



Community & Hospital Letter

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Potpourri

WORLD HEALTH ORGANIZATION (WHO) officials, in December, warned that the current H5N1 avian influenza virus in Asia could become pandemic and kill a minimum of 2-7 million people (www.who.int). While there are widely varying estimates of human mortality (up to 50 million), if the H5N1 virus actually adapts to efficient person-to-person transmission, there is little doubt that if it did, no country is positioned to protect its citizens from the pandemic.

The most infamous of the 3 influenza pandemics of the 1900s was that of 1918-1919. Worldwide, mortality was a staggering 20 to 40 million people. Kansas City was not spared from that influenza virus. From an article published in the *Missouri Historical Society Review* (Oct 1968:55), the 1918 death rate from all forms of pneumonia and influenza (P&I) was 718.1 per 100,000 population (population in 1918 was ~300,000). In 1917 the P&I rate was 205.0 and in 1919 it was 301.1. So there were roughly 1,200-1,500 excess deaths that year due to the pandemic or 0.5% of the population. During the last four months of 1918, 1,865 Kansas Citizens died from pneumonia & influenza.

New studies indicate that although the H1N1 influenza virus responsible for the 1918-1919 pandemic had enhanced pathogenicity, it was not an especially contagious virus. Epidemiologists have sifted through mortality data from 45 cities from late 1918 onwards (*Nature* 432:904, 2004). They calculated that a person incubated the virus for 1.9 days on average and then was infectious for 4.1 days. It was then determined that a person with H1N1 influenza infected <4 other individuals, a transmission rate no worse than other forms of the flu or SARS. The enhanced mortality was attributed to the general susceptibility of the population to the virus.

SOME HOSPITAL emergency departments (ED) across the country are beginning to guarantee quick service or your room and possibly physician charges are free (USA Today 12/3/04, A1). Such guarantees, however, are not likely to become universal as EDs are overwhelmed.

According to the American Hospital Association, the average ED saw 24,300 patients in 2003 vs 16,800 in 1990. Consequently, ED ambulance diversions increase during influenza season (*Ann Emerg Med* 44:61, 2004), as more persons suffering from the flu go to EDs for medical care. Experience suggests that for 100 cases of influenza in the community in a given week, ED ambulance diversion would be expected to increase by 2.5 h/week on average. ED ambulance diversion has been a major issue during past influenza seasons in the metropolitan area. And, given the aging of the population, hospitalizations for influenza have been increasing over the past two decades (*JAMA* 292:1333, 2004). Hospitalization rates for influenza among children <5 y of age are similar to those among individuals 50-64 y old.

ACCORDING TO the National Center for Health Statistics, regardless of population subgroup (age, sex, race, Hispanic origin, education, income, or nativity) or health indicator (fair or poor health, limitations in activities, low back pain, headaches, serious psychological distress, smoking, or leisure-time physical inactivity), married adults were generally found to be healthier than adults in other marital status categories (*NCHS Adv Data Vital Health Stat*, #351, 12/15/04). Marital status differences in health were found in each of the three age groups studied (18-44 years, 45-64 years, and 65 years and over), but were most striking among adults aged 18-44 years. The one negative health indicator for which married adults had a higher prevalence was overweight or obesity. Married adults, particularly men, had high rates of over-

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weight or obesity relative to adults in other marital status groups across most population subgroups studied. Never married adults were among the least likely to be overweight or obese.

A PARASITE that claims around 50,000 lives a year in Latin America could use an entirely novel mechanism to cause disease. A study of patients with Chagas disease has found segments of the parasite's DNA integrated into their genomes. Besides viruses, no other organism that causes disease in animals has been found to integrate its DNA into its host.

Chagas disease infects around 17 million people in Latin America, and its range is extending. The disease, which is caused by the protozoan *Trypanosoma cruzi*, is poorly understood, and there is no effective vaccine.

One particularly puzzling aspect of the disease is its variability. In the initial acute phase, the parasite infects blood cells, causing fever and sometimes swelling of the face and eyes. But it is rarely fatal, and patients often fail to get medical attention. The parasite then goes quiescent for 10 or 20 years, during which time it invades most organs. Two-thirds of these chronic sufferers remain unaware that they are infected with the parasite, but the others eventually die from the disease.

How the parasite causes death in the chronic phase is controversial. Some researchers believe that it is the result of accumulated damage to the heart muscles by the parasite. Others believe that an immune reaction directed at the parasite and host's tissues does the damage. Whatever the truth, the new finding promises to stir up the debate even further.

Brazilian researchers, studying patients with the chronic infection, detected sequences of 100 to 500 of the parasite's nucleotides, or DNA building blocks, integrated into the patients' genomes at one or more locations (Cell 118:175, 2004). It remains to be determined whether the integrated parasite DNA is expressed as RNA or protein — one of the most obvious ways it could play a role in causing Chagas. If the parasite DNA is expressed, that could explain why the disease differs so much between people, as the exact course of the disease could depend on where on the genome the parasite DNA is incorporated.

The human results were confirmed by infecting rabbits and chickens with the parasite. The parasite DNA integrated into the genomes of both animals, and chickens died of Chagas-like symptoms. In addition, the parasite DNA was found in the genomes of chickens two generations on from the birds originally infected. This suggests that parasite DNA can be spread via the host genome in chickens, and raises the intriguing possibility that Chagas might also be an inheritable genetic disease in humans.

VACCINES against cervical cancer may soon be available. Both GlaxoSmithKline (GSK) and Merck have candidate vaccines against the most common strains of human papillomaviruses (HPV) that are associated with human cervical cancer. While both vaccines contain proteins that mimic HPV16 and HPV18 (which together account for ~70% of cervical cancers), the Merck vaccine also protects against HPV6 and HPV11 which cause genital warts. The GSK vaccine, in Phase II trials, was shown to be 100% effective in healthy young women (Lancet 364:1757, 2004). The Merck vaccine is further along and may be submitted for Food and Drug Administration approval in 2005 (Intern Med News 37 (24):12/15/04).

WHO reports that cervical cancer is the 2nd most important cancer of women after breast cancer killing over 250,000 women per year. Essentially all cervical cancers are caused by infection with just a few types of HPV. Starting in the early 1990s, work has been proceeding on vaccines against HPV following two paths of development. One path was the creation of a prophylactic vaccine, such as those described above, while the other has been directed at developing a therapeutic vaccine for women already infected.

Should a prophylactic vaccine come to market, a major issue will be at what age it should be administered. To be effective, the vaccine would need to be administered before women become sexually active. For example, if combined with a normal childhood vaccine, would immunity persist into at least adolescence? Would a booster shot be necessary before girls become sexually active and how would that age be determined? In addition, should males be vaccinated? After all, they also get infected with the same strains of HPV and serve as a reservoir of infection for women. These will be tough questions to answer.

FOUR PERSONS developed botulism as the result of anti-wrinkle therapy after being injected with large doses of a raw, unlicensed botulinum toxin known as Botulinum Neurotoxin type A manufactured by a firm in California. This incident occurred in Fort Lauderdale, FL. The physician who did the injections already had his license suspended for prescribing excessive amounts of pain medication. The 4 cases included a couple, the physician's girlfriend and the physician, who injected himself as well as the others. As of this writing, all 4 remain on life-support in intensive care. Tests have shown the presence of botulinum toxin A in these individuals.

Botox-like products have been a growing problem throughout the country, as companies from overseas, primarily China and Europe, solicit physicians directly by e-mail and faxes offering deep discounts. Many of these products do not meet Food & Drug Administration standards.

FIRSTBORN CHILDREN tend to suffer more from eczema, hay fever and asthma than their siblings. This is because women have a weaker immune response to allergens with each successive pregnancy (Clin Exper Allergy 34:853, 2004). This suggests that the mother's immune response is somehow influencing the baby's immune system. These findings present a challenge to the "hygiene" theory as an explanation as to why children born later have fewer allergies. That theory posits that more older siblings means more dirt and infections, which primes the immune system so that the child is less likely to develop harmful hypersensitivities.

WALKING can ward off dementia according to two recent studies. One study looked at nurses and found that higher levels of physical activity (primarily walking) resulted in a 20% reduction in the odds of cognitive impairment (JAMA 292:1454, 2004). The other study looked at 71-83 y old healthy, non-smoking men, and found that those who walked the least (<0.25 mile/day) were almost twice as likely to have dementia as those who walked the most (JAMA 292:1447, 2004).

Walking, of course, can be hazardous. The Mean Streets 2002 report (www.transact.org) ranked the Kansas City MO-KS metropolitan area as the 20th worst for pedestrian

fatalities with a 10.4% increase in the Pedestrian Danger Index (PDI) between 1994-1995 and 2002-2003. The PDI is a measure of the average yearly pedestrian fatalities per capita, adjusted for the number of walkers.

The National Highway Transportation Safety Administration (NHTSA), in 2001, ranked Kansas City 56th out of 245 cities for pedestrian fatalities. And, according to the Missouri State Highway Patrol's Traffic Safety Compendium for 2002, the 4 Kansas City metropolitan counties ranked in the upper quartile of motor vehicle-pedestrian accidents. Jackson County was 2nd, Clay was 7th, Platte was 13th, and Cass was tied for 20th. Kansas City proper ranked only 2nd to St Louis City. Data from the Jackson County Medical Examiner's Office for 1997 through 2002, showed 92 pedestrian fatalities in Jackson County, 12 in Clay County, and 3 in Platte County. Over 95% of these fatalities were caused by being struck by a car.

DENTAL PLAQUE may be the source of bacteria that cause potentially fatal pneumonia in elderly nursing home patients (Chest 126:1575, 2004). Using molecular fingerprints of the bacteria in patients' mouths before they developed pneumonia and the comparing the isolates from those patients who developed pneumonia, researchers were able to demonstrate that >70% of the pneumonias were due to organisms also found in the dental plaque. And, DNA matching linked the bacteria in the lungs to those in the dental plaque in >50% of the cases.

WHICH MEDICAL conditions account for the rise in health care spending? Research shows that the 15 most costly medical conditions accounted for half of the overall growth in health care spending between 1987 and 2000 (Health Affairs 8/25/04, W4-437). The 15 conditions were from highest to lowest effect on health care spending: heart disease, pulmonary conditions, mental disorders, cancer, hypertension, trauma, cerebrovascular disease, arthritis, diabetes, back problems, skin disorders, pneumonia, infectious disease, endocrine, and kidney.

US SURGEON GENERAL Richard Carmona is urging Americans to track down and record cases of cancer,

heart disease and other diseases prevalent in their families. While many people know their family's health can indicate possible problems with their own, relatively few people have tried to collect it in an organized way. Consequently, US Department of Health & Human Services has developed a new computer-based program to help patients better organize their medical histories. The computer based tool (www.hhs.gov/familyhistory) allows users to record health histories for as many relatives as they have information for and then print out copies for their doctor. A print version of the tool is being made available

bacco companies between 1993 and 2000 (Am J Prev Med 27:363, 2004). Republicans were more likely to vote pro-tobacco than Democrats, and politicians from tobacco states also favored the industry. Controlling for these factors, the researchers found that for every \$10,000 in contributions Democrats were 10% more likely to vote to protect tobacco interests, while Republicans were only 3.5% more likely. The discrepancy may reflect Republicans being more pro-tobacco to start with.

for health care providers to give patients.

US CONGRESSIONAL voting records show that the more tobacco money politicians receive, the more likely they are to protect tobacco company interests with their votes. Researchers from St Louis University compared the voting records of US senators and representatives on 43 tobacco related bills between 1997 and 2000 with the amount of campaign money each had received from to-

SALMONELLA TYPHIMURIUM caused a gastrointestinal disease outbreak in southern Johnson County, KS, during November. The outbreak was associated with a retail store that also had a food bar. Of some 3 dozen suspect cases, *S typhimurium* has been recovered from 8 individuals. These 8 isolates all have the same pulsed field gel electrophoresis (PFGE) type. In addition, another unrelated case of *S typhimurium* was reported in the county; this one had a different PFGE type and no link to the store.



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