Highlights from ECCMID 2019

The 29th European Congress of Clinical Microbiology and Infectious Diseases was held in Amsterdam, Netherlands, April 13–16. Phoebe Hall reports.

With 13 787 attendees from 130 countries, ECCMID 2019 was the largest in the congress' history. Equally impressive was the gender balance, with women making up 50% of speakers (including 44% of invited speakers) and 52% of chairs. With numerous sessions in parallel, it was sadly not possible to attend them all, but there were several highlights.

In a session about pneumococcal vaccines on the first day of the congress, Wendy Watson (Pfizer, Collegeville, PA, USA) presented the findings of a phase 2 trial of Pfizer's 20-valent pneumococcal conjugate vaccine (PCV20). The trial included 444 vaccine-naive, immunocompetent adults aged 60–64 years who were randomly assigned to receive 13-valent pneumococcal conjugate vaccine (PCV13) or PCV20. Rates of injection-site reactions and systemic events were similar between groups, with no safety concerns noted.

Importantly, increases in opsonophagocytic activity titres were detected for all vaccine serotypes at 1 month after PCV20 vaccination, with geometric mean fold rises from baseline of 6·1–68·6 for PCV13 serotypes and 9·0–112·2 for the seven additional serotypes. No formal statistical comparisons were done, making assessing the significance of the findings difficult, but then no correlate of protection exists for adult disease. As an indication of the vaccine's potential, and on the basis of the phase 2 trial results, on Sept 20, 2018, the US Food and Drug Administration granted the vaccine breakthrough therapy status, meaning that its development and review will be expedited. A phase 3 trial (NCT03760146) of the vaccine in adults aged 18 years and older is currently recruiting.

Having been identified by WHO as one of the top ten global health threats of 2019, vaccine hesitancy was a theme of the ECCMID this year, with an oral session on day 3 entirely devoted to the issue. Pierre Tattevin (Centre Hospitalier Universitaire de Rennes, France) described a cross-sectional study to assess influenza vaccine coverage among health-care workers (HCWs) in France. Of 985 HCWs who had face-to-face interviews in 2018, only 330 (34%) reported receiving influenza vaccination for the 2017–18 season. Coverage was highest among doctors and lowest among laboratory technicians and nurse assistants. The main motivator for vaccination was patient protection (28%), while suboptimal efficacy of the vaccine (40%), side-effects (23%), and time or access constraints (7%) were the main barriers. Participants said that better information about benefits or risks, provision of the vaccine at work, and mandatory vaccination would improve uptake.

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Machine learning was another theme of the congress, with proposed applications in routine microbiology diagnostics, monitoring of emerging infectious diseases, and imaging. Mads Lause Mogensen, chief executive officer at Treat Systems (Aalborg, Denmark), spoke of the use of a machine learning model based on a causal probabilistic network (SepsisFinder CPN) to predict mortality among patients with community-acquired pneumonia. Specifically, within a retrospective observational study in 4531 patients, SepsisFinder CPN was used to calculate probability of death within 30 days, and the results were compared with those of commonly used clinical scores. SepsisFinder did significantly better than some of the existing scores, with an area under the receiver operating characteristic curve (AUC) of 0·81, compared with 0·76 for CURB-65, 0·67 for the sequential organ failure assessment (SOFA) score, and 0·64 for the quick SOFA score (all p<0·001), and similarly to the pneumonia severity index (AUC 0·80; p=0·61). External validation of the model is needed to confirm its generalisability.

Finally, in a latebreaker session on day 4, Steven Tong (Royal Melbourne Hospital and University of Melbourne, Australia) reported the results of CAMERA2, a phase 3 trial that tested whether addition of a β-lactam to standard therapy (vancomycin or daptomycin) could improve outcomes for patients in hospital with meticillin-resistant *Staphylococcus aureus* bacteraemia. The planned enrolment was 440 patients, with a composite primary endpoint at 90 days of all-cause mortality, persistent bacteraemia at day 5 or beyond, microbiological relapse, or microbiological treatment failure. However, the study was terminated early after 352 participants had been enrolled because of no evidence of improvement in the primary endpoint but a higher incidence of acute kidney injury in patients receiving the combined treatment (30% *vs* 9% in patients receiving standard care). A post-hoc analysis suggested that acute kidney injury was more common with flucloxacillin than with cefazolin, but the results of the trial warrant temperance in the pursuit of combination therapy.

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