Swine flu.

I have maintained a web page on bird flu for some time, and I would like to include info on the new swine flu. So, I wanted to write this anyway. I think everything I say here is mainstream; certainly that is the intent. However, the facts are limited at this point, with new facts coming in fast. Some things are not clear.

If you have questions or comments, let me know. If you see things here that differ from what you have heard elsewhere, let me know, and we'll try to sort it out.

The flu virus is a fascinating little beast, but I have tried to avoid the virus issues here for the most part. What is important here is the implications for us.

The name. Swine flu and bird flu.

Let's start with the name, swine flu. It is a name. Just that. It tells you nothing about the virus -- at least nothing useful (except to the biologists trying to sort out the story). What is important is that it is now a human flu virus -- capable of transmission from one human to another. It is -- apparently -- transmitted easily from one human to another, as typical of our common flu viruses. Acquiring that ability was probably the most important part of its history.

> Parallels with bird flu...We have been worrying about a bird flu (H5N1) for the last few years. Indeed, some humans have come down with bird flu. But they got it from birds. Almost all people with bird flu were in close contact with fresh birds -- either live birds or recently killed ones. The evidence so far is that acquiring this bird flu from humans is extremely limited, if it occurs at all. The big fear is that this flu virus will acquire the ability to transmit from human to human. So far, it has not. However, the current swine flu has acquired that ability. It is transmitted human-to-human; it is now a human flu virus.

Why is this flu of concern?

There are two rather distinct issues here. One is the frequency of the disease and the other is its severity. The first is general; the second is an issue about this specific virus.

1. The first reason for concern is the same reason any new flu strain is a concern: it is new, and we lack immunity to it. We lack immunity as individuals, and the current vaccine is not active against it. When a new flu virus arises, it may result in a higher frequency of flu infections. The first year. By the next year, the new strain will likely be included in the vaccine.

> There seems to be some question about how new this strain is, thus whether we have any immunity to it. We can't resolve that here. Let's just assume, worst case, that we have no immunity.

We may be lucky on the timing of this new swine flu strain. It is very near the end of the flu season. Perhaps it will not circulate well. But that is just optimistic speculation. (That is info

for the northern hemisphere. The flu season is the opposite in the south. Hm, the new strain could make it to Australia by late May.)

So, the new strain might cause a higher frequency of flu for a while.

2. Severity of the disease.

What about severity of disease? That is a different issue. It is not predictable (it is not relevant that it may come from swine or bird), and the data so far is frankly confusing.

In humans, flu is an upper respiratory infection (which is part of why it is so easily transmitted). The course is familiar enough, and most people survive fine, after some unpleasantness. However, it is a significant killer -- about 30,000 each year in the US. For the most part, the common flu kills the infirm, by allowing secondary infections. Most flu deaths are among the elderly, and others who would seem vulnerable. However, some flu virus has a second trick. It over-stimulates our immune system, causing a fatal reaction. The term used is that it causes a "cytokine storm"; cytokines are regulator molecules, something like hormones. This effect is greatest in those who are young and healthy; it is hard to over-stimulate the immune system in those whose immune system is weakened. Thus a flu virus with this mode of action preferentially kills people in mid-life -- people who seemed vigorous. The 1918 flu virus did this, and it seems that the current H5N1 bird flu that we worry about does this, which is why it is of such concern.

So what does this new swine flu do? Well, that is where the confusion is. In Mexico it seems to be causing serious illness and death among the young. But outside of Mexico, it seems to be causing a very mild flu, with few deaths or even serious consequences so far. This holds even for those who seem to have caught their flu in Mexico a week ago. This makes no sense, and it serves little purpose to speculate on the reason at this point. (A major problem is that the data are very fragmentary at this point.) The main conclusion for now may be that there is some reason to be concerned that this might be a flu virus capable of causing serious illness, though the case is incomplete at this point.

Eating pork? Eating bird?

You will not get swine flu by eating swine (pig, pork), and you will not get bird flu by eating bird (chicken). This assumes only proper food handling and cooking. The flu virus will not survive even modest cooking. The food handling issue is that there might be virus on the meat; you need to avoid ingesting uncooked material. These comments hold for flu virus, but also more generally for almost all meat-borne illnesses. The only one that really resists ordinary cooking is the BSE agent (variant Creutzfeld Jakob disease, or mad cow disease). However the BSE agent is poorly transmissible and rare.

> If anyone is in close contact with pigs, that is a separate issue to consider. However, there is no reason to believe that the swine flu of concern, now a human flu, is actually present in any pigs, except possibly in Mexico. (Any hog farmers here? Does anyone keep a pig as a pet? Apparently, they make good pets, and are becoming popular. But an isolated pig as a pet is probably more in danger of getting the flu from you than you are from the pig.)

Advice.

What can you do? Most flu transmission between people is either by aerosols or by contact. Aerosols come from people who are infected releasing the virus by sneezing. You should try to minimize such exposure -- and minimize being a source, too. Are masks useful? Maybe, but probably only if you have this kind of direct exposure. More important is transmission by contact. It is an important part of this that the flu virus can survive a while -- perhaps hours -- on ordinary surfaces. A flu virus carrier can leave virus on a doorknob and you can get it from the doorknob; you then transfer it to your face. The main protection is two things, which should be second nature anyway. One is frequent hand-washing, and the other is to minimize touching yourself, especially your face, with your hands. These simple steps can be quite effective in reducing flu virus transmission.

Should you contact a doctor if you have some symptoms? This is a tricky question, and the answer may vary as info comes in. The best advice seems to be to call, and discuss it with them. Do not go to the emergency room.

Note that most of the advice above is actually general -- good regardless of this new strain.

Another good piece of advice would be to relax. Unless you happen to be in one of the places with a substantial incidence of this new virus, there is really very little to worry about, at least for now. And there aren't many places with much of it. The authorities are being extremely aggressive in trying to break the chain of transmission. Good. Go wash your hands, and let them do their work.

> In the past week, <u>one</u> death due to the new swine flu has been reported in the US. During that same time, it is likely that several hundred have died from flu. That is, at this point the new flu is uncommon, and evidence that it is severe is questionable. Most important, if it is potentially severe, is to break the transmission, so it does not become common.

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