

## Background

Hospitalizations due to infective endocarditis (IE) have increased exponentially within the last ten to fifteen years driven by the opioid epidemic and intravenous drug use-infective endocarditis (IDU-IE).

From the years 2000 to 2013, IDU-IE hospitalizations in the United State rose 238% with more recent trends estimating increases as much as 12-fold in 2017 (>400%).<sup>1</sup>

## Purpose

Safe injection sites (SIS) have become a topic of interest to help limit or decrease IDU-IE cases and overdoses in general.

They are places that create a controlled and stable environment for drug users to self-administer their drugs and are staffed by medically trained individuals.

Canada has been operating these sites for decades, and overdoses have drastically decreased.<sup>2</sup>

The thought is that these sites will also decrease transmission of infection, specifically bacteria causing endocarditis.

## PICOT

For intravenous drug users, does the use of safe injection sites reduce the risk of developing bacterial endocarditis compared to those who don't use safe injection sites?

## Design & Methods

**Keywords:** Intravenous (IV) drug use, SIS and associated laws, endocarditis, left against medical advice and drug use, infective bacterial endocarditis, and bacterial endocarditis with IV drug use.

**Inclusion:** adult over age 18 years old and active IV drug use, articles less than 5 years old, provided informed consent.

**Exclusion:** non-IV drug use, history of previous addiction, less than 18 years old, previous history of cardiovascular issues (acquired or congenital), history of valvular issues, history of previous endocarditis diagnosis/treatment, history of immunosuppression or use of medications that reduce immunity, and history of other intravenous drug use associated disease/health issues.

Database	Yielded	Reviewed	Included in Analysis
Google Scholar	1,935	9	5
PubMed	2,874	7	4
Valparaiso University Library	212	5	1
<b>Total:</b>	<b>5,021</b>	<b>21</b>	<b>10</b>

## Results

- **Management of Infective Endocarditis in People Who Inject Drugs (PWID):** Leave against medical advice (AMA) due to drug withdrawal symptoms, poor care, or perceived stigmatization; poor outcomes when care was solely inpatient medical care, improved outcomes when their treatment course involved addiction specialists and treatment.<sup>3</sup>
- **Risk Factors and Injection Practices in PWID:** Females had higher odds of having IE and are more likely to not use clean injection equipment from SIS; injecting into multiple sites or heating the intended drug prior to injection were not associated with IE; Drug of Choice = Hydromorphone, personal injectables or cookers were frequently contaminated with bacteria-causing IE, association with higher level of education.<sup>4</sup>
- **Against Medical Advice Discharges in IDU-IE:** One third of the AMA discharges occurred before hospital day three; more women and Hispanics leave AMA; increased 12% yearly.<sup>5</sup>
- **Common Belief with Safe Injection Sites in the US:** SIS enable drug addicts and perpetuate their addiction, entice more addicts to flood the already crowded areas of the city and increase crime because of the lack of police control or monitoring, violates the "Federal Crack House Statute" per the U.S. Drug Enforcement Agency.<sup>6</sup>
- **Healthcare Experience of PWID:** Overwhelming distrust in the healthcare system and medical providers, feel stigmatized based on IV drug use status, negative attitudes towards seeking medical care at hospitals, PWID feel more comfortable seeking care at SIS that limit or lack internalized drug use stigma.<sup>7</sup>
- **How Safe Injection Sites Help:** Healthcare is more accessible and less stigmatizing at SIS; significantly better outcomes with treatment plans that included drug counseling, group treatment, urine toxicology screening, opiate therapy, and a comprehensive harm reduction plan; reduces readmission and hospitalization as well as healthcare expenses.<sup>8</sup>

## Discussion

- Need for and importance of using SIS for distribution of sterile materials for IE prevention- key role in decreasing the incidence, morbidity, and mortality of infective endocarditis.
- Gender difference in injection techniques and females are at a higher risk of developing IE.
- Current studies primarily identify the clinical and epidemiological characteristics of PWID developing IE, but comprehending PWID-IE risk factors are just as important.
- Exploring the relationship between housing/socioeconomic status and education in PWID and IE should be researched further.
- Information enables public officials to understand risk factors associated with PWID and IE and develop harm reduction strategies reducing infections in PWID-IE.
- Outpatient medical care can be given to those recently diagnosed with IE which may diminish the noncompliance rate and provide resources for recovery and bridge the gap to rehabilitation.

## Limitation and Further Study

Study of SIS impact on IDU-IE is extremely limited due to legal hurdles in the US.

Sites must be located in major cities with high rates of homeless individuals and drug use.

Finding participants who are reliable and provide informed consent- PWID may not be forthcoming with information in fear of stigma or consequences.

Opening SIS will require some level of government approval and funding which is an enormous mountain to climb, but can be done.

It is important to be aware that these sites will be staffed with medical workers who will need to be specially trained in substance use and addiction, and who may work on a volunteer basis.

Donations of medical equipment from suppliers would also be needed.

## Conclusion

Infective endocarditis is one of the leading causes of hospitalization for PWID, but it can be prevented by providing sterile injection equipment and a safe environment.

SIS reduce overdose deaths, infectious diseases like IE, and public nuisance crimes.

SIS are effective harm reduction interventions where lives are saved and a connection to treatment is provided including outpatient IE medical care..

## References

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