RESEARCH

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RESEARCH NEWS All you need to read in the other general medical journals Kristina Fišter, associate editor, *BMJ* kfister@bmj.com

It pays to distribute naloxone to heroin users

Distribution of the opioid antagonist naloxone to heroin users for use at witnessed overdoses probably reduces deaths and seems highly cost effective, say researchers. The modelling study examined hypothetical scenarios set in the US and compared distributing naloxone to 20% of heroin users with no intervention.

In the base case scenario, distribution of naloxone prevented 6% of deaths by overdose, one for every 227 kits distributed (95% CI 71 to 716). The distribution of naloxone increased lifetime costs by $53 (£33; €40; 95% CI $3 to $156) and quality adjusted life years by 0.119 (0.017 to 0.378), giving an estimated incremental cost effectiveness ratio of $438 ($48 to $1706). In sensitivity analyses, distribution was cost saving in some scenarios and cost effective in all. In the worst case scenario—where overdoses were rarely witnessed and naloxone rarely used, minimally effective, and expensive—the incremental cost effectiveness ratio reached $14 000.

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Fructose may be making us eat more

Consumption of glucose reduces blood flow in the hypothalamus—the part of the brain that controls appetite and hunger—but consumption of fructose does not. Also, fullness and satiety are increased after consuming glucose, but not after consuming fructose.

This was found in a study of young healthy volunteers: 10 men and 10 women of normal weight. The study had a blinded, random order, crossover design, and all participants drank 75 g preparations of pure glucose or fructose. During the next hour, functional magnetic resonance imaging was used to study blood flow in the brain, and a visual analogue scale was used to assess satiety, hunger, and fullness.

Consumption of glucose reduced blood flow in the regions of the brain that control appetite and reward, which in addition to the hypothalamus include the thalamus, insula, anterior cingulate, and striatum. Blood flow was reduced in the thalamus in response to fructose, but also in entirely different regions: the hippocampus, posterior cingulate cortex, fusiform, and visual cortex. Fructose also resulted in lower concentrations of plasma insulin and the satiety hormone glucagon-like polypeptide 1.

Increases in obesity have paralleled the increased consumption of added sugars, including fructose. Although obesity is ultimately caused by excess energy intake, sensations such as hunger and fullness are major determinants of how much people eat (editorial, p 85). Because fructose seems to make people eat more, its intake should be reduced. Sucrose and high fructose corn syrup, which contain about equal amounts of fructose and glucose, are added to sodas, as well as energy and sports drinks. They are also added to juices for small children and many processed foods, including meats and sauces.

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Overweight people live longest

Although a body mass index (BMI) of 18.5 to <25 is considered normal, all cause mortality is lowest among people with a BMI of 25 to <30, who are termed overweight, according to a systematic review. The review identified 143 papers, and, after eliminating overlap, 97 studies comprising 2.88 million people were pooled in a meta-analysis.

Compared with normal BMI, hazard ratios for all cause mortality were 0.94 (95% CI 0.91 to 0.96) for overweight, 1.18 (1.12 to 1.25) for obesity overall (BMI ≥30), 0.95 (0.88 to 1.01) for grade 1 obesity (BMI 30 to <35), and 1.29 (1.18 to 1.41) for grades 2 and 3 obesity (BMI ≥35). Researchers examined the role of various confounders and biases, and the results were consistent across analyses.

It could be that risk factors are better managed in overweight and obese people, but we also know that BMI and mortality are inversely related in the presence of a wasting disease, heart or kidney disease, diabetes, and old age (editorial, p 87). The results could also be an artefact; in most studies, the lowest all cause mortality was seen in patients with a BMI of 22-25, but the "normal" range also includes people with a BMI of 18.5-22 who have a higher mortality.

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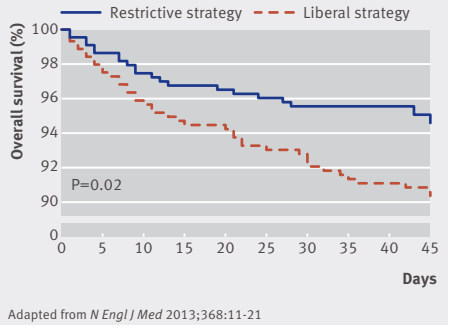
Restrictive approach to transfusion best in upper gastrointestinal bleeding

Survival, according to transfusion strategy



Adapted from *N Engl J Med* 2013;368:11-21

An open label trial of 921 people with severe but not massive acute upper gastrointestinal bleeding compared a restrictive transfusion strategy with a more liberal one (giving red blood cells when haemoglobin falls below 70 g/L or 90 g/L, respectively). All participants had haematemesis (or bloody nasogastric aspirate), melaena, or both, and those deemed to be at low risk of rebleeding were excluded.

Among participants randomised to the restrictive strategy, 51% (225/461) were never transfused, compared with 15% (65/460) of those in the liberal strategy group. At six weeks, survival was 95% and 91%, respectively (hazard ratio 0.55, 95% CI 0.33 to 0.92). The restrictive strategy was associated with less further bleeding (10% *v* 16%), reduced stay in hospital (mean 9.6 *v* 11.5 days), and fewer adverse events (40% *v* 48%). These included bacterial infections (27% *v* 30%), acute kidney injury (18% *v* 22%), heart complications (11% *v* 16%), and transfusion reactions (3% *v* 9%).

Transfusion is of particular concern in people with cirrhosis and portal hypertension. In a haemodynamic substudy of 175 patients, an increase in portal pressure was seen with the liberal strategy but not with the restrictive strategy. However, whereas a survival benefit was seen at six weeks with the restrictive strategy in participants with cirrhosis and Child-Pugh class A or B disease (0.30, 0.11 to 0.85), it was absent in the group with more severe class C disease (1.04, 0.45 to 2.37).

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