The role of PDVAC

Objectives of this meeting

Key highlights from the 2014-2015 year for Vaccine Development

Vasee Moorthy MRCP PhD, WHO
Gap in our processes identified: overseeing activities related to upstream vaccine R&D

• “The Product Development for Vaccines Advisory Committee (PDVAC) will provide strategic advice and recommendations to WHO related to vaccines at the Phase 2 stage of clinical evaluation or earlier. The committee’s remit is for disease areas where there is substantial disease burden in low and middle income countries, no vaccines or products currently exist, and there is some ongoing product development activity which may benefit from guidance from WHO. This committee may also have a role where first generation vaccines are licensed but development of improved second generation products is a priority for WHO.”
PDVAC: Scanning the pipeline for vaccines emerging
577 candidate vaccine approaches

110 pathogens

Pipeline Analyses List will change each year
Emerging pathogens included in 2015

24 pathogens
Pathogens screened this year

- MERS
- EV71
- RSV
- HSV
- HIV
- Dengue
- Nipah
- Cikungunya
- Universal influenza
- Norovirus
- Group A Streptococcal
- Group B Streptococcal
- Streptococcus pneumoniae
- Non-typhoidal salmonella
- Paratyphoid fever
- ETEC
- Shigella
- TB
- Malaria
- Campylobacter
- Schistosomiasis
- Leishmaniasis
- Hookworm
- Chagas disease
Background documents

- Status of vaccine research and development for Campylobacter
  pdf, 172kb
- Status of vaccine research and development of vaccines for Chagas disease
  pdf, 165kb
- Status of vaccine research and development of vaccines for Enterotoxigenic Escherichia coli
  pdf, 195kb
- Status of vaccine research and development of vaccines for Streptococcus pyogenes
  pdf, 213kb
- Status of vaccine research and development of vaccines for HIV-1
  pdf, 163kb
- Status of vaccine research and development of vaccines for Herpes Simplex Virus
  pdf, 191kb
- Status of vaccine research and development of vaccines for Human Hookworm infection
  pdf, 2.52Mb
- Status of vaccine research and development of vaccines for Leishmaniasis
  pdf, 223kb
- Status of vaccine research and development of vaccines for Malaria
  pdf, 206kb
- Status of vaccine research and development for Nontyphoidal Salmonelloses
  pdf, 248kb
- Status of vaccine research and development for Norovirus
  pdf, 255kb
- Status of vaccine research and development for Paratyphoid fever
  pdf, 230kb
- Status of vaccine research and development of next-generation Rotavirus vaccines
  pdf, 230kb
- Status of vaccine research and development of vaccines for Schistosomiasis
  pdf, 194kb
- Status of vaccine research and development of vaccines for Shigella
  pdf, 194kb
- Status of vaccine research and development of vaccines for pediatric vaccines for Streptococcus pneumoniae
  pdf, 184kb
- Status of vaccine research and development of vaccines for Tuberculosis
  pdf, 205kb
- Status of vaccine research and development of vaccines for Universal Influenza vaccine
PDVAC: Informing agenda of regulatory and policy functions in WHO
PDVAC: Overseeing TPPs, PPCs
PDVAC: Guidance on critical phase 3 design elements
PDVAC: R&D Roadmaps
Myth
• PDVAC is engaging directly in product development. This could pose conflicts of interests for WHO

Reality
• PDVAC provides strategic advice
• PDVAC does not directly engage in any product development
• As a further firewall, PDVAC and SAGE are entirely independent, and it is only SAGE that can advise WHO on recommendations for use
Myth
• PDVAC’s role is to advocate for particular pathogens

Reality
• WHO does not advocate for any pathogen field over any other
• If pathogens are not highlighted by PDVAC, they may be at an earlier stage, and ongoing research and product advancement remains critical
Myth

- Manufacturers can obtain a free regulatory assessment on the spot through PDVAC

Reality

- WHO can develop consensus on clinical development pathways
- WHO can facilitate scientific consensus which can be helpful for regulators
- All regulatory decisions are made in direct interactions between manufacturers and NRAs
- ECBS develops formal regulatory guidelines; PDVACs consensus building will feed into the ECBS processes
WHO's work in various upstream pathogen areas in 2015:

• RSV highlighted as most likely “big new vaccine” area, with a North America-South America-Africa Phase 3 trial due to start in Q4 2015, and 4 large manufacturers highly engaged, over 30 other RSV vaccine projects in the pipeline
WHO's work in various upstream pathogen areas in 2015:

• Group B Strep highlighted as a pathogen area with substantial disease burden, part of a maternal immunization agenda, likely technical feasibility to develop a vaccine, but only one large manufacturer engaged.

• Group A Strep highlighted as a pathogen area with substantial disease burden, likely technical feasibility to develop a vaccine, but suboptimal industry engagement.
ETEC, Shigella and Norovirus highlighted as potentially promising areas for vaccine development

Other areas will continue to be tracked
Vaccine Development Highlights
2014-2015
Ebola Consortia assembled from August 2014
Phase 1

Phase 2

Phase 3

Years

Licensure submissions
Introductions
First in human / novel vector – High income setting

First Phase 1 in Africa

Large I-RCT trial in Liberia

Large C-RCT trial in Guinea

Large I-RCT trial in Sierra Leone

Interim Results from Ring Vaccination Trial
Lessons from Ebola for PDVAC

• Preclinical assays and models to be within scope
• Emerging pathogen agenda to be included
• Still early to be clear what broader implications will be for Vaccine Development
• Ring Vaccination Design
Is a universal flu vaccine on the horizon?

Hemagglutinin-stem nanoparticles generate heterosubtypic influenza protection

Hadi M Yassine¹,6, Jeffrey C Boyington¹,6, Patrick M McTamney¹,5,6, Chih-Jen Wei¹,5,6, Masaru Kanekiyo¹, Wing-Pui Kong¹, John R Gallagher², Lingshu Wang¹, Yi Zhang¹, M Gordon Joyce¹, Daniel Lingwood¹,5, Syed M Moin¹, Hanne Andersen³, Yoshinobu Okuno⁴, Srinivas S Rao¹,5, Audray K Harris², Peter D Kwong¹, John R Mascola¹, Gary J Nabel¹,5 & Barney S Graham¹

Published Online August 24 2015
Science DOI: 10.1126/science.aac7263

A stable trimeric influenza hemagglutinin stem as a broadly protective immunogen

Antonietta Impagliazzo¹,4, Fin Milder¹,4, Harmjan Kuipers¹,4, Michelle Wagner²,4, Xueyong Zhu³,4, Ryan M. B. Hoffman³,4, Ruud van Meersbergen¹,4, Jeroen Huizingh¹,4, Patrick Wanningen¹,4, Johan Verspui¹,4, Martijn de Man¹,4, Zhaoqing Ding²,4, Adrian Apetri²,4, Başak Kükør¹,4, Eveline Sneekes-Vriese², Danuta Tomkiewicz¹,4, Nick S. Laursen¹,4, Peter S. Lee¹, Anna Zakrzewska¹,4, Liesbeth Dekking¹,4, Jeroen Tolboom¹,4, Lisanno Tottori¹,4, Sandor van Meer¹,4, Wenli Yu³, Wouter Koudstaal¹,4, Jaap Goudsmit¹,4, Andrew B. Ward²,4, Wim Meijberg²,4, Ian A. Wilson²,4, Katarina Radošević²,4
Efficacy and Long-Term Safety of a Dengue Vaccine in Regions of Endemic Disease

Efficacy and safety of RTS,S/AS01 malaria vaccine with or without a booster dose in infants and children in Africa: final results of a phase 3, individually randomised, controlled trial

RTS,S Clinical Trials Partnership

† Members listed at end of paper

Published Online: 23 April 2015

Final results from a pivotal phase 3 malaria vaccine trial

Vasee S Moorthy, Jean-Marie Okwo-Bele

Published Online: 23 April 2015
Summary

- A great deal of progress this year
- Incorporation of emerging pathogens
- Advice on how to maximize benefits in product development for public health outcomes, focusing on where the need is greatest