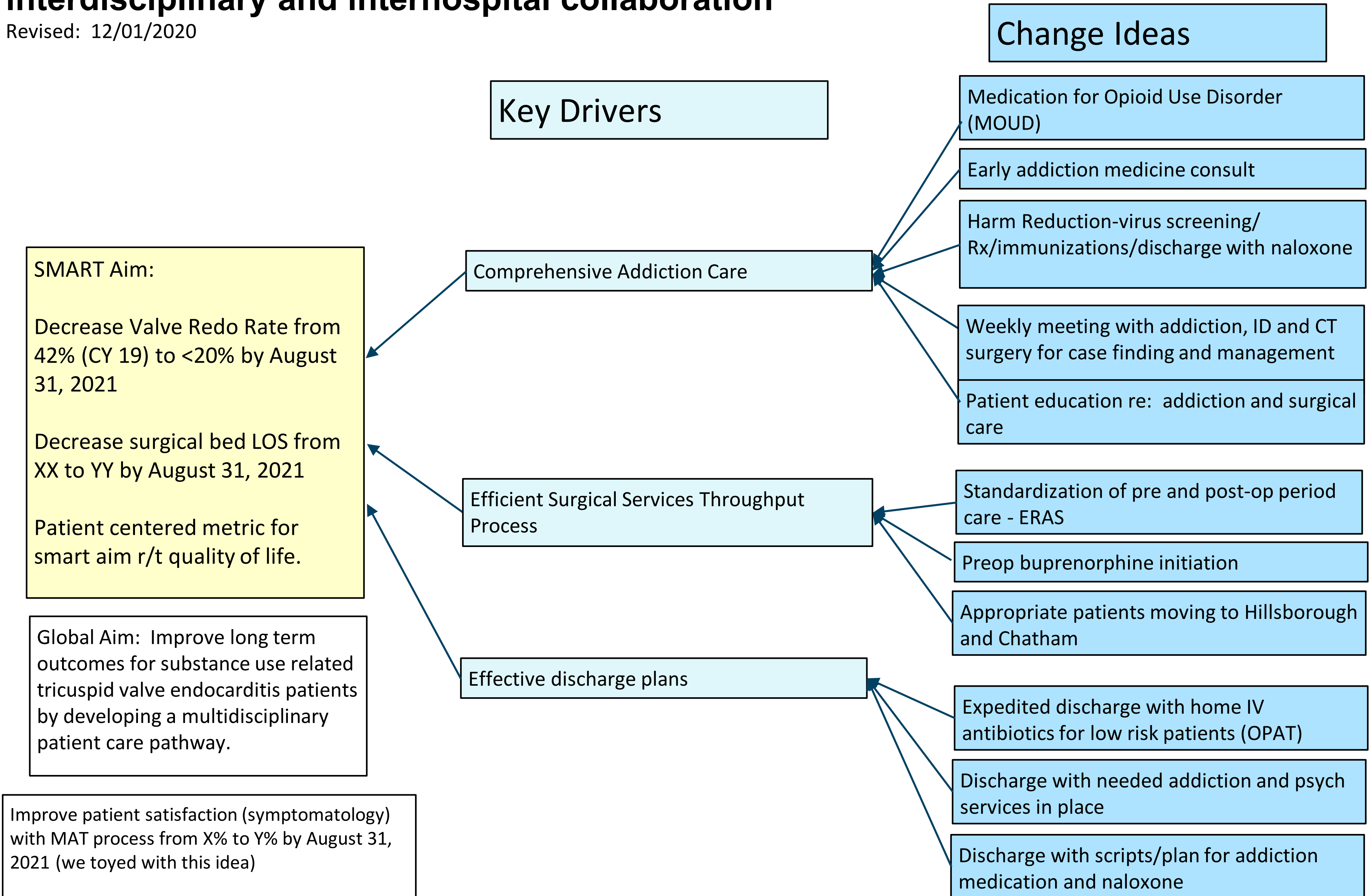
Importance



Key Driver version 1.0

Optimizing Care of Patients with Tricuspid Valve Endocarditis r/t IVDU through interdisciplinary and interhospital collaboration

Revised: 12/01/2020



EQUALITY

EQUITY

Key Driver v99

Optimizing Care of Patients with Tricuspid Valve Endocarditis related to Intravenous use of drugs (IDU)

Revised: 8/12/2021

Global Aim:

- To provide **equity of care** to patients with endocarditis related to IUD by ensuring all patients admitted to the hospital for this condition have access to evidence-based treatment options for OUD.

Smart Aims:

Between April and September 2021:

- **60% of patients initiated on MOUD**, *to improve* ***patient outcomes***
- **5% initiated on buprenorphine pre-operatively**, *to improve* ***efficiency of care***
- **10% of patients discharged home on intravenous antibiotics (OPAT)**, *to* ***reduce cost*** *of care*

Key Drivers	Change Ideas
Comprehensive Addiction Care (Phase 1)	**Inpatient initiation of medication for Opioid Use Disorder (MOUD)** Preop buprenorphine initiation when able
	Harm Reduction & naloxone prescribing
	Weekly meeting w/addiction, ID and CT surgery to identify OPAT eligible patients & enhance **collaborative co-management**
	Patient education re: addiction and surgical care
	Unique periOp pain management protocol
Effective discharge plans (Phase 2)	Transfer to Hillsborough and Chatham post-op when appropriate
	Expedited discharge with home IV antibiotics for low risk patients (OPAT)
	Discharge with needed Addiction services

What is EQUITABLE care for IE-IDU?

1) Patient access to needed care teams: Infectious disease, Addiction Medicine & Cardiothoracic surgery

2) Patients understand the disease process

3) Opportunity to transition to outpatient care when medically appropriate

4) Treatment with Buprenorphine as early as possible

Why do patients with opioid addiction need buprenorphine?

Patients reporting abstinence (%)

100
90
80
70
60
50
40
30
20
10
0

0 5 10 15 20 25 30

Days Post-detoxification

Detox doesn't work

How did we accomplish these goals?

Pathway for PreOperative initiation of buprenorphine

IV Drug Use/Endocarditis Clinical Care Pathway: Perioperative Multimodal Pain Management

Preop:

- Patients may or may not be on buprenorphine (Suboxone).
  - Typical dose is 8-12 mg, which should not significantly affect perioperative pain control.
  - Addiction medicine service orders buprenorphine.
  - Yes, it is ok to take buprenorphine on the day of surgery.
- Alternatively, patients may be on methadone instead of buprenorphine. Patients should NOT be taking both.
  - Yes, it is ok to take methadone on the day of surgery.

Principle:

Improve efficiency and outcomes

by starting Buprenorphine earlier

- Ketamine 0.5 mg/kg bolus, followed by ketamine infusion 0.5 mg/kg/hour. Discontinue during chest closure.
- Sufentanil infusion (5 mcg/mL dilution), set at 0.3-0.6 mcg/kg/hr. Sufentanil should be started as soon as central line placement is complete. Discontinue during chest closure.

Postop:

- **Resume buprenorphine** at pre-op daily dosing

New UNC Program:

Home IV Antibiotics for patients with Opioid Use Disorder (OUD)

(Developed by Infectious Diseases/OPAT, Addiction Psychiatry, General medicine and UNC Homecare)

Program Qualifications

1. Patient, companions and medical team agree that home health with IV antibiotics is an appropriate treatment plan

Principle:

Reduce costs and increase equity

by discharging patients home earlier

6. Patient receiving medications for opioid use disorder or in a treatment program (strongly preferred*)
7. Signed OPAT Treatment Plan

Weekly Multi-Disciplinary meeting:

Visual Management System

	Patient Information						Assessments				MOUD				Surgery			OPAT				Other		
Patient Name	Medical Record Number	Patient Age at Admission	Last Review Date	Currently Admitted	Admit Primary Service	Identified by Weekly List 1=yes; 0=no	Seen by Addiction Medicine; 1= Yes, 0 = No, 2 = No, not indicated on MAT, 3 = No, Died prior to assessment	Seen by ID; 1=yes; 0=no	Screened for HIV?; 1=yes; 0=no	Seen by C/T; 1 = yes, 0 = no, 2 = no, but not indicated	Has MOUD been Discussed?; 1=yes; 0=no	MOUD Accepted; 1=yes; 0=no	MOUD Receipt; 1=yes; 0=no	Pre-op initiation of suboxone 0=no; 1=yes;	Surgery Planned; 1=yes; 0=no	Reason for Surgery	Surgery Performed; 0 = no, 1 = yes	Evaluated for OPAT; 1=yes; 0=no; 2 OPAT not indicated	OPAT Candidate (per Thurs Meeting); 1=yes; 0=no	Reason not OPAT candidate	Enrolled in OPAT; 1 = yes, 0 = No	Complex Social Information	Addtn pertinent info; 1=yes; 0=no	Pertinent information
Patient A				Y	MDC		1	1		1	1	1	1		0			1	1					Injured in a car accident
Patient B		[illegible]		Y	6 NSH	1	1	1		1	0	0						0	0	Very hesitant to use anything		Trafficked and		
Patient M	xxxxxxxxxxxx	41	6/24/2021	N	CTS	0	0	0	1	1	0	0	0	0	1	Flail MV	1	2		Completed abx course	0		1	elective surgical repair
Patient N	xxxxxxxxxxxx	40	6/24/2021	N	MICU	1	3	1	1	1	0	0	0	0	0		0	0	0	Died prior to candidacy	0		1	Inpatient ICU death
Patient O	xxxxxxxxxxxx	38	6/3/2021	N	SRV	1	1	1	1	1	1	1	1	0	1	severe AI	1	1	1	declined OPAT admitted he would be inclined to use.	0		1	On methadone pre-op
Patient P	xxxxxxxxxxxx	49	6/10/2021	N	CAR	1	1	1	1	1	1	1	1	1	1	Severe TR, recurrent TV	1	1	0	Unstable housing	0	Partner is still using and is currently living	1	Left AMA due to housing concerns
Patient Q	xxxxxxxxxxxx	32	5/27/2021	N	OB	0	1	1	1	1	1	1	1	0	0		0	2	0	discharged on oral antibiotics; need for discussion with	0	Apartment in Chapel Hill, rent out other	1	Surgery was indicated but delayed d/t pregnancy
Patient R	xxxxxxxxxxxx	27	6/10/2021	N	MICU	0	0	1	0	1	0	0	0	0	0		0	0	0	Transferred back to sending hospital	0		1	transferred from MICU back to sending hospital
Patient S	xxxxxxxxxxxx	28	4/29/2021	N	MICU	1	1	1	0	1	1	0	0	0	1	Large TV veg, severe TR	1	1	0	Not engaging in care	0		0	septic emboli to lungs, brain, sternum; CTEPH; massive PE
Patient T	xxxxxxxxxxxx	30	5/27/2021	N	MEDK	0	0	0	0	0	0	0	0	0	0		0	0	0	Left AMA	0		1	AMA in < 24 hours
Patient U	xxxxxxxxxxxx	45	5/13/2021	N	CTS	0	1	1	1	1	1	0	0	0	1	Right atrial veg	1	1	0	Housing/lack of MOUD	0	Partner encouraging continued use	1	Suspect in hospital drug use (syringes found) and left AMA
Patient V	xxxxxxxxxxxx	22	4/29/2021	N	MEDU	0	1	1	1	1	1	1	1	0	0		0	1	0	Teams agree not appropriate	0		1	Prior TVR (MSSA), brought to ED for overdose 30 days later
Patient W	xxxxxxxxxxxx	33	4/29/2021	N	CTS	1	1	1	1	1	1	1	1	1	1	Prosthetic valve infection, Severe	1	1	0	Housing	0		1	Failed postop buprenorphine, prior TVR
Patient X	xxxxxxxxxxxx	22	4/15/2021	N	CAR	1	1	1	1	1	1	1	1	1	1	Severe TR	1	1	0	lack of social support	0	abusive partner, pending charges for	1	AMA discharge, preop suboxone, did well postop
Patient Y	xxxxxxxxxxxx	28	4/15/2021	N	MEDK	0	1	1	0	1	1	1	1	0	0		1	0	0	Left AMA	0	in-hospital heroin use, schizophrenia	1	had severe w/d with suboxone d/t in-hospital drug use, left AMA

Principle:

Improve outcomes

with a collaborative, multidisciplinary approach to care

Patient Education Materials

Endocarditis Care at UNC Health

What is *endocarditis*?

When a person injects drugs, bacteria can enter the blood and cause infections in many parts of the body. Endocarditis is an infection of the heart due to bacteria in the blood. Patients who have endocarditis due to drug use are at risk for infections in other parts of the body also.

Tell your hospital doctor if you have any of these symptoms:

- numbness
- chest pain
- neck or back pain
- weakness
- leg swelling
- belly pain

Endocarditis Care at UNC Health (cont.)

1. ***IV antibiotics:*** You will need to take IV antibiotics for at least 6 weeks. Some patients need repeat testing after antibiotics to make sure the infection is completely gone. Some patients need to continue IV antibiotics longer.
2. ***PICC line:*** To get antibiotics for such a long time you will need a PICC line, which is a long IV placed in your arm that can be safely kept in place for weeks to months while you are getting treatment.
3. ***Addiction care:*** Our addiction medicine team will treat opioid use disorder while you are in the hospital. By stopping injecting drugs, you can prevent this kind of infection from coming back.
4. ***Testing for viruses:*** People who inject drugs a lot get viral infections like HIV and hepatitis. We will test you for these viruses while you are in the hospital. Let us know if you have had one of these infections before or if you know that you shared a needle with someone. Also let us know if you have received a tetanus or hepatitis

Principle:

Increase patient engagement and adherence

by enhancing understanding

what you need to stay healthy.

Buprenorphine helps to treat cravings, which enables you to participate in your care more and feel more comfortable.

If you are having surgery, we recommend starting ***buprenorphine*** before surgery. We are confident that we can treat pain after surgery with medicines that don't interfere with ***buprenorphine.*** Talk to your doctors about this if you have concerns. Our goal is to make sure you are as comfortable as possible and support you on the path to recovery from opioid use disorder.

IVDU Endocarditis Panel (iCARE)

- [x] IVDU Endocarditis Panel (iCARE) HIV Labs

Order if patient is not already known positive or if not screened within the past 3 months

- [ ] HIV Antigen/Antibody Combo

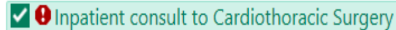
- [x] IVDU Endocarditis Panel (iCARE) Hepatitis C Labs

Order Hep C Antibody If patient has no prior Hepatitis C test or has a previous negative Hepatitis C antibody
Order Hep C RNA if patient has previously-positive Hepatitis C antibody test

- ( ) Hepatitis C Antibody
- (•) Hepatitis C RNA, Quantitative, PCR
  Once, First occurrence today at 1224

- [x] IVDU Endocarditis Panel (iCARE) Consults

Order details



Order details

Order details P

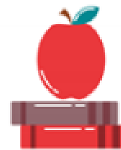
Principles:

Educate, Spread & Sustain

iCARE Pathway

IHQI
INSTITUTE FOR HEALTHCARE QUALITY IMPROVEMENT

improving **C**are for **A**ddiction **R**elated **E**ndocarditis



Endocarditis Checklist

The following items are recommended for completion

Consult Infectious Disease

Consult Cardiothoracic Surgery

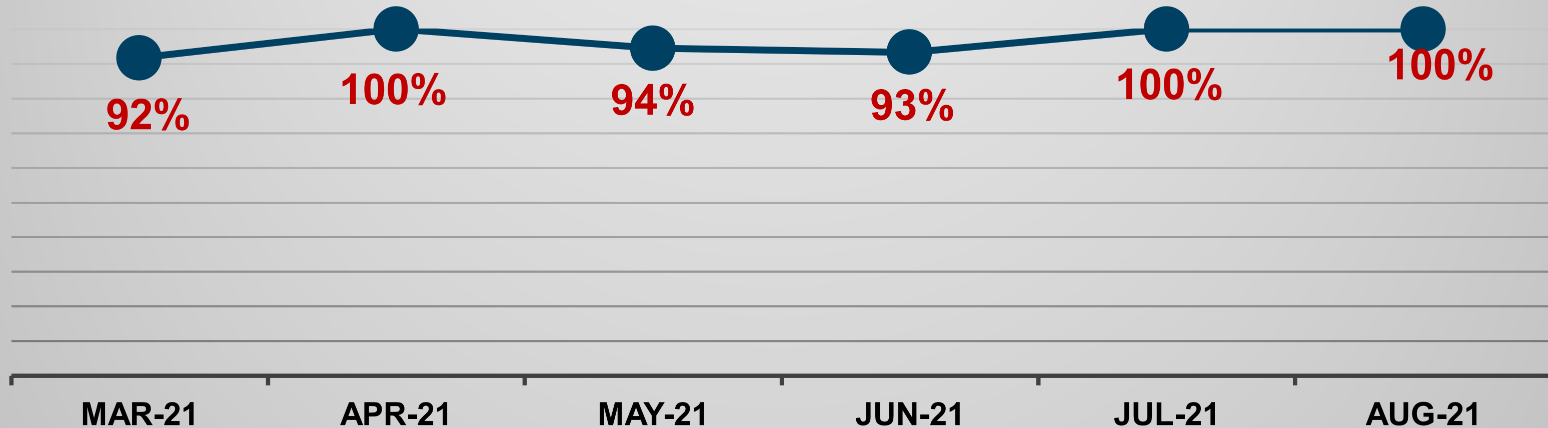
Consult IV Drug Use Service

Provide patient with education materials

Utilize infection prevention strategies (dotphrase .IDPrevent)

iCARE aims to improve care equity and patient outcomes in addiction related endocarditis via timely evidence-based treatment, medications for addiction and providing support for patients in recovery. The pathway was developed by UNC infectious disease, addiction medicine, cardiothoracic surgery, internal medicine, pharmacy, anesthesiology, chronic pain and quality improvement.

How did we do?

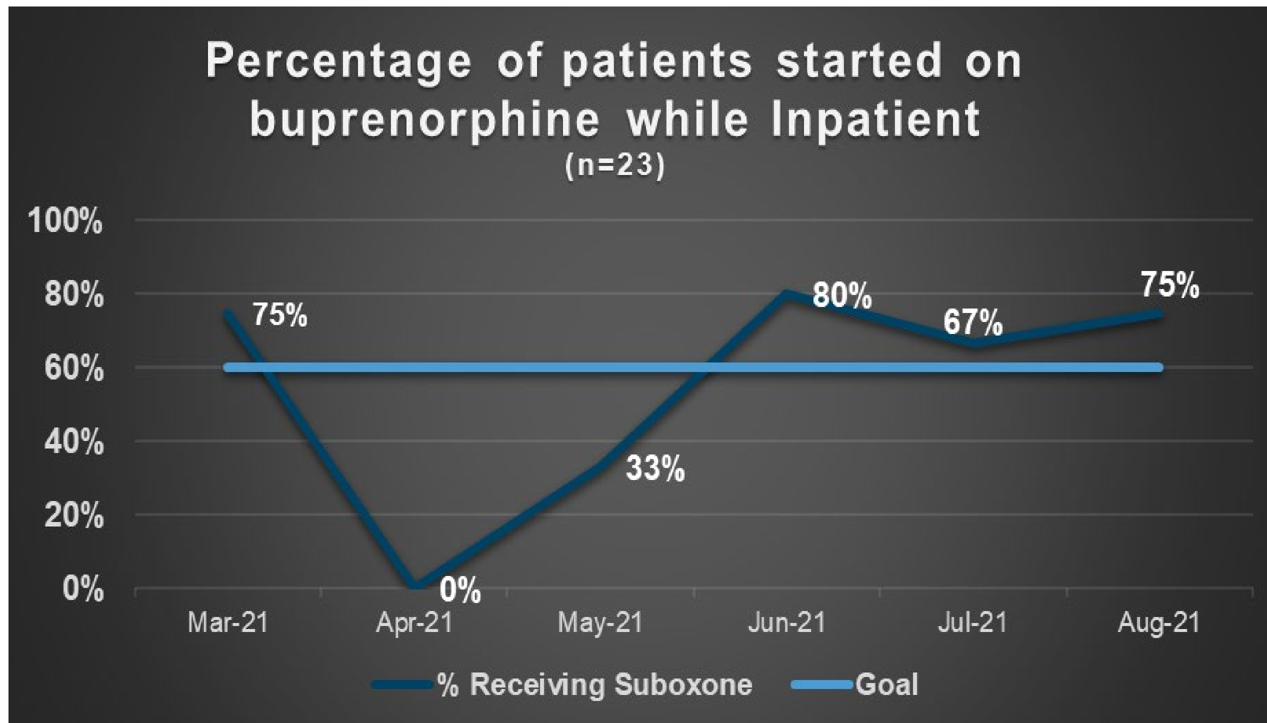


Indicated consultations:

1. Infectious Disease
2. Addiction medicine
3. Cardiothoracic surgery

From 2015-2017:

2% of patients were started on buprenorphine while inpatient



From 2015-2020:

0% were started on buprenorphine pre-operatively

In the past 3 months:

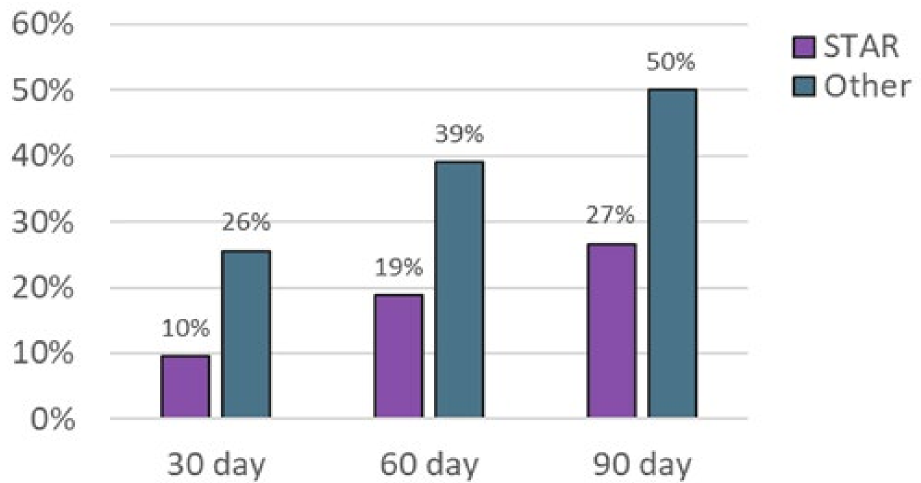
100% of patients were started on buprenorphine pre-operatively

*OPAT Experience (Home IV Antibiotics)

*Efforts led by Dr. Schranz & OPAT team

Late December 2020 through August 2021

	OPAT Patients (n=7)
Hospital days saved (days on OPAT), median	24
Hospital days saved, total	166
Follow-up in ID clinic	7 (100%)
30-day readmission (%)	1 (14%)



Readmission rates

For patients started on Buprenorphine in the hospital &
with or without follow-up in UNC Addiction (STAR) Clinic

Efforts led by Dr. Robin Jordan & team

At Home "Results"

Thank you for your time & attention

Thank you to our Amazing Team

Dr Lavinia Kolarczyk (Sponsor; Anesthesia)
Dr Matt Nielsen (Coach; Urology)
Matt Huemmer (IHQI Project manager)
Kelly Reilly (IHQI Project manager)
Megan Quinn, NP (CTS)
Dr Robyn Jordan (Addiction)
Kate Roberts (Addiction SW)
Dr Irina Phillips (Pain)
Keva Southwell, PA (Hillsborough)
Lindsey Kennedy (Pharmacy)
Dr Jenny Bui (CTS)
Dr Madeline McCray (ID)
Many others….