

Masala

A new, rapid drug-susceptibility test for tuberculosis

Researchers from the USA conducted a diagnostic accuracy study of a rapid, automated, cartridge-based molecular assay for the detection of *Mycobacterium tuberculosis* in sputum samples. The assay also detects resistance to fluoroquinolones, aminoglycosides and isoniazid, all within a few hours. The study recruited 308 sputum culture-positive patients in China and South Korea. Using phenotypic drug-susceptibility testing as the gold standard, the sensitivities of the assay for detecting resistance were 83.3% for isoniazid, 88.4% for ofloxacin, 96.2% for moxifloxacin, 71.4% for kanamycin and 70.7% for amikacin. The specificity of the assay for the detection of phenotypic resistance was greater than 94% for all drugs except moxifloxacin. Using DNA sequencing as the gold standard, the sensitivities of the assay for detecting mutations associated with resistance were 98.1% for isoniazid, 95.8% for fluoroquinolones, 92.7% for kanamycin and 96.8% for amikacin; specificity for all drugs was over 99%. This rapid assay could lead to more appropriate selection of antitubercular drugs (*N Engl J Med* 2017;**377**:1043–54).

Hyperbaric oxygen and the sword of DAMOCLES

The DAMOCLES (Does Applying More Oxygen [O₂] Cure Lower Extremity Sores?) trial randomized 120 patients with diabetes and ischaemic leg ulcers to receive standard care alone or standard care plus hyperbaric O₂ therapy. Hyperbaric O₂ was given in a chamber with sessions of 90 minutes each, 5 days a week for a maximum of 40 sessions. At the end of a year of follow-up, limb salvage was achieved in 47 of 60 patients in the standard care group and 53 of 60 in the hyperbaric O₂ group. The number of healed wounds was comparable between the groups. Amputation-free survival was achieved in 41 patients given standard care and 49 given hyperbaric O₂. None of these differences achieved statistical significance. Given the high cost and limited availability of hyperbaric O₂, these data provide food for thought (*Diabetes Care* 2017 pii: dc170654. doi:10.2337/dc17-0654).

Vaccines PREVAIL over Ebola virus

Partnership for Research on Ebola Virus in Liberia (PREVAIL), a collaborative effort between the US National Institutes of Health (NIH) and the Liberian government, carried out a phase 2 trial of two candidate vaccines against the Ebola virus—the chimpanzee adenovirus 3-based vaccine (ChAd3-EBO-Z) and the recombinant vesicular stomatitis virus-based vaccine (rVSVÄG-ZEBOV-GP). Both vaccines were tested in 1500 healthy adults in Liberia in a randomized, double-blind, placebo-controlled trial. Serious adverse events during the first year occurred in 8% of those given the ChAd3-EBO-Z vaccine, 9.4% of those receiving the rVSVÄG-ZEBOV-GP vaccine and in 11.8% of those given placebo. At 1 month, an antibody response developed in 70.8% of those given the ChAd3-EBO-Z vaccine, in 83.7% of those in the rVSVÄG-ZEBOV-GP group, and in only 2.8% of those receiving placebo. The antibody response persisted at 1 year in 63.5% of those in the ChAd3-EBO-Z group and in 79.5% of those in the rVSVÄG-ZEBOV-GP group (*N Engl J Med* 2017;**377**:1438–47).

Limited axillary dissection in carcinoma breast

The American College of Surgeons Oncology Group Z0011 (ACOSOG Z0011) trial enrolled women with clinical T1 or T2 stage invasive breast cancer, no palpable axillary lymph nodes and 1 or 2 sentinel lymph nodes with metastases. All participants underwent lumpectomy, whole-breast radiation and adjuvant systemic therapy. The women were randomized to undergo either sentinel lymph node dissection (SLND) alone or complete axillary lymph node dissection (ALND). After a median follow-up of 9.3 years, the 10-year overall survival was 86.3% in the SLND group ($n=446$) and 83.6% in the ALND group ($n=445$), proving non-inferiority of SLND alone over ALND. The 10-year disease-free survival was 80.2% in those receiving SLND and 78.2% in those who had ALND (*JAMA* 2017;**318**:918–26).

Post-diagnosis statin use in prostate cancer

Using data from nationwide Danish registries, researchers identified cases of incident adenocarcinoma of the prostate from 1998 to 2011. Post-diagnosis statin use was defined as two or more prescriptions for statins in the database. Till 2013, of 31 790 patients, 7365 died of prostate cancer and 11 811 of other causes during a median follow-up of 2.8 years from 1 year after diagnosis. Prostate cancer-specific mortality was 17% lower and all-cause mortality was 19% lower in patients who had been taking statins after their diagnosis of prostate cancer. The study design did not allow conclusions to be drawn about the causality of this association (*J Clin Oncol* 2017;**35**:3290–7).

Drones to the rescue!

Zipline, a technology start-up has risen to the challenge of supplying blood in areas with poor road connectivity such as in Rwanda. They use drones to transport units of blood to remote sites. The doctor calls up the distribution centre, the team takes units of blood from the on-site inventory and loads it onto the 'Zip', a miniature plane with a 10-foot wingspan and launches the unmanned drone. The doctor gets a message shortly before the blood arrives. In a little over a year, 4100 units of blood have been delivered; each delivery takes just 15–45 minutes (www.flyzipline.com accessed 7 Oct 2017).

Women outperform men in surgical outcomes

A research team from Toronto carried out a retrospective, matched cohort study from 2007 to 2015. Patients who had one of 25 surgical procedures performed on them during this period by a female surgeon were matched by their age, sex, comorbid conditions, surgeon age, surgeon volume and hospitals to patients who were operated on by a male surgeon. The primary outcome was a composite of death, re-admission and complications. A total of 104 630 patients were treated by 3314 surgeons, of whom 774 were women and 2540 were men. After adjusting for confounders, the 30-day mortality of patients operated on by female surgeons was significantly lower, although the difference was small—adjusted odds ratio of 0.88. Re-admission and complication rates were similar in the two groups (*BMJ* 2017;**359**:j4366).

VIVEK ARYA