Missing the forest for the trees: The world around us and surgical treatment of endocarditis

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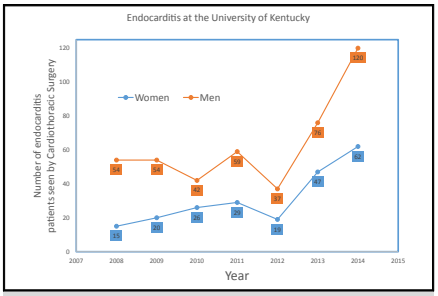
ABSTRACT

There has been a dramatic increase in intravenous drug abuse (IVDA)–related deaths in midlife Americans. Nowhere is this more profound than in rural Appalachia, with Kentucky in the midst of the epidemic. The causes of this finding are multifactorial and likely related to social, economic, legal, and population factors. Evidence suggests that the economic middle class is shrinking. The traditionally white midlife demographic that used to comprise more than 80% of the US middle class now accounts for less than 60%. Along with this shrinking middle class come the inevitable trappings of poverty, including drug abuse. Population-based data reveal that the shrinking middle class is associated with a significant rise in drug abuse in the population that traditionally made up the middle class; that is, white, midlife Americans. In Kentucky, the drug of choice for abuse has changed during the past 2 decades, largely related to law enforcement and political efforts. Efforts to control drug abuse have, however, suppressed availability and use of 1 substance only to have another move to the forefront. For example, during this time abuse has shifted from methamphetamine at the turn of the century to narcotic pills during the early 2000s to intravenous injection of heroin beginning around 2010. Along with this shift in the drug of choice for abuse came an alarming trend in mortality associated with IVDA, both in Kentucky and nationally, including the need for surgical correction of IVDA-related endocarditis. Thoracic surgeons have tended to avoid or ignore the greater problems that caused the epidemic of IVDA-related endocarditis. Perhaps it is time for thoracic surgeons to give a stronger voice to the societal issues that loom in the background of this epidemic. (J Thorac Cardiovasc Surg 2016;152:677-80)



Increasing incidence of endocarditis in rural Appalachia.

Central Message

Drug-related endocarditis and associated mortality are increasing in white, midlife Americans. The causes suggest societal problems that need to be addressed.

Perspective

Intravenous drug abuse-related endocarditis represents more than just operative treatment of complex problems of valvular endocarditis. Thoracic surgeons can play a role by bringing the problem of intravenous drug abuse to public consciousness and by facilitating solutions to the underlying causes of this problem.

See Article page 832.

See Editorial Commentaries page 681 and 842.

If you can't see the forest for the trees, you can't see the whole situation clearly because you're looking too closely at small details, or because you're too closely involved.

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Abusers of intravenous drugs are not a favorite population for cardiothoracic surgeons to manage. Apart from the high recidivism rate, the operations required to treat complex endocarditis require intensive surgical interventions and dramatic resource expenditures. The hours spent reconstructing the fibrous skeleton of the heart in a patient with endocarditis are both long and tedious. There are very few simple operations for valvular endocarditis related to intravenous drug abuse (IVDA). Unfortunately, the rate of IVDA increased dramatically in Kentucky beginning around 2010 (Figure 1).

At the University of Kentucky, our hospital serves a large population from the eastern part of the state, where rural poverty persists and is increasing. The population is mostly

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Abbreviations and Acronyms
CMEA = Combat Methamphetamine Epidemic Act of 2005
IVDA = intravenous drug abuse

white Americans, many of whom have lost jobs from decline in the coal industry or who avoid higher education in favor of work that provides for immediate, minimal standards of survival—food, shelter, and necessities of daily life. Our state struggles with the fallout of rural poverty in Appalachia, including drug abuse and addiction.

Substance abuse is well recognized in Kentucky. The abuse of crystal methamphetamine reached such national importance that, in 2005, the US Senate passed the Combat Methamphetamine Epidemic Act of 2005 (CMEA), which regulated, among other things, retail over-the-counter sale of ephedrine and pseudoephedrine (precursors in the manufacturing of methamphetamine). Notably, the CMEA is Title VII of the USA Patriot Improvement and Reauthorization Act of 2005. The final provisions of the law went into effect during September 2006. In Kentucky, Senate Bill 63, patterned after the CMEA, was passed banning the cold remedy methamphetamine precursors from over-the-counter sale. Purchases were allowed in quantities equal to a 30-day supply of medication. Photo identification and signatures are required. Affected medications can now only be dispensed at pharmacies from behind the counter. The law went into effect June 21, 2005. By 2009, Kentucky had closed 696 methamphetamine labs.[1] The methamphetamine problem was effectively controlled. Unfortunately, the underpinnings of substance abuse are not so easily controlled with legislation and law enforcement.

Next up was prescription painkillers. Centers for Disease Control and Prevention 2012 data show that at that time Kentucky had among the highest rates of prescription painkiller use, with 128 prescriptions written for every 100 adult citizens. In 2011, 1023 overdose deaths occurred in Kentucky, the vast majority of which were unintentional and attributed to the use of prescription oral painkillers. Florida had a similar issue with prescription painkillers. In 2010, 650 million painkiller capsules were shipped into the state of Florida; that is, enough for 34 pills for each resident. In 2012, the Florida state legislature passed laws regulating pain clinics and stopped health care providers from dispensing prescription painkillers from their offices. Kentucky House Bill 1, modeled after Florida's legislative efforts, restricted prescription painkillers and pain clinics.[2] One year after House Bill 1 went into effect, a press release from the Kentucky Governor's office described the influence of this legislation: "For the first time in a decade Kentucky overdose deaths have declined."[3] The report concluded by saying that "autopsy overdose deaths

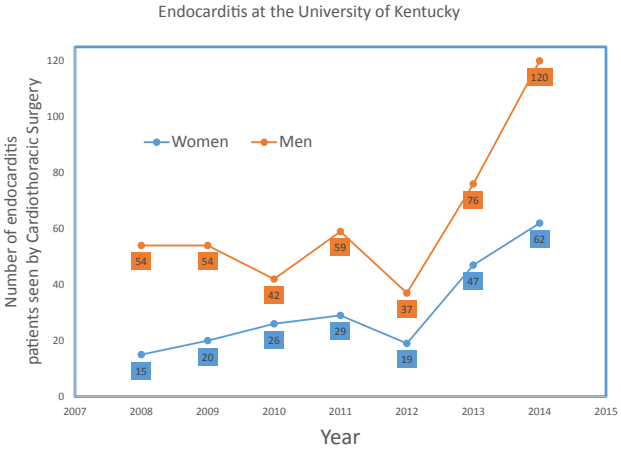

FIGURE 1. Increasing incidence of endocarditis in rural Appalachia.

attributed to the use of intravenous heroin increased by 550% over the previous year, from 22 in 2011 to 143 cases in 2012" (Figure 1). This was the tip of the iceberg and a precursor of things to come.

IVDA rapidly replaced methamphetamine and prescription narcotic pill abuse as the leading cause of drug-related deaths in Kentucky beginning around 2012 (Figure 1). Surgical endocarditis patients are the most visible victims of this substance abuse epidemic in our field. However, nonoperative patients with primary endocarditis treated with intravenous antibiotics for 6 weeks in the hospital, patients treated for

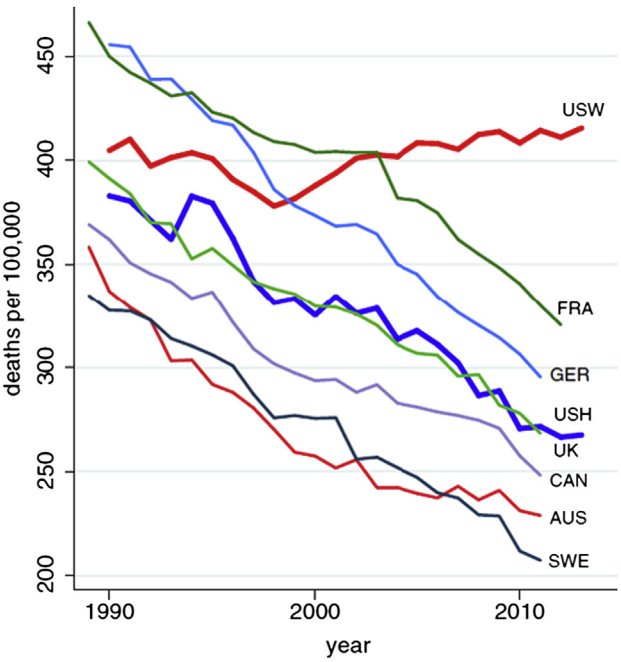

FIGURE 2. Increasing death rates in white, midlife Americans. *USW*, US white non-Hispanics; *FRA*, France; *GER*, Germany; *USH*, US Hispanics; *UK*, United Kingdom; *CAN*, Canada; *AUS*, Australia; *SWE*, Sweden. Reprinted with permission.[4]