COMMENTARY

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Matter of the heart: Prioritizing harm reduction in managing infective endocarditis associated with injection drug use

People who inject drugs have a 100-fold higher risk of infective endocarditis compared with the general population.[1] The incidence of injection drug use–associated infective endocarditis (IDU-IE) has increased with the opioid epidemic and growing number of people who inject drugs.[2]

Patients with IDU-IE are typically much younger than patients with infective endocarditis unrelated to IDU (non–IDU-IE),[2] tend to have a lower prevalence of other medical conditions, and achieve similar or better treatment outcomes in the short term, particularly with surgical interventions.[3] However, long-term outcomes are notably poorer compared with non–IDU-IE patients. Those with IDU-IE experience more complex hospital courses, prolonged hospitalizations, higher 30-day readmissions, increased occurrences of reoperation and reinfection, and increased rates of long-term mortality.[3–5]

The American Heart Association recently issued a scientific statement[6] with suggestions and guiding principles for managing IDU-IE. The statement emphasizes the need to treat substance use disorder in conjunction with endocarditis. This stance is endorsed by the American Association for Thoracic Surgery[7] and the American College of Cardiology.[8] We support a multidisciplinary approach that considers how to improve quality of care for IDU-IE from an addiction psychiatry perspective.[9]

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PARENTERAL ANTIMICROBIAL THERAPY: INPATIENT OR OUTPATIENT?

Treatment of infective endocarditis should be customized for each patient. The American Heart Association recommends 6 weeks of parenteral (intravenous or intramuscular) antimicrobial therapy.[6] Once acutely stabilized in the hospital, the patient can be discharged to receive outpatient parenteral antimicrobial therapy through a peripherally inserted central catheter for the remainder of treatment. Peripherally inserted central catheters are the preferred choice for medication administration because their durability allows for long-term access to the bloodstream for frequent drug administrations.[10] Alternative methods may be considered in certain situations, such as shortening the duration of parenteral antibiotic treatment, using long-acting lipoglycopeptide therapy, or switching to oral antibiotics.[6] Each patient is carefully assessed for surgical indications and extracardiac complications during and after their course of antimicrobial therapy.[6]

Despite evidence supporting the effectiveness of outpatient parenteral antimicrobial therapy, patients with IDU-IE receive it at a lower rate than non–IDU-IE patients. There may be concerns about whether IDU-IE patients are good candidates for outpatient therapy—for example, misuse of the peripherally inserted central catheter for self-administration of drugs, treatment nonadherence, challenges related to insurance coverage, and complex psychosocial and legal factors.[10] Nevertheless, extended hospital stays for patients with IDU-IE (often lasting 4 to 6 weeks) can lead to premature patient-directed discharges related

to ongoing addiction, loss of patient autonomy, and conflicts with the healthcare team.[11] Improved communication and rapport between staff and patients will help to prevent premature patient-directed discharges. This includes addressing immediate patient needs such as drug withdrawal and pain and providing concurrent comprehensive addiction and psychiatric treatment.[6]

There is no consensus on using outpatient parenteral antimicrobial therapy for IDU-IE, mainly because of limited clinical data. The American Heart Association recommends it for IDU-IE,[6] but the Infectious Diseases Society of America has expressed concerns about the quality of evidence supporting this approach.[12] These limitations exist because people who inject drugs have been excluded from larger clinical trials[13]; smaller studies demonstrate the safety, effectiveness, and cost benefits of outpatient parenteral therapy for IDU-IE.[10] This lack of consensus and research has affected clinical practice. A recent survey of infectious disease clinicians reported that less than one-third of those who agreed with using outpatient parenteral therapy for IDU-IE had a policy in place at their institutions to guide outpatient parenteral therapy for patients with IDU-IE.[14]

A HARM-REDUCTION APPROACH

Harm reduction is an evidence-based approach that uses interventions aimed at reducing the negative effects of drug-related behaviors without necessarily requiring complete elimination of drug use.[15] An approach based on harm reduction may reassure and encourage people who inject drugs and are reluctant to engage in treatment.

Education and sterile supplies

Patient education on the dangers of sharing needles and other drug-use equipment can help reduce injection-related risk behaviors and lower the likelihood of contracting infections. Providing patients with naloxone kits can further improve their health and safety. Some programs offer sterile needles, syringes, and other supplies to patients, which has proven to be an effective method of reducing blood-borne infections like human immunodeficiency virus and hepatitis C.[16] These initiatives aim to reduce the number of discarded needles and syringes in the community and provide a unique access point for health and social services that may not be readily available to this patient population.[16]

Additional harm-reduction practices include contingency management, which is behavioral therapy where the patient is rewarded (eg, a raffle ticket) for positive change such as a negative drug screen, and supervised consumption sites, which are sterile environments where individuals can use illicit substances under the observation of trained staff, emphasizing overdose prevention.[17]

Better outpatient access

A harm-reduction approach can also help improve outpatient parenteral antimicrobial therapy access for people who inject drugs. An initiative at a tertiary hospital found that people with peripherally inserted central catheters who inject drugs engaged in risky behavior, such as flushing the lines with nonsterile water or injecting drugs into the tubing instead of the port.[18] This led to the development of a comprehensive harm-reduction program that is currently implemented throughout the hospital system. The program provides clear guidance and support to clinical staff when working with people who inject drugs and are being discharged with a peripherally inserted central catheter. It also offers nonjudgmental education on safe injection practices and supplies sterile equipment on patient request.[18]

Specialized assistance: A challenge

Harm reduction also supports medication-assisted treatment or the use of medication alongside behavioral therapy to treat substance use disorders. The most common form of medication-assisted treatment in IDU-IE is medication for opioid use disorder. Some nursing and rehabilitation facilities will not admit patients who have a history of addiction or are prescribed medication for opioid use disorder. This is a challenge for people with IDU-IE who could benefit from a structured environment with specialized assistance or medical observation while completing their antimicrobial treatment. A safety-net hospital in Boston reported that 4 of 10 patients with opioid use disorder were declined admission to facilities.[19] This practice violates the Americans with Disabilities Act, but enforcement is rare and court rulings have had little effect.[19]

ROLE OF ADDICTION SERVICES: INTEGRATED TREATMENT

Complications in IDU-IE often stem from addiction; these include drug-related overdoses, recurrent infections, treatment nonadherence, and poor health-seeking behavior.[8] Although optimal addiction treatment is critical to improve the long-term medical outcomes for these patients,[4] only a small number of hospitals include addiction medicine in their management of IDU-IE.[20]

Medication for opioid use disorder

Optimal addiction treatment includes medications for opioid use disorder: buprenorphine, methadone, and extended-release naltrexone. The American Heart

Association recommends that medications be offered to every IDU-IE patient with opioid use disorder during hospitalization.[6] The choice of opioid use disorder medication should be based on the patient's preferences, addiction treatment history, and availability of medication in the outpatient setting.[21] If patients are already prescribed medication for opioid use disorder, it should not be discontinued during the hospital stay, but it may need to be adjusted.

Medication for opioid use disorder in IDU-IE patients can help to manage drug withdrawal symptoms, cravings, and pain, and it may improve patient engagement and retention. Studies have also shown that initiating medication for opioid use disorder in IDU-IE patients can reduce premature patient discharges.[22] Because premature patient discharges are linked to higher rates of hospital readmissions[23] and mortality,[24] beginning treatment for opioid use disorder could be an effective strategy to enhance patient outcomes, including increasing antibiotic therapy completion.[10]

Multidisciplinary treatment team

Stigma, genetic predisposition, trauma, concurrent psychiatric disorders, social support systems, home environment, education, employment, and legal circumstances all significantly influence the development and perpetuation of addiction. Certain strategies help mitigate these factors:

- Implementing an approach that is comprehensive, nonjudgmental, patient-centric, low-barrier, and centered on harm reduction
- Establishing close posthospitalization follow-up
- Integrating psychiatrists, psychologists, and social workers in IDU-IE care.[25,26]

Several models have been used to integrate addiction treatment into the care of patients with IDU-IE. One involves creating an inpatient multidisciplinary endocarditis team that includes an addictionologist.[9] The team sees all admitted IDU-IE patients and participates in all related meetings. Although the evidence is limited to single-center observational studies, this model has been shown to reduce in-hospital mortality, improve 1-year survival, increase rates of surgery, and decrease time to surgery,[27] as well as reduce the time from admission to addiction consultation and increase initiation of medication for opioid use disorder.[28]

If a multidisciplinary team is unavailable, an option is to establish an inpatient addiction consultation service. This service facilitates initiation of medication for opioid use disorder, improves outpatient addiction follow-up, reduces addiction severity, increases the number of days of abstinence,[29,30] increases the completion of antimicrobial therapy,[20] and decreases short-term mortality.[31]

WHERE TO NOW?

Treating IDU-IE is complex and challenging. Addressing the coexisting addiction is essential to achieve the best long-term outcomes. Despite recommendations from the American Heart Association, American College of Cardiology, and American Association for Thoracic Surgery, many patients with IDU-IE do not receive substance use disorder treatment in conjunction with heart disease treatment. Further research, including experimental and observational studies such as randomized controlled trials, cohort studies, and big data analysis, is needed to encourage clinicians to unlearn and change clinical practices. More qualitative studies are also necessary to determine the attitudes, barriers, and facilitators that can guide clinical practice.

Surgeon and cardiology champions are needed to create urgency and empower their addiction colleagues. Large-scale strategies to reduce stigma must be implemented and explored in hospital settings to improve patient-clinician relationships, reduce patient-directed discharges, and improve patient health-seeking behaviors. Alternatives such as harm-reduction strategies and supervised consumption sites should also be explored. It is essential to understand the social and structural determinants of people who inject drugs in order to identify new prevention strategies that will decrease the incidence of IDU-IE.

DISCLOSURES

Dr. Cantu-Weinstein has disclosed being an employee of Natera, Inc. and having ownership interest (stock, stock options in a publicly owned company) in Natera, Inc. The other authors report no relevant financial relationships which, in the context of their contributions, could be perceived as a potential conflict of interest.

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