


RN



# Fighting the flu in the face of a **SHORTAGE**

Everyone knows the flu can be fatal for the sick and the elderly, but even children and otherwise healthy adults are vulnerable to its complications. A vaccine shortage may make this flu season especially tough.

*I*t's December, the heart of a flu season marked early on by a severe vaccine shortage. Chances are you've already begun to see patients presenting with an abrupt onset of fever, body aches, sore throat, and often, a runny or stuffy nose, headache, substernal burning, eye pain, and sensitivity to light.

Some 10% – 20% of U.S. residents usually get the flu between November and early March, and while the majority will recover after three to five days, the flu—and its complications—can be fatal.<sup>1</sup>

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Each year, influenza kills about 36,000 people and leads to some 226,000 hospital admissions.<sup>2</sup> Very young children, adults age 65 and older, and the chronically ill are at highest risk of developing complications from the flu.<sup>3,4</sup>

These statistics alone are cause for concern. Yet worries have been growing since the October announcement that half the nation's supply of flu shots would not make it to our shores because of manufacturing problems at a plant in England.

The situation prompted the Centers for Disease Control and Prevention (CDC) to revise its recommendations on who should get a flu shot this year, giving priority to those at highest risk and to healthcare workers, including nurses, who directly deal with patients.<sup>5</sup>

Now more than ever, it's essential to focus attention on flu prevention and containment. To lessen the severity of outbreaks, healthcare providers need to be aware of available treatments, encourage high-risk patients to be vaccinated if they can, and get immunized themselves.

### **How influenza incubates and is spread**

The word influenza has an Italian origin, meaning "influence" and "a visitation," so named because the disease was originally thought to be connected to an ominous configuration of the planets and stars.<sup>6</sup>

Influenza viruses belong to the Orthomyxoviridae family and are subdivided into three

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types: Influenza A, B, and C. Type A is further subdivided based on surface proteins, or antigens, which may be hemagglutinin (H) or neuraminidase (N). Three H and two N antigens account for nearly all human infections. Influenza B virus causes a milder disease than type A. Type C is rarely a source of human infection.

The flu is a formidable foe because the viruses continually change their genetic composition—a process known as antigenic drift.<sup>3</sup> This repeatedly results in the creation of new strains of the virus, rendering antibodies from earlier vaccination or infection ineffective.

As you know, the flu is a contagious respiratory illness, spread primarily via droplets released by coughing or sneezing, which can travel up to three feet. The virus can survive for hours outside the body, especially in cold weather with low humidity, and is also spread by direct contact.<sup>7</sup>

The incubation period ranges from one to four days, and the virus is shed in respiratory secretions for five to 10 days.<sup>3</sup> An adult can spread the virus from one day before symptoms begin to three to five days after. In young children, the disease remains infectious for up to a week after onset.<sup>7</sup>

While symptoms usually abate in less than a week, a lack of strength and energy may persist for several weeks.

### **Is it the flu, or could it be something else?**

Common signs and symptoms of the flu are an abrupt onset of fever, chills, headache, malaise, myalgias, and anorexia. Upper respiratory symptoms include hoarseness, dry cough, sore throat, and nasal discharge.<sup>8</sup>

Identifying influenza A or B solely on the basis of clinical criteria can be difficult because other, more serious viruses may ini-

tially cause flu-like symptoms. Some cases of West Nile virus, for instance, were first diagnosed as the flu.<sup>9</sup>

Laboratory tests may be ordered to confirm a flu diagnosis. If a culture is performed within three days of symptom onset, the virus can be isolated from the throat and nasopharynx. It typically takes 48 hours for the lab to detect the virus and an additional day or two to identify the type or strain. But rapid diagnostic tests, which yield results in one to two hours, are now available in some places.<sup>3</sup>

The CDC is encouraging clinicians to be on the lookout for avian flu. That means asking patients with flu symptoms about international travel and other exposure risks—and testing those who present with conjunctivitis, pneumonia, or severe respiratory distress and have recently traveled to places with documented cases of avian flu. (See [www.cdc.gov/travel/other/avian\\_flu\\_ig\\_americans\\_abroad\\_021804.htm](http://www.cdc.gov/travel/other/avian_flu_ig_americans_abroad_021804.htm)).

### Treat symptoms, stop the spread

Depending upon the severity of illness, flu patients will require supportive care, administration

of antiviral medications, or treatment of opportunistic bacterial infections.

Supportive treatment focuses on relieving symptoms: Advise home care patients to get plenty of rest, drink lots of fluids, and take medications to relieve aches and fever. (Children and teenagers should not take aspirin without first consulting a physician because it may result in Reye's syndrome, a rare encephalopathy and degeneration of the liver). Caution patients to avoid alcohol and tobacco use. Saline gargles may ease sore throat pain, and when ordered, antihistamines may reduce rhinorrhea.<sup>10</sup>

Note that there are now four antiviral agents approved by the Food and Drug Administration for treating influenza. (Three of them—amantadine, rimantadine and oseltamivir—are also approved for use in preventing the flu in high-risk individuals who weren't vaccinated by the time flu season arrived.) Amantadine (Symadine, Symmetrel) and rimantadine (Flumadine) are used only with influenza type A and must be administered within two days of symptom onset to be effective in reducing the duration of the illness. A new class of drugs, called neuraminidase inhibitors—zanamivir (Relenza) and osel-

tamivir (Tamiflu)—are effective in reducing the severity and duration of both types A and B influenza, and must also be taken within 48 hours of symptom onset.<sup>3,4,9</sup>

Every patient with the flu should be told to seek medical attention if symptoms become severe—if, for example, he develops chest pain or finds it difficult to breathe. Advise those at increased risk for complications because of age, medical condition, or pregnancy to consult a physician if symptoms worsen or fail to abate.<sup>3</sup>

### Be on the lookout for these complications

The most common influenza complication is pneumonia, which might require hospitalization. Other, less common complications include myocarditis and a worsening of a preexisting chronic pulmonary disease, such as COPD. There's even a risk of developing acute respiratory distress syndrome.<sup>3</sup>

You should suspect pneumonia if there is chest or pleuritic pain, myalgia, headache, chills, fever, cough, tachycardia, dyspnea, tachypnea, and sputum production. Observe the patient's breathing pattern and assess his cough. He may be wheezing and chest expansion may be diminished. A rapid, weak pulse may indicate hypoxemia, dehydration, or impending shock. A chest X-ray is usually taken, and blood cultures may indicate whether the organism has invaded the bloodstream.

Note the amount, color, consistency, and odor of sputum. Obtain a sample

## Quick facts

- ▶ Every year, 10% – 20% of the U.S. population gets the flu.
- ▶ The flu causes some 36,000 deaths in this country annually.
- ▶ Only about half the expected supply of flu shots were available at the start of this season.

for testing to help determine the responsible organism. Bacterial infections require treatment with antibiotics, of course.<sup>10</sup>

Anyone who enters the room of a hospitalized flu patient needs to wear a surgical mask, regardless of vaccine history.<sup>11</sup> Similarly, any patient with flu-like symptoms should wear a surgical mask if he must be transported for testing or treatment. Precautions should continue for approximately five days, and until the patient is no longer febrile.

Immunocompromised patients can shed the flu virus for weeks after onset, so precautions should be continued for their entire length of stay. If possible, put such a patient in a private room, or place similarly infected patients together—a practice known as “cohorting”—after consulting with your infection control department.

Scrupulous handwashing and respiratory hygiene—including the use of no-touch trash containers for tissue disposal—provide the best protection from infection. (For more on infection control measures, see the box at right.)

In the event that avian flu or severe acute respiratory syndrome (SARS) is suspected, additional steps are required. Initiate contact precautions, wearing gloves and a gown at every encounter, and donning eye protection whenever you come within three feet of the patient.

Airborne precautions are also needed: Avian flu and SARS patients should be put in a negative airflow room, while the staff should be outfitted with protective devices known as N95 respirators. It is important, too, to adhere to CDC standards when donning and removing per-

## Steps to take to prevent transmission

**In addition to immunization, the Centers for Disease Control and Prevention recommend the following measures to prevent transmission of the flu:**

### Respiratory hygiene/cough etiquette

- ▶ Post alerts for patients and others to inform healthcare personnel if they have symptoms of respiratory infection.
- ▶ Provide tissues to patients and visitors to cover their mouth and nose when coughing and sneezing.
- ▶ Provide dispensers of alcohol-based hand rubs.
- ▶ Ensure that supplies for handwashing are available at all sinks.
- ▶ Offer masks to people who are coughing.
- ▶ Encourage people with coughs to sit at least three feet away from others.
- ▶ Have healthcare personnel observe Droplet Precautions in addition to Standard Precautions.

### Standard Precautions

- ▶ Wear gloves if hand contact with respiratory secretions or potentially contaminated surfaces is expected.
- ▶ Wear a gown if soiling of clothes with patient's respiratory secretions is expected.
- ▶ Change gloves and gowns after each patient encounter.
- ▶ Decontaminate hands before and after touching the patient or his belongings, even if gloves are worn.

### Droplet Precautions

- ▶ Place patient in a private room or place influenza patients together.
- ▶ Wear a surgical mask upon entering the patient's room or when working within three feet of the patient. Remove the mask when leaving the patient's room and properly dispose of it.
- ▶ If patient movement or transport is necessary, have the patient wear a surgical mask.

### Visitor and worker restrictions

- ▶ Discourage people with symptoms of respiratory infection from visiting patients.
- ▶ Exclude healthcare personnel with symptoms of respiratory infection from work for the duration of illness.

**Source:** Centers for Disease Control and Prevention. “Infection control measures for preventing and controlling influenza transmission in health-care facilities.” 2004. [www.cdc.gov/flu/professionals/infectioncontrol/healthcarefacilities.htm](http://www.cdc.gov/flu/professionals/infectioncontrol/healthcarefacilities.htm) (20 Oct. 2004).

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sonal protective equipment. A used gown should be turned inside out, rolled up and discarded, for example, without first shaking it out. Further instructions can be found at [www.cdc.gov/ncidod/sars/pdf/ppeposter1322.pdf](http://www.cdc.gov/ncidod/sars/pdf/ppeposter1322.pdf).<sup>12</sup>

As for treatment, because the avian viral strains show resistance to amantadine and rimantadine, the World Health Organization recommends the use of oseltamivir for suspected cases of avian flu.<sup>13,14</sup>

### Who's a candidate for a shot at prevention?

Vaccination, of course, is the best way to avoid the flu. If more vaccine becomes available, you will need to get vaccinated and encourage your at-risk patients to get vaccinated, too. According to the CDC's list, revised in light of the vaccine shortage, these patients include:<sup>5</sup>

- ▶ children age 6 – 23 months
- ▶ adults over 65
- ▶ people with chronic medical conditions
- ▶ pregnant women
- ▶ residents of nursing homes and long-term care facilities
- ▶ children 6 months to 18 years on long-term aspirin therapy
- ▶ out-of-home caregivers and household contacts of children less than 6 months old.

Immunization for the flu is available through an inactivated trivalent vaccine, typically administered in the deltoid muscle, and a live, attenuated vaccine (LAIV), delivered by nasal spray. The live vaccine is approved for use only in healthy individuals between the ages of 5 and 49.<sup>4</sup> (Nurses and other healthcare workers are being encouraged to get the live vaccine if a flu shot is unavailable,

as long as they aren't in contact with severely immunocompromised patients.)

Whenever you give either, be sure the patient (or parent) reviews the Vaccine Information Statement beforehand. (A copy is available at [www.cdc.gov/nip/publications/VIS/default.htm#flu](http://www.cdc.gov/nip/publications/VIS/default.htm#flu)) And always review allergies. Anyone with a known hypersensitivity to eggs or other vaccine components should consult with a doctor before getting vaccinated.

Tell patients getting a flu shot that there may be soreness at the injection site. Adverse reactions are usually mild, but some patients may experience fever, malaise, and myalgias for a day or two. Warn patients to avoid people with the flu for at least two weeks—that's how long it takes for antibodies to develop after vaccination.

At press time, the government was arranging to have more vac-

cine available this winter, though certainly not enough for all the 185 million U.S. residents initially recommended for immunization by the CDC for this season. (That number represents far more than even the original vaccine supply could have immunized.)

Efforts to vaccinate those at risk should continue into the new year, according to the CDC, since the flu season in the United States generally peaks from late December to early March.

No doubt, this will be a challenging season. But by steering patients to the vaccine (when available) and properly caring for those who come down with the flu, you should be able to minimize the impact this unwelcome visitor has on all of us. **RN**



Have your at-risk patients had to do without the flu vaccine this year? Visit [www.rnweb.com](http://www.rnweb.com) and vote in our poll.

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