

# Vaccination and infection control in a global perspective

## Assignment 1 – Implementing a vaccination programme

### Background

Vaccines and vaccination programmes have altered the epidemiology of many infectious diseases worldwide.

### Assignment

You are a group of physicians brought together to examine the design and impact of national vaccination programmes, and will **give a 8 minute presentation (a maximum of 10 slides)** about this topic. Begin by discussing the major objectives of a vaccination programme, and the main criteria that should be considered before introducing a new vaccine into a vaccination programme. Compare the vaccination programmes of two countries represented in your group, and one low-income country of your choice. What are the main similarities and differences? How do we monitor the impact of a vaccine? Choose one vaccine to show the impact of the vaccine on the epidemiology of the disease in these countries. Finally, reflect on key challenges low- and middle-income countries may face as part of implementing a vaccination programme.

### Some suggestions for resources:

1. Greenwood B. The contribution of vaccination to global health: past, present and future. *Philos Trans R Soc Lond, B, Biol Sci.* Available at: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4024226/>
2. Anderson RM, May RM. Immunisation and herd immunity. *Lancet.* 1990 Mar 17;335(8690):641–5. Available at: <http://www.sciencedirect.com/science/article/pii/014067369090420A?via%3Dihub>
3. Andre FE, Booy R, Bock HL, Clemens J, Datta SK, John TJ, et al. Vaccination greatly reduces disease, disability, death and inequity worldwide. *Bull World Health Organ.* 2008 Feb;86(2):140–6. Available at: <http://www.who.int/bulletin/volumes/86/2/07-040089/en/>

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## Assignment 2 – Tackling vaccine hesitancy globally

### Background

Recent outbreaks of Covid 19 have provoked heated debates about vaccinations throughout international media. Many countries are working to identify the most effective strategies for addressing vaccine hesitancy.

### Assignment

You are a group of physicians from different countries assigned by your respective ministries of health. Your assignment here is to prepare **8-minute presentation (a maximum of 10 slides)** to the World Health Organization and recommend effective strategies for addressing vaccine hesitancy. What is vaccine hesitancy? Identify examples of vaccine hesitancy in two countries represented in your group. What are the most common claims for not accepting covid-19 vaccine? Discuss and recommend strategies different actors (physicians, school nurses, and other health workers, public health physicians, policymakers, others) may take to address vaccine hesitancy/vaccine skepticism.

### Some suggestions for resources:

1. **Vaccine hesitancy.** [http://www.who.int/immunization/programmes\\_systems/vaccine\\_hesitancy/en/](http://www.who.int/immunization/programmes_systems/vaccine_hesitancy/en/)
2. Vaccine hesitancy: A growing challenge for immunization programmes. <http://www.who.int/mediacentre/news/releases/2015/vaccine-hesitancy/en/>
3. Vaccine hesitancy: definitions and dimensions. [http://www.sabin.org/sites/sabin.org/files/1-vaccine\\_hesitancy\\_final\\_draft\\_7\\_jan26\\_2017.pdf](http://www.sabin.org/sites/sabin.org/files/1-vaccine_hesitancy_final_draft_7_jan26_2017.pdf)
4. Kessels R, Luyten J, Tubeuf S. Willingness to get vaccinated against Covid-19 and attitudes toward vaccination in general. *Vaccine*. 2021 Jul 30;39(33):4716-4722. doi: 10.1016/j.vaccine.2021.05.069. Epub 2021 May 26. PMID: 34119349; PMCID: PMC8149196.
- 5.
6. COCONEL Group. A future vaccination campaign against COVID-19 at risk of vaccine hesitancy and politicisation. *Lancet Infect Dis*. 2020 Jul;20(7):769-770. doi: 10.1016/S1473-3099(20)30426-6. Epub 2020 May 20. PMID: 32445713; PMCID: PMC7239623.
7. Dror AA, Eisenbach N, Taiber S, Morozov NG, Mizrahi M, Zigron A, Srouji S, Sela E. Vaccine hesitancy: the next challenge in the fight against COVID-19. *Eur J Epidemiol*. 2020 Aug;35(8):775-779. doi: 10.1007/s10654-020-00671-y. Epub 2020 Aug 12. PMID: 32785815.
8. Strategies for addressing vaccine hesitancy – a systematic review. [http://www.who.int/immunization/sage/meetings/2014/october/3\\_SAGE\\_WG\\_Strategies\\_addressing\\_vaccine\\_hesitancy\\_2014.pdf](http://www.who.int/immunization/sage/meetings/2014/october/3_SAGE_WG_Strategies_addressing_vaccine_hesitancy_2014.pdf)
9. **No vaccine for the scaremongers.** <http://www.who.int/bulletin/volumes/86/6/08-030608/en/> -
10. **Countering antivaccination attitudes.** <http://www.pnas.org/content/112/33/10321>
11. The Vaccine confidence project: <http://www.vaccineconfidence.org/>
12. The State of Vaccine Confidence 2016: Global Insights Through a 67-Country Survey <http://www.sciencedirect.com/science/article/pii/S235239641630398X?via%3Dihub>

# Vaccination and infection control in a global perspective

## Assignment 3 – Global polio eradication

### Background

Poliomyelitis (polio) is a highly infectious viral disease. Polio has no cure, and the disease can only be prevented by immunization. The Global Polio Eradication initiative was launched in 1988 to complete the eradication and containment of the polio virus.

### Assignment

You are a group of physicians convened by the WHO to review the progress of the global polio eradication efforts, and are tasked to give a **8 minute presentation (a maximum of 10 slides)** on the topic.

Your presentation should briefly (max 1 slide) introduce polio, including how it is transmitted, clinical consequences, and the vaccines available for protecting against polio. The main part of the presentation should describe the progress of the global polio eradication efforts since 1988. When was the last cases of polio observed in countries represented in your group, and what role did vaccination play in eliminating the disease? Finally, discuss what characterize those countries that have yet been able to eradicate polio, and the major challenges that needs to be addressed to achieve eradication.

### Some suggestions for resources:

1. <http://polioeradication.org/>
2. Aylward B, Tangermann R. The global polio eradication initiative: lessons learned and prospects for success. *Vaccine*. 2011 Dec 30;29 Suppl 4:D80-85. Available at: [https://linkinghub.elsevier.com/retrieve/pii/S0264-410X\(11\)01599-4](https://linkinghub.elsevier.com/retrieve/pii/S0264-410X(11)01599-4)
3. Ending polio in conflict zones. Available at: <http://polioeradication.org/news-post/ending-polio-in-conflict-zones/>
4. Bhutta ZA. Conflict and polio: winning the polio wars. *JAMA*. 2013 Sep 4;310(9):905–6. Available at: <http://jamanetwork.com/journals/jama/fullarticle/1734711>

# Vaccination and infection control in a global perspective

## Assignment 4 - Malaria: Control, elimination, eradication?

### Background

Malaria is a parasitic infection caused by the *Plasmodium* genus. It is estimated to cause 216 million cases and 655 000 deaths annually, with more than 85% of malaria cases and 90% of malaria deaths occurring in sub-Saharan Africa. Most cases are caused by the species *Plasmodium falciparum* and *Plasmodium vivax*, while almost all deaths are caused by falciparum malaria. The sustainable development goal for health (Goal 3: Good health and well-being) has among its targets to “By 2030, end the epidemics of AIDS, tuberculosis, **malaria** and neglected tropical diseases and combat hepatitis, water-borne diseases and other communicable diseases”. In the past century, more than 100 countries eliminated malaria. As of April 2016, 35 countries were categorized as malaria-eliminating countries, defined as a country in the process of moving from controlled low-endemic malaria to elimination. Globally, eradication of malaria is lifted as an aspiration.

### Assignment

You are a group of physicians and public health professionals convened as part of a scientific advisory committee by the World Health Organization, to advise about the steps that needs to be taken to effectively address malaria towards 2030. Your assignment is to **give a 8 minute presentation (a maximum of 10 slides)** about this topic. Provide an overview of the global status of malaria on different continents. Identify key populations that are affected, the major challenges to diagnosis and treatment of malaria in low-resource settings, and strategies for controlling different modes of malaria transmission. Choose one or several low- or middle-income countries to illustrate these points. Finally, describe major future challenges for reducing malaria in the future.

### Some suggestions for resources:

1. Malaria fact sheet. <http://www.who.int/mediacentre/factsheets/fs094/en/>

*WHO's fact sheet gives a short overview about malaria, but is alone insufficient to help you adequately respond to the question.*

2. New report signals country progress in the path to malaria elimination.  
<http://www.who.int/mediacentre/news/releases/2015/report-malaria-elimination/en/>

*This news release summarize the major findings of the World Malaria Report 2015. The entire report is available here: <http://www.who.int/malaria/publications/world-malaria-report-2015/report/en/>*

3. Malaria. White et al. Lancet, August 2014. [http://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(13\)60024-0/abstract](http://www.thelancet.com/journals/lancet/article/PIIS0140-6736(13)60024-0/abstract)
4. The path to eradication: a progress report on the malaria-eliminating countries. Newby et al. Lancet, April 2016. [http://www.thelancet.com/pdfs/journals/lancet/PIIS0140-6736\(16\)00230-0.pdf](http://www.thelancet.com/pdfs/journals/lancet/PIIS0140-6736(16)00230-0.pdf)

*The World Malaria Report and the Lancet articles are long, dense and detailed, and contain a lot of information not necessarily relevant to the assignment. Reading from cover to cover is not recommended, but instead you should seek to extract information relevant to the assignment. Additional searching for literature relevant to the country of your choice may be needed.*

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## Assignment 5 – Tuberculosis: a socioeconomic disease

### Background

Tuberculosis (TB) remains a worldwide global health threat, being second only to HIV/AIDS as the major cause of death to an infectious agent. Over 95% of TB deaths occur in low- and middle-income countries, and TB causes ¼ of all HIV-related deaths. The WHO estimates that 9 million people fell ill with TB in 2013. Of these, 1.5 million died, including 80 000 HIV-negative children.

### Assignment

You are a group of physicians that the WHO has requested to review how TB has been addressed over the past century and identify lessons for addressing this disease in the future. Your assignment is to prepare a **8 minute presentation (a maximum of 10 slides)** of your findings.

Examine changes in TB burden over the past century by using two countries represented in your group, and one low-income country. Try to suggest explanations for why TB rates have differed between high-income countries, and low- and middle-income countries. Finally, use Dr. Farmer's account of three patient stories from Chapter 7 "The Consumption of the Poor" from his book *Infections and Inequalities: The Modern Plagues* to shed light on the major social risk factors for TB, the population groups that have higher risk of contracting TB, and strategies for addressing TB globally in the 21<sup>st</sup> century.

### Some suggestions for resources:

1. Tuberculosis (TB). <http://www.who.int/tb/en/>
2. Ch. 7 – The Consumption of the Poor. In *Infections and Inequalities: The Modern Plagues*, Paul Farmer. (chapter available at *Mine Studier on the day of the crash course in global health*)
3. What is the relationship between TB and poverty?  
[http://www.stoptb.org/assets/documents/events/world\\_tb\\_day/2002/1TheRelationship.pdf](http://www.stoptb.org/assets/documents/events/world_tb_day/2002/1TheRelationship.pdf).
4. Tuberculosis control in vulnerable groups. <http://www.who.int/bulletin/volumes/86/9/06-038737/en/>