European Exam in Medical Microbiology (EEMM)

Mission:

- Harmonize specialty training in Medical Microbiology
- Facilitate professional mobility across Europe
- Based on UEMS curriculum

EUROPEAN UNION OF MEDICAL SPECIALISTS

The advocate of medical specialists

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- Union Européenne des Médecins Spécialistes (Euroopa Meditsiinispetsialistide Ühendus)
- Euroopa riiklikke arstide erialaseltse koondav organisatsioon (sh Eesti Arstide Liit)
- 43 erialasektsiooni, sh Medical Microbiology ja Laboratory Medicine

Peamised eesmärgid:

- arstide väljaõppe ühtlustamine üle Euroopa (residentuur, täiendõpe, CME)
- kutsekvalifikatsioonide vastastikune tunnustamine
- arstide huvide esindamine Euroopa Liidu tervishoiupoliitikate kujundamisel
- spetsialistide vaba liikumise (free movement) võimaldamine ELi siseselt

Ajalugu

2008 – UEMS Medical Microbiology sektsiooni asutamine
2017 – Curriculumi koostamine
2020 – Planeeritud pilooteksam (COVID)
2021 – Pilooteksam online’is
2022 – Esimene eksam (Pariis)
2024 – Teine eksam online’is

28.11.2026: järgmine eksam

Eksami statistikat

- 2021 pilooteksam: 97 osalejat, ei olnud hindeline
- 2022 1. eksam: 17 osalejat, 53% läbisid
- 2024 2. eksam: 41 osalejat, 71% läbisid

Kokku lubatakse igale eksamile 50 osalejat

Osalejad riikide kaupa (N=155)

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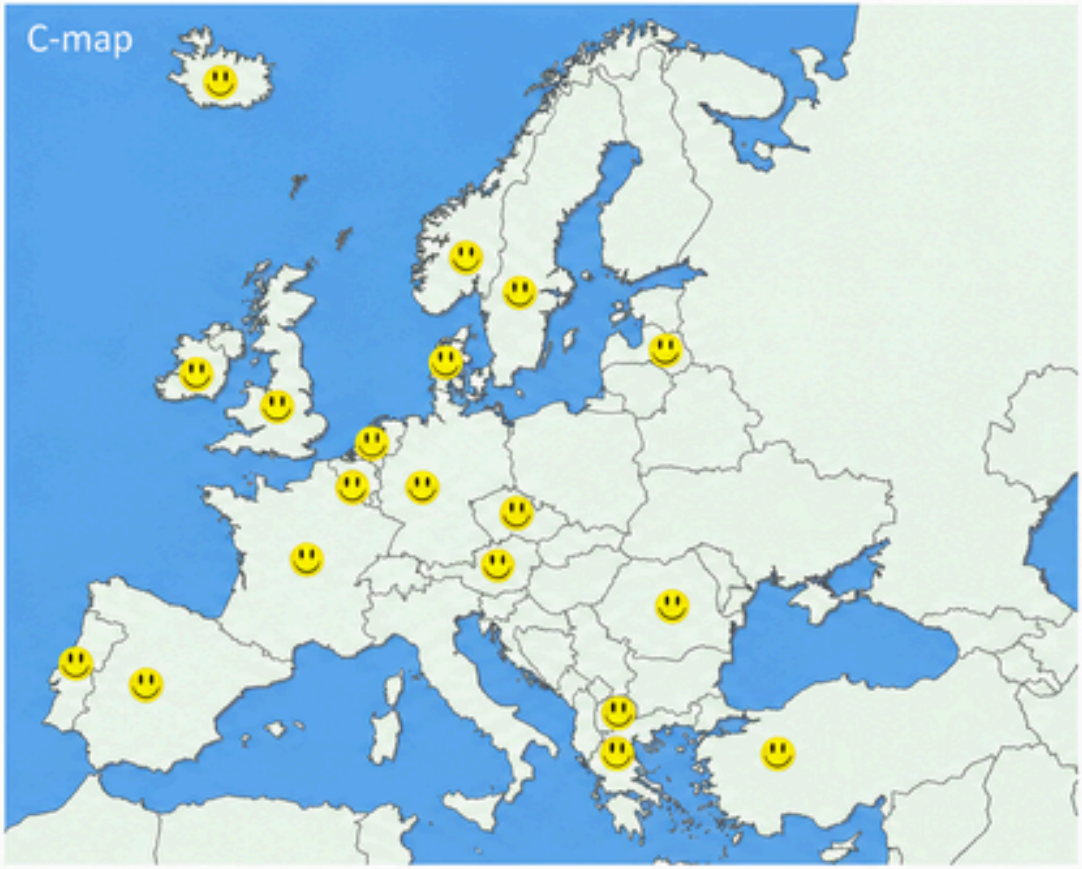
Numbers

Total
Candidates: 155



Country
Turkey
Netherlands
Germany
Ireland
Sweden
Austria
Spain
UK
Belgium
Denmark
Greece
Romania
Czech Republic
France
Portugal
Iceland
Latvia
Macedonia
Norway
Switzerland
Unknown

Criterion-Referenced Exam

- Erialane lõpueksam
- Läbitakse residentuuri lõpupoole (~42 kuud)
- Põhineb UEMS curriculumil
- Hindamine sõltumatu teiste osalejate tulemustest

9 valdkonda, proportsionaalselt

General Microbiology

- Scientific basis of CM and immune response
- Laboratory safety
- Microbiology of Sterilisation and Disinfection
- Handling specimens
- Data handling
- Results reporting
- Microscopy
- Serology
- Molecular

Bacteriology

- General
- Culture

Virology

Mycology

Parasitology

Antimicrobials

Infection Prevention and Control

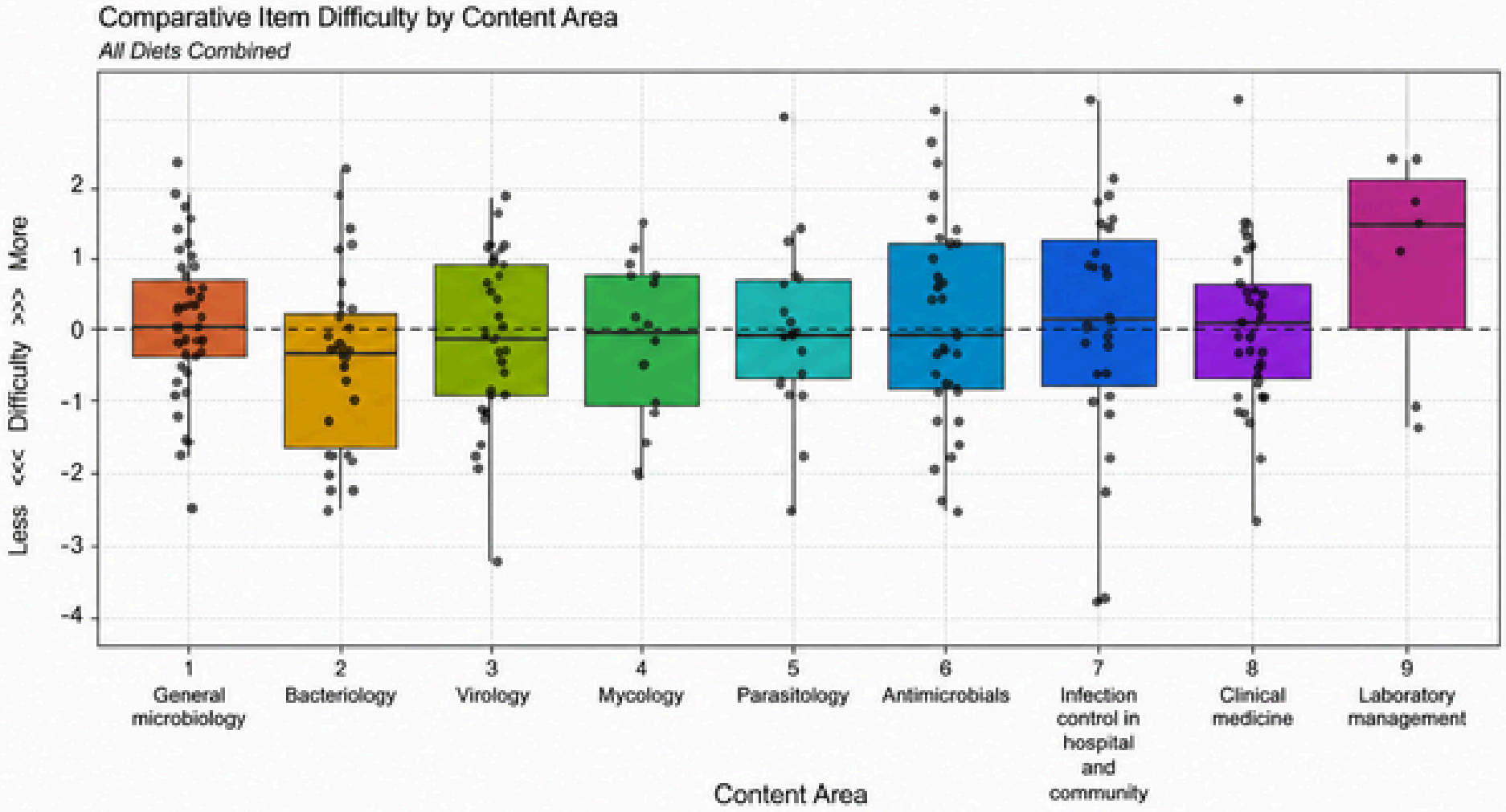
- Community and hospital

Clinical Medicine

- Clinical skills
- Clinical syndromes/systems

Laboratory management

Valdkondade keerukus



Eksamile pääsemise eeldused

1. The candidate must be a Medical doctor.
2. The candidate must be employed or in training in a UEMS member country or an associated UEMS country or a country with UEMS observer status (see UEMS website for current country status https://uems-smm.eu/uems-smm/).
3. The candidate must be a medical consultant or a trainee in Medical Microbiology with a **minimum of 42 months** whole-time training in Medical Microbiology on the date of the examination.
4. The candidate must be able to communicate in the English language.
5. Candidates have to be recommended by 2 independent referees e.g. supervisor, trainer, head of department, regional/national trainer. The names of the referees must be included in the application form (see section 3 'References' of the application form).

General Microbiology

- Laboratory Risk assessment
- Biostatistics
- Laboratory reporting
- Epidemiology/Assessment/Treatment
- Genetic susceptibility to infection

Infection Prevention and Control (IPC)

- **Outbreaks**
  - Hospital
  - Community
- **IPC committees and policies**
- **Departments with special IPC requirements**
  - Operating theatres
  - Kitchen
  - Central Sterilisation Services Departments (CSSDs)
  - Laundry
  - Pharmacy
- **Patient accommodation**
  - Wards
  - Isolation facilities
  - The febrile traveller
  - Immunocompromised
- **Working party recommendations and international guidelines** e.g.
  - MRSA
  - C. difficile
  - Norovirus

Infection Prevention and Control (IPC)

- **Public health microbiology**
  - Public Health Laboratory
  - the role of the Environmental Health Officers
- **Decontamination**
  - Physical and chemical agents used in hospital infection control
- **Notification and epidemiologic surveillance of infectious diseases and antimicrobial resistance**
- **Bioterrorism**
- **Routes of transmission**
  - Methods of preventing nosocomial spread of e.g. VRE, VZV, CPE

Which of the following organism as culture does NOT belong to biosafety level 3?

A. Chlamydia psittaci
B. Yellow fever virus
C. Brucella melitensis
D. Mycobacterium chelonae
E. Yersinia pestis

Level: 4

Your laboratory is using a test to diagnose a certain infection with a prevalence of 10%, the test has a sensitivity of 90% and a specificity of 90%.
Which of the following statements is correct?

A. 1% positives are false positives
B. 10% negatives are false negatives
C. 10% positives are false positives
D. 50% negatives are false negatives
E. 50% positives are false positives

Level: 2

A pregnant patient presents with diarrhoea, without fever, after a recent course of amoxicillin-clavulanic acid for a UTI. Stool is sent for Clostridioides difficile diagnostics and C. difficile DNA is detected and toxin test positive. Other causes of diarrhoea are excluded.
What is the most appropriate treatment for management of this patient?

A. Intravenous metronidazole 500 mg three times a day
B. Intravenous vancomycin 1000 mg two times a day
C. Oral fidaxomicin 200 mg
D. Oral metronidazole 400 mg
E. Oral vancomycin 125 mg four times a day

Level: 3

A subpopulation of individuals are genetically more vulnerable to symptomatic disease after exposure to noroviruses.
Which factor is associated with this phenomenon?

A. Chemocine receptor 5
B. Duffy blood group
C. Fucosyltransferase 2
D. Hemoglobin subunit beta
E. Prion protein

Level: 1

A patient originally from sub-Saharan Africa identified through community screening of high-risk populations: HBsAg -, anti-HBs -, anti-HBc IgG+, anti-HBc IgM+, HBeAg -, anti-HBe +, HBV DNA 20,000 IU/ml.
Best interpretation?

A. Acute HBV
B. HBV infection with HBsAg mutant
C. HBV infection with pre-core mutant
D. HBV reactivation
E. Past (cleared) HBV infection

Level: 3

A 5-year-old girl from Norway presented with a seven day history of bloody diarrhoea, mild abdominal pain predominantly in the right lower quadrant, high fever, nausea and vomiting. She also complained of sore throat, which her general practitioner (GP) diagnosed as pharyngitis. She has a history of eating pork meat/chop. The GP sent a stool sample for culture. The laboratory used sorbitol MacConkey agar, Campylobacter selective agar, and xylose lysine deoxycholate (XLD) agar. They also used mannitol selenite broth which was subcultured onto XLD agar, and modified tryptone soya broth subculture onto sorbitol MacConkey agar after appropriate incubation. None of the media yielded the target microorganisms.

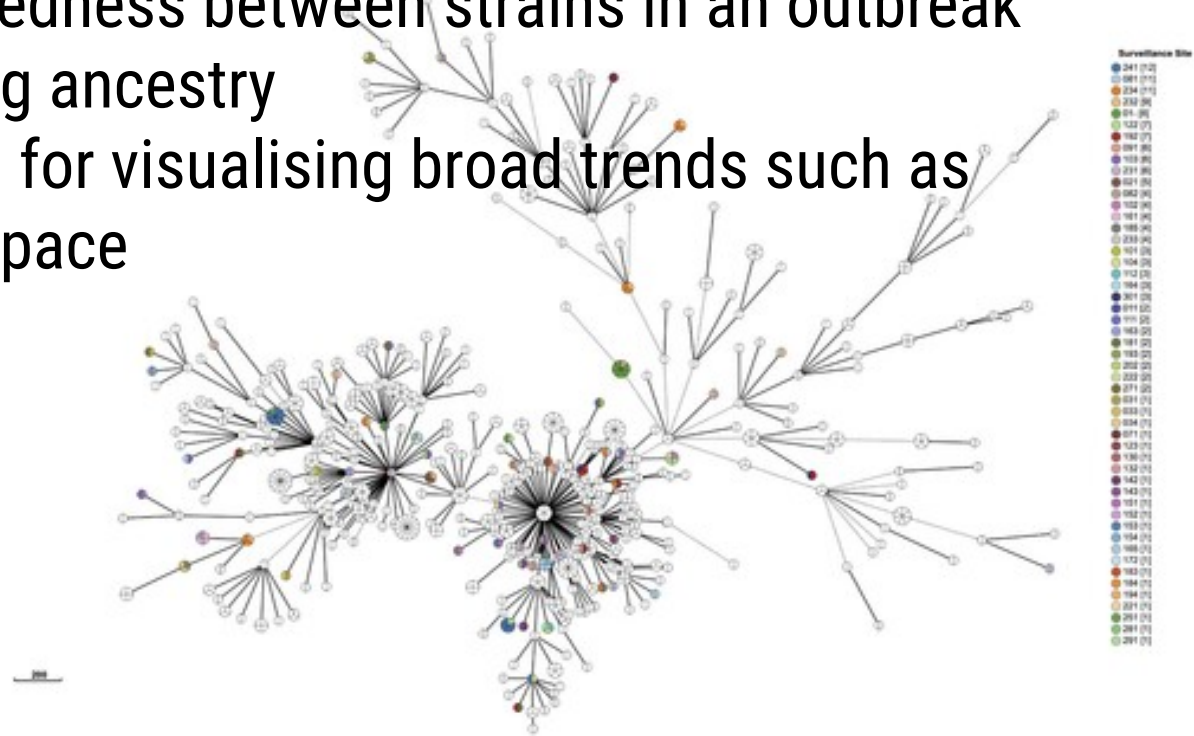
Which additional media is most likely to isolate the expected pathogen in this case?

A. Bacillus cereus selective agar (PEMBA)
B. Baird-Parker agar
C. Cefsulodin-Irgasan-Novobiocin (CIN) agar
D. Mannitol lysine crystal violet brilliant green (MLCB) agar
E. Thiosulfate Citrate Bile salts Sucrose (TCBS) agar

Level: 3

Which of the following most accurately describes the role of Whole Genome Sequencing in outbreak investigations?

A. WGS relatedness provides the “proof” of association without the need for additional information
B. In WGS, highly related isolates are likely to have a recent common ancestor and indicate the direction of transmission
C. Genetic distance cutoff values are useful tools for WGS cluster detection, and are used to definitively exclude cases
D. Unrooted trees show relatedness between strains in an outbreak investigation without inferring ancestry
E. Rooted trees are preferred for visualising broad trends such as clonal expansion in time or space



You are introducing WGS analysis into your *M tuberculosis* reference laboratory to improve your service to multiple users including clinicians and public health professionals.
You are formulating a reporting structure for cluster identification.
Choose from the following the best option for cluster distance threshold for potential transmission.

A. Less than or equal to 3 SNPs apart
B. Less than or equal to 12 SNPs apart
C. Greater 5 than but less than or equal to 12 SNPs apart
D. Greater than 12 but less than or equal to 20 SNPs apart
E. Zero SNPs apart

Level: 2

A patient who is 68 days post allogenic unmatched unrelated transplant for AML with skin and liver GvHD, develops a blood stream infection, is identified from all lumens of Hickmann line and peripheral set of blood cultures.
The line has been removed and patient was started on voriconazole, after 3 days additional skin lesions appear.
Choose the most appropriate option.

A. Continue on Voriconazole with monitoring of levels and addition of echinocandin
B. Discontinue voriconazole, start ambisome and echinocandin
C. Reduction in immunosuppressive agents, discontinue voriconazole and start echinocandin
D. Await susceptibility testing of blood culture isolate and tailor treatment accordingly
E. Continue voriconazole start ambisome with consideration of third agent 5 flucytosine

Which of the following is true of hypochlorite disinfectants, used in healthcare?

A. Have a limited spectrum of antimicrobial activity
B. Have reduced activity in the setting of hard water
C. Are an inexpensive, slow acting disinfectant agent
D. Do not leave toxic residues on items following disinfection
E. Are safe when mixed with ammonia or acid (e.g. household cleaning agents)

Decontamination of a gastro-intestinal endoscope; the Spaulding classification is:

A. Critical device requiring high-level disinfection
B. Critical device requiring sterilisation
C. Non-critical device requiring sterilisation
D. Semi-critical device requiring high-level disinfection
E. Semi-critical device requiring intermediate-level disinfection

Your laboratory is accredited to ISO 15189:2022.
Which of the following parameters of a diagnostic test will vary with the prevalence of a given disease in a population?

A. Specificity
B. Sensitivity
C. Precision
D. Likelihood ratio
E. Accuracy

During an accreditation visit for ISO 15189:2022 for an extension to scope test the assessor raises a non-conformance as measurement of uncertainty has not been included in the extension to scope test documentation.

In relation to ISO 15189:2022 measurement of uncertainty requirement for documentation applies most often to which of the following?

A. Below the limit of detection test results
B. Qualitative test results
C. Quantitative test results
D. Uncertainty of external quality control test results
E. Uncertainty of internal quality control test results

A group of tourists returns from a 2-week trip to Lake Malawi. During the trip, several members of the group swam daily in freshwater and also waded barefoot in shallow water near the shore.
Approximately 4 weeks after returning, several group members develop fever, fatigue, dry cough, urticarial or itchy rash and intermittent abdominal discomfort. Some report diarrhoea. Blood tests show marked eosinophilia. Routine bacterial stool culture and respiratory viral testing are negative.
Which of the following is the most appropriate diagnostic investigation at this stage?

A. Urine microscopy
B. Stool microscopy
C. Cystoscopy
D. Urine culture
E. Serology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Review

Specialist training in medical microbiology across Europe in 2021—an update on the actual training situation based on a survey

Maeve Doyle [1,*], Breida Boyle [2], Caoimhe Brennan [1], Jane Holland [3], Albert Mifsud [5], Markus Hell [6], Frank van Tiel [4], Truls Michael Leegaard [7,8]

Clinical Microbiology and Infection 27 (2021) 1576–1580

Table 1
The current structure of training programmes in clinical microbiology in Europe

Country	Do you have to be a medical doctor to train as a CM specialist in your country?	Do you have to do a formal CM training programme in order to register as a specialist?	In your country, is there a structured training programme for trainees who wish to become medical microbiology specialists?	Does the trainee have to spend time working in clinical medicine before specialist training[a]	Minimum duration in clinical medicine before specialist training	What is the duration of CM training?[a]
Austria	Yes	Yes	Yes	Yes	1 year	5 or 6 years
Belgium	Yes	Yes	Yes	No		4 years
Croatia	Yes	Yes	Yes	Yes	1 year	5 years
Czech Republic	Yes	Yes	Yes	Yes		5 years
Denmark	Yes	Yes	Yes	Yes	1 year	5 years
Finland	Yes	Yes	Yes			5 years
Germany	Yes	Yes	Yes	Yes	1 year	5 years
Greece	Yes	Yes	Yes	No		2 years
Ireland	Yes	Yes	Yes	Yes	3 years	5 years
Italy	Yes	Yes	Yes	No		4 years
Netherlands	Yes	Yes	Yes	No		5 years
Norway	Yes	Yes	Yes	Yes	1 year	5 years
Poland	No	Yes	Yes	No		4 years
Portugal	Yes	Yes	Yes	Yes	9 months	5 years
Slovakia	No	Yes	Yes	No		4 years
Slovenia	Yes	Yes	Yes	Yes	1 year	5 years
Spain	No	Yes	Yes	No		4 years
Sweden	Yes	Yes	Yes	Yes	18 months.	5 years
Switzerland	No	Yes	Yes	No		4 years
Turkey	No	Yes	Yes	No		4 years
UK	No	Yes	Yes	Yes	2 years	4 years

[a] Questions that relate specifically to the European training requirements.