

ARVAC: ICAVT ALUMNI REFRESHER VACCINOLOGY COURSE 2023

COURSE OBJECTIVES

General objectives

The course aims at providing a refresher course and latest updates on immunization and vaccines to the alumni of the various existing advanced vaccinology training courses worldwide.

The International Collaboration of Advanced Vaccinology Training is a partnership of 34 vaccinology courses worldwide (www.icavt.org). Those trainings have different history, background, content and audiences but they all have trained, over the years, altogether, thousands of experts in the area of vaccinology.

However, alumni from those various trainings have constantly requested to attend again the trainings they attended initially or other ones to update their knowledge as the vaccinology area is in constant evolution and changes thanks to a strong research pipeline and a rich and diverse implementation community.

Instead of allowing alumni to attend the trainings they already completed again or attend another course and therefore reduce the number of new experts trained, ICAVT members have agreed to jointly develop a single common refresher course dedicated to their alumni. This course will provide annually the alumni from various background with lectures on the last updates on immunization and on new topics key for their daily activities.

The alumni refresher vaccinology course will provide updates in the following key areas of vaccinology: immunology, vaccine development, clinical trials, regulatory processes, vaccine-specific issues including new vaccines, vaccination strategies and policies, programme implementation, humanitarian emergencies, social, economic, political and ethical issues, financing, and communications. It will also provide lectures on new areas of the discipline uncovered by previous courses.

The course is limited in duration but focused on update relevant to alumni of all courses around the world.

By the end of the course, participants should be able to an updated knowledge on:

- (1) the last development in immunology,
- (2) the existing vaccines (combination, antigens included...),
- (3) the innovations and new platforms used to deliver traditional and new vaccines,
- (4) the immunization programs policies and strategies at global, regional, national, and local levels,
- (5) the regulatory processes for vaccines,
- (6) the vaccines production and quality control,
- (7) the role of communities and individuals for vaccines demands.

The ICAVT Alumni Refresher Vaccinology Course will help the audience to translate the updated scientific and epidemiological evidence into effective policy development and program implementation related to vaccines and immunization.

ICAVT Refresher Vaccinology Course also aims to update the scientific foundation of the alumni and their knowledge in vaccinology areas outside of their current expertise, showing the multifaceted constantly evolving aspects of vaccinology, allowing them to explore novel technologies and think more globally and holistically, and providing them with a unique skill set to develop their leadership in vaccinology.

Finally, this Refresher Vaccinology Course represents a unique networking opportunity where participants can form valuable and sustainable professional relationships beyond those developed during their initial vaccinology course and serves as a platform where problems to professional challenges can be shared, and solutions identified.

Specific objectives for each training activity (lectures, debates, interactive sessions, small group exercises and parallel workshops/sessions)

DAY 1

Update on new and evolving vaccine development platforms

- Describe the different technologies that are currently being applied in the research setting to address the different challenges in vaccine development. Examples will include vaccine design, manufacturing, delivery, stabilization and evaluation.
- Describe the stage of development of different new vaccines/vaccine technologies.

Update on combination vaccines and strain(s) adaptations

- Describe the critical elements of immunization schedule and the recent evolution of vaccines combinations including the conditional elements and challenges faced by immunization schedules around the world.
- Describe the basics of serotype replacement and its consequences on the vaccine strain adaptation.
- Describe why understanding the population biology of pathogens (viruses or bacteria) matters including its role in selecting vaccine antigens and in assessing vaccine effectiveness.
- Describe the biological, environmental, and population basis of variability in pathogens over time and in different geographical locations: the role of mutation, adaptability, and transmission dynamics.
- Discuss why understanding the evolution and adaptation of pathogens is important in the context of vaccine direct and indirect protection, emphasizing how genomics, environmental, and population surveillance and sequencing have revolutionized epidemiology.

Update on Malaria vaccines

- Describe the different targets/life cycle stages for malaria vaccines and explain how immune responses to different parts of the life cycle have different clinical implications.
- Identify the key role of non-vaccine measures in malaria control.
- Discuss the current malaria vaccine characteristics.
- Discuss the current status of the malaria vaccine pipeline.

DAY 2

PANEL: What's new on the vaccine policy and country support front?

- Describe the current global targets, achievements, and challenges with respect to immunization coverage worldwide.
- Discuss how to increase vaccination coverage and options to simplify and facilitate vaccine delivery.
 - Describe the latest recommendations for immunization and vaccines from the WHO (the Strategic Advisory Group of Experts on Immunization, SAGE).
 - Describe the latest policies for support to countries immunization programs at WHO.
 - Describe the latest policies for support to countries immunization programs at GAVI, the vaccine alliance.
 - Describe the latest policies for support to countries immunization programs at UNICEF.
 - Describe the perspectives and latest policies for support to countries immunization programs from a donor's perspective, illustrated by the Bill & Melinda Gates Foundation.

COVID vaccination and booster (including vaccination of children)

- Describe the existing Covid vaccines with focus on their effectiveness and brief description of safety profile.
- Describe the pipeline of new Covid vaccines.
- Discuss the optimization of vaccination schedules including the recommendations for boosters and vaccination of children.

Update on Cholera vaccines

- Describe the current situation of the cholera outbreaks.
- Describe the existing cholera vaccines with their characteristic and immunogenicity.
- Describe the situation of the cholera vaccines stockpile and the production capacity perspectives.
- Describe the other vaccines currently under development and the possible future strategies for cholera outbreaks prevention and response.

Update on Typhoid vaccines

- Describe the current situation of the typhoid outbreaks.
- Describe the existing typhoid vaccines with their characteristic and immunogenicity.
- Describe the situation of the typhoid vaccines stockpile and the production capacity perspectives.
- Describe the other vaccines currently under development and the possible future strategies for typhoid outbreaks prevention and response.

DAY 3

PANEL: Update on regulatory processes

- Describe the recent evolution of vaccine regulations overtime and the status of National Regulatory Authorities (NRAs) functionality globally.
- Explain the role and functioning of NRAs.
- Describe the different stages of review and regulation of vaccines (investigational new drug application, biologics license application, post-licensure).
- Explain the roles and complexity of regulatory decision-making by involving key players (regulatory and industry) in licensing of vaccines.
- Discuss one or two key vaccine development/implementation issues from the viewpoint of how this will influence/affect decisions made by regulators/manufacturers.

Vaccine production and quality control

- Describe the different steps involved in the manufacturing of vaccines and the complexity of quality control during and after manufacture including the regulatory environment.
- Explain the complexity of any process modification during manufacture and its real impact on potential shortages of vaccines.
- Explain the perspective from the large pharmaceutical industry with respect to relative importance and value of vaccines in the competitive global health care industry, with specific emphasis on corporate social responsibility goals, portfolio management (and its alignment with the corporate strategy, vision, and mission), and productivity.
- Discuss common valuation metrics used by large pharmaceutical companies in decision-making processes to discern vaccine development projects that warrant further investment.

Update Monkeypox vaccines

- Describe the current situation of the monkeypox outbreaks.
- Describe the existing monkeypox vaccines with their characteristic and immunogenicity.
- Describe the situation of the monkeypox vaccines stockpile and the production capacity perspectives.
- Describe the other vaccines currently under development and the possible future strategies for monkeypox outbreaks prevention and response.

Update on RSV vaccines

- Describe the current situation of the RSV circulation.

- Describe the concept of structure-based vaccine design.
- Describe the RSV vaccines currently under development and the possible future strategies for prevention and response.

Update on vaccines adjuvants

- Explain why adjuvants are included in vaccines and the benefits and risks they bring.
- Discuss the different adjuvants that are used or in development, and the relative pros and cons to each of these adjuvants.
- Discuss which adjuvants to consider when developing vaccines.
- Discuss the recent innovations for adjuvants.