

# Endocarditis as a Sentinel Marker for New Epidemics of Injection Drug Use and Hepatitis C Virus Infection

Keeshin SW, Feinberg J

Division of Infectious Diseases, University of Cincinnati

## Background

- Intravenous drug users (IDUs) are a subset of individuals at great risk for infective endocarditis (IE)<sup>1</sup>
- Sharing injection equipment (syringes, cookers, and filters) or simply sharing drugs from a single syringe clearly increases the chances of not only HIV, hepatitis B and C<sup>2,3</sup>, but also of local skin infections and serious systemic bacterial infections such as IE<sup>4</sup>
- It is difficult to determine the prevalence of heroin abuse due to its socially unacceptable and illegal nature
- Current U.S. prevalence of IDU is defined primarily by surveys, surveillance of drug-related emergency room visits, and annual substance abuse treatment admissions
- We reviewed all admissions for IE at a tertiary care teaching hospital from 1999-2009 to see if an increase in IE cases and an increase in HCV in those with IE could predict a new epidemic of injection drug use
- We examined screening rates of for HIV & HCV of IE cases with known IDU either through self-identification or by a +toxicology screen

## Methods

- Retrospective chart review of all IE admissions, identified via ICD-9 codes, from 1999-2009 (640 admissions)
- 542 admissions included in the final analysis met the modified Dukes Criteria for IE
- Chi squared test was used to calculate all p values

## Results

- Of 542 admissions, 392 were unique pts with IE; 104 pts were readmitted 2-7 times

Cases of IE, HCV, & Tox+ by Year

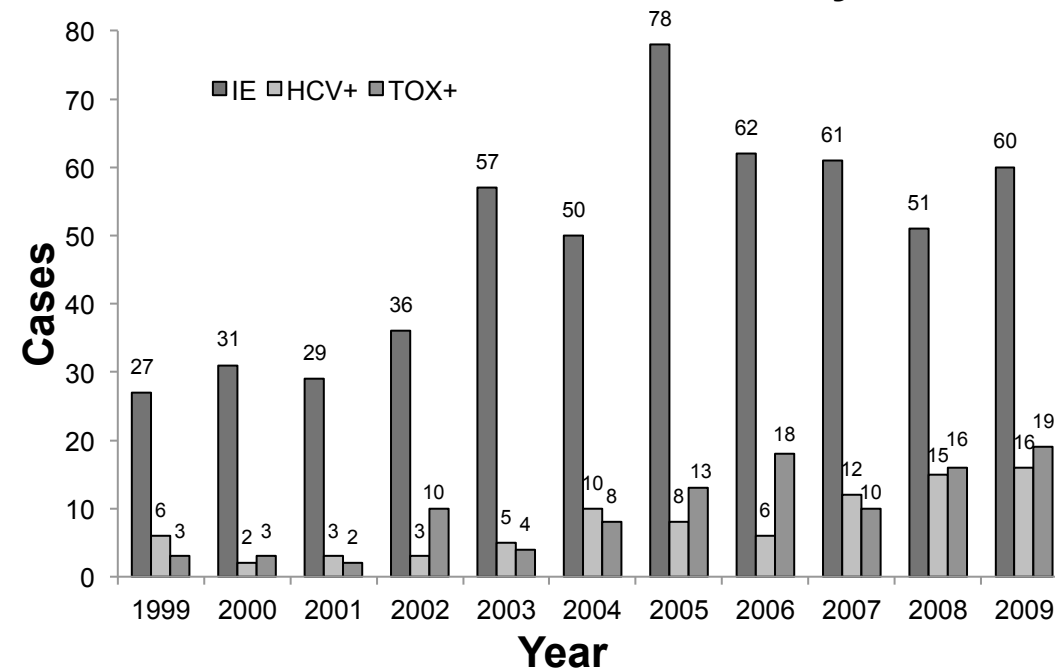


Table 1: HIV & HCV Screening

Variable	No. (%)
<b>HIV status</b>	
Positive	28 (5%)
Negative	110 (20%)
Not tested	404 (75%)
<b>HCV status</b>	
Positive	86 (16%)
Negative	89 (16%)
Not tested	367 (68%)

### References

- Cherubin CE, Sapira JD. The medical complications of drug addiction and the medical assessment of the intravenous drug user: 25 years later. *Ann Intern Med* (1993) 119:1017-28.
- Chitwood DD, Griffin DK, Comerfor M, Page JB. Risk Factors for HIV-1 seroconversion among injection drug users: A Case control study. *Am J Public Health* 1995;85:1538-1545
- Hagan H, Thiede H, Wiess NS. Sharing of drug preparation equipment as a risk factor for hepatitis c. *Am J Public Health* 2001;91:42-46
- Gordon RJ, Lowy FD. Bacterial Infections in drug users. *N Engl J Med* 2005;353:1945-1954

Table 2: Toxicology & IDU screening

	Tox+	Tox-	Tox not tested	IDU+ by history	p value (between Tox testing)
Total	106	49	387	108	
Screened for HCV	70 (66%)	22 (45%)	83 (21%)	75 (69%)	<0.001
HCV positive	50 (71%)	6 (27%)	30 (36%)	53 (71%)	0.019
Screened for HIV	66 (62%)	25 (51%)	47 (12%)	72 (67%)	<0.001

Table 3: Demographics

Variable	No. (%)
Total	542
Male	308 (57%)
<b>Race:</b>	
White	319 (59%)
Black	203 (37%)
Other	20 (4%)
Mean Age (SD), years	50.6 (15.8)
<b>Insurance:</b>	
Public	414 (76.4%)
Private	110 (20.3%)
None	18 (3.3%)
Mean length of stay(SD), days	14.6 (12)
In-hospital mortality	111 (20%)

## Conclusions

- Similar to other published data, our population was predominately white men
- The mean age of those with IE was slightly lower than other published data which, may reflect an increase in young IDU among area youth
- Over a 10 year period there was a 2-fold increase in IE admissions, a 4-fold increase in HCV prevalence and a 6-fold increase in known IDU by + toxicology screens, but no appreciable increase in +HIV tests
- This is an underestimation of the actual prevalence as most admissions were not screened for IDU, HCV and/or HIV
- The observation of a sharp increase in IE cases may be useful as a sentinel marker of new IDU and HCV epidemics
- IDU status needs to be assessed and screening for HCV and HIV performed among pts admitted for IE, both for optimal inpatient care and so that linkage to appropriate outpatient care can be implemented