



VITALS

A Weekly Safety Newsletter For Medical Transport Professionals

Mike Szczygiel (Segal)
888-969-8033
meszczygiel@thomcoins.com

How Does H1N1 2009 Get Around?

Most experts agree that influenza travels from person to person through close contact. Close is commonly defined as six feet. The virus must be inhaled or placed in contact with mucous membranes or non-intact skin to infect. There are several ways in which the virus can be transmitted. Some experts think that large droplet transmission is the predominant mode. Others think that aerosols are the major culprit. Direct contact with secretions or substances to which the virus particles can adhere (fomites) is a mode of transmission. The virus can remain infectious on "nonporous dry surfaces for less than or equal to 48 hours."

The difference between a large droplet and an aerosol is size. Size is important because large particles fall (settle) faster and are trapped in the upper respiratory tract. Small particles (aerosols) can be suspended in air longer than large particles and can become deposited into the lower respiratory tract. Think of coughs or sneezes as air cannons that hurl virus projectiles. 20,000 virus particles can be expelled in an "average" cough. About 3,000 of these particles are small (somewhat arbitrarily defined as less than or equal to 5 microns) and can remain suspended in the air for a long time. Without going into great detail, one study showed that for a 3-meter fall settling time for a 100-micron particle was 10 seconds, 4 minutes for a 20-micron particle, 62 minutes for a 5-micron particle and particles with a diameter less than 3 microns essentially don't settle. There is some thought, though controversial, that because aerosols remain airborne they can cause "long-range" infections. Fortunately, high humidity makes the virus lose its infectivity quicker.



The increased survival of the influenza virus at low humidity may be a factor that accounts for the seasonality of its occurrence.

To make it more complicated, large particles expelled with coughs or sneezes may become dehydrated by evaporation and shrink. These shrunken particles are referred to as droplet nuclei. They act like small particles and reach the lower respiratory tract. They are hygroscopic, which means they get rehydrated in the lungs, get bigger and are retained in the lower respiratory tract.

Other viral characteristics determine how readily it can make you sick. In addition to the nature of the virus, there are host, additional pathogen and environmental factors that come into play. It's clear that the manner in which viruses are transmitted is complex and scary. The simplest approach involves identifying when we are placing ourselves at risk and doing everything we can to keep from getting contaminated.

Poster Pointers

Before You
Move Her,
Secure Her



Securing a wheelchair client is just as critical as securing a trauma patient with a cervical collar and spine board. Clients using scooters present an even greater challenge. Review "Proper Patient Handling" in "Arrive Alive Do No Harm". Take a moment to think. Are your wheelchairs properly secured to the unit by devices that are specifically designed as wheelchair tie-down occupant restraint systems? Have your personnel been trained to assess each client to determine the proper manner in which to secure them? If they have a wheelchair client who is a double amputee and weighs 250 pounds, do they know what to do?

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