

Discussing vaccines at the 50th ICAAC, Boston

LONDON, UK----20th September 2010----ExpertREACT. VacZine Analytics discusses vaccine highlights at the recent international conference held in Boston 12th-15th September 2010.

Recently the 50th Interscience Conference on Antimicrobial Agents and Chemotherapy (ICAAC) was held in Boston, 12-15th September 2010. Around 10,000 delegates from the world over came together to discuss latest issues and advances within the field of infectious diseases. As usual vaccines and vaccination were dominant within the agenda. **VacZine Analytics** was in attendance at the conference and summarizes some of the key vaccine related topics.

In the opening Keynote Session, which was composed of three unrelated talks, Prof Peter Doherty (University of Melbourne, Australia) discussed the influenza virus and immunity with a particular focus on the interplay of T-cell mediated and humoral immunity in the control of influenza A infections. In particular, virus specific CD8+ cells, the "hitmen" were discussed and their recognition of various influenza virus internal epitopes. The work raises the possibility of novel vaccine based approaches that may also involve broad T cell priming being superior to current limited conventional approaches. Prof Doherty also reminded the audience that in his view the seriousness of the recent H1N1 virus should be downplayed especially as we await the "second wave". In particular H1N1 has caused 10,000 excess deaths and noticeably increased the number of ICU admissions of pregnant women.

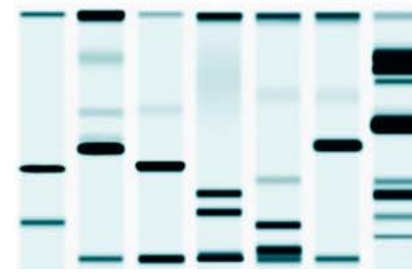
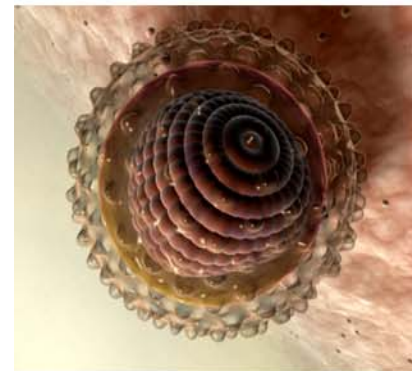
In the Vaccines for Global Health session, hot topics within malaria, tuberculosis, *pneumococcal* and meningococcal A vaccines were discussed with developing world issues high on the agenda. For malaria vaccines, current approaches were discussed with coverage of the most advanced candidate GSK Biologicals RTS,S (pre-erythrocytic) vaccine. RTS,S has now been given to approximately 3000 infants/children (~9000 doses) having a favourable safety profile with its latest Phase III initiated at 11 clinical centres in May 2009. Despite the quickening pace of malaria vaccine development the speaker (Regina Rabinovich) highlighted that only different vaccine approaches including transmission blocking vaccines (TBVs) could achieve the ideal long term goal of malaria eradication. TBVs would theoretically limit the spread of infection by stopping mosquitoes spreading malaria to new hosts after feeding on an infected person. Such vaccines are far less represented in current malaria vaccine R&D although the speaker mentioned candidates such as AnAPN1 being worked upon by the John's Hopkins Bloomberg School of Public Health (JHSPH) and Sabin Vaccines Institute (Sabin).

In the tuberculosis session, Willen Hanekom (Cape Town, South Africa), discussed current TB vaccine development with emphasis on new BCG replacement vaccines (rBCG) and BCG booster vaccines (MVA85A, Aeras-402). The speaker discussed his work on the immune response to various vaccines in terms of a molecular "signature" of various genes being activated and behaving as possible biomarkers of protection. The differential immune response of TB vaccines in infants compared to adults was also covered along with other more logistical/funding challenges of TB vaccine development such as a lack of Phase III testing capacity.

In the Viral Vaccines session cytomegalovirus (CMV), varicella (VZV) and HIV vaccines were covered. Robert Pass (Birmingham, AL) gave an update on CMV vaccine development highlighting current progress to date of AlphaVAX (Novartis Vaccines), Vical and Sanofi Pasteur approaches. The speaker drew attention to latest Vical Phase II data released at the conference regarding a therapeutic DNA vaccine (TransVax, gB + pp65) for control of CMV in hematopoietic cell transplant recipients (HSCT) (1). Data indicate that TransVax can significantly reduce the occurrence, recurrence and duration of CMV viremia episodes by elevation of pp65 and gB specific T-cells being the first CMV therapeutic vaccine to show proof of concept in HSCT patients. Anne Gershon (Columbia Univ, NY) gave a review of varicella vaccine implementation and outcomes. VZV (chickenpox) vaccines have been given to ~50 million US children since 1995 reaching 80% coverage within 5 years of licensure. However, primary vaccine failures in around 15-20% of children have caused persistence of VZV in the community necessitating an updated ACIP recommendation in 2006 for 2 doses (2). Despite this recommendation the speaker drew attention to two VZV outbreaks in Arkansas (2006) (3) and Philadelphia (2006) (4) suggesting that high 2 dose coverage rates are still required.

In the "Hot topics in Vaccines" session, rotavirus, *meningococcal* disease, *pneumococcal* disease and H1N1 vaccines were discussed. Carol Baker (Houston, TX) discussed the US implementation of rotavirus vaccines (notably RV5, Rotateq) which have been recommended for routine vaccination of infants since 2006. The speaker discussed published discharge data (ICD-codes) from 18 states (~49% of total US population) which indicated that vaccine implementation, albeit relatively modest in terms of coverage, had "delayed and diminished" the the rotavirus season for January to June 2008 (5). Furthermore, compared with the median rate for the 2000-2006 rotavirus seasons (101.1 acute gastroenteritis hospitalizations per 10,000 children), the rates of the 2007 and 2008 seasons were 16% and 45% lower respectively. Interestingly the peak of rotavirus now appears in the 0 - 2 months group (prior to vaccination) which has also declined suggesting indirect effects of the vaccine.

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Other rotavirus related talks discussed differential vaccine efficacy of GSK's Rotarix in Malawi versus South Africa (6) and the current status of the PCV-1 (porcine circovirus-1) story in the US (7). Both licensed rotavirus vaccines Rotarix and Rotateq were found to contain PCV-1 (or fragments thereof) early this year, a virus not presumed to cause ill health in humans.

Another talk focused on US epidemiology of *Neisseria meningitidis* disease covered by the Active Bacterial Core (ABC) Surveillance data collected during 1998-2007 (7). During this time 2262 cases of disease were reported of which 11.3% were fatal. The fact that annual incidence of meningococcal disease has decreased ~64% between 1998 to 2007 and, implementation of quadrivalent conjugate vaccine (MVC4) has had no significant decrease on serogroup C or Y disease among 11-19 years in 2006-2007 compared to 2004-2005, raises important questions about future US vaccination strategies. However, serogroup B vaccines were mentioned as a continued priority. Latest data on serogroup B vaccines has been recently discussed elsewhere at the IPNC conference in Banff, Canada which ran simultaneously to ICAAC (8).

Other notable vaccine related talks covered at ICAAC covered serotype-specific hyporesponsiveness to Prevnar (PCV-7) in Israel due to nasopharyngeal carriage of *S.pneumoniae*. This talk raised the possibility that in certain settings the effectiveness of PCV-7 may vary according to carriage – an important implication for the developing world. Other notable talks covered the discussion of the need for vaccine adjuvantation in H1N1 vaccines and finally advances in *Staphylococcal* vaccine development.

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References and Notes:

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