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Hospitalizations for heart infection related to drug injection rising across the US

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Hospitalizations for infective endocarditis, a heart valve infection often attributed to injection drug use, have increased significantly among young adult Americans—particularly in whites and females—according to a new study by researchers from Tufts Medical Center and Tufts University School of Medicine. The findings, published in *Open Forum Infectious Diseases* on Sept. 1, shed light on the healthcare burdens and shifting demographics associated with the rising national trend of opioid abuse.

Infective endocarditis is a sometimes lethal infection of the heart valves. People born with abnormal valves or older adults who develop valve issues are at increased risk for infective endocarditis, but it can also be triggered by injection drug use, which can introduce bacteria into the blood stream.

The research team found that injection drug use-related infective endocarditis (IDU-IE) represented around 12 percent of all infective endocarditis hospitalizations in the U.S. in 2013, a significant increase from seven percent in 2000. This represents an estimated growth from 3,578 cases to 8,530.

Young adults (ages 15 to 34) accounted for 28 percent of all IDU-IE cases in 2000. This proportion grew to 42 percent in 2013.

When broken down by race, white individuals represented 40 percent of all IDU-IE hospitalizations in 2000. This grew to 69 percent in 2013.

This trend was magnified among white young adults, growing in proportion from 57 percent to 80 percent.

Females represented 41 percent of all IDU-IE hospitalizations in 2013, but accounted for 53 percent of young adult IDU-IE hospitalizations.

"As clinicians, we have observed a major increase in young people with opioid addiction cycling in and out of the healthcare system, and many end up with devastating complications of injection drug use like infective endocarditis," said first author Alysse Wurcel, MD, infectious diseases physician at Tufts Medical Center and also an assistant professor at Tufts University School of Medicine. "Our study confirms that this trend is increasing across the U.S. and represents yet another indicator of the challenges we face with the national opioid epidemic."

A shift toward youth

On an average day in the U.S, 78 people die from an overdose involving opioids—including prescription opioid pain relievers and heroin— a rate that has quadrupled since 1999, according to the U.S. Department of Health and Human Services. The prevalence of injection drug use has grown alongside this epidemic—particularly among younger, white individuals.

The five-year mortality rate for infective endocarditis ranges from 12 to 50 percent of patients. The cumulative expense of care for IDU-IE poses increasing financial burdens for healthcare facilities and insurance companies, as the majority of these patients are unemployed or underemployed, and reliant on publically-funded medical insurance, write the study authors.

"We're seeing a shift toward youth, white youth, and women, and it's likely that we'll continue to see even higher increases. It's a much more

suburban problem than most people realize," said senior author Thomas Stopka, PhD, assistant professor of public health and community medicine at Tufts University School of Medicine, who specializes in the epidemiology and geospatial distribution of infectious diseases and substance abuse. "We need to identify these different subgroups and better understand how they are affected by the opioid epidemic and associated complications, so that we can try to design a more comprehensive approach to prevention, intervention, and care."

To determine whether the opioid epidemic was paralleled by cases of infective endocarditis, the team analyzed data from the Nationwide Inpatient Samples—the largest public administrative database for hospital care data in the U.S., which estimates health statistics from more than 35 million inpatient stays each year. The team calculated their estimates by excluding infective endocarditis cases linked to congenital defects, and including cases of reported drug use and young patients with hepatitis C—a strong indicator of injection drug use.

"The current systems we have in place for the opioid epidemic are like bandages for much bigger, oozing wounds," Wurcel said. "The focus should be to catch people in the early stages of addiction, and to try and educate them about how to reduce their risks for disease and, if possible, to initiate drug treatment. Or if not, try to find a way to help them into opioid replacement projects where they can somehow break the cycle they're in. Otherwise this epidemic will continue."

More information: Wurcel, Alysse G, Anderson, J, Chui KKH, Skinner, S, Knox, TA, Snydman, DR, Stopka, TJ. Increasing Infectious Endocarditis Admissions among Young People Who Inject Drugs. *Open Forum Infectious Diseases*. Fall 2016; 3 (4). DOI: 10.1093/ofid/ofw157