

# Flu Pandemic Could Cost the World \$2 Trillion

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PARIS — A worldwide influenza pandemic resulting from a mutation of the H5N1 avian influenza virus could restrain global economic growth by as much as \$2 trillion, or more than 3%, as a result of voluntary or mandatory restrictions on travel, trade, and public interaction, a World Bank economist said at an international conference on avian influenza in humans.

Other effects that could restrict world economic growth are reductions in labor productivity because of absenteeism and

increased costs related to hospitalization and health care, Milan Brahmbhatt, the World Bank's lead economist for East Asia and the Pacific, told the gathering of international public health officials.

In addition to the loss of lives, the threat to economic productivity demonstrates the value of preventing the avian flu virus from mutating to a form that can be passed easily from human to human.

"The general problem of global infectious diseases is going to be with us for a

long time and may get worse," Mr. Brahmbhatt said. "Thus it makes sense to also undertake broader long-term measures to strengthen the early detection, surveillance, institutional, regulatory, and technical capacity of the animal health, human health, and other relevant sectors. These will be valuable investments both in the short and long run."

World Bank modeling and previous research suggests that, in the event of a severe pandemic on the scale of the 1918-

1919 outbreak, 70 million people could die, which would reduce economic output by 0.4%. The short-run costs of illness, such as absenteeism and health care costs, would cut global economic output by another 0.9%.

In the event of a mild outbreak, such as the 1968 flu pandemic, analyses indicate that the United States could experience 100,000-200,000 deaths, 700,000 additional hospitalizations, and 40 million more outpatient visits, Mr. Brahmbhatt said. ■

## AHIC Calls for Tests of Secure E-Messaging

Public and private payers may soon be testing reimbursement strategies for secure electronic messaging between clinicians and patients, if the American Health Information Community has anything to say about it.

The group, which advises Health and Human Services Secretary Mike Leavitt on health information technology (IT) interoperability issues, voted to urge payers to pilot-test secure messaging to evaluate possible forms of

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reimbursement, physician workflow issues, and the impact on patients' involvement in their care.

AHIC also voted to recommend that the Healthcare Information Technology Standards Panel, an independent

group that facilitates harmonization of standards, work on defining standards for secure messaging that will be interoperable with electronic health records.

And in an effort to ensure that access to secure messaging is available to all patients and clinicians, AHIC is asking officials at the Health and Human Services Department to look at different methods to address the gaps in access to computers and the Internet for poor and underserved populations and their safety net providers.

AHIC also recommended that the federal government work with state agencies and professional societies to develop new licensing alternatives that address the ability to provide electronic care delivery across state lines through secure messaging systems. This will be especially important in times of national emergency, said Dr. Mark McClellan, administrator of the Centers for Medicare and Medicaid Services and cochair of AHIC's chronic care workgroup.

—Mary Ellen Schneider



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## The Emerging Role of Substance P in PONV

### A new emetic pathway to target for PONV

More than 50 years after its discovery, substance P is now recognized as an important neurotransmitter in the central and peripheral nervous systems. Substance P, which belongs to the neurokinin (NK) family of neurotransmitters, plays an integral role in relaying noxious and aversive sensory information to the brain. Originally studied in disease models associated with pain transmission, substance P and its NK<sub>1</sub> receptor represent the newest emetic pathway implicated in PONV.<sup>1-3</sup>

### Key neurotransmitter receptors located in brainstem vomiting center

The brainstem vomiting center contains the essential neurocircuitry required for producing the emetic response (see Figure). This anatomical region contains high concentrations of several key neurotransmitters involved with emesis, including receptors for choline, histamine, dopamine, opioids, serotonin,<sup>4</sup> and substance P.<sup>2</sup> By serving as sensors that can be stimulated by drugs, electrolytes, and metabolic chemicals, these receptors relay impulses to the vomiting center and initiate the vomiting reflex.<sup>5</sup> Blockade, or antagonism, of these receptor sites is the mechanism of action of many pharmacologic antiemetic agents commonly used for PONV. Various antiemetics exhibit different affinities for emetic neuroreceptors and, therefore, target different emetic neuroreceptors.

### Different types of stimuli trigger different emetic pathways

The vomiting center can receive stimuli from several areas, including afferents from both the periphery and the central nervous system.<sup>5</sup> Because afferent systems trigger the release of various neurotransmitters, receptor antagonists may be particularly effective against one type of vomiting and less effective against emesis induced by other stimuli.<sup>6</sup> For example, by targeting receptors in the vestibular apparatus, antihistamines are particularly useful for motion sickness and PONV associated with middle ear surgery.<sup>4,5</sup> Conversely, 5-HT<sub>3</sub> receptor antagonists, which act primarily on abdominal vagal afferents, do not exhibit an antiemetic response to motion, yet exhibit potent antiemetic response activity against acute chemotherapy-induced nausea and vomiting.<sup>6</sup>

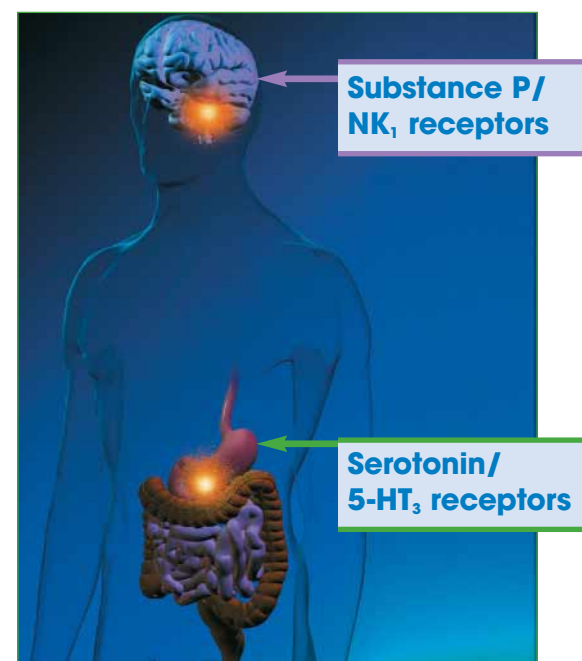


Figure. Proposed primary mechanism of 2 most recently identified emetic pathways.<sup>6-9</sup>

\*Postoperative nausea and vomiting.