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
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 ENDOCARDITIS
NORTH CAROLINA

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

* Incidence per 100,000 persons
† Drug dependence includes heroin, cocaine, and other opioids

Year
2010 2011 2012 2013 2014 2015
Incidence (cases per 100,000 persons)
0 1 2 3 4 5 6
Age group (yrs)
18–25
26–40
41–60
≥60

HealthCare
Fleischauer AT et al. MMWR 2017;66:569-73
INCIDENCE OF ENDOCARDITIS
NORTH CAROLINA
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.
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
<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Methadone</th>
<th>Buprenorphine</th>
<th>Naltrexone</th>
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</thead>
<tbody>
<tr>
<td>Brand names</td>
<td>Dolophine, Methadose</td>
<td>Subutex, Suboxone, Zubsolv</td>
<td>Depade, ReVia, Vivitrol</td>
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<tr>
<td>Class</td>
<td>Agonist (fully activates opioid receptors)</td>
<td>Partial agonist (activates opioid receptors but produces a diminished response even with full occupancy)</td>
<td>Antagonist (blocks the opioid receptors and interferes with the rewarding and analgesic effects of opioids)</td>
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<tr>
<td>Use and effects</td>
<td>Taken once per day orally to reduce opioid cravings and withdrawal symptoms</td>
<td>Taken orally or sublingually (usually once a day) to relieve opioid cravings and withdrawal symptoms</td>
<td>Taken orally or by injection to diminish the reinforcing effects of opioids (potentially extinguishing the association between conditioned stimuli and opioid use)</td>
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<td>Advantages</td>
<td>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</td>
<td>Eligible to be prescribed by certified physicians, which eliminates the need to visit specialized treatment clinics and thus widens availability</td>
<td>Not addictive or sedating and does not result in physical dependence; a recently approved depot injection formulation, Vivitrol, eliminates need for daily dosing</td>
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<td>Disadvantages</td>
<td>Mostly available through approved outpatient treatment programs, which patients must visit daily</td>
<td>Subutex has measurable abuse liability; Suboxone diminishes this risk by including naloxone, an antagonist that induces withdrawal if the drug is injected</td>
<td>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</td>
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Partial Oral versus Intravenous Antibiotic Treatment of Endocarditis

Probability of Primary Outcome vs Days since Randomization

- Intravenous treatment
- Oral treatment

Iversen K et al. NEJM 2018
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.