

SCIENCE

## Is It Time to Treat Violence Like a Contagious Disease?

By BRANDON KEIM

The idea that violence is contagious doesn't appear in the Obama administration's gun control plan, nor in the National Rifle Association's arguments. But some scientists believe that understanding the literally infectious nature of violence is essential to preventing it.

To say violence is a sickness that threatens public health isn't just a figure of speech, they argue. It spreads from person to person, a germ of an idea that causes changes in the brain, thriving in certain social conditions.

A century from now, people might look back on violence prevention in the early 21st century as we now regard the primitive cholera prevention efforts in the early 19th century, when the disease was considered a product of filth and immorality rather than a microbe.

"It's extremely important to understand this differently than the way we've been understanding it," said Gary Slutkin, a University of Chicago epidemiologist who founded Cure Violence, an anti-violence organization that treats violence as contagion. "We need to understand this as a biological health matter and an epidemiologic process."

Slutkin helped organize a National Academies of Science workshop that in October published "The Contagion of Violence," a 153-page report on the state of his field's research.

What they describe might seem at first like common sense. Intuitively we understand that people surrounded by violence are more likely to be violent themselves. This isn't just some nebulous phenome-

non, argue Slutkin and his colleagues, but a dynamic that can be rigorously quantified and understood.

According to their theory, exposure to violence is conceptually similar to exposure to, say, cholera or tuberculosis. Acts of violence are the germs. Instead of wracking intestines or lungs, they lodge in the brain. When people, in particular children and young adults whose brains are extremely plastic, repeatedly experience or witness violence, their neurological function is altered.

Cognitive pathways involving anger are more easily activated. Victimized people also interpret reality through perceptual filters in which violence seems normal and threats are enhanced. People in this state of mind are more likely to behave violently. Instead of through a cough, the disease spreads through fights, rapes, killings, suicides, perhaps even media, the researchers argue.

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"The underlying theme is learned behavior. That's what gets transferred from person to person," said Deanna Wilkinson, a professor in Ohio State University's Department of Human Development, who led the research in New York City and works with Cease Fire Columbus, that city's implementation of the Cure Violence principles.

Rowell Huesmann, a psychologist at the University of Michigan, echoed Wilkinson's point. "The contagion of violence



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is really a generalization of the contagion of behavior," he said. "How do cultures transmit norms and beliefs across generations? It's through observation and imitation. There's no genetic encoding."

Not everybody becomes infected, of course. As with an infectious disease, circumstance is key. Social circumstance, especially individual or community isolation — people who feel there's no way out for them, or disconnected from social norms — is what ultimately allows violence to spread readily, just as water sources fouled by sewage exacerbate cholera outbreaks.

At a macroscopic population level, these interactions produce geographic patterns of violence that sometimes resemble maps of disease epidemics. There are clusters, hotspots, epicenters. Isolated acts of violence are followed by others, which are followed by still more, and so on.

There are telltale incidence patterns formed as an initial wave of cases recedes, then is followed by successive waves that result from infected individuals reaching new, susceptible populations. "The epidemiology of this is very clear when you look at the math," said Slutkin. "The density maps of shootings in Kansas

City or New York or Detroit look like cholera case maps from Bangladesh.”

Some of the best-known research on this phenomenon comes from analyses of homicides in New York City. Homicide rates nearly tripled between the mid-1960s and mid-1970s, rose in waves through the mid-1990s, and then fell precipitously, like a disease burning itself out.

This didn't only hold true for killing, but also for non-lethal violence, hinting at an important feature observed by other researchers: An act of violence doesn't just stimulate other acts, but other kinds of acts. Killings lead to domestic violence which leads to community violence which leads to suicide.

Such dynamics might sound almost mechanistic, as if violence could be considered in isolation from all the other factors — poverty, drugs, demographics, policing — that shape the society in which it occurs. That's absolutely not the case, but neither are these factors solely responsible for violence outbreaks.

“This is one of the most important things about this: People often don't have an answer why violence goes up or down,” said Slutkin. “Sometimes it's because of the epidemic nature. It doesn't track with something like jobs or general social conditions.”

Despite the research behind it, the violence-as-contagion framework is relatively little-known. There's still a tendency to view violence, in particular the mass shootings that precipitated the current national dialogue on violence, as isolated acts of madness or evil.

Even when social factors are considered, it's often in a general way. To David Hemenway, director of Harvard University's Injury Control Research Center, the idea of violence as contagion is more useful as metaphor than literal description.

“It helps you understand things better,” said Hemenway. “What it means is that sometimes, if you get the infection early, you can have a big effect. But if you wait and wait, it's hard to impose a policy that will have a huge effect.”

Hemenway said that policies to reduce gun violence don't necessarily require

a contagion framework to benefit from the principles. Wilkinson agreed that just the idea is valuable, but she and Slutkin argue for more direct, epidemiologically informed programs.

The Cure Violence approach, which identifies potential outbreaks while trying to change social norms, enrolling ex-convicts as public health workers who intervene in hotspots, has dramatically reduced gun violence where it's been tried in Baltimore and Chicago. Those efforts were documented in the film *The Interrupters*.

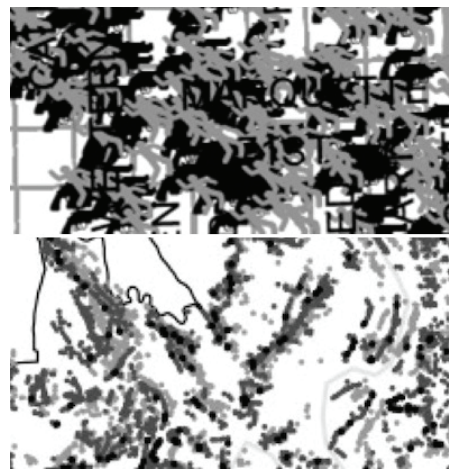
Key to this approach, said Slutkin and Wilkinson, is understanding that quarantine — criminal incarceration — is a limited tool, something that needs to be applied in certain circumstances but won't suffice to prevent violence any more than imprisoning everyone with tuberculosis would stop that disease.

“You do interruption and detection. You look for potential cases. You hire a new type of worker, a violence interrupter, trained to identify who is thinking a certain way. They have to be like health workers looking for the first cases of bird flu,” said Slutkin. “In a violence epidemic, behavior change is the treatment.”

Ultimately this changes community norms, making it harder for germs of violence to spread. “The way that public health workers deal with the spread of AIDS is by educating, by redirecting behavior, by changing norms in a community so that everyone uses a condom,” said Wilkinson.

It's not immediately clear that these lessons, drawn from the epidemiology of largely drug- and gang-related urban violence, could apply to the Newtown or Aurora or Virginia Tech tragedies, but underlying factors transcend demography. “They're part of the same syndrome,” said Slutkin, who likened the mass shootings to what epidemiologists called sporadic disease, while urban violence is endemic.

The shooters were socially isolated, disconnected in their own minds from social norms. In their isolation, the idea of violence may have grown pathologically. As anthropologist Daniel Lende wrote after the shooting of Arizona



A comparison of clustering patterns seen in violence in a Chicago neighborhood (above) and cholera outbreaks in southeastern Bangladesh (below). Images: 1) City of Chicago Data Portal 2) Ruiz-Moreno et al./BMC Infectious Diseases

congresswoman Gabrielle Giffords and 18 other people, Jared Loughner didn't simply have a mental health problem, but a violence problem.

A view of violence as contagious doesn't directly inform the Obama administration's gun control plan, which is focused largely on gun availability and mental health services. President Obama did, however, encourage the Centers for Disease Control and Prevention to resume public health research on gun violence, which was suppressed in the mid-1990s after pro-gun advocates took issue with findings that, at least statistically, keeping guns at home didn't protect people.

Specific programs and research questions aside, Wilkinson hopes that understanding violence as contagious will spread a broader message. “It helps us a lot more than rhetoric about getting tough on crime, harsher penalties, locking people away,” she said. “We need to help people change their behavior.”

