

All you need to read in the other general medical journals
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Exercises help prevent falls in older adults

Preventing falls in older people is a public health priority, and the latest synthesis of randomised evidence reports plenty of interventions that work, including exercise classes and exercises for adults to do at home. The most successful exercise interventions included at least two different types of exercise, such as balance training, muscle strengthening, or walking. Tai Chi helped prevent falls, but not for adults at highest risk. The authors found 51 new trials to add to the last review in 2009, bringing the total to 159.

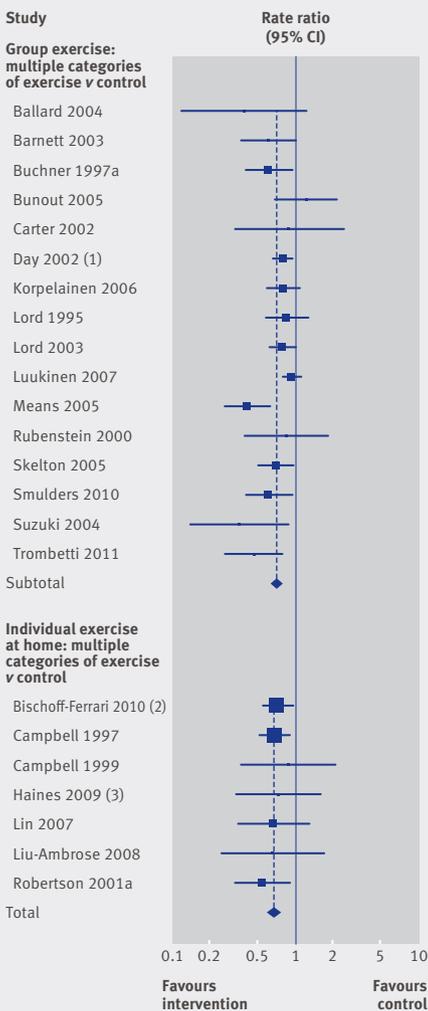
Improvements to home safety and personal mobility aids also worked, particularly when assessments and improvements were led by an

occupational therapist. Simple things such as an anti-slip shoe for use on icy pavements reduced the risk of outside falls in one trial. More invasive treatments such as cataract surgery (one trial) and a pacemaker (three trials) were associated with fewer falls in selected adults.

Doubt remains about the effectiveness of rationalising prescribed drugs, educating doctors or patients, and providing new glasses for adults with poor eyesight. Results for complex multifactorial interventions were also mixed. Extra vitamin D, with or without calcium, did not help prevent falls in this review, or the previous one. The authors weren't able to tell whether any of these interventions helped prevent fractures.

Cochrane Database Syst Rev 2012;9:CD007146

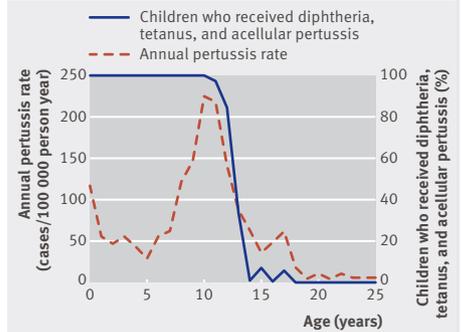
Effect of exercises on rate of falls



Adapted from *Cochrane Database Syst Rev* 2012;9:CD007146

Waning protection after vaccination against whooping cough

Annual rate of pertussis and vaccination history by age



Adapted from *N Engl J Med* 2012;367:1012-9

The ingredients of good transitional care remain elusive

Discharging patients from hospital to home, or even from hospital to rehabilitation, is a complex process with multiple pitfalls. Patients suffer when it goes wrong, and health budgets are stretched by having to pay for avoidable readmissions. A seamless transition that is well coordinated, patient centred, safe, and effective is the ultimate goal, and two systematic reviews found many promising interventions to help achieve it. But the interventions were a very mixed bag and incorporated so many different components that neither review could pin down the essential ingredients of good transitional care.

There were hints that discharge planning, shared follow-up, better communication, and electronic tools (for discharge summaries and drug orders) were all useful—mostly for preventing readmissions. Do any of these components save lives, improve quality of life, or help carers? We don't yet know after 44 studies in one review and 36 trials in the other. We do know the biggest gaps in the evidence, however.

Researchers must try to agree on the most promising components to study, define them in a reproducible way, and describe them in detail, says a linked editorial (p 448). The same applies to outcomes, which must include the patient, not just the process. The stakes are high. Avoidable readmissions cost the US healthcare budget an estimated \$12bn (£7.3bn; €9bn) a year.

Ann Intern Med 2012;157:407-16; 417-28

Children in California, US, must have all five doses of an acellular vaccine against *Bordetella pertussis* (whooping cough) before starting school. Mandatory vaccination has not prevented serious outbreaks, however—the most recent of which was in 2010. Waning protection from the acellular vaccine may be to blame, according to a case-control study.

The authors compared time since last dose among children testing positive and negative for *B pertussis* during the 2010 outbreak. Cases had their last dose significantly earlier than controls (1699 v 1028 days; $P < 0.001$). Primary analyses suggested that the odds of infection rose by 42% each year after the fifth dose (95% CI 21% to 66%). A secondary analysis comparing cases with population controls reported similar results.

Most of these children completed their vaccinations between the ages of 4 and 6 years. The proportion of positive tests for *B pertussis* reported by all laboratories in one health plan during the outbreak peaked in children aged 8-11 years, then fell sharply. The authors speculate that older children remained protected by the whole cell vaccine they had received as infants. Whole cell vaccines were widely used in the US until the late 1990s.

The newer acellular vaccine against whooping cough may not protect children well enough for long enough, say the authors. Low dose boosters are already recommended for 11 year olds, but we don't know how long they last either.

N Engl J Med 2012;367:1012-9



“However you remunerate doctors, there will be perverse incentives—to do too little, or too much, or the wrong things”

Richard Lehman's blog at www.bmj.com/blogs

Disappointing first trial of a vaccine against dengue

Dengue viruses are spreading globally, and the World Health Organization estimates that around half the world's population are now at risk of infection. Dengue is carried by mosquitoes. There are no specific treatments, and although prototype vaccines are in the pipeline, the first one to be tested in a clinical trial failed to provide adequate protection to children in Thailand.

Sanofi Pasteur tested its tetravalent vaccine in 4002 schoolchildren in one district west of Bangkok. Seventy seven children had confirmed dengue more than one month after the last of three injections. Overall efficacy for the new vaccine relative to control (rabies vaccine or a placebo) was just 30.2% (95% CI -13.4% to 56.6%). The vaccine was particularly ineffective against dengue virus 2—the type that is circulating in that part of Thailand. Bigger trials are already under way in other Asian countries and in Latin America, where the epidemiology of dengue is very different, say the authors. Their vaccine seems immunogenic. In smaller exploratory analyses, 95-100% of children were seropositive for all four virus types one month after their third dose, compared with 43-59% of controls. It also looks safe so far.

Endemic countries urgently need a good vaccine, says a linked editorial (doi:10.1016/S0140-6736(12)61510-4). This one has yet to prove itself, and parents will want to know if it can protect their children from the severest forms of dengue, which can kill. Only five children in this trial were admitted to hospital with severe dengue. Three of them had received the new vaccine.

Lancet 2012; doi:10.1016/S0140-6736(12)61428-7

Job strain is a risk factor for coronary heart disease

People with demanding jobs but little control over their working day have a higher risk of myocardial infarction or death from coronary disease than people with less demanding jobs or more control. The combination of high demand and poor control is an established definition of job strain, and a new meta-analysis of 13 European cohorts confirms that job strain is a health hazard for both men and women.

The authors drilled into each study for data on nearly 200 000 participants. They included

published and unpublished studies, adjusted analyses for more than a dozen potential confounders, and conducted several sensitivity analyses. All results were consistent with a link between job strain and new coronary heart disease, with an overall hazard ratio of 1.23 (95% CI 1.10 to 1.37).

This figure is lower than previous estimates but likely to be nearer the truth, say the authors. Job strain was associated with coronary heart disease in both sexes, in all social classes, and in adults above and below 50 years. If the link is causal, eliminating job strain from all workplaces would cut heart attacks and coronary deaths in Europe by 3.4% (1.5% to 5.4%), they write.

Lancet 2012; doi:10.1016/S0140-6736(12)60994-5

Extra deletions or duplications found in highly variable genetic disorders

Some chromosomal deletions and duplications (copy number variants) cause clinical features that vary widely from child to child. One has been associated with obesity, autism, schizophrenia, and learning disability. Why? The heterogeneity may have something to do with the presence of second or even third copy number variants in some children, according to a study from the US.

The authors studied three groups of children with intellectual disabilities—those with a copy number variant that causes a well characterised syndrome, such as Prada-Willi syndrome; those with a variant that causes heterogeneous phenotypes; and those with a variant of unknown clinical significance.

Children with variants causing heterogeneous phenotypes were more likely than children with syndromes to have a second or third copy number variant, to have inherited their large

primary duplication or deletion from their parents, and to be boys. When the authors focused on children with the four variants known to cause the most heterogeneous phenotypes, they found a significant association between extra variants and worse developmental delay or intellectual disability in other analyses.

The authors sequenced the genomes of 2312 children with one of 72 primary deletions or duplications. They hope their study and others like it will eventually disentangle the complex link between genotype and phenotype, with a view to more accurate prognosis for children with genetic disorders.

N Engl J Med 2012; doi:10.1056/nejmoa1200395

Physical benefits of gastric bypass surgery last for years

Roux-en-Y gastric bypass caused lasting weight loss and significant improvements in glucose metabolism, blood pressure, and lipid profiles in a cohort study from Utah, US. After six years, 418 adults who had surgery were significantly less likely to develop diabetes or hypertension than controls who did not have surgery. They were also significantly more likely to be cured of type 2 diabetes or hypertension.

Surgery was associated with significantly better outcomes in 14 of 15 comparisons of markers of metabolic and cardiovascular health and quality of life. Some of the differences were dramatic. Surgery reduced the odds of new diabetes by 80-90% in analyses that were fully adjusted using a propensity score. The authors compared their surgical cohort with two sets of controls: 417 severely obese adults who sought surgery but didn't have it and 321 severely obese adults who did not want surgery. The surgical cohort did better than both groups.

Surgery was associated with improved quality of life overall but no improvement in the mental health component of the SF-36 score. The authors also noted that all four adults who committed suicide had undergone surgery, a finding that deserves further exploration. There were no perioperative deaths, but 3% of the surgical cohort had perioperative complications and 8% were admitted to hospital with problems relating to their surgery, usually within two years.

JAMA 2012;308:1122-31

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