

## Registration requirements for Epidemiologist A and B

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*Epidemiology is the scientific discipline which studies the occurrence and distribution of diseases and health indicators in human populations in relation to the factors affecting these. Epidemiological research fosters the development of public health and clinical health care.*

### Registration requirements for Epidemiologist A

Candidates for registration as an Epidemiologist A must meet the following requirements:

*(=> detailed information on the specific requirements is presented below)*

#### **A1. Pre-training (formally foundation degree) with sufficient content concerning health and disease**

#### **A2. Training in epidemiological methods (60 EC)**

A2.1. Basic knowledge of epidemiological methods (15 ECs, of which at least 10 ECs at MSc level)

A2.2. Practical experience in epidemiology (25 ECs, MSc level)

A2.3. Advanced epidemiological knowledge (5 ECs, MSc level)

A2.4. Elective component (theoretical and/or practical experience) (15 ECs, MSc level)

### Registration requirements for Epidemiologist B

Candidates for registration as Epidemiologist B must meet all requirements stated for registration as an Epidemiologist A.

Additionally, they must meet the following additional requirements:

*(=> detailed information on the specific requirements is presented below)*

#### **B1. Completion of PhD**

#### **B2. Epidemiological publications**

#### **B3. Epidemiological supervision**

#### **B4. Epidemiological portfolio**

## Detailed information on the requirements for Epidemiologist A

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### **A1. Pre-training (formally foundation degree) with sufficient content concerning disease and health / basic medical knowledge**

The pre-training must consist of a completed university or higher vocational programme in the medical-biological domain, at least at the Bachelor's level. Please indicate in your application the programme followed and send a copy of your diploma.

### **Pre-training with sufficient content concerning disease and health**

Educational programmes such as Biomedical Sciences, Physiotherapy, Medicine, Health Sciences, Nutritional Sciences and Dentistry contain sufficient basic medical knowledge. A complete list of approved programmes regarding disease and health can be found on the website of the Netherlands Epidemiology Society (VvE).

### **Different pre-training**

If your pre-training is not mentioned in the approved list with sufficient basic medical knowledge, this does not mean that you cannot meet this requirement. You must contact a recognized educator (appointed by the VvE) at an early stage to draw up a proposed training programme with sufficient content regarding disease and health. This can be done by demonstrating that:

- 1) You have completed at least 8 EC of education/courses on disease and health at the Bachelor level or higher. You must provide the relevant certificates and diplomas and a brief description of the content of the courses.
- 2) You have had at least one year of work experience as a biomedical researcher in the field of epidemiology in a department where the biomedical context of the research is central. The recognized educator assesses whether this work experience has sufficient depth and breadth and therefore meets the registration requirements.

The following aspects are important when considering whether you have sufficient basic medical knowledge.

#### **General knowledge of disease and health**

Normal versus pathological human physiological and biological processes; corner stones of medical action, i.e. diagnosis (medical history taking, physical examination, additional diagnostics), therapeutic options and prognosis; medical terminology; complexity of and relationship between disease categories; and insight into the role and function of different specialisms.

#### **Specific knowledge of disease and health**

Medical aspects of specific illnesses both at the population level (risk indicators, prevention, prevalence/incidence, trends) and at the individual patient level – detailed for several illnesses and more general for the other ones.

It is important that you have knowledge of for example the aetiology, pathogenesis, diagnostics, prognostics and the intentional (and unintentional) effects of medical interventions (therapy, rehabilitation, and primary, secondary and tertiary prevention). It can be about major illnesses such as cancer, cardiovascular diseases, infectious diseases, neurological disorders, locomotor diseases and injuries, and so forth.

## **A2. Training in epidemiological methods (60 ECs)**

Here you include which epidemiological courses you have completed, as well as how the practical time and elective space has been filled. Send a copy of the diploma as well as the diploma supplement.

For non-recognized programmes in epidemiology, you also add appendices in which you provide a description of the content, learning outcomes and test format for each course, where and when you took the course, and the results achieved. You are advised to contact a recognized educator at an early stage of developing the training program.

At least 85% of the courses taken must have been completed with an examination (so a participation certificate alone is not sufficient), with a substantial part assessed at an individual level.

### **A2.1. Learning outcomes for basic knowledge of epidemiological methods**

(15 ECs, at least 10 ECs at the MSc level)

This pertains to **having knowledge of, having an understanding of and being able to work with:**

- epidemiological measures for the occurrence of events and states, measures of association and measures of effect
- epidemiological study designs such as cross-sectional studies, case-control studies, cohort studies, and randomized trials
- epidemiological research domains such as aetiology, diagnosis, prognosis and therapy
- collection, processing and storing data, for example FAIR data management
- characteristics and quality of measurement instruments and measurement- and analysis methods
- such terms as randomisation, causality, effect modification, confounding, generalisation, precision, validity and bias
- basic epidemiological methods such as patient-year analysis and methods for adjustment of confounding
- basic statistics, including distributions, simple statistical tests, p-value and confidence interval
- multiple regression and survival analysis

The candidate must have taken courses about the above-mentioned concepts and be able to explain, apply and use them in epidemiological research. The candidate must be able to independently perform analyses and interpret and present analysis results.

### **A2.2. Practical experience in epidemiology**

(25 ECs, MSc level)

The candidate must have applied theoretical epidemiology and statistics in a sufficiently independent manner (usually during an internship). Merely being an executive part of a project and using only descriptive statistics is not sufficient. The internship supervisor must be at least a registered Epidemiologist A or similar (if similar, please explain and substantiate). An individual

end product must be delivered, for example an internship report or a scientific publication.

The end product must show sufficient epidemiological work, that is, the product must contain more than just descriptive information. There needs to be a well-founded epidemiological research question, an appropriate research design and proper data analysis. This may take the form of a systematic review or an aetiological, diagnostic, prognostic or therapeutic study.

The candidate will mention the subject, the start and end date of the research project, the supervisor's name(s) and epidemiological expertise (registration as an Epidemiologist A or B, or a brief curriculum vitae and/or list of publications) and the name of the organisation where the candidate performed the practical work. The candidate will send a digital copy of the end product.

### **A2.3. Advanced epidemiological knowledge**

(5 ECs, MSc level)

In addition to the requirements stated under 'Basic knowledge of epidemiological methods', the candidate must select at least two different advanced epidemiological topics, taking at least 5 ECs in courses related to these. This may involve epidemiological specialist areas, illnesses, or advanced epidemiological methods (see examples below). These advanced topics and the number of ECs per course must be clearly described. The candidate must demonstrate through certificates and diplomas with a satisfactory assessment that he/she has fulfilled the stated learning outcomes.

Examples of subjects for more advanced study include:

<u>Specialist areas:</u>	such as genetic epidemiology, nutritional epidemiology, pharmaceutical epidemiology, public health epidemiology, etc.;
<u>Illnesses:</u>	such as diabetes epidemiology, infectious disease epidemiology, cancer epidemiology and the like;
<u>Methodology:</u>	such as a course in clinimetrics, multilevel analysis, longitudinal data analysis, competing risk analyses, etc.

#### **A2.4. Elective component**

(15 ECs, MSc level)

The candidate may freely fill the remaining 15 ECs with the five components below. The elective part exists of at least two different components.

**I. Extra advanced course in epidemiological knowledge**

This concerns courses, workshops, or training regarding theoretical education.

**II. Extra course in a topic related to epidemiology (*at most 5 ECs*)**

This concerns courses, workshops, or training regarding theoretical education.

Related topics include biostatistics, ethics, health technology assessment and qualitative research methods.

**III. Extra epidemiological practical experience**

This must include **extra** practical experience, that is, relating to a **different topic** than the practical experience mentioned under A2.2. The extra practical experience will be obtained within a programme and under supervision of at least a registered Epidemiologist A or similar (if similar, please explain and substantiate). For a further description, see A2.2.

**IV. Writing an epidemiological/methodological essay**

The candidate must indicate the subject, the supervisor's name(s) and the name of the organisation where the candidate wrote this essay. The essay must be written under supervision of a registered Epidemiologist A or B or similar (if similar, please explain and substantiate). The candidate will send a digital copy of the essay.

**V. Providing epidemiological teaching**

The epidemiological teaching provided needs to be specified in terms of the epidemiological level, topics discussed and number of hours of face-to-face teaching.

## **Detailed information on the requirements for Epidemiologist B**

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Registration as an Epidemiologist B will occur at the Foundation for Biomedical Scientific Research Training (SMBWO). The application will be submitted through the Netherlands Epidemiology Society (VvE).

Candidates for registration as an Epidemiologist B must meet all requirements stated for registration as an Epidemiologist A. Moreover, they must meet the additional requirements stated below.

If you are already registered as an Epidemiologist A, you can simply state the A-registration number for parts A1 and A2. You can then continue with completing the additional registration requirements for Epidemiologist B in parts B1 to B4.

### **B1. Completion of PhD**

In a biomedical or related field at a medical faculty. If another faculty then substantiate why this fits within this application for Epidemiologist B.

The candidate must indicate the title of the PhD thesis, the university from which the PhD degree was obtained and the PhD thesis supervisor(s). The candidate must also send a copy of the diploma. A PhD obtained in a foreign country will be valid, too.

### **B2. Epidemiological publications**

The candidate must have published at least four scientific papers as the first author, or three papers as the first author and two papers as a co-author, in international and peer-reviewed scientific journals.

These publications must be sufficiently epidemiological in nature, that is, the publications must contain more than just descriptive information. There needs to be a well-founded epidemiological research question, an appropriate research design and proper data analysis. This may take the form of a systematic review or a study into aetiology, diagnosis, prognosis or therapy. The publications must be sufficiently varied in terms of type of research question, methodology, research design, and analysis methods.

### **B3. Epidemiological supervision**

The candidate must have worked under the supervision of a registered Epidemiologist B (or similar) for at least one year. This person may be the thesis supervisor, thesis co-supervisor or day-to-day supervisor. The applicant must indicate which supervisor is registered as an Epidemiologist B (if similar with Epidemiologist B, please explain and substantiate). For an international PhD degree, the supervision needs to have taken place by an epidemiologist equivalent to an Epidemiologist B.

#### **B4. Epidemiological portfolio**

During the training period, the candidate must demonstrably keep up with epidemiological developments through attending conferences, giving lectures, providing epidemiological teaching, taking advanced epidemiological courses and participating in epidemiological journal clubs and seminars. The candidate needs to build up a portfolio equalling at least 5 ECs. The portfolio will contain proof of participation in seminars, journal clubs and conferences, certificates from the courses taken, information about the teaching provided (which courses and specification of the tasks) and proof of oral presentations. The various elements must be sufficiently varied and at least 2 components must be supplied.

Note 1: This concerns a portfolio in the context of registration as an ***EPIDEMIOLOGIST***. Therefore, be specific with regard to the epidemiological nature of the components you include.

Note 2: This portfolio concerns unique activities that have not previously been included in other parts of the registration.