

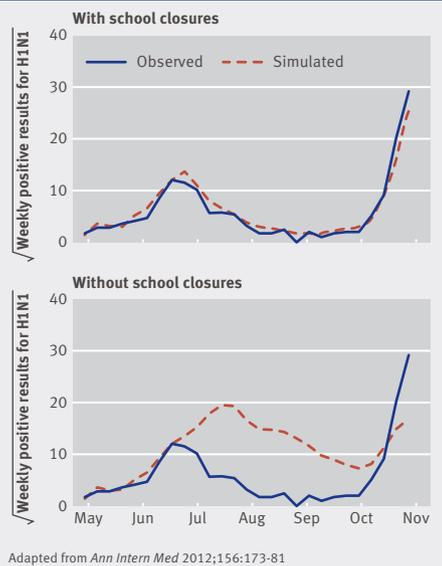
All you need to read in the other general medical journals  
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## Transmission of pandemic flu halved during Alberta's 2009 school holidays

A model of the H1N1 influenza pandemic in one province of Canada suggests that closing schools for summer holidays in 2009 greatly reduced the spread of infection and the incidence of confirmed cases. The end of the holidays may have kick started the second wave of the pandemic, say the authors, although falling temperatures and the arrival of autumn weather were also important factors in the upsurge of cases in late October and early November. They estimate that closing schools for the summer cut transmission of H1N1 in school children by around half and ended the first wave of the pandemic early in all age groups.

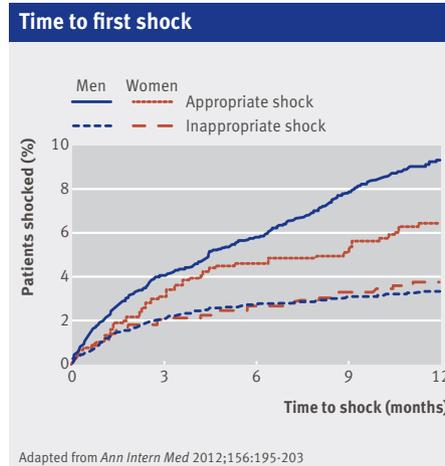
The new model adds to growing evidence of a link between school closure and reduced transmission of flu viruses, says a linked editorial (p 238). Schoolchildren are high transmitters and seem to drive the trajectory of pandemics in particular. Closing schools to contain pandemics is controversial, not least because of the social and economic disruption that follows, but public health authorities now have enough evidence to at least consider it as a future strategy, says the editorial. Natural experiments in social distancing from St Louis in 1918, from Mexico in 2009, and now from Alberta all point the same way. They also share the same limitations. It is almost impos-

### Models of pandemic flu with and without school closures



sible, using observation alone, to isolate the effect of school closures from other changes that occur at the same time, including weather, vaccinations, distribution of antiviral drugs, and a rapid surge in the population's enthusiasm for handwashing. *Ann Intern Med* 2012;156:173-81

## ICDs cause more complications for women than for men



Implantable cardioverter defibrillators (ICDs) may be riskier for women than for men, according to a cohort study from Canada. Once referred, women and men were equally likely to receive a device. But women had significantly more complications after the procedure than men (any major complication within 45 days: 5.4% (55/1026) v 3.3% (126/3804); adjusted odds ratio 1.78, 95% CI 1.24 to 2.58). The excess wasn't explained by clinical differences between men and women, and it seemed to persist for at least one year. Women had significantly more problems with device leads than men, possibly because of their smaller body size, say the authors.

Women's devices also deployed less often than men's devices. Fewer women received a rescue shock (adjusted hazard ratio 0.69, 95% CI 0.51 to 0.93) or antitachycardia treatment (0.73, 0.59 to 0.9) during the first year. Again, the difference wasn't explained by clinical factors, including indication for the ICD, or the type of device.

These findings underscore the limitations of current research on implantable devices for women, says an editorial (p 241). We know little about the true balance of risks and benefits because landmark trials were top heavy with men and sex specific analyses were too weak to

be useful. A one size fits all approach ignores the many biological differences between men and women, including distinct pathologies underlying arrhythmias and sudden deaths.

Men and women may need different designs of device and different programming algorithms to maximise benefits and limit harms, says the editorial. The predominant algorithms used in this cohort were derived from a study population that was 75% male.

*Ann Intern Med* 2012;156:195-203

## Tai chi for adults with Parkinson's disease

Tai chi is a low intensity form of exercise that emphasises balance and core stability. It is perfect for adults with mild or moderate Parkinson's disease, say researchers, who tested a six month programme of group tai chi in a randomised trial.

Tai chi was better than either resistance training or stretching exercises at improving balance, reach, and length of stride. It was better than stretching at increasing walking speed and reducing the time it took for patients to get up and go. The 65 men and women doing tai chi reported significantly fewer falls than the 65 doing stretching exercises (0.22 v 0.62 per patient per month; P=0.005). They also reported fewer falls than 65 controls doing resistance training, but the difference wasn't (quite) significant (0.22 v 0.51; P=0.05).

These researchers were particularly interested in postural stability, which is indicated by how far a person can lean without falling and how accurate their movements are towards a target (expressed as a percentage). Tai chi improved both measures by around 10% (from 64% to 73.6% and from 65.8% to 73.8%, respectively), significantly more than either of the control exercises. The tai chi group was still doing better than both control groups three months after the end of the classes.

Postural stability and accurate movements are essential for basic activities such as reaching for a tin from a cupboard and getting up out of a chair, say the researchers. So tai chi should help patients get through their day safely. These participants had mild or moderate Parkinson's disease and attended group classes twice a week for 24 weeks.

*N Engl J Med* 2012;366:511-9



**“This study of a new polyvalent vaccine against serotype B meningococcus may mark a great moment in medical history—final victory over a horrible killer and maimer of mostly young people”**

Read Richard Lehman's journal blog at [bmj.com/blogs](http://bmj.com/blogs)

## Experimental brain stimulation enhances memory in volunteers

Targeted deep brain stimulation improves spatial learning in mice. It is much harder to test such an invasive technology in humans, although researchers were recently able to make a start thanks to seven volunteers with epilepsy who had brain electrodes implanted in an attempt to identify the source of their intractable seizures.

Six volunteers had an electrode implanted into the entorhinal cortex, part of the medial temporal lobe thought to be important for learning and memory. In an elegant experiment, the volunteers navigated around a computer simulated city picking up passengers and dropping them off at shops. They repeated navigations three times with entorhinal stimulation and three times without before a final game tested how well they could remember the shortest and fastest routes.

All six did significantly better when tested on the navigations they had learnt during deep brain stimulation. They took shorter routes to the target shop and got there more quickly. Five of the volunteers also had at least one electrode in the hippocampus. Stimulation here had no discernible effect on test results.

Entorhinal stimulation seems to improve spatial learning and memory, say the researchers. We need these skills to find a car in a car

park or remember the way home. Adults with dementia might one day benefit from this research, although an editorial (p 563) warns that treatment would have to start very early in the disease course. Alzheimer's disease begins in the entorhinal cortex, and this part of the brain may be overwhelmed by disease by the time that symptoms appear.

*N Engl J Med* 2012;366:502-10

## Antenatal screening for thyroxine deficiency fails to improve children's intelligence

Thyroxine is essential for the developing brain. Should pregnant women be screened for thyroxine deficiency? International guidelines say no, at least not yet, and a randomised trial from Europe supports this advice. The children of women screened at 12 weeks' gestation and given levothyroxine if necessary had the same IQ at 3 years as children born to control women whose blood was stored from 12 weeks and tested only after delivery (99.2 v 100; difference 0.8, 95% CI -1.1 to 2.6).

The authors screened almost 22 000 pregnant women. About 5% had thyrotropin concentrations above the 97.5th centile or concentrations of free thyroxine below the 2.5th centile. Women who met either criterion qualified for treatment, which began at 13 weeks' gestation on average. Few women were positive on both tests, and a linked editorial (p 562) wonders whether the authors found and treated mild deficiencies that were unlikely to have an obvious effect on a young child's intelligence. IQ at 3 years is a blunt instrument, too insensitive to pick up subtle differences in cognitive function, it says. Or perhaps screening and treatment came too late. The developing fetus is dependent entirely on maternal thyroxine during the first trimester. We should probably think about screening well before 12 weeks.

This trial will not be the last word, says the editorial, and it will probably not change the minds of doctors who currently advocate universal screening. Good observational evidence of a link between thyroid deficiency in pregnant women and poor cognitive function in their children has been around for decades and is hard to ignore. Another large trial of screening is under way and will test children

at 5 years. In the meantime, recommendations against universal screening look secure.

*N Engl J Med* 2012;366:493-501

## Y chromosome is implicated in the inheritance of heart disease

The Y chromosome is small and contains just a few dozen genes, handed down unchanged from father to son. Most genes on the Y chromosome determine male characteristics, but for some men they also predetermine a substantially increased risk of coronary artery disease, according to a new study.

Researchers genotyped the Y chromosomes of 3233 men with known cardiovascular histories and separated them into nine well characterised genetic lineages, known as haplogroups. Men in the same haplogroup share similar packages of polymorphisms on the Y chromosome, and most European men belong to one of 13 known groups.

Men belonging to haplogroup 1 had a 50% higher risk of coronary artery disease than men in other haplogroups (odds ratio 1.56, 95% CI 1.24 to 1.97). The link was evident in both cross sectional and longitudinal analyses and was not explained by traditional risk factors, including serum lipids, body mass index, blood pressure, smoking, alcohol consumption, poverty, or serum glucose concentrations. A closer look at the genetic profile of monocytes and macrophages from men in haplogroup 1 showed important differences in 19 genetic pathways involved in immune function and inflammation. In general, immune pathways were downregulated (weaker) and inflammatory pathways were upregulated (stronger), relative to the same pathways in men from other haplogroups.

Between 15% and 40% of men in northern Europe belong to haplogroup 1, say the researchers. There are far fewer men with this lineage in southern Europe and almost none anywhere else. Future studies should explore the contribution of the Y chromosome to geographical variations in heart disease, including the north-south divide in Europe. Genetic tests would not be helpful for individuals though. These haplogroups are weak predictors of heart disease risk on their own.

*Lancet* 2012; doi:10.1016/S0140-6736(11)61453-0

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### Spatial learning with or without deep brain stimulation of the entorhinal region

