



# OPIOID ADDICTION AND ENDOCARDITIS

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# WHAT IS ENDOCARDITIS?

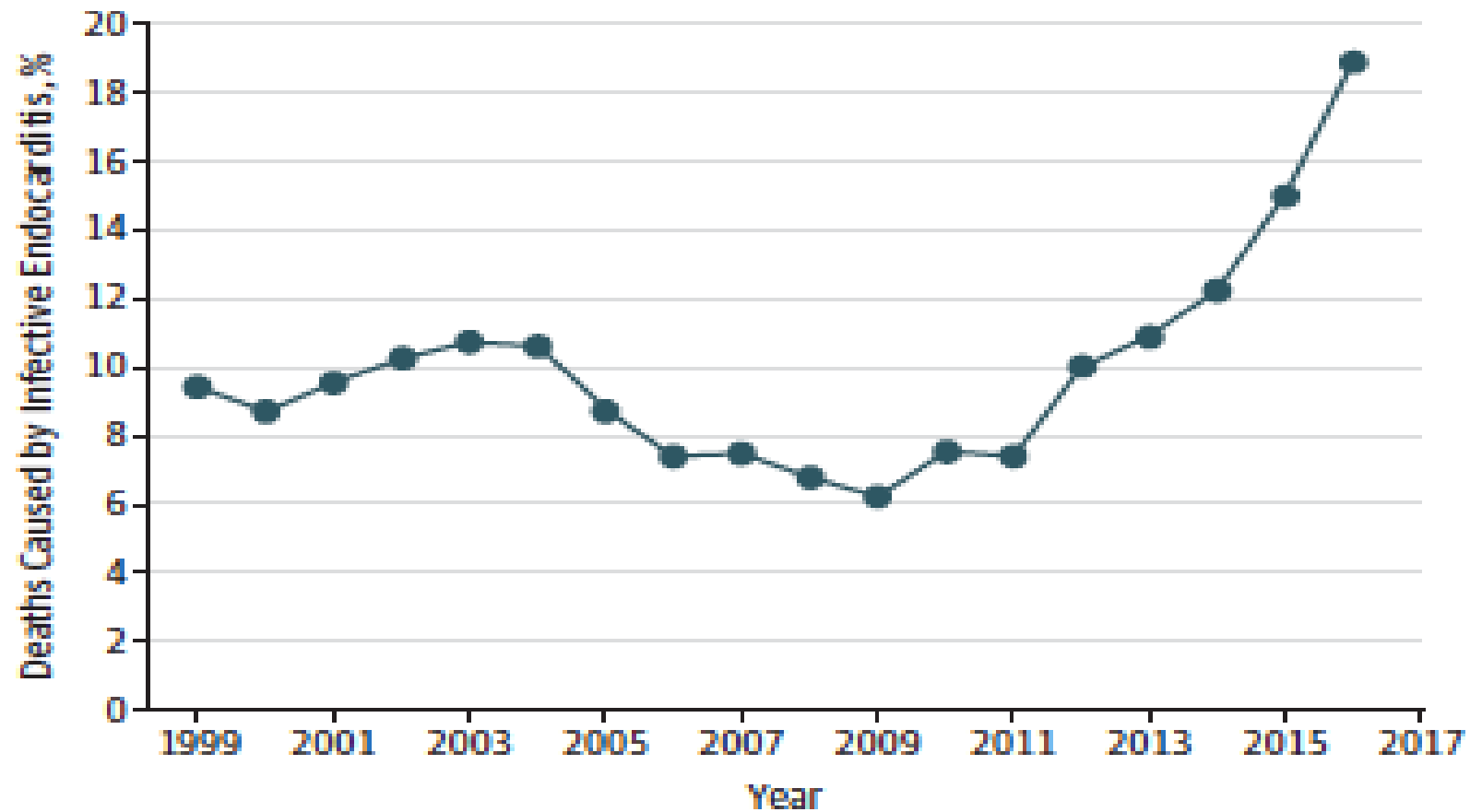
- Infection of the endocardium, which is the inner lining of the heart chambers and heart valves
- Typically occurs with bacterial infection of the blood stream which can attach to damaged areas of the heart
- Occurs more often in damaged or artificial heart valves, but can occur in normal heart valves as well
- Leads to valve destruction, heart failure, sudden death
- Treatment includes long-term IV antibiotics and heart valve surgery to replace damaged valves
- Once valves have been replaced, they are more likely to develop recurrent endocarditis if the patient develops a recurrent infection

# WHAT IS ENDOCARDITIS?

- Deaths from opioid abuse have increased markedly among the United States population, particularly in young and otherwise healthy people
- Patients who inject drugs are at significantly higher risk of developing bacterial blood-stream infection (bacteremia)
- Given the relationship between persistent bacteremia and endocarditis, the United States has seen a significant increase in the number of endocarditis cases as well

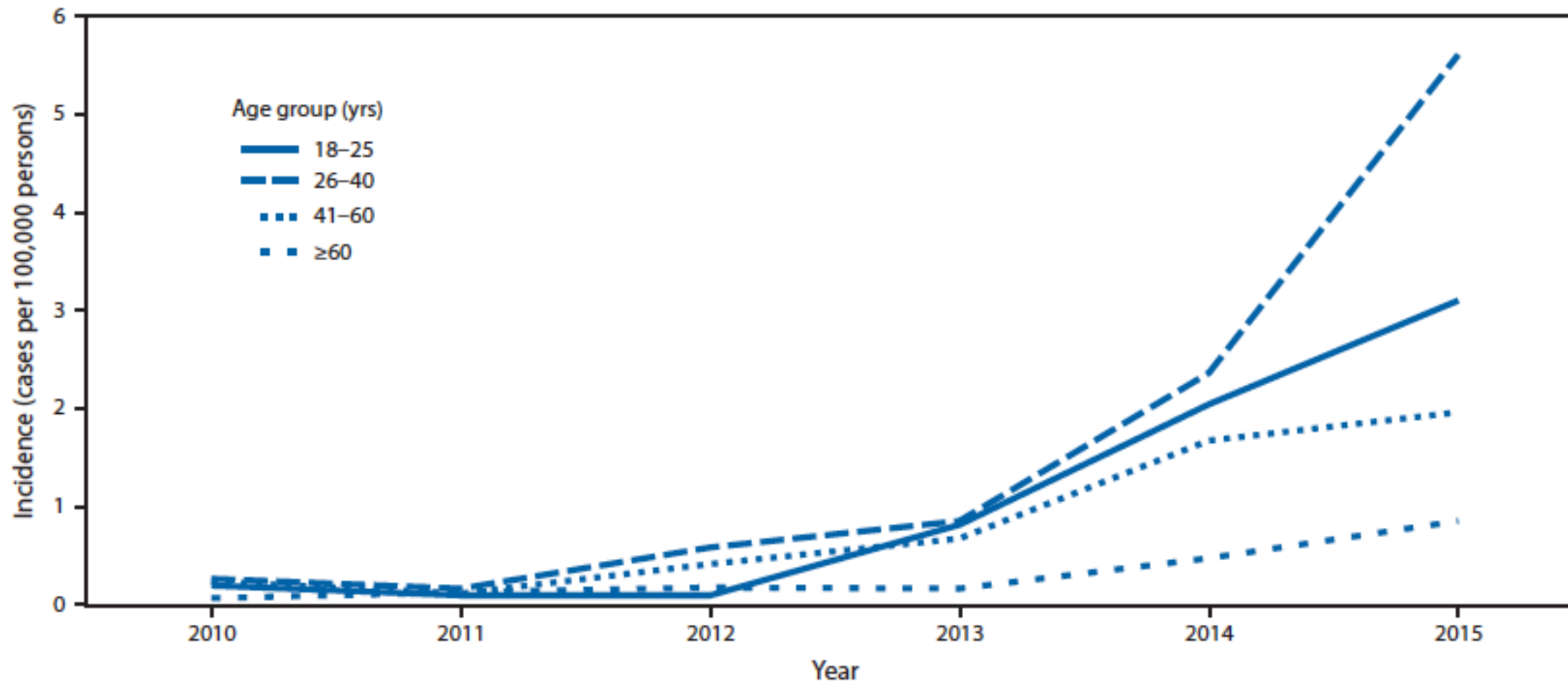
# INCREASE IN ENDOCARDITIS MORTALITY

**Figure 1. Rising Infective Endocarditis Mortality Among People Who Inject Drugs (1999-2016)**



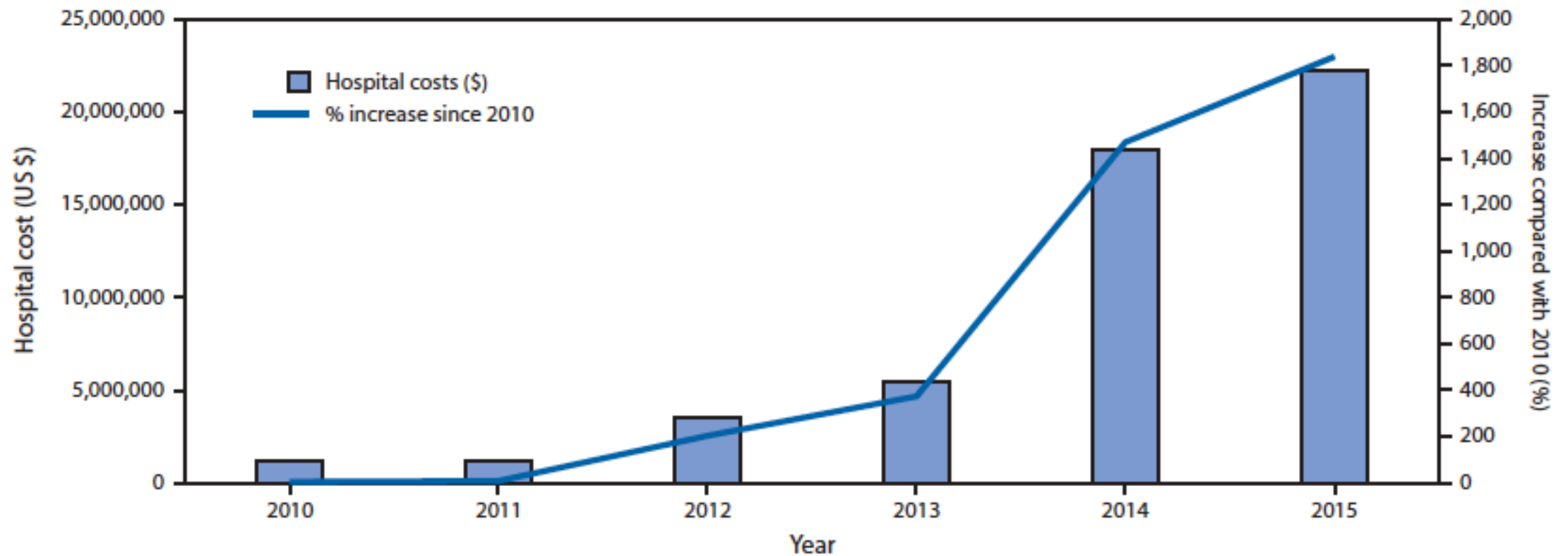
# INCIDENCE OF ENDOCARITIS NORTH CAROLINA

FIGURE 1. Incidence\* of hospital discharge diagnoses of drug dependence–associated endocarditis,† by age group — North Carolina, 2010–2015

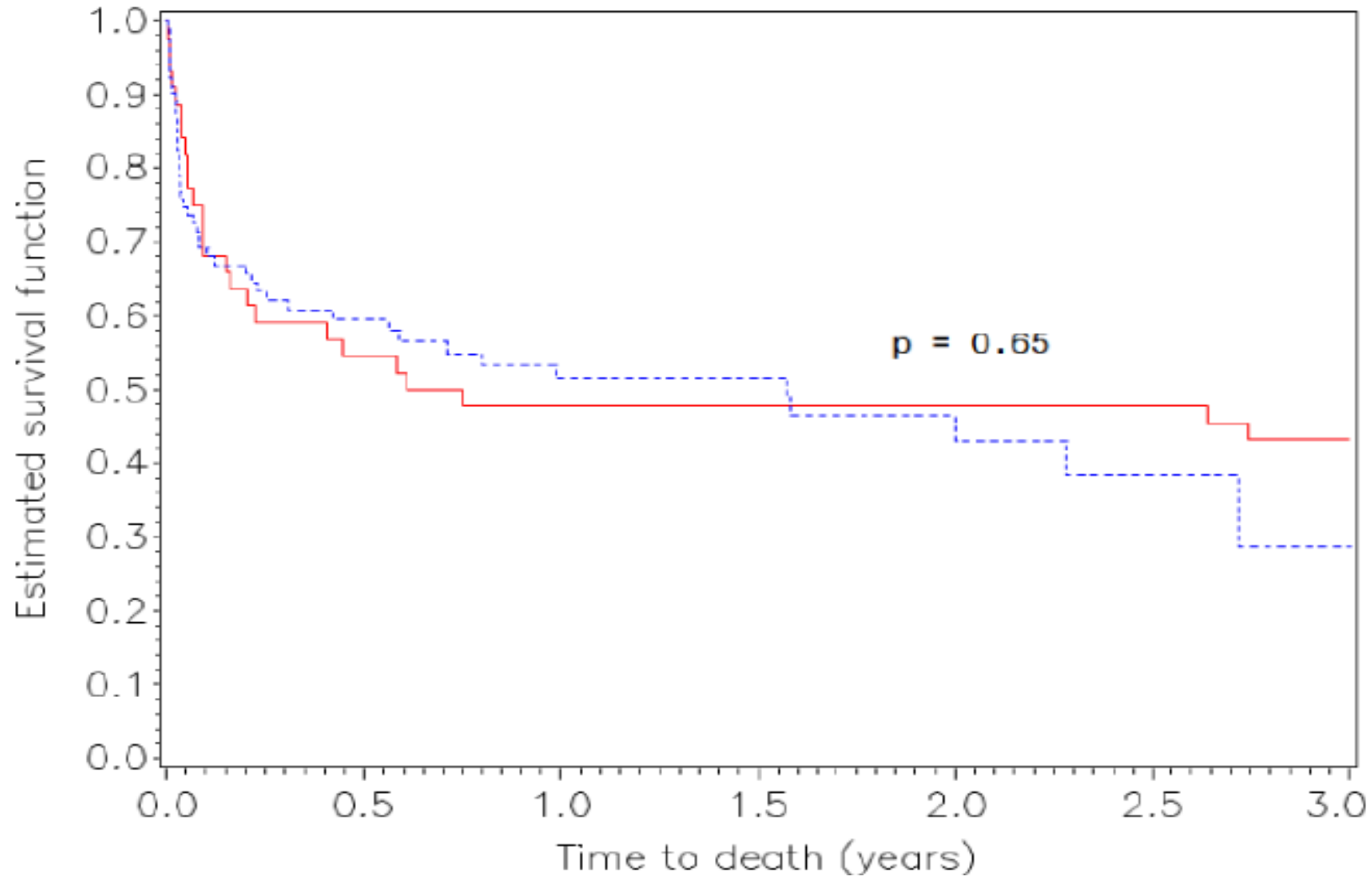


# INCIDENCE OF ENDOCARITIS NORTH CAROLINA

FIGURE 2. Hospital costs for persons with drug dependence–associated endocarditis and percentage increase since 2010 — North Carolina, 2010–2015



# UNIVERSITY OF KENTUCKY HIGH MORTALITY ASSOCIATED WITH ENDOCARDITIS



# WHAT CAN BE DONE?

- Long-term antibiotics and valve surgery treat the result of opioid abuse but do not treat the underlying problem
- Patients who relapse may develop infection of their artificial valves requiring repeat surgery with poor long-term success
  - Are surgeons obligated to operate on such patients?
- Best opportunity for long-term success is by treating the opioid abuse at the same time as the treatment of cardiovascular disease



# WHAT CAN BE DONE?

## Putting Parity into Practice — Integrating Opioid-Use Disorder Treatment into the Hospital Setting

Laura Fanucchi, M.D., M.P.H., and Michelle R. Lofwall, M.D.

# WHAT CAN BE DONE?

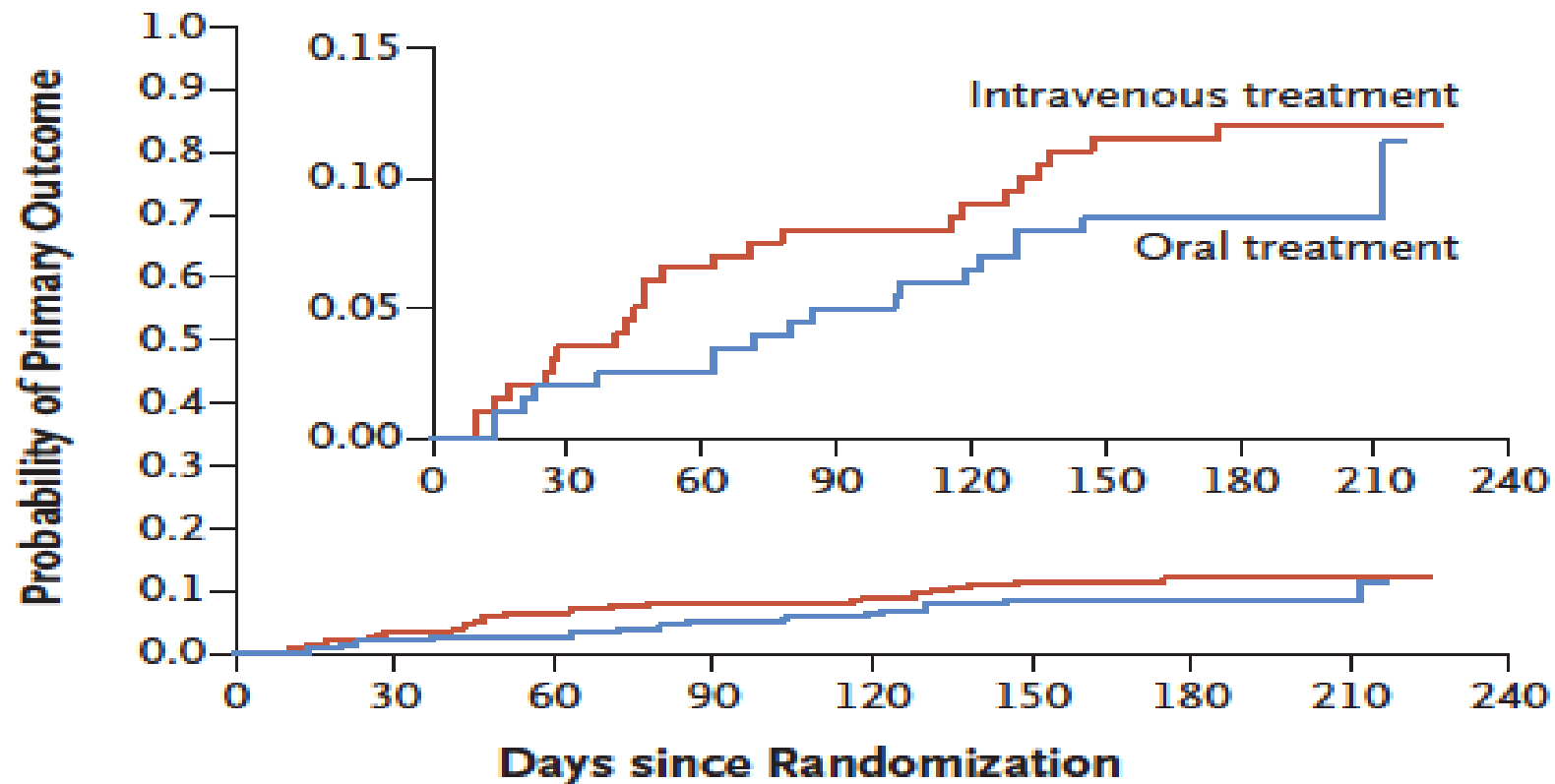
- Expanding access to addiction treatment services
- Medication-assisted therapies (MAT)
  - Initiation during hospitalization is ideal, but many issues prevent widespread utilization
  - Limited availability of outpatient providers
  - Insurance coverage
- Safe needle practices
- More clinical research

# MEDICATION ASSISTED THERAPIES (MAT)

Characteristic	Methadone	Buprenorphine	Naltrexone
Brand names	Dolophine, Methadose	Subutex, Suboxone, Zubsolv	Depade, ReVia, Vivitrol
Class	Agonist (fully activates opioid receptors)	Partial agonist (activates opioid receptors but produces a diminished response even with full occupancy)	Antagonist (blocks the opioid receptors and interferes with the rewarding and analgesic effects of opioids)
Use and effects	Taken once per day orally to reduce opioid cravings and withdrawal symptoms	Taken orally or sublingually (usually once a day) to relieve opioid cravings and withdrawal symptoms	Taken orally or by injection to diminish the reinforcing effects of opioids (potentially extinguishing the association between conditioned stimuli and opioid use)
Advantages	High strength and efficacy as long as oral dosing (which slows brain uptake and reduces euphoria) is adhered to; excellent option for patients who have no response to other medications	Eligible to be prescribed by certified physicians, which eliminates the need to visit specialized treatment clinics and thus widens availability	Not addictive or sedating and does not result in physical dependence; a recently approved depot injection formulation, Vivitrol, eliminates need for daily dosing
Disadvantages	Mostly available through approved outpatient treatment programs, which patients must visit daily	Subutex has measurable abuse liability; Suboxone diminishes this risk by including naloxone, an antagonist that induces withdrawal if the drug is injected	Poor patient compliance (but Vivitrol should improve compliance); initiation requires attaining prolonged (e.g., 7-day) abstinence, during which withdrawal, relapse, and early dropout may occur

# NEW RESEARCH

## Partial Oral versus Intravenous Antibiotic Treatment of Endocarditis



# DRUG ABUSE AND ORGAN DONATION

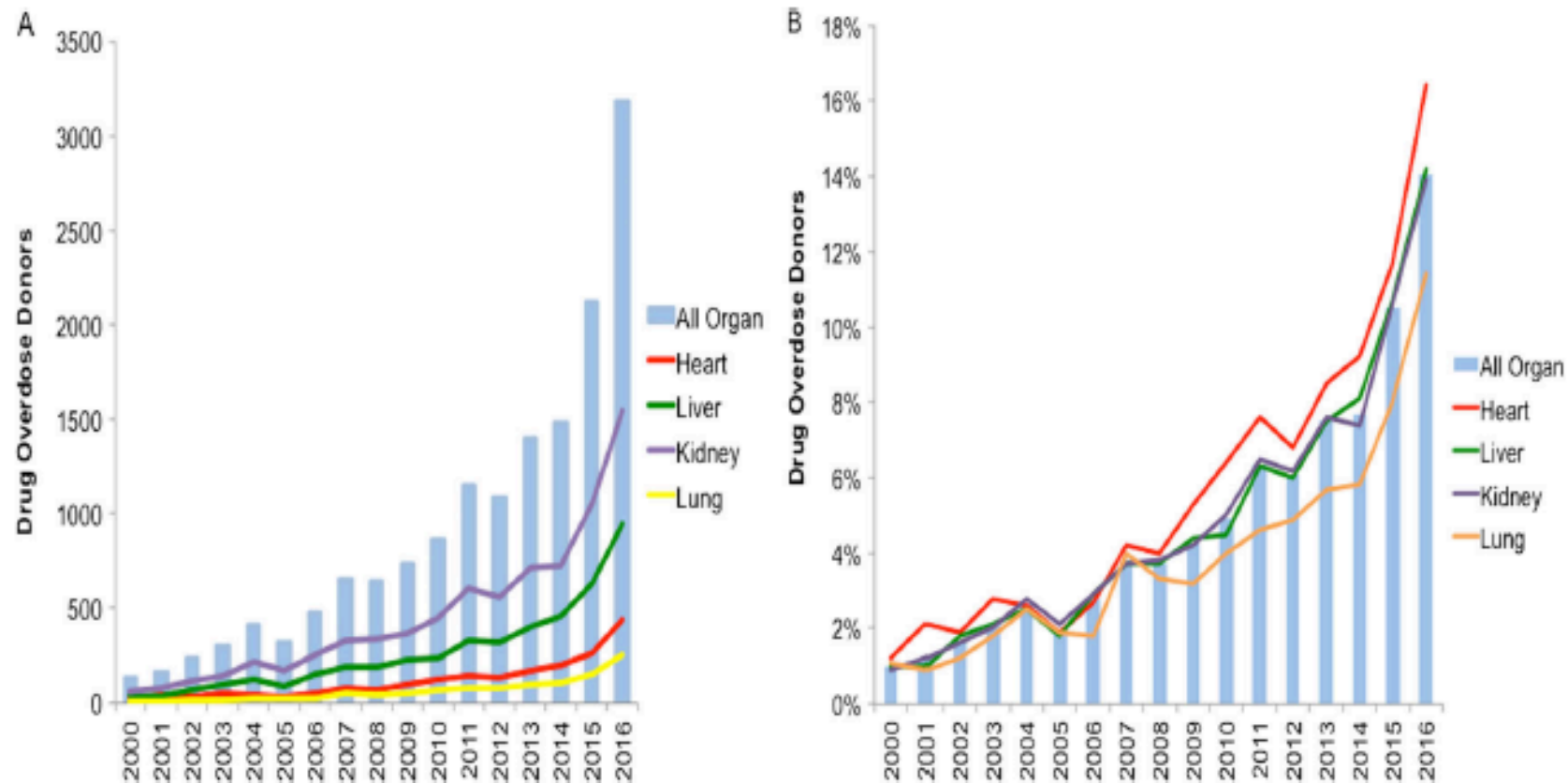


Fig. 1 Annual trends in donors from drug overdose utilized in solid organ transplantation in the United States from 2000 to 2016. a Annual trend in the number of drug overdose donors. b Annual trend in the percentage of donors utilized from drug overdose.