Cost-effectiveness analysis of dengue vaccination in the Philippines

H. Lam1,∗, G.M. Ku 1, D. Wu2, K.J.G. Cheng3, A. Rivera1, B. Tumanan-Mendoza1, M. Alejandria4
1 University of the Philippines Manila, Manila, Philippines
2 Monash University Malaysia Campus, Selangor, Malaysia
3 University of the Philippines Manila, Ermita, Manila, NCR, Philippines
4 University of the Philippines - Philippine General Hospital, Manila, Philippines

**Background:** From years 2001-2010, the Philippines ranked 4th among the ASEAN in annual average reported dengue episodes with 45,409 cases. The WHO aims to achieve 50% reduction in dengue mortality and 25% reduction in morbidity by 2020 through integrating vector control approaches with vaccine introduction. Dengue has yet to be prevented and 20 years of development has finally yielded a candidate vaccine that has reached Phase III efficacy clinical trials: Sanofi Pasteur's dengue vaccine, a recombinant, live, attenuated, tetravalent dengue vaccine (TDV).

**Methods & Materials:** This study aims to assess the cost-effectiveness of different dengue vaccination strategies in the Philippines from both a societal and a public payer's perspective. Coudeville and Garnett’s (2012) dengue dynamic transmission model was populated using Philippine-specific dengue vector, epidemiology, and cost data from literature and records review which were validated through consultations with dengue experts from the field of family medicine, vaccine research, molecular biology, epidemiology, public health, entomology, and infectious diseases.

**Results:** Main results show that over a period of 5 years, conducting a school-based vaccination program targeting nine year-olds for routine vaccination decreases dengue cases and DALYs lost due to dengue relative to status quo by 24% and 26%, respectively. Expanding the vaccination to more children by adding age cohorts close to nine years such as 10 to 11, 10 to 13, 10 to 15, 10 to 17, and 10 to 20 translates to more DALYs averted and less dengue disease costs the government must shoulder.

**Conclusion:** Cost-effectiveness threshold prices following cost-effectiveness definition of less than or equal to 1x GDP per capita for the public payer and societal points of view are found to be 13 USD per dose and 24 USD per dose, respectively. This cost-effectiveness threshold set by the Philippines’ Department of Health is more stringent than the WHO recommended cost-effectiveness thresholds.

http://dx.doi.org/10.1016/j.ijid.2016.02.897

Type: Poster Presentation

Final Abstract Number: 43.160
Session: Poster Session III
Date: Saturday, March 5, 2016
Time: 12:45-14:15
Room: Hall 3 (Posters & Exhibition)
Conclusion: Our results demonstrate that vaccination of camels with MVA-S confers protection against MERS-CoV infection. In addition, induction of MVA specific antibody cross neutralizes camelpox virus, suggesting that MVA-MERS-S can be used as a dual vaccine in dromedary camels.

Acknowledgements: The Authors are employees of Sanofi Pasteur; CYD-TDV trials are funded by Sanofi Pasteur. The vaccine was not licensed, at the time of this abstract submission.

http://dx.doi.org/10.1016/j.ijid.2016.02.899

Type: Poster Presentation

Final Abstract Number: 43.162
Session: Poster Session III
Date: Saturday, March 5, 2016
Time: 12:45-14:15
Room: Hall 3 (Posters & Exhibition)

Integrated analysis of immunogenicity data from 11 dengue vaccine trials across 14 countries at risk for dengue

J. Menezes1, C. Frago1, T. Laot2, D. Chansinghakul1, T. Waritel1,2, B. Zambrano4, A. Boukennooghe1, F. Noriega5
1 Sanofi Pasteur, Singapore, Singapore, Singapore
2 Sanofi Pasteur Philippines, Manila, Philippines
3 Sanofi Pasteur Thailand, Bangkok, Thailand
4 Sanofi Pasteur, Montevideo, Uruguay
5 Sanofi Pasteur US, Swiftwater, USA

Background: Dengue is a mosquito-borne viral infection with a very rapid global expansion during the last 50 years. This disease has become an important public health problem in Asia and Latin America with over half the world’s population at risk. Sanofi Pasteur is developing a recombinant, live, attenuated, tetravalent dengue vaccine (CYD-TDV) for countries at-risk of dengue. The results from CYD-TDV trials are useful to observe the trends in immunogenicity (GMT) titres across various countries.

OBJECTIVES: To assess immunogenicity titres after 3 doses of CYD dengue vaccine in children, adolescents and adults up to 60 years by revisiting pre- and post-vaccination GMTs from Sanofi Pasteur CYD-TDV trials.

Methods & Materials: Dengue neutralizing antibody (Ab) levels were assessed by a plaque neutralization test with a 50% endpoint (PRNT50) for each serotype. In total, 25 clinical studies from Phase I to Phase III have been included in the clinical development plan. Of these 25 clinical studies, the integrated immunogenicity analysis presented here is based on results from 11 trials conducted in 8 Asian countries (Philippines, Indonesia, Malaysia, Vietnam, Thailand, Singapore, Australia, and India) and 6 Latin American countries (Brazil, Colombia, Honduras, Mexico, Peru, and Puerto Rico).

Results: Immune titres increased after 3 doses from baseline, and higher GMTs were observed with increasing age and endemicity in all countries considered at-risk of dengue. Further exploration in older adults in Australia3 vaccinated with 3 doses of CYD-TDV, revealed that both the 18-60 age group (N=655) and the 46-60 age group (N=241) had similar GMTs which were higher than baseline.

Conclusion: Integrated analysis from CYD-TDV trials in children, adolescents and adults up to 60 years of age showed a consistent finding of higher GMTs in the vaccinated arm versus control arm. Subjects who received 3 doses of CYD-TDV elicited a balanced immune response against all four serotypes.


Preliminary immunoinformatics research for prediction the most immunogenic linear and conformational B-cell epitopes of 14-3-3 antigen in echinococcus granulosus

G. Moghaddam1,2, M.M. Pourseif2, Y. Omidi3, H. Daghlighakia2, A. Nemattollahi2, R. Jafari-Jozani3, A. Barzegari1, J. Dehghani4
1 University of Tabriz, Faculty of Agriculture, Tabriz, East Azarbayjan, Iran, Islamic Republic of
2 University of Tabriz, Faculty of Agriculture, Tabriz, Iran, Islamic Republic of
3 Tabriz University of Medical Sciences, Tabriz, Iran, Islamic Republic of
4 Faculty of Veterinary Medicine- University of Tabriz, Tabriz, Iran, Islamic Republic of
5 University of Tabriz, Faculty of Veterinary Science, Tabriz, Iran, Islamic Republic of
6 University of Tabriz, Faculty of Plant Biology, Tabriz, Iran, Islamic Republic of

Background: Cystic Echinococcosis (CE) is one of the most important zoonosis parasite diseases which caused by the larval stage of Echinococcus granulosus (Eg). The Eg14-3-3 protein is a vaccine candidate antigen which exists in different development stages of E. granulosus. The basement of vaccine design strategies is identification the most efficacious epitopes of the antigen. This study presents linear and conformational B cell epitopes of the Eg14-3–3 antigen via computational tools.

Methods & Materials: The protoscoleces (PSC) of E. granulosus was aspirated from infected lungs and livers of slaughtered sheep (Tabriz, Iran) and then DNA samples were extracted. The polymerase chain reaction (PCR) was performed using specific primers (forward: ATGCTTTCCTCAGTAAAGCGCGA and reverse: ATCGGCTTTCGCGGCTTCAG) and basing on the sequence in GenBank (Access No. AY942149). After sequencing the PCR products, our regional Eg14-3–3 sequence was utilized (the sequence of our local Eg14-3–3 shall be published soon). The linear B-cell epitopes were predicted by Bepipred Linear Epitope Prediction algorithm with threshold 0.35. The conformational B-cell epitopes were predicted using a sequence-based server named CBTOPE which uses the support vector machine (SVM) threshold ~0.3, and also the three dimensional (3D) properties of the antigen such as, Relative Solvent Accessibility, Number of Transmembrane Domains and protein tertiary structure prediction. The structural details of Eg14-3–3 which are usable in the epitope-based vaccine design evaluated via SCRATCH Protein Predictor.

Results: The Best linear B-cell epitopes were selected based on their length (<9 amino acids) and score (highest), so that the high scales consist of ATEVAEGDMQTT, DLTPSEYSK, EQKHDG-DAK and TGDERKQASDN. Based on CBTOPE algorithm five high