Retrospective Review of Infections in Injection Drug Users

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INTRODUCTION

- Since 2010, with the rapidly increasing epidemic of injection drug use (IDU), a perception exists of increasing resources being required to manage & treat infectious complications of IDU.
- Patients with IDU-associated infections require aggressive antibiotic treatment, causing long hospital stays & high costs.

Objective

- Identify patients with infectious complications of IDU and collect data related to their hospitalization, demographics, and the characteristics of their infections to help us understand trends in this population.

METHODS

Setting: Christiana Care Hospital System, an 1100-bed academic affiliated tertiary medical center in Newark and Wilmington, DE

Definitions: IDU is defined as "drug use with an infection;" there are no ICD9 or ICD10 codes for IDU

Inclusion Criteria

- Patients ≥18 years were identified from 2010 through 2013 using ICD9 and ICD10 codes for drug use and infections
- **Drug Use:** amphetamines, opioids, cocaine, or other drug
- **Infections:** bacteremia/sepsis, empyema, endocarditis, diskitis, osteomyelitis, or other serious infection not including skin and soft tissue infections

Exclusion Criteria

- Nursing home patients
- Patients on a transplant list
- Infections due to pneumonia, a central catheter line, or another specified cause other than IDU

Index Visit: First visit with a qualifying infection and drug use identified at that visit or a prior visit

Data Collection

- The Value Institute System Engineer identified the patient population and index visit from ICD9/ICD10 codes in the data warehouse
- We conducted a thorough chart review of the index visit to validate the type of infection and collect information about drug types and habits
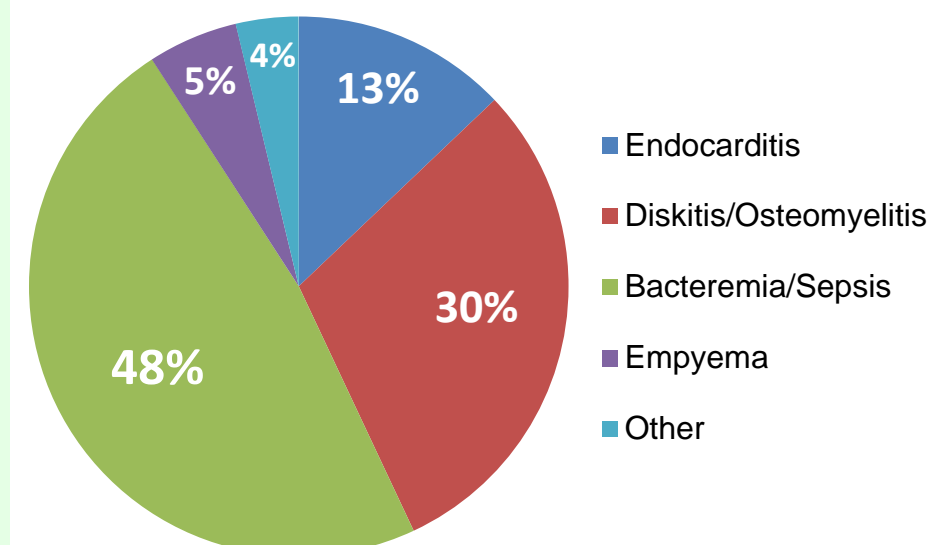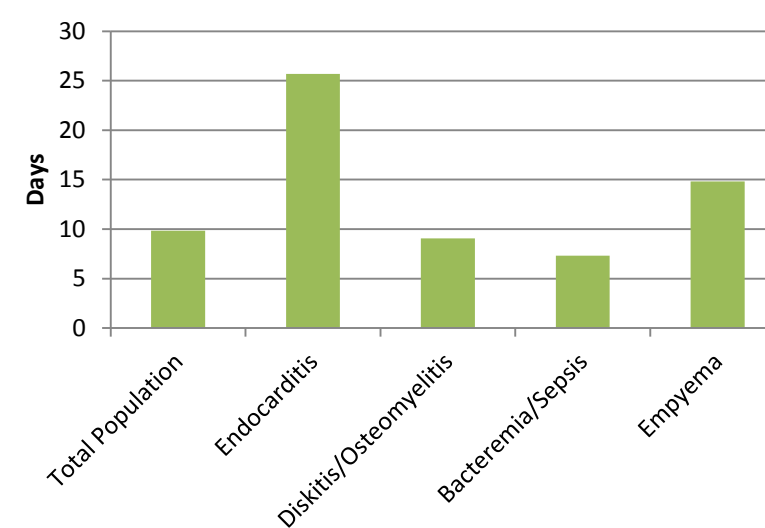
RESULTS

Demographics
372 patients identified from 2010 through 2013

- **62.1%** male
- **65.3%** Caucasian, **29.5%** African American
- **48.7%** unemployed, **27.7%** disabled
- **50%** Medicaid, **27.7%** Medicare, **15.3%** commercial, and **7.0%** self-paid
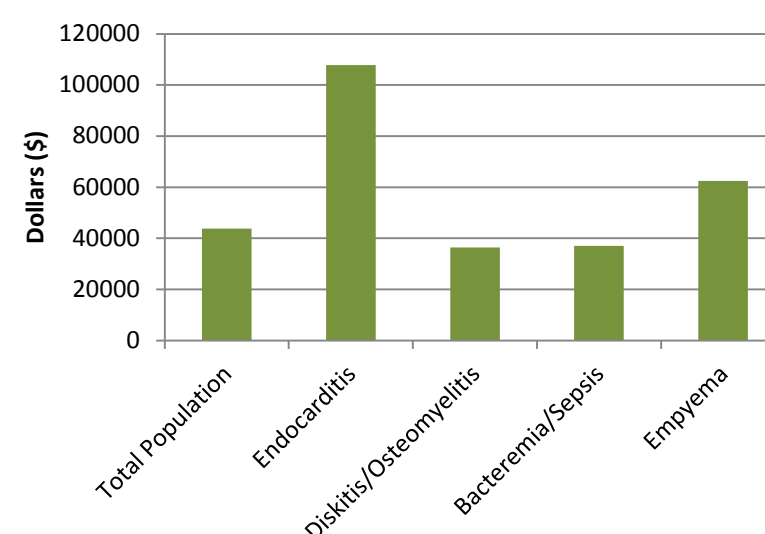- Age range: **18-72** years
- Mean age: **45.5**; SD: **11.9**

Type of Infection

- Endocarditis — 13%
- Diskitis/Osteomyelitis — 30%
- Bacteremia/Sepsis — 48%
- Empyema — 5%
- Other — 4%

Median Length of Stay

Median Charges

Drug Habits

- **69.6%** of patients used opiates
- **42.2%** of patients used cocaine
- Drug habits included needle licking, sharing needles, and skin popping

Readmission Rates
46.4% of patients were readmitted to inpatient or observation within 3 months of discharge

- Diskitis/osteomyelitis had the highest readmission rate with **50.5%** of patients
- Max readmissions: **12** times

Discharge Disposition

- **9.3%** of patients died during the index visit
- **6.3%** of patients left the index visit against medical advice

Antibiotic Treatment

- **95%** of endocarditis patients & **59.2%** of osteomyelitis/diskitis patients received **>42** days of antibiotic treatment

Total Charges
$26,365,775 for 372 patients in 4 years
$7,566,402 for revisit charges 3 months post discharge

LIMITATIONS

- Some miscoded ICD9 and ICD10 codes
- Difficult to read handwritten chart notes
- Charges may include hospital acquired infections or falls
- Missed patients based on inadequate drug history and patients not admitting to drug use

CONCLUSIONS

- Extent of charges and length of stay document severity of infections in this population
- The high readmission rate speaks to a need for post-hospital intervention needs
- The outstanding cause of the problem is the injection drug use, which should be addressed by healthcare professionals, policy makers, and community outreach efforts

CLINICAL IMPLICATIONS

- Evaluate current practice management and identify ways to improve
- Support various community healthcare projects, such as a specialized outpatient facility for IDU patients receiving IV antibiotic treatment
- Focus on solutions to the source of the problem – the injection drug use

NEXT STEPS

- Finish the full project for cases up through 2017
- Investigate the costs to the hospital for IDU-associated infections
- Perform a prospective study to gain more information on drug habits