



Educating Vaccination Competence Web-based Course

Syllabus



















	Educating Vaccination Competence (EDUVAC)
Type of course	Undergraduate
ECTS	3
Duration	Depends on each Higher Education Institute
Method	Online, self-study
Objectives	The web-based course's objective is to enhance the quality and relevance of the learning about vaccinations and strengthen the knowledge, skills and attitudes of students in vaccinating different population groups and counselling people of different age groups and their families.
Previous student	This course is suitable for undergraduate health sciences students who
requirements	have basic knowledge of physiology, anatomy, and health care clinical skills. Students should have a B2 level in English language.

Background

Vaccines are one of public health's most cost-effective interventions (World Health Organization [WHO], 2018a). Immunisation should be recognized as a core component of the human right to health and an individual, community and governmental responsibility (WHO, 2013).

In any case, health professionals who implement vaccinations should be authorized to administer vaccines, have distinctive personal qualities, theoretical knowledge and practical skills (Nikula et al., 2009). In addition, there are several studies that support the need to educate future health professionals on vacciantions. For example, Bralic & Pivalica (2019) have concluded that evidence-based education, especially the experience and attitudes of all health professionals, as potential educators of the population, is the foundation for successful vaccination, and thus, it is









essential to strengthen the quality in vaccination education in order to overcome the vaccine hesitancy issue. Health professionals are important in communicating information about vaccination and are trusted by the public (Public Health England, 2018). Moreover, improving vaccine confidence among healthcare workers is crucial as they have been shown to have the potential to influence patient vaccination uptake (European Centre for Disease prevention and Control [ECDC], 2015a), as well as health professionals' high level of knowledge and a positive attitude to immunisation have a positive impact in high vaccination (Simone et al., 2012).

Finally, it has been supported that vaccinations competency among health professionals should be ensured (Sakellari, 2019) and therefore, curricula and training programmes should aim that health professionals will (a) readily understand and support vaccination with minimal introduction and will not need to subsequently revisit the topic in their continual professional development, and (b) have the skills to improve attitudes to vaccination among the general population effectively (Yaqub et al., 2014). Hence, the current web-based course was developed within the Erasmus+funded project "EDUVAC". The web-based course is in English language using the Moodle platform. It is developed by a collaboration among University of West Attica (Greece), Metropolia University of Applied Sciences (Finland), Trnava University (Slovakia), University of Vic (Spain) and University of Modena and Reggio Emilia (Italy).

EDUVAC web-based course sections rationale

The EDUVAC web-based course is developed in sections based on the review of the literature and reports by health authorities, such as the WHO, the ECDC, the Centers for Disease Control and Prevention [CDC] and national (public) health authorities among the partner countries. The review of the literature was conducted using different databases (e.g. PubMed, ScienceDirect, Scopus, CINAHL) and the internet (see literature review list at the end of the syllabus). Furthermore, examples and guidelines about how a syllabus should be, were reviewed.









Thus, the project team after reviewing the literature and discussing thoroughly, concluded to include the following six evidence-based sections and a glossary:

- 1. Vaccination basics
- 2. Vaccination procedure
- 3. Counseling people
- 4. Vaccinating refugees, migrants, and asylum seekers
- 5. Vaccinating travellers and people on the move
- 6. People who hesitate to take vaccines and anti-vaccination groups

7. Glossary

As mentioned above, all these sections which form the content of the web-based course were decided based on relevant literature. The sections "Vaccination basics" has been supported by the WHO webpages dedicated to immunization and the Global Vaccine plan by the WHO (2018b). The section "Vaccination procedure" was decided, taking as an example, among other sources, the different material produced by the Finnish Institute of National Health and Welfare (2020a) and the WHO (2015a) recommendations on reducing pain at the time of vaccination, and the "Pink Book" by CDC (2015). The section "Counseling people" was decided to be included based on the WHO (2017b).

An important part of the course is "Vaccinating refugees, migrants and asylum seekers" which is a population group with special needs and it is supported by the literature and EU policies (e.g. WHO-UNHCR-UNICEF, 2015b, Rechel et al., 2011). Other population group that has extra vaccination needs are travelers and people on the move with the CDC, NHS (UK) and the WHO dedicating specific part its webpages for this purpose in addition to the rich publications (Allen et









al., 2016; Avni et al., 2018; Brent et al., 2018; Dolan et al., 2014; Hagmann et al., 2017; Hamer et al., 2018; Kamata et al., 2017a, 2017b; Lee et al., 2017; Rossi et al., 2012; Tan et al., 2019; Zafer et al. 2018).

Furthermore, the vaccine hesitancy and anti-vaccination groups section because this is a new movement across the world and there is rich literature on this (e.g. Berry et al., 2017; Chung et al., 2017; Greenberg et al., 2017; Hussain et al., 2018; Opel et al., 2013), and future health professionals need to be competent in order to address this challenge.

Finally, a glossary was recognised as a source to be included to help students understand some of the terms used in this web-based course (CDC, 2020b; International Organization for Migration [IOM], 2011; Rokotustieto, 2020).

EDUVAC web-based course objectives

The web-based course's objective is to enhance the quality and relevance of the learning about vaccinations and strengthen the knowledge, skills, and attitudes of students in vaccinating different population groups and counselling clients of different age groups and their families.

Learning outcomes

At the completion of the vaccination education, students will:

- have knowledge on immunity system and vaccination
- have knowledge on evidence-based practice in vaccinations
- have knowledge on the different vaccination needs among special population groups
- be able to screen and identify migrant people on vaccination needs and exposures to contagious diseases.
- be able to provide information, counselling, and support about vaccines to migrants









- be able to access vaccination needs and vaccination coverage of different population groups
- be aware of different vaccination schedules in different countries and be able to find the
 different schedules for different populations target groups
- be able to administrate vaccines in theory
- will develop their critical thinking and will raise their awareness and knowledge on different cultural backgrounds and social values
- be aware of the ethical issues raised in the vaccination healthcare provision
- will improve their communication skills, and be familiar with different learning/teaching means
- will improve their English skills
- be able communicate and study in English in international student groups

At the description of each section, below, the learning outcomes of each section are described in more details.

Learning resources and activities

EDUVAC web-based course has produced different learning material in order to promote learning and motivate students in their learning process. The resources and activities included in EDUVAC web-based course include:

- PowerPoint presentations that allow students to study a topic through the PowerPoint
 presentation. There are for example presentations where they provide information in a
 text or other more animated that illustrate something that needs to be performed by
 students.
- Documents that provide knowledge and may also refer to other sources by for example links to online scientific sources/websites for studying or further reading if the students would like to deepen more their knowledge on a subject.
- Videos include illustrative information and they can be an effective study method for









students who can identify themselves as health care providers/vaccinators in those

- Self-tests with which students can test their knowledge after they study a topic. The students get immediate feedback and they can repeat the test several times.
- Assignments are interactive or reflective to help the students learn more and go deeper in a topic. Students should first study the topic, read the instructions, and then do the assignment.
- Portfolio Assignments are those that teachers need to evaluate. Students firstly read the instructions and then they work on the assignment. There are 5 assignments for the portfolio. Students should complete all assignments required for the portfolio in order to be evaluated. Teachers should give a written feedback on the portfolio assignments through the e-learning platform (Moodle). They can allow students to have a second try on portfolio assignments if they haven't succeeded.

EDUVAC web - based course sections

1. Vaccination Basics

<u>Description of the section:</u>

- Why is vaccination important
 - Why vaccination is important for global health
 - Effectiveness of vaccination programme
- What is immunisation
 - Immunisation-what it is
- Who is a competent vaccinator?
 - Who is vaccinator?
 - Article: vaccination competence
 - Article: Factors strengthening and weakening vaccination competence









- Vaccination programs in different countries
- Vaccination coverage in different countries
 - Self-tests and assignments

Self-test: Immunization 1

Self-test: Immunization 2

Self-test: Immunity

Assignment: Vaccinator

Assignment: Vaccination coverage

Further reading

Further reading about Vaccinations basics

Learning outcomes

At the completion of the section, students will:

- be aware of importance of vaccination
- be aware of qualities of competent vaccinator
- be aware of the National Vaccination Programs (NIPs) in different countries
- have knowledge on immunity system and vaccination

Learning resources and activities:

- power point presentation (in pdf format)
- self-tests
- pdf documents
- assignment(portfolio assignment)*









2. Vaccination procedure

Description of the section:

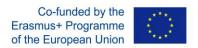
- Ethics
- Vaccination step by step
- How to administer vaccines in practice
 - Contraindications for vaccinations
 - How to hold a child during vaccination
 - Vaccination sites and administering vaccines
 - Subcutaneous (SC) vaccination technique: steps and video
 - Intramuscular (IM) vaccination technique: steps and video
 - Make the vaccination as comfortable as possible
 - Adverse events
 - Storage and the cold chain of vaccination
 - Self-tests and assignments
 - Self-test: Storage and the cold chain of vaccination
 - Assignment: Vaccination procedure
 - Self-test: Vaccination procedure
 - Further reading
 - Further reading about Vaccination procedure

<u>Learning outcomes</u>

At the completion of the section, students will:

- have knowledge on vaccines and immunization, development of the vaccines and the way
 the
 - immune system and vaccines work, vaccine preventable diseases and population health
- have knowledge on evidence-based practice in vaccinations
- have knowledge on different vaccination techniques









- be able to administer vaccines in theory
- be aware of ethical issues
- be aware of the storage and cold chain of vaccines
- have knowledge and be able to identify and manage adverse effects of vaccinations
- be able to record, monitor and survey of vaccination

Learning resources and activities:

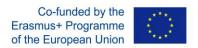
- power point presentation (in pdf format)
- technique videos and imagesself-tests
- pdf documents
- assignment

3. Counselling people

Description of the section:

- What is good counselling
 - What constitutes counselling?
 - Elements of good counselling
- Ethics and counselling
- Counselling different population groups
- Immunocompromised people
 - Counselling parents about their child's vaccinations
 - Counselling adolescents
 - Counselling adults
 - Video: Example of vaccination counselling situation
- Self-test
 - Self-test about Counselling
- Further reading









Further reading about Counselling people

Learning outcomes

At the completion of the section, students will know:

- how to address clients' concerns about vaccination
- how to receive and give verbal and nonverbal client references
- how to improve and streamline decision making
- how to be aware of ethical issues

Learning resources and activities:

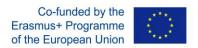
- self-test
- power point presentation (in pdf format)
- video
- pdf documents

4. Vaccinating refugees, migrants, and asylum seekers

Description of the section:

- Introduction
- Ethical issues to consider
- Epidemiological data
- Screen for vaccination and controlling diseases
 - Self-tests and assignments
 - Self-test
 - Optional Activity
 - Further reading
 - Further reading about Refugees, migrants and asylum seeker









Learning outcomes

At the completion of the section, students will:

- be able to screen and identify migrant people on vaccination needs and exposures to contagious diseases
- be able to provide information, counselling, and support about vaccines to migrants
- be able to refer to other experts and/or health specialists when necessary
- be able to care people, respecting dignity, freedom, equality, health perception, without any distinction
- be aware of ethical issues
- be able to follow the guidelines and the evidence based public health recommendation
- be aware of health as a fundamental right

Learning resources and activities:

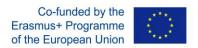
- power point presentation (in pdf format)
- narrated power point video
- self-test(portfolio assignment)*

5. Vaccination travellers and people on the move

Description of the section:

- Pretravel consultation
- Self-evaluation questionnaire
- Traveller's Health history
- Immunisation condition before departure
- Vaccination for travellers
 - Vaccination for travellers
 - International Certificate of Vaccination or Prophylaxis









- Other travellers' groups
- Self-tests and assignments

Self-test: Travellers vaccination

Assignment: Travellers' vaccinations

- Further reading
 - Further reading about Vaccinating travellers and people on the move

Learning outcomes

At the completion of the section, students will:

- be able to access vaccination needs and vaccination coverage of travellers and people on the move
- be aware of pre-travel consultation
- be aware of ethical issues
- be familiar with the use of sources needed for proper consultation (e.g. CDC, ECDC, WHO)
- have knowledge and be able on history taking and vaccination history in order to provide proper vaccination consultation
- have knowledge on vaccination of travellers with special medical problems or special conditions
- have knowledge on ethical and cultural issues regarding vaccinating travelers and people on the move

Learning resources and activities:

- power point presentation
- power point presentation (in pdf format)
- narrated power point presentations
- video
- assignment
- self-test









(portfolio assignment)*

6. Clients who hesitate to take vaccines and anti-vaccination groups

Description of the section:

- A description of the phenomenon
 - Vaccine hesitancy and antivaccination phenomenon
 - Antivaccination movement
 - Vaccine hesitancy among healthcare workers
- How communication can influence vaccine uptake and address vaccine hesitancy
 - Communication strategies
 - Face to face interventions to address hesitancy and motivational interview
 - How to talk to anti-vaxxers
- Self-tests
 - Self-test
 - Self-test
- Further reading
 - Further reding about People who hesitate to take vaccines and anti-vaccination groups

Learning outcomes

At the completion of the section, students will:

- have knowledge about the vaccine hesitancy and anti-vaccination movement phenomenon
- have knowledge on the different vaccination needs among special population groups
- be aware of ethical issues
- be able to communicate and provide consultation to different population groups by applying all the theoretical background knowledge obtained









Learning resources and activities:

- PowerPoint presentation
- Interactive video
- self-test
- pdf documents(portfolio assignment)*

*The portfolio assignments are not included in Moodle platform however, they are available for teachers upon request (Please contact us by email: eduvac@uniwa.gr).

7. Glossary

In this section, the students can find several useful terms explained and clarified in order to help their learning.

Students' evaluation and grading system

Students will be evaluated through five assignments included in their portfolio. All assignments should be successfully completed in order for the students to pass the course. Grading system is based on pass or fail or according to local grades (depending on the University system). This webbased course leads to 3 ECTS.









Relevant literature

Scientific articles, reports, guidelines, and other scientific sources reviewed to help the EDUVAC project team to develop this web-based course

- Allen, J. E., & Patel, D. (2016). Enquiries to the United Kingdom National Travel Advice Line by healthcare professionals regarding immunocompromised travelers. *Journal of Travel Medicine*, *23*(3), taw016. https://doi.org/10.1093/jtm/taw016
- Austvoll-Dahlgren, A., & Helseth, S. (2010). What informs parents' decision-making about childhood vaccinations? *Journal of Advanced Nursing*, *66*(11), 2421–2430. https://doi.org/10.1111/j.1365-2648.2010.05403.x
- Avni, C., Stienlauf, S., Meltzer, E., Sidi, Y., Schwartz, E., & Leshem, E. (2018). Region-Specific, Life-Threatening Diseases among International Travelers from Israel, 2004–2015. *Emerging Infectious Diseases*, 24(4), 790–793. https://doi.org/10.3201/eid2404.171542
- Benartzi, S., Beshears, J., Milkman, K. L., Sunstein, C. R., Thaler, R. H., Shankar, M., Tucker-Ray, W., Congdon, W. J., & Galing, S. (2017). Should Governments Invest More in Nudging?.

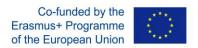
 Psychological science, 28(8), 1041–1055. https://doi.org/10.1177/0956797617702501
- Berry, N. J., Henry, A., Danchin, M., Trevena, L. J., Willaby, H. W., & Leask, J. (2017). When parents won't vaccinate their children: a qualitative investigation of australian primary care providers' experiences. *BMC Pediatrics*, *17*(1). https://doi.org/10.1186/s12887-017-0783-2
- Bralic, I., Pivalica, K. (2019). The undergraduate education about vaccination and vaccine hesitancy *Archives of Disease in Childhood, 104*(suppl.3),A301-A302. https://adc.bmj.com/content/104/Suppl_3/A301.3
- Brent, S. E., Watts, A., Cetron, M., German, M., Kraemer, M. U., Bogoch, I. I., ... Khan, K. (2018).

 International travel between global urban centres vulnerable to yellow fever transmission.

 Bulletin of the World Health Organization, 96(5), 343-354B.

 https://doi.org/10.2471/blt.17.205658









- Butcher, H. K., Bulechek, G. M., Dochterman, J. M., & Wagner, C. M. (Eds.). (2018). *Nursing Interventions Classification (NIC)* (7th ed.). St. Louis. MO. Elsevier. Retrieved from: https://www.scribd.com/document/403886002/Gloria-M-Bulechek-Howard-K-Butcher-Joanne-M-McCloskey-Dochterman-Cheryl-Wagner-Nursing-Interventions-Classification-Mosby-2012-pdf
- Campinha-Bacote, J. (2002). The Process of Cultural Competence in the Delivery of Healthcare Services: A Model of Care. *Journal of Transcultural Nursing*, *13*(3), 181–184. https://doi.org/10.1177/10459602013003003
- Cattaneo, M., L. (2006). Elementi di base della clinica transculturale. In: *Quaderno di formazione* alla clinica transculturale. Milano: Comune di Milano e Cooperativa Sociale Crinali onlus, 9-23.
- Centers for Disease Control and Prevention. (2015). General recommendations on immunization.

 In Hamborsky J, Kroger A, Wolfe S. (eds). *The Pink Book, Epidemiology and Prevention of Vaccine-Preventable Diseases* (13th ed). Washington D.C. Public Health Foundation.
- Centers for Disease Control and Prevention. (2016). *Vaccines and Preventable Diseases*. https://www.cdc.gov/vaccines/vpd/index.html
- Centers for Disease Control and Prevention. (2019a). 2020 *Yellow Book. Travelers' Health*. Retrieved September 16, 2020, from http://wwwnc.cdc.gov/travel/page/yellowbook-home
- Centers for Disease Control and Prevention. (2019b). *How to Hold Your Child During Vaccinations*. https://www.cdc.gov/vaccines/parents/visit/holds-factsheet.html?CDC_AA_refVal=https%3A%2F%2Fwww.cdc.gov%2Fvaccines%2Fparents%2Ftools%2Fholds-factsheet.html
- Centers for Disease Control and Prevention (2019c). Immunology and Vaccine-Preventable

 Diseases Pink Book Principles of Vaccination.

 https://www.cdc.gov/vaccines/pubs/pinkbook/downloads/prinvac.pdf
- Centers for Disease Control and Prevention. (2020a). *Travelers' Health*. Retrieved May 15, 2020, from https://wwwnc.cdc.gov/travel/
- Centers for Disease Control and Prevention. (2020b). Vaccine Glossary of terms. Glossary Vaccines









- and Immunization. https://www.cdc.gov/vaccines/terms/glossary.html
- Chaves, T. do S. S., Monteiro, W. M., Alves, J. R., Lacerda, M., & Lopes, M. H. (2017). Pre-travel malaria chemoprophylaxis counselling in a public travel medicine clinic in São Paulo, Brazil. *Malaria Journal*, 16(1). https://doi.org/10.1186/s12936-017-1713-3
- Chiarenza, A. (2012). Developments in the concept of "cultural competence." In D. Ingleby, A. Chiarenza, W. Devillé, & I. Kotsioni (Eds.), *Inequalities in health care for migrants and ethnic minorities* (pp. 66–81). Garant: Antwerp.
- Chung, Y., Schamel, J., Fisher, A., & Frew, P. M. (2017). Influences on Immunization Decision-Making among US Parents of Young Children. *Maternal and Child Health Journal*, *21*(12), 2178–2187. https://doi.org/10.1007/s10995-017-2336-6
- Council of Europe, European Union. (2020). *T-Kit 4: Intercultural Learning*. Retrieved from: https://pjp-eu.coe.int/en/web/youth-partnership/t-kit-4-intercultural-learning
- De Vito, E., Parente, P., de Waure, C., Poscia, A., & Ricciardi, W. (2017). *A review of evidence on equitable delivery, access and utilization of immunization services for migrants and refugees in the WHO European Region*. Retrieved from WHO Regional Office for Europe website: http://www.euro.who.int/__data/assets/pdf_file/0005/351644/HEN53.pdf?ua=1
- Declaration of Alma-Ata. (1978). *The Lancet, 312*(8098), 1040–1041. https://doi.org/10.1016/s0140-6736(78)92354-1
- Dolan, S. B., Jentes, E. S., Sotir, M. J., Han, P., Blanton, J. D., Rao, S. R., ... Ryan, E. T. (2014). Pre-Exposure Rabies Vaccination among US International Travelers: Findings from the Global TravEpiNet Consortium. *Vector-Borne and Zoonotic Diseases*, *14*(2), 160–167. https://doi.org/10.1089/vbz.2013.1381
- European Agency for Fundamental Rights. (2020). Asylum, migration and borders. Retrieved from https://fra.europa.eu/en/theme/asylum-migration-borders/overviews/focus-healthcare
- European Centre for Disease Prevention and Control. (2015a). Vaccine hesitancy among healthcare workers and their patients in Europe A qualitative study. Stockholm. https://www.ecdc.europa.eu/sites/default/files/media/en/publications/Publications/vaccine-hesitancy-among-healthcare-workers.pdf









- European Centre for Disease prevention and Control. (2015b). ECDC Technical document.

 Infectious diseases of specific relevance to newly-arrived migrants in the EU/EEA.

 https://www.ecdc.europa.eu/sites/default/files/media/en/publications/Publications/Infect ious-diseases-of-specific-relevance-to-newly-arrived-migrants-in-EU-EEA.pdf
- European Centre for Disease prevention and Control. (2013). Vaccine schedules for individual European countries and specific age groups. Retrieved January 17, 2020, from https://www.ecdc.europa.eu/en/immunisation-vaccines/EU-vaccination-schedules
- European Centre for Disease prevention and Control. (2015c). Rapid literature review on motivating hesitant population groups in Europe to vaccinate. Stockholm: ECDC. https://www.ecdc.europa.eu/sites/portal/files/media/en/publications/Publications/vaccin ation-motivating-hesistant-populations-europe-literature-review.pdf
- European Centre for Disease prevention and Control. (2016). *Let's talk about hesitancy*.

 Stockholm:

 ECDC.

 https://www.ecdc.europa.eu/sites/portal/files/media/en/publications/Publications/lets-talk-about-hesitancy-vaccination-guide.pdf
- European Centre for Disease prevention and Control. (2017). Surveillance Atlas of Infectious Diseases. https://www.ecdc.europa.eu/en/surveillance-atlas-infectious-diseases
- European Centre for Disease prevention and Control. (2018a). Public health guidance on screening and vaccination for infectious diseases in newly arrived migrants within the EU/EEA.

 Stockholm:

 ECDC.

 https://www.ecdc.europa.eu/sites/default/files/documents/Public%20health%20guidance
 %20on%20screening%20and%20vaccination%20of%20migrants%20in%20the%20EU%20EE
 A.pdf
- European Centre for Disease prevention and Control. (2018b). Designing and implementing and immunization information system. A handbook for those involved in the design, implementation or management of immunization information systems. Stockholm. E.C.D.C. https://www.ecdc.europa.eu/sites/portal/files/documents/designing-implementing-immunisation-information-system_0.pdf









- European Centre for Disease prevention and Control. (2019a). *Monthly measles and rubella monitoring*
 - https://www.ecdc.europa.eu/sites/default/files/documents/measels-rubella-monthly-report-january-2020.pdf
- European Centre for Disease prevention and Control. (2019b). Factsheet about meningococcal disease. https://www.ecdc.europa.eu/en/meningococcal-disease/factsheet
- European Centre for Disease prevention and Control. (2019c). Vaccination coverage for the second dose measles-containing vaccine, [map] EU/EEA, 2017. Retrieved October 21, 2020, from https://www.ecdc.europa.eu/en/publications-data/vaccination-coverage-second-dose-measles-containing-vaccine-eueea-2017
- Fadda, M., Depping, M. K., & Schulz, P. J. (2015). Addressing issues of vaccination literacy and psychological empowerment in the measles-mumps-rubella (MMR) vaccination decision-making: a qualitative study. *BMC Public Health*, *15*(1). https://doi.org/10.1186/s12889-015-2200-9
- Fadda, M., Calimberti E., Carraro, V. & Schulz, PJ. (2016). What are parents' perspectives on psychological empowerment in the MMR vaccination decision? A focus group study. *BMJ Open*, 6(4). https://doi.org/10.1136/bmjopen-2015-010773
- Finnish Institute of National Health and Welfare (2020a). *Vaccination techniques*. https://thl.fi/fi/web/infektiotaudit-ja-rokotukset/tietoa-rokotuksista/rokottamisen-vaiheet/rokotustekniikat
- Finnish Institute of National Health and Welfare (2020b). *Vaccination coverage*. https://thl.fi/en/web/vaccination/vaccination-coverage
- FRA European Union Agency for Fundamental Rights (2016). Fundamental rights report. https://fra.europa.eu/en/publication/2016/fundamental-rights-report-2016
- Giambi, C., Del Manso, M., Dalla Zuanna, T., Riccardo, F., Bella, A., Caporali, M. G., ... Declich, S. (2019). National immunization strategies targeting migrants in six European countries. *Vaccine*, *37*(32), 4610–4617. https://doi.org/10.1016/j.vaccine.2018.01.060
- Giambi, C., Del Manso, M., Dente, M., Napoli, C., Montaño-Remacha, C., Riccardo, F., & Declich, S.







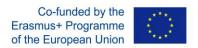


- (2017). Immunization Strategies Targeting Newly Arrived Migrants in Non-EU Countries of the Mediterranean Basin and Black Sea. *International Journal of Environmental Research and Public Health*, *14*(5), 459. https://doi.org/10.3390/ijerph14050459
- GOV.UK. (2014, July 31). Assessing new patients from overseas: migrant health guide. https://www.gov.uk/guidance/assessing-new-patients-from-overseas-migrant-health-guide
- Greenberg, J., Dubé, E., & Driedger, M. (2017). Vaccine Hesitancy: In Search of the Risk Communication Comfort Zone. *PLoS Currents* Outbreaks. https://doi.org/10.1371/currents.outbreaks.0561a011117a1d1f9596e24949e8690b
- Hadaye, R. S., Shastri, S., & Lavangare, S. R. (2018). A cross-sectional study to assess the awareness and practices related to adult immunization among nursing students in a metropolitan city.

 Journal of Education and Health Promotion, 7, 129.

 https://doi.org/10.4103/jehp.jehp_55_18
- Hagmann, S. H. F., Leshem, E., Fischer, P. R., Stauffer, W. M., Barnett, E. D., & Christenson, J. C. (2014). Preparing Children for International Travel: Need for Training and Pediatric-Focused Research. *Journal of Travel Medicine*, *21*(6), 377–383. https://doi.org/10.1111/jtm.12155
- Hagmann, S. H. F., Rao, S. R., LaRocque, R. C., Erskine, S., Jentes, E. S., Walker, A. T., ... Ryan, E. T. (2017). Travel Characteristics and Pretravel Health Care Among Pregnant or Breastfeeding U.S. Women Preparing for International Travel. *Obstetrics & Gynecology*, *130*(6), 1357–1365. https://doi.org/10.1097/aog.00000000000002360
- Hamer, D. H., Angelo, K., Caumes, E., van Genderen, P. J. J., Florescu, S. A., Popescu, C. P., ... Schlagenhauf, P. (2018). Fatal Yellow Fever in Travelers to Brazil, 2018. MMWR. Morbidity and Mortality Weekly Report, 67(11), 340–341. https://doi.org/10.15585/mmwr.mm6711e1
- Hammer, M. R., Bennett, M. J., & Wiseman, R. (2003). Measuring intercultural sensitivity: The intercultural development inventory. *International Journal of Intercultural Relations*, *27*(4), 421–443. https://doi.org/10.1016/s0147-1767(03)00032-4
- Henrikson, N. B., Opel, D. J., Grothaus, L., Nelson, J., Scrol, A., Dunn, J., Faubion, T., Roberts, M.,









- Marcuse, E. K., & Grossman, D. C. (2015). Physician Communication Training and Parental Vaccine Hesitancy: A Randomized Trial. *Pediatrics*, 136(1), 70–79. https://doi.org/10.1542/peds.2014-3199
- Heywood, A. E., Nothdurft, H., Tessier, D., Moodley, M., Rombo, L., Marano, C., & De Moerlooze, L. (2016). Pre-travel advice, attitudes and hepatitis A and B vaccination rates among travellers from seven countries†. *Journal of Travel Medicine*, 24(1), taw069. https://doi.org/10.1093/jtm/taw069
- Hofstetter, A. M., Robinson, J. D., Lepere, K., Cunningham, M., Etsekson, N., & Opel, D. J. (2017).

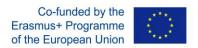
 Clinician-parent discussions about influenza vaccination of children and their association with vaccine acceptance. *Vaccine*, *35*(20), 2709–2715. https://doi.org/10.1016/j.vaccine.2017.03.077
- Hussain, A., Ali, S., Ahmed, M., Hussain, S. (2018). The Anti-vaccination Movement: A Regression in Modern Medicine. *Cureus*, 10(7): e2919 https://doi.org/10.7759/cureus.2919
- International Organization for Migration. (2011). *Glossary on migration (2nded)*. https://publications.iom.int/system/files/pdf/iml25 1.pdf
- International Organization for Migration. (2015). *World Migration Report 2015*. Retrieved from https://www.iom.int/world-migration-report-2015
- Jadhav, E. D., Winkler, D. L., & Anderson, B. S. (2018). Vaccination Perceptions of College Students:

 With and without Vaccination Waiver. *Frontiers in public health*, 6, 36.

 https://doi.org/10.3389/fpubh.2018.00036
- Kamata, K., Birrer, R. B., & Tokuda, Y. (2017a). Travel medicine: Part 1-The basics. *Journal of General and Family Medicine*, 18(2), 52–55. https://doi.org/10.1002/jgf2.39
- Kamata, K., Birrer, R. B., & Tokuda, Y. (2017b). Travel medicine: Part 2-Special situations. *Journal of General and Family Medicine*, *18*(3), 114–117. https://doi.org/10.1002/jgf2.40
- Kempe, A., O'Leary, S. T., Kennedy, A., Crane, L. A., Allison, M. A., Beaty, B. L., Stokley, S. (2015).

 Physician Response to Parental Requests to Spread Out the Recommended Vaccine
 Schedule. *Pediatrics*, 135(4), 666–677. https://doi.org/10.1542/peds.2014-3474
- Lee, T. K., Hutter, J. N., Masel, J., Joya, C., & Whitman, T. J. (2017). Guidelines for the prevention of









- travel-associated illness in older adults. *Tropical Diseases, Travel Medicine and Vaccines,* 3(1). https://doi.org/10.1186/s40794-017-0054-0
- Lemos, C., Ramirez, R., Ordobas, M., Guibert, D. H., Sanz, J. C., Garcia, L., & Martinez Navarro, J. F. (2004). New features of rubella in Spain: the evidence of an outbreak. *Eurosurveillance*, 9(4), 19–20. https://doi.org/10.2807/esm.09.04.00463-en
- Lown, B. A., Chen, L. H., Han, P. V., Jentes, E. S., Wilson, M. E., Benoit, C. M., ... Barnett, E. D. (2014). Preferences and Decision Needs of Boston-Area Travelers to Countries With Risk of Yellow Fever Virus Transmission: Implications for Health Care Providers. *Journal of Travel Medicine*, *21*(4), 266–271. https://doi.org/10.1111/jtm.12119
- McLenon, J., & Rogers, M. (2019). The fear of needles: A systematic review and meta-analysis. *Journal of Advanced Nursing*, 75(1), 30–42. https://doi.org/10.1111/jan.13818
- Ministry of Social Affairs and Health. (2020). *Vaccinations*. Retrieved November 25, 2020, from https://stm.fi/en/vaccinations
- Mipatrini, D., Stefanelli, P., Severoni, S., & Rezza, G. (2017). Vaccinations in migrants and refugees:
 a challenge for European health systems. A systematic review of current scientific evidence. *Pathogens and Global Health*, 111(2), 59–68. https://doi.org/10.1080/20477724.2017.1281374
- Nations, U. (2019). UNSD *Demographic and Social Statistics*. Retrieved from Un.org website: https://unstats.un.org/unsd/demographic-social/index.cshtml
- Neilson, A. A., & Mayer, C. A. (2010). Yellow fever prevention in travellers. *Australian Family Physician*, 39(8), 570–573. Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/20877751
- Nelson, N. P., Link-Gelles, R., Hofmeister, M. G., Romero, J. R., Moore, K. L., Ward, J. W., & Schillie, S. F. (2018). Update: Recommendations of the Advisory Committee on Immunization Practices for Use of Hepatitis A Vaccine for Postexposure Prophylaxis and for Preexposure Prophylaxis for International Travel. MMWR. Morbidity and Mortality Weekly Report, 67(43), 1216–1220. https://doi.org/10.15585/mmwr.mm6743a5
- Nglazi, M. D., Bekker, L. G., Wood, R., Hussey, G. D., & Wiysonge, C. S. (2013). Mobile phone text









- messaging for promoting adherence to anti-tuberculosis treatment: a systematic review. BMC infectious diseases, 13, 566. https://doi.org/10.1186/1471-2334-13-566
- N.H.S Choices. (2018). *Overview-Travel vaccinations*. Retrieved June 16, 2020, from https://www.nhs.uk/conditions/travel-vaccinations/
- Nikula, A., Hupli, M., Rapola, S., Leino-Kilpi ,H. (2009) . Vaccination competence. *Public Health Nursing*, 26(2), 173–182. https://doi.org/10.1111/j.1525-1446.2009.00768.x.
- Nikula, A., Nohynek, H., Puukka, P., & Leino-Kilpi, H. (2011). Vaccination Competence of Public Health Nurses. *Public Health Nursing*, *28*(6), 533–542. https://doi.org/10.1111/j.1525-1446.2011.00943.x
- Nikula, A., Puukka, P., & Leino-Kilpi, H. (2012). Vaccination competence of graduating public health nurse students and nurses. *Nurse Education Today*, *32*(8), 850–856. https://doi.org/10.1016/j.nedt.2011.10.008
- Opel, D. J., Heritage, J., Taylor, J. A., Mangione-Smith, R., Salas, H. S., DeVere, V., ... Robinson, J. D. (2013). The Architecture of Provider-Parent Vaccine Discussions at Health Supervision Visits. *PEDIATRICS*, *132*(6), 1037–1046. https://doi.org/10.1542/peds.2013-2037
- Opel, D. J., Robinson, J. D., Heritage, J., Korfiatis, C., Taylor, J. A., & Mangione-Smith, R. (2012). Characterizing providers' immunization communication practices during health supervision visits with vaccine-hesitant parents: A pilot study. *Vaccine*, *30*(7), 1269–1275. https://doi.org/10.1016/j.vaccine.2011.12.129
- Pérez-Molina, J. A., Álvarez-Martínez, M. J., & Molina, I. (2016). Medical care for refugees: A question of ethics and public health. *Enfermedades Infecciosas y Microbiología Clínica*, 34(2), 79–82. https://doi.org/10.1016/j.eimc.2015.12.007
- Pottie, K., Greenaway, C., Feightner, J., Welch, V., Swinkels, H., Rashid, M., ... Tugwell, P. (2010). Evidence-based clinical guidelines for immigrants and refugees. *Canadian Medical*









- Association Journal, 183(12), E824-E925. https://doi.org/10.1503/cmaj.090313
- Public Health England. (2012). *Immunisation procedures. The Green Book*. Retrieved from https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment data/file/147915/Green-Book-Chapter-4.pdf
- Public Health England. (2013). *Immunisation against infectious disease*. https://www.gov.uk/government/collections/immunisation-against-infectious-disease-the-green-book
- Public Health England (2018). *National minimum standards and core curriculum for immunisation*training for registered healthcare practitioners.

 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment

 data/file/679824/Training standards and core curriculum immunisation.pdf
- Rechel, B., Mladovsky, Ph., Devillé, W., Rijks, B., Petrova-Benedict, R., McKee, M. (2011). *Migration and health in the European Union*. Open University Press. Retrieved from https://www.euro.who.int/ data/assets/pdf file/0019/161560/e96458.pdf
- Rodrigues, K. M. de P., & Moreira, B. M. (2018). Preventing diseases in round-the-world travelers: a contemporary challenge for travel medicine advice. *Revista Da Sociedade Brasileira de Medicina Tropical*, *51*(2), 125–132. https://doi.org/10.1590/0037-8682-0418-2017
- Rokotustieto.fi. (2018). *Basic information on vaccines*. Rokotustieto.fi. https://www.rokotustieto.fi/en/basic-information-vaccines
- Rokotustieto.fi. (2020). *Vaccination glossary*. Rokotustieto.fi. https://www.rokotustieto.fi/en/basic-information-vaccines/vaccination-glossary
- Rossi, I. A., & Genton, B. (2012). The Reliability of Pre-travel History to Decide on Appropriate Counseling and Vaccinations: A Prospective Study. *Journal of Travel Medicine*, *19*(5), 284–288. https://doi.org/10.1111/j.1708-8305.2012.00618.x
- Rull, M., Masson, S., Peyraud, N., Simonelli, M., Ventura, A., Dorion, C., ... Cigleneki, I. (2018). The new WHO decision-making framework on vaccine use in acute humanitarian emergencies:
 MSF experience in Minkaman, South Sudan. Conflict and Health, 12(1).
 https://doi.org/10.1186/s13031-018-0147-z









- Sakamoto, Y., Yamaguchi, T., Yamamoto, N., & Nishiura, H. (2018). Modeling the elevated risk of yellow fever among travelers visiting Brazil, 2018. *Theoretical Biology and Medical Modelling*, *15*(1). https://doi.org/10.1186/s12976-018-0081-1
- Sakellari, E. (2019). The need to develop health professionals' vaccination competence.

 *International Journal of Caring Sciences 12(2) 591. Retrieved from http://www.internationaljournalofcaringsciences.org/docs/1_editorial_12_2.pdf
- Šálek, J., Čelko, A. M., & Dáňová, J. (2020). Vaccination Perception and Attitude among Undergraduate Medical and Teacher Education Students at Charles University, Prague, Czech Republic. Vaccines, 8(1), 136. https://doi.org/10.3390/vaccines8010136
- Serra, L. C., York, L. J., Gamil, A., Balmer, P., & Webber, C. (2018). A Review of Meningococcal Disease and Vaccination Recommendations for Travelers. *Infectious Diseases and Therapy*, 7(2), 219–234. https://doi.org/10.1007/s40121-018-0196-z
- Simone, B., Carrillo-Santisteve P., Lopalco, P.L. (2012). Healthcare workers' role in keeping MMR vaccination uptake high in Europe: a review of evidence. *Euro Surveillance*, 17(26): pii=20206. https://doi.org/10.2807/ese.17.26.20206-en
- Smeti, P., Pavli, A., Katerelos, P., & Maltezou, H. C. (2014). Typhoid Vaccination for International Travelers From Greece Visiting Developing Countries. *Journal of Travel Medicine*, *21*(2), 99–103. https://doi.org/10.1111/jtm.12076
- Statistic Division, U.N. (2017). *UNSD Demographic and Social Statistics*. Retrieved from https://unstats.un.org/unsd/demographic-social/products/dyb/dyb_2017/
- Tan, E. M., Marcelin, J. R., & Virk, A. (2019). Pre-travel counseling for immunocompromised travelers: A 12-year single-center retrospective review. *Infection, Disease & Health, 24*(1), 13–22. https://doi.org/10.1016/j.idh.2018.09.083
- Tan, E. M., St. Sauver, J. L., & Sia, I. G. (2018). Impact of pre-travel consultation on clinical management and outcomes of travelers' diarrhea: a retrospective cohort study. *Tropical Diseases, Travel Medicine and Vaccines*, *4*(1). https://doi.org/10.1186/s40794-018-0076-2
- United Kingdom. Government UK. (2017). Contraindications and special considerations, chapter 6.

 In Ramsay, M.(ed) *Immunisation against infectious disease. The Green Book.*









- https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment _data/file/655225/Greenbook_chapter_6.pdf
- United Nations. (1969). Convention Relating to the Status of Refugees. *The American Journal of International Law, 63*(2), 389. https://doi.org/10.2307/2197458
- United Nations High Commissioner for Refugees. (2017). *Global Trends Forced Displacement in 2017*. https://www.unhcr.org/5b27be547.pdf
- Vaccines.GOV. (2020). *Who and When.* Retrieved December 20, 2020, from https://www.vaccines.gov/who_and_when
- Vanderslott, S., Dadonait, B., & Roser, M. (2015). *Vaccination. Our World in Data*. Retrieved from https://ourworldindata.org/vaccination
- Vorsters, A., Tack, S., Hendrickx, G., Vladimirova, N., Bonanni, P., Pistol, A., Metlicar, T., Pasquin, M. J., Mayer, M. A., Aronsson, B., Heijbel, H., & Van Damme, P. (2010). A summer school on vaccinology: Responding to identified gaps in pre-service immunisation training of future health care workers. *Vaccine*, 28(9), 2053–2059. https://doi.org/10.1016/j.vaccine.2009.12.033
- Walldorf, J. A., Date, K. A., Sreenivasan, N., Harris, J. B., & Hyde, T. B. (2017). Lessons Learned from Emergency Response Vaccination Efforts for Cholera, Typhoid, Yellow Fever, and Ebola. *Emerging Infectious Diseases*, *23*(13). https://doi.org/10.3201/eid2313.170550
- World Health Organization. (2013). *Global vaccine action plan 2011- 2020.*https://www.who.int/immunization/global_va

 ccine_action_plan/GVAP_doc_2011_2020/en
- World Health Organization. (2014). CISID The Computerized Information System for Infectious Diseases. http://data.euro.who.int/cisid/
- World Health Organization. (2015a). WHO recommendations on reducing pain at the time of vaccination: WHO position paper. Weekly epidemiological record. 39, 505–516 https://www.who.int/wer/2015/wer9039.pdf?ua=1
- World Health Organization. (2015b). WHO, UNICEF and UNHCR call for equitable access to vaccines for refugees and migrants. http://www.euro.who.int/en/health-









- topics/communicable-diseases/poliomyelitis/news/news/2015/11/who,-unicef-and-unhcr-call-for-equitable-access-to-vaccines-for-refugees-and-migrants
- World Health Organization- United Nations High Commissioner for Refugees United Nations International Children's Emergency Fund. (2015c). *Joint Statement on general principles on vaccination of refugees, asylum-seekers and migrants in the WHO European Region*. https://data2.unhcr.org/en/documents/download/46488
- World Health Organization. (2016a). *Infectious diseases*. http://www.emro.who.int/health-topics/infectious-diseases/index.html
- World Health Organization. (2016b). Why is vaccination important for addressing antibiotic resistance? https://www.who.int/features/qa/vaccination-antibiotic-resistance/en/
- World Health Organization. (2017a). Managing pain during vaccine administration. A training module for healthworkers. https://www.who.int/immunization/programmes_systems/TrainingModule_PainManage ment final.pptx
- World Health Organization. (2017b): "Vaccination and trust. How concerns arise and the role of communication in mitigating crises".

 http://www.euro.who.int/ data/assets/pdf file/0004/329647/Vaccines-and-trust.PDF
- World Health Organization. (2018a). *Immunization, Vaccines and Biologicals*. Retrieved January 13, 2020, from https://www.who.int/teams/immunization-vaccines-and-biologicals
- World Health Organization. (2018b). Global Vaccine Action Plan Monitoring, Evaluation and Accountability: Secretariat Annual Report 2018. https://www.who.int/immunization/global_vaccine_action_plan/web_gvap_secretariat_report_2018.pdf?ua=1; 2018
- World Health Organization. (2018c). Summary of the WHO Position Paper on Typhoid vaccines:

 WHO position paper—March 2018.

 https://www.who.int/immunization/policy/position_papers/PP_typhoid_2018_summary.p

 df
- World Health Organization. (2018d). Vaccination requirements and recommendations for









- international travellers, including yellow fever and malaria. https://www.who.int/ith/ith-country-list.pdf
- World Health Organization. (2018e). Assessment report of the Global Vaccine Action Plan.

 Strategic Advisory Group of Experts on Immunization. Geneva: World Health Organization;

 2018 (WHO/IVB/18.11). Licence: CC BY-NC-SA 3.0.

 https://www.who.int/immunization/global_vaccine_action_plan/SAGE_GVAP_Assessment

 _Report_2018_EN.pdf?ua=1
- World Health Organization. (2018f). Herd immunity. Fighting measles is a shared responsibility. https://www.euro.who.int/__data/assets/pdf_file/0003/365178/herd-immunity-eiw2018-eng.pdf
- World Health Organization. (2020a). *Welcome WHO Vaccine Safety Basics.* https://vaccine-safety-training.org/home.html
- World Health Organization. (2020b). *International travel and health.* Retrieved from https://www.who.int/publications/i/item/9789241580472
- World Health Organization. (2020c). Immunization coverage. https://www.who.int/en/news-room/fact-sheets/detail/immunization-coverage
- World Health Organization. (2020d). WHO vaccine-preventable diseases: monitoring system. 2019 global summary. http://apps.who.int/immunization monitoring/globalsummary
- World Health Organization. (2021a). Vaccines and immunization. Retrieved February 5, 2021, from http://www.euro.who.int/en/health-topics/disease-prevention/vaccines-and-immunization
- World Health Organization. (2021b). *Vaccines and immunization: What is vaccination?*. Retrieved February 27, 2021, from https://www.who.int/news-room/q-a-detail/vaccines-and-immunization-what-is-vaccination?adgroupsurvey={adgroupsurvey}&gclid=CjwKCAiAp4KCBhB6EiwAxRxbpJL6Rw-
 - Ginq5xNJc5MwyQZW9YuJgd20lQpSgUzVExxme4UkeJI1cFhoC_-cQAvD_BwE
- Yaita, K., Yahara, K., Hamada, N., Sakai, Y., Iwahashi, J., Masunaga, K., & Watanabe, H. (2018).

 Typhoid Vaccination among Japanese Travelers to South Asia and the Factors Associated







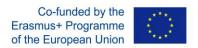


- with Compliance. *Internal Medicine*, *57*(8), 1071–1074. https://doi.org/10.2169/internalmedicine.9405-17
- Yaqub, O., Castle-Clarke, S., Sevdalis, N., & Chataway, J. (2014). Attitudes to vaccination: a critical review. *Social science & medicine* (1982), 112, 1–11. https://doi.org/10.1016/j.socscimed.2014.04.018
- Zafer, N., Dulong, C., Rahman, A., Tashani, M., Alfelali, M., Alqahtani, A., S., Barasheed, O., Emamian, M., H., & Rashid H. (2018). Acute respiratory tract infection symptoms and the uptake of dual influenza and pneumococcal vaccines among Hajj pilgrims. *International Maritime Health*, 69(4), 278–284. https://doi.org/10.5603/imh.2018.0044
- Zavadska, D., Anca, I., Andre, F., Bakir, M., Chlibek, R., Čižman, M., Ivaskeviciene, I., Mangarov, A., Mészner, Z., Pokorn M., Prymula R., Richter D., Salman N., Šimurka, P., Tamm, E., Tešović, G., Urbancikova, I., & Usonis, V. (2013). Recommendations for tick-borne encephalitis vaccination from the Central European Vaccination Awareness Group (CEVAG). *Human Vaccines & Immunotherapeutics*, 9(2), 362–374. https://doi.org/10.4161/hv.22766

Relevant peer reviewed journals

- Vaccine
- Vaccine Reports
- European Journal of Immunology
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- Tropical Diseases, Travel Medicine and Vaccines
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- International Journal of Vaccines and Immunization
- International Journal of Vaccines and Research
- International Journal of Vaccines and Vaccination
- Journal of Immunology Research









- Journal of Vaccines and Clinical Trials
- Journal of Vaccines and Immunology
- Journal of Vaccines, Immunology and Immunopathology
- Journal of Vaccines and Vaccinations
- SM Vaccines and Vaccination Journal
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