

New flu strains prompt review of current research, call to redouble flu fight

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Despite numerous medical advances over the past century, the flu—a seasonal rite of passage for many around the world—still remains deadly and dangerous. An estimated 150,000 to 200,000 are hospitalized from influenza annually just in the United States, and between 30,000 to 50,000 die from this infection. The flu takes a heavy financial toll as well, leading countries to lose billions in direct medical costs, loss of productivity, and loss of life. In April of this year, a new flu strain known as H7N9, thought to have the potential to cause a pandemic, emerged in China. This novel strain's high mortality rate, more than 20 percent, has led the Centers for Disease Control and Prevention to issue predictions of hospitalizations, deaths, and economic impacts several times higher than those caused by the typical seasonal flu.

In light of this new information, researchers have published a comprehensive overview of current [flu](#) research and efforts to combat this potentially [lethal disease](#), including global surveillance to track the flu and vaccines and antiviral drugs currently in use. They also issue a call to improve efforts to fight the flu, including improving surveillance, developing new types of vaccines and drugs, and—most importantly—improving efforts to educate the public about the flu. This review article, entitled "Adapting global influenza management strategies to address emerging viruses", is published online by the *American Journal of Physiology-Lung Cellular and [Molecular Physiology](#)*.

The new article is written by Diana L. Noah and James W. Noah, both of

the Southern Research Institute.

Fighting flu now

In their review, the researchers explain that various strains of the flu circulate annually, with new strains arising through small mutations in current strains and others arising spontaneously. Of these, several H7 strains—so named for a portion of the virus called hemagglutinin—have caused [flu outbreaks](#) in various parts of the world. For the most part, these infectious have caused mild upper respiratory symptoms. However, as the authors' review was completed, the 130 known H7N9 infections had caused 31 fatalities—a mortality rate of more than 20 percent.

Though the transmission mode of the strain is not yet known, some research suggests that H7N9 is being passed between humans, rather than from animals to humans, a dangerous sign that this outbreak has the potential to escalate into a deadly pandemic.

The authors point out that the best way to curb flu deaths is by preventing the disease altogether through vaccination. However, many countries, including the United States, have suboptimal flu vaccination rates. Even if more people got the flu shot, they write, the vaccine itself isn't perfect—although each year's flu vaccine has been crafted to inspire an immune response to several different flu strains, it's not always a match to currently circulating strains.

Because the flu mutates each year, researchers must develop a new vaccine annually. But when surveillance efforts identify dangerous strains, the authors say, current manufacturing efforts may not be able to produce new vaccines quickly enough to protect a large population.

For those who have the bad luck of contracting the flu, antivirals are currently available to limit disease severity and shorten its duration.

However, the review authors say, the [antiviral drugs](#) currently in use are increasingly becoming less effective due to the flu's ability to constantly mutate.

Flu in the future

To better combat the flu, Noah and Noah review a number of current efforts. For example, they say, a universal vaccine that could fight any flu strain and still be useful year after year is in development. Also, several companies are now working on new ways to manufacture current flu vaccines more quickly to avoid the problem of a vaccine shortage in the face of a rapidly arising pandemic. Other companies are focusing on developing new antivirals to gain the upper hand on flu strains that are immune to current drugs, as well as other drugs that modulate the human host's immune response to the flu, which researchers now know can cause as much or more damage as the virus itself.

With a call to support each of these efforts, the authors point out that educating the public about the flu is equally important. Outreach efforts to increase public awareness, hygiene practices, and vaccination rates could significantly stem flu deaths, they say.

"Key innovations that result in new antivirals and new, broadly effective vaccines will contribute to increased public health, but aggressive education programs may be the most important factor in immediately leveraging current vaccines and antivirals," they write.

More information: [ajplung.physiology.org/content/5.2013.full.pdf+html](#)

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