

ASPHER'S EUROPEAN PUBLIC HEALTH CORE COMPETENCES PROGRAMME

European Core Competences for MPH Education (ECCMPHE)

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Foreword

The Association of Schools of Public Health in the European Region, ASPHER, exists to support its members in their efforts, individually and collectively, to strive for, and to achieve, excellence in public health education. ASPHER`s decision in 2006 to embark on the creation of a system of core competences designed to be appropriate for public health education and training, and for senior public health professionals engaged in public health practice, whether this be service work, teaching, or research – for many, a combination of more than one of these - followed various similar attempts elsewhere around the world. As population health status, health systems and public health systems as well as educational traditions vary across countries and over time, ASPHER however aimed at developing lists of competences based on European experiences, as expressed by the European schools of public health, by representatives of European ministries of health, and by public health workforce representatives.

The results were presented in ASPHER`s provisional lists of competences published in 2007 and 2008, and have since then been refined in order to increase precision and consistency. This time-consuming process – intended to result in the demarcation of a whole profession - has included the integration of further experience from various workshops and from more discussions with and comments from ASPHER members, the majority of whom have stated repeatedly that the development of lists of competences should have the highest priority. Moreover, the lists have to be implemented among ASPHER members, public health workforces and their employers, and they should be revised and further developed over time, as according to the nature of future public health challenges.

This publication is designed to be a guide to the level of competences which should be achieved by MPH graduates. It includes competence lists in all the main domains of public health practice, whether this be in service work, teaching, or research.

We are confident that these competence lists will facilitate the raising of standards of MPH education across Europe, and enable some degree of standardisation of MPH curricula across the continent. They should therefore contribute to public health capacity development in Europe, and also to the easy mobility of public health professionals across Europe.

Paris and Maastricht, October, 2011



Antoine Flahault
President, ASPHER



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President-Elect, ASPHER

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Introduction

Over the years there has been an increasing amount of activity to systematise and describe precisely the knowledge and skills required by various groups of professionals to carry out specified tasks, deemed to be within their professional domains. This has been applied to a number of areas of medical, health and other health service activities, and within public health there have been various efforts to carry out this kind of analysis over the last two decades. There have been a number of different starting points for such activities; for example, attempts have been made to define public health competences such that these might inform and advise public health education, while others have used them as building blocks for the construction of job specifications and job descriptions in public health. Further groups have used them as a means of evaluation of completion of training in public health.

In 2006 the Association of Schools of Public Health in the European Region (ASPHER) took a decision that it was time to begin to define a system of core competences which could be applicable to public health education, research and practice throughout Europe, and that ASPHER should take the lead in the development of such a system. The ASPHER work included involvement of all ASPHER member organisations, various conferences, including the participation of representatives of European Ministries of Health, and workshops for the establishment of dialogue between schools of public health and public health decision makers and employers¹, and has resulted in two previous reports of competences at intermediate stages of development ^{1, 2, 3} . Moreover, in September 2011, a workshop took place in connection with the WHO European Committee 61 in Baku, Azerbaijan. Throughout this process, previous competence lists have taken previously published lists, and their background philosophies, fully into account ^{4,5}.

We believe that competences have to be appropriate and meaningful both to public health workforces and in an educational and research context, and that necessarily competences will have to change over time to reflect changing epidemiology, technology etc. Accordingly, developments and definitions of systems of competences need to be ongoing processes involving the whole wider public health community, all parts of which – e.g., teachers, researchers, service workers, employers, decision makers - need actively to identify with and to utilise such a system.

In this third phase of the European core competences programme¹, based on the previous longer lists of core competences¹ ASPHER has refined and increased the precision of definitions and concepts used, deemed to be appropriate for public health professionals of all

kinds involved in higher levels of public health employment, whether in service work, teaching or research⁵. On account of its nature, ASPHER is concerned primarily with development of public health education, training and research in Europe, and accordingly its first priority has been identified as the need to use defined competences to inform the educational activities of its member organisations. The first stage was to prepare an (as far as possible) comprehensive list (the list of European Core Competences for Public Health Professionals (ECCPHP))^{4,5}. As a second stage, ASPHER has prepared a subset of this complete list of competences, deemed to be appropriate for use in advising curriculum development for MPH courses.

Like its “parent”², the present list is subdivided into six chapters, which of course may not apply to the structure of any particular public health educational programme; the structure however reflects the cross-disciplinarity of the sciences involved in public health, and is intended in principle to be exhaustive. Moreover, the list seeks to link identifiable practical competences to professional activities in the public health services by use of a strategic model – ‘The Public Health Cycle’ – also cited within the competences, with 5 mutually interacting stages:

Stage 1. Problem identification/community analysis/situation analysis;

a. Population health and its contexts;

b. Intervention systems;

Stage 2. Selection of targets and identification of target groups;

Stage 3. Selection of intervention;

Stage 4. Implementation of intervention;

Stage 5. Follow-up and evaluation.

Each and every one of these stages includes a set of functions and tasks, and thus each demands its own defined sets of competences to be expected of the public health professional responsible for carrying out each such function in an appropriate way. To facilitate the production of an overview of competences needed in defined contexts, it may be appropriate firstly to select a population health challenge (e.g. lung cancer; cardiovascular disease; traffic accidents), secondly to propose an intervention (tobacco control legislation or campaigns; food content regulation or nutritional advice; change of road construction system; etc.), and then, thirdly, to derive the necessary functions and their underlying competences in each of the stages.

A list of definitions, which we find especially relevant, is provided at the start of each section. Some of these are borrowed from well-known sources, many of which are widely respected and will be recognised, but throughout we take responsibility for the particular definitions chosen in this context. However, we are aware that there are also alternative definitions, which may be preferred by our readers in their daily work.

Moreover, the competences list has not been prepared with respect to public health practice at any particular level of intervention or with respect to any particular subspecialty, which from a formal or administrative point of view may or may not be considered a component part of public health, e.g. occupational health. Indeed, the list is designed to represent a general logical structure, and to apply the principles of public health theory and practice in general, at all levels and situations, e.g. whether global, European, or national, or local, etc. Moreover, we would like to stress that the list consists of competences, which do not by themselves signify specific components of educational programmes.

It should be noted that we have attempted not to be repetitive. Based on the profoundly cross-disciplinary nature of public health, it is inevitable that competences will be relevant in different areas of public health theory and practice. For example, competences defined in the methods section are always applicable elsewhere. Accordingly, we invite our readers to apply combinations of competences appropriately within their research, teaching and practice.

Accordingly, as described, the present list represents the end of a programmatic phase aiming at the condensation and refinement of the list produced on the basis of reactions from a wider audience, and we are fully and equally responsible for the editing processes we have adopted. Moreover, refining the list of competences must be seen as a continuous and ongoing process, requiring sustainable management arrangements and widespread support. Such a process should ensure future revisions of lists, and accordingly it is essential that organisational structures are established to ensure public health capacity development, which will include regular updating of competences lists.

Irrespective of the extent to which this development of a list of competences has sought to reflect the ideas of public health schools, policy makers and practitioners, and notwithstanding our best efforts to follow the basic programme principles, the ultimate “success” of this and subsequent lists will depend on the extent to which they are implemented and used. It is anticipated that this use will be:

- by public health schools (of various types) in their development of educational programmes;

- for schemes designed to evaluate public health degree courses, which might operate at regional, national, or European levels;
- for monitoring and evaluation of progress made by public health students and trainees;
- by public health students and trainees themselves, in their efforts to achieve the appropriate levels of knowledge and skills that are required of them;
- by policy makers when considering public health challenges and how they should be met, in terms of organisational structures, strategies and policies; and
- by everyday practitioners planning whatever may be required to improve the level of health of local populations, for which they are responsible.

This implementation process needs to be carefully planned, monitored and evaluated. Accordingly, we would be most grateful for comments and suggestions on this from all who are likely to be users of this or subsequent lists.

We are indebted to the many colleagues working in ASPHER member institutions, who have contributed actively and creatively to the agreed procedures according to which the collective aim was to create a generally agreed-upon classification of competences. In particular, we are especially indebted to the chairs and members of the original working groups and to the members of ASPHER's central work group as well; to the regional organisers of workshops, at which competences were discussed with other stakeholders in different European countries; to all of those working in ASPHER member schools, who by their valuable comments contributed significantly to the current version. Likewise, we are grateful to decision-makers and employers for providing us with their valuable contributions, and by their participation in conferences and workshops, to the European Health Management Association, EHMA, and EuroHealthNet, EHN, for their constructive help in arranging certain workshops, and to the European Public Health Alliance, EPHA, for working so constructively with us to widen the understanding of the competences programme, and of how it can contribute to public health capacity building generally.. Last but not least, we are grateful to the EU Commission for its economic support, without which the programme could not have achieved as much as it has, and to WHO Europe for its valuable support to the development of essential concepts and ideas, which are so important for future public health capacity building in Europe.

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Methods in Public Health

Definitions

Health

The WHO defined health in 1948 as *'a state of complete physical, mental, and social wellbeing and not merely the absence of disease or infirmity'*¹

There are many definitions of health in the literature, none of which seem to be completely satisfactory. Many models of health have been described and identification of just three of these may illustrate some aspects of the discussion about concepts of health:

- a. The medical model sees health as the absence of disease; so health is viewed as a steady state from which an individual falls off, when s/he becomes ill.
- b. The behavioural model refers to the ability of an individual to fulfill the behavioural expectations of society regarding the functional capacities expected of an individual of that age, gender, etc.; thus an individual fulfilling all society's expectations in these respects is seen as enjoying health.
- c. The control model envisages health as the extent to which the overall environment can be controlled and improved so as to promote health and wellbeing.

Public Health

In the current context, public health will be considered as the science and art, which focuses on:

- Population health,
- Human systems and interventions made to improve health, and
- Interactions between these two systems.

Population health includes involvement with all social, economic, physical, chemical and biological conditions that influence or interact with the health of the members of the population.

Human systems and interventions made to improve health include all types of health services, social services, and all interventions and policies intended to improve health. Public health focuses on health promotion.

The concept of “interaction” refers to real influences of human systems on population health.

There are other definitions, e.g. that which originates from 1920, when it was proposed by Professor C E A Winslow, then the Professor of Public Health at Yale University, USA, according to which *‘Public health is the science and art of preventing disease, prolonging life and promoting health through the organised efforts and informed choices of society, organisations, public and private, communities and individuals’*². More recently, this definition was adopted both by both the Acheson Report in 1988 on the Future of Public Health in England³ and by the UK Faculty of Public Health, which amended it slightly, so as to define public health as *‘The science and art of promoting and protecting health and well-being, preventing ill-health and prolonging life through the organised efforts of society’*⁴

Epidemiology

Is the science focusing on the occurrence of health phenomena in populations.

Demography

Is the science focusing on populations, especially with reference to size and density, fertility, mortality, growth, age distribution, and migration, and the interaction of all of these with social and economic conditions.

Statistics

Is the science of collecting, summarising, analysing, and interpreting numerical information that is subject to chance or systematic variation.

Quantitative research methods

These are scientific methods applying formal probabilities when studying structure and when inferring causality and effect.

Qualitative research methods

These are scientific methods not applying formal probabilities when studying structure or when inferring causality and effect.

Sociology

Is the science focussing on the structure and dynamics of human groups or populations and on their mutual interactions.

Social psychology

Is the science focussing on the psychological aspects of the structure and dynamics of human groups or populations and on their mutual interactions.

Anthropology

Is the science focussing on the cultural, religious, psychological and social aspects of the structure and dynamics of human groups or populations, and on their mutual interactions.

Competences

Intellectual competences: The student shall know and understand:

Health

- Basic definitions, models and concepts of health and disease;
- Concepts of mental and somatic diseases and their practical implications, including diagnostic systems and diagnoses.

Public health

- Major definitions of public health;
- Significant aspects of the history of public health theory and practice.

Philosophy of science

- Major definitions of philosophy and philosophy of science;
- Basic theories in philosophy and philosophy of science and concepts of importance for public health science and practice, e.g. concepts such as hypothesis, theory, explanation, understanding, objectivity, evidence, method, deduction, induction, utilitarian, qualitative and quantitative studies and observations.

Epidemiology, demography and statistics

- Major definitions of epidemiology as a science;
- Definition of demography as a science;
- Major aspects of the history of epidemiology;
- Basic demographic and epidemiological aspects, such as:
 - Population;
 - Population pyramid;
 - Population at risk;
 - Duration;
 - Time at risk;
 - Case vs. non-case;
 - Rate;
 - Fertility;
 - Migration;
 - Disease;
 - Incidence (number; rate; proportion);
 - Prevalence (number; proportion);
 - Mortality (number; rate; proportion);
 - Lethality/fatality (number; rate; proportion);
 - Specific mortality parameters (age, gender, disease, other);
 - Survival and life expectancy (general and specified by, e.g., age);
 - Demographic transition;

- Relative risk (incidence rate-ratio; prevalence proportion relative risk; other);
- Odds ratio;
- Population attributable risk;
- Preventive fraction;
- Etiological fraction;
- Longitudinal study;
- Cross-sectional design including population health surveys;
- Longitudinal design;
- Cohort design;
- Case-control/case-referent design;
- Observational design;
- Quasi-experimental design;
- Experimental design;
- Randomised controlled trial (RCT);
- Validity;
- Reliability;
- Bias (selection bias; information bias; analytical bias);
- Inference;
- The concepts of test sensitivity, specificity and the predictive value of a positive and a negative test result;
- Lead time and lead time bias;
- The concepts of health, disease, handicap and death, both as comprehensive entities and in terms of identifiable components, i.e. physical, mental and social dimensions;
- The structure, main content and applications of standard authorised health classification systems, such as:
 - International Classification of Diseases (ICD);
 - International Classification of Functioning, Disability and Health (ICF);
 - International Classification of Health Interventions (ICHI);
 - Other systems;
- The principles, main content, validity and applications of standardised data collection instruments for measuring health outcomes, e.g. QOL, SF36, GHQ, FINBALT;
- The concept of epidemiological surveillance;
- Basic principles, methods, types and components of:
 - Epidemiological surveillance systems;

- Health services monitoring systems;
- Major national and European population surveys and surveillance systems and the application of their results;
- Definition of statistics as a science;
- Basic statistical concepts, such as:
 - Inference;
 - Parameter;
 - Probability;
 - Random sampling;
 - Probability sampling;
 - Stratified sampling;
 - The normal distribution;
 - The binominal distribution;
 - The Poisson distribution;
 - Statistical power;
 - Point estimate;
 - Interval estimate;
 - Confidence interval;
 - Association;
 - Confounding;
 - Interaction;
 - Correlation;
 - Significance;
 - Statistical test;
 - Parametric vs. non-parametric test;
 - Student's t-test;
 - Chi-square test (X²);
 - Non-parametric tests, such as Kruskal-Wallis test and other tests;
 - Predictor;
 - Simple stratified analysis (e.g. Mantel-Haenszel);
 - Standardisation;
 - Direct standardisation;
 - Indirect standardisation;
 - Survival analysis;
 - Regression;

- Additive and multiplicative prediction models;
- Logistic regression;
- Linear regression;
- Randomisation.

Qualitative methods

- Main approaches to, and concepts of, qualitative methods frequently applied in public health concerning population groups as well as organisations;
- Qualitative concepts, terms, theories and methodologies, such as:
 - Grounded theory;
 - Structuralism;
 - Qualitative interview;
 - Focus groups;
 - Action research.

Sociology, social psychology and anthropology

- Major definitions of sociological and anthropological science;
- Significant aspects of the history of social science;
- Sociological, social psychological and anthropological main theories and concepts, e.g. material levels of living, social group, social network, social system, culture, religion, social status, interest and power, attitude, behaviour;
- Basic concepts of classification and scaling.

IT handling

- General aspects of IT functioning.

Literature search and evaluation – The student shall know and understand:

- The existence of the most important literature databases and their main fields, within health sciences, social sciences, and natural sciences, for the identification of:
 - Theoretical literature;
 - Original empirical studies;
 - Reviews and meta-analyses.

Practical competences: The student shall be able to:

Epidemiology, demography and statistics

- Estimate basic demographic and epidemiological parameters, such as:
 - Population projection;
 - Time at risk;
 - Probability;
 - Incidence (number; rate; proportion);
 - Prevalence (number; proportion);
 - Mortality (number; rate; proportion);
 - Lethality/fatality (number; rate; proportion);
 - Specific mortality parameter (age, gender, disease, other);
 - Survival and life expectancy (general and specified by, e.g., age);
 - Relative risk (incidence rate-ratio; prevalence proportion relative risk; other);
 - Odds ratio;
 - Population attributable risk;
 - Preventive fraction;
 - Etiological fraction;
 - Validity;
 - Reliability;
 - Bias (selection bias; information bias; analytical bias);
- Estimate simple statistical parameters, such as:
 - Point estimate;
 - Interval estimate/confidence interval;
 - Statistical power;
 - Strength of association;
 - Interaction parameters;
- Apply basic epidemiological concepts in a concrete but simple empirical setting, such as:
 - Cross-sectional design;
 - Longitudinal design;
 - Cohort design;
 - Case-control/case-referent design;
 - Quasi-experimental design;

- Randomised controlled trial (RCT);
- Correction for confounding;
- Apply basic statistical concepts in a concrete but simple empirical setting, such as:
 - Assessment of sample size requirements;
 - Random sampling;
 - Student's t-test;
 - Chi-square test (X²);
 - Non-parametric tests, such as Kruskal-Wallis test and other tests;
 - Simple stratified analysis (e.g. Mantel-Haenszel analysis);
 - Direct standardisation;
 - Indirect standardisation;
 - Logistic regression in simple form;
 - Linear regression in simple form;
 - Randomisation;
- Design and implement a protocol applying:
 - An ad hoc questionnaire based on classification theory;
 - Extraction of data from antecedent documents and databases or surveillance systems;
- Design and carry out a health needs assessment and draw appropriate conclusions;
- Design a monitoring system for health service interventions;
- Develop and apply a system to assess the quality of scientific publications in public health; a list of relevant aspects should include:
 - Aims and hypotheses/study questions;
 - Design;
 - Participant recruitment;
 - Data collection;
 - Analysis;
 - Selection validity and bias;
 - Information validity and bias;
 - Analytical validity and bias;
- Use a statistics software programme to perform the above statistical analyses.

Qualitative methods

- Identify main types of qualitative empirical methods in literature;
- Plan, organise, carry out, analyse and report on:
 - Observations based on:
 - Grounded theory;
 - Structuralist approaches;
 - Qualitative interviews;
 - Focus groups;
 - Action research interventions.

IT handling

- Make use of the most common IT functions.

Literature search and evaluation

- Plan a search profile involving the most important data bases;
- Develop a search profile and conduct a literature search based on it.
- Systematise the results of an empirical literature search, based on:
 - Main characteristics of design;
 - Findings/results;- and on this basis produce a review table;
- Present, systematise, and apply important quality criteria for empirical studies on identified literature;
- Define the concept of meta analysis and present an overview of strengths and weaknesses of meta analyses;
- Summarise the findings of empirical studies through meta analysis.
- Develop a public health research project protocol outlining the main sections, which will include:
 - Title page;
 - Introduction;
 - Aims and hypotheses;
 - Methods and material /resources;

- Results and discussion;
- References based on an accepted referencing system, such as the Vancouver or Harvard systems;
- Conduct a public health project according to protocol;
- Write a scientific report with the main sections based on the project:
 - Title page;
 - Abstract;
 - Introduction;
 - Aims and hypotheses;
 - Material and methods;
 - Results;
 - Discussion;
 - Conclusion;
 - References based on an accepted referencing system, such as the Vancouver or Harvard systems.

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Population Health and Its Social and Economic Determinants

Definitions

Social and economic environment

This consists of the external social and economic elements and conditions which surround, influence, and affect the life and development of an organism or of a population.

Social and economic determinant

This may be any social or economic definable entity that causes changes in population status; from a statistical viewpoint such a factor will be associated with, or provide an index relating to, a health outcome.

Competences

Intellectual competences – The student shall know and understand:

Population health

- The level and trends of main population health indicators in European countries:
 - Mortality indicators:
 - Crude mortality;
 - Cause-specific mortality, especially cardio-vascular and cancer mortality and mortality caused by mental disease;
 - Age- and gender-specific mortality (e.g., infant mortality; before 5 years of age; after 60 years);
 - Disease indicators, especially concerning cardiovascular diseases, cancer and other chronic non-communicable diseases:
 - Indicators of occurrence and time (incidence, prevalence, duration);
 - Disease-specific occurrence indicators;
 - Health expectancy indicators:
 - Life expectancy (mean; median) at birth and at later ages;
 - Population survival curves;
 - Disease-free life years;
 - Disability-adjusted life years (DALYs).

Socio-economic determinants

- Basic concepts of the social sciences, i.e. the following sociological concepts:
 - Family structure
 - Housing;
 - Education;
 - Occupation;
 - Employment;
 - Working conditions;
 - Economy;
 - Individual and society;
 - Social environment;
 - Social structure, social processes;
 - Social group;
 - Social network;
 - Social cohesion/social support;
 - Social capital;
 - Socioeconomic status;
 - Social mobility;
 - Underprivileged groups;
 - Social-economic inequalities;

- The level and trends of main population socio-economic indicators in European countries, such as:
 - Family structure;
 - Culture and ethnicity;
 - Housing;
 - Education;
 - Occupation;
 - Employment;
 - Working conditions;
 - Economy/income/poverty;
 - Economy;
 - Under-privileged groups;
 - Socio-economic status;

- Socio-economic inequality/underprivileged groups;;
- The level and trends in indicators of health behaviour development, such as:
 - Exercise activity;
 - Dietary behaviour;
 - Alcohol use and abuse;
 - Drug abuse;
 - Tobacco use;
 - Sexual behaviour;
 - Injury-prone behaviour;
- In European populations and population subgroups, e.g.:
 - Adolescents;
 - The elderly;
 - Males and females;
 - Ethnic groups;
 - The socially disadvantaged;
 - Other socially, culturally and/or religiously distinct groups.

Population health and social and economic determinants

- Models concerning social determinants of health, especially:
 - Material pathways, e.g. poverty, income inequality, neighbourhood deprivation;
 - Psycho-social pathways (social stressors and protective factors, e.g. social work, social cohesion, social anomie, social support);
 - Behavioural pathways, e.g. healthy lifestyle, sociological and psychological models of behaviour change;
- The levels and trends of associations in Europe between population health indicators – especially concerning cardiovascular diseases, cancer and other chronic non-communicable diseases - and various background indicators, such as:
 - Socio-economic, including social inequality;
 - Social environment (cultural, material, psychosocial, behavioural);
 - General policy and health policy;
 - Social capital;
 - Economy;
 - Culture;
- Social and economic health implications of globalisation;

- Major European research programmes focussing on population health and its social and economic determinants, e.g. North Karelia Project, and research contributing to the Marmot reviews, etc.

Practical competences: The student shall be able to:

- Based on information from epidemiological surveillance systems (e.g. national systems; WHO's Health for All (HFA) database) accessible from, e.g., the internet:
 - Produce epidemiological documentation (tables, figures, etc.) on the relationships between the socio-economic environment and the health of European populations and population groups;
 - Produce forecasts for the development of health status of European populations and population groups.
 - Identify, retrieve and analyse major trends of social change with special reference to demography, social structure, and economic and technological development;
 - Identify population groups with elevated health risks and recognise their health needs, e.g. children, elderly, adults both within-and without the labour market, immigrants, people with physical, mental and learning disabilities, and under-privileged groups.

Population Health and Its Material - Physical, Radiological, Chemical and Biological - Environmental Determinants

Definitions

Environment

This consists of the external elements and conditions which surround, influence, and affect the life and development of an organism or of a population

Environmental Health

Is the science of controlling or modifying those physical, radiological, chemical and biological conditions, influences, or forces surrounding human communities which relate to the promoting, establishing, and maintenance of health.

Competences

Intellectual competences: The student shall know and understand:

- Basic concepts of the natural sciences, in particular the biological sciences, i.e. the following biological disciplines and concepts:
- Basic concepts of the natural sciences, especially:
 - Chemistry;
 - Physiology;
 - Genetics;
 - Toxicology;
 - Microbiology;
 - Radiation;
 - Immunology;
- Basic concepts and terminology of empirical scientific disciplines that analyse the impact of the physical, radiological, chemical and biological environment on health, e.g. toxicology, radiation measurement, etc.;
- The basic concepts, principles and methods of environmental risk estimation;
- Population health consequences of climate change;

- The magnitude of the burden of disease, injury and fatality associated with physical, radiological, chemical and biological environmental exposures in national and European populations;
- Basic principles of measurement and monitoring of environmental components, e.g. water, indoor air, microorganisms;
- Material environmental health implications of globalisation;
- National and European policies, legislation, standards, systems and organisations for the monitoring and control of the physical, radiological, chemical and biological environment;
- Major stakeholders in environmental health, e.g. the chemical industry, farming industry, mining industry, electrical supply industry, water purification industry, injury prevention programmes, accident and emergency services;
- Environmental and infectious disease surveillance systems, databases and warning systems, as developed by ECDC and in individual European countries;
- Basic principles of, and major approaches to, preventing and controlling environmental hazards that pose risks to human health and safety;
- The general principles of emergency planning and of how to manage major incidents, such as those caused by flooding, by a train crash, or by a bomb;
- Major European research programmes focussing on population health and environmental risks, e.g. research carried out over the last three decades in various European countries on improved road design; the association between alcohol consumption and road traffic accidents (RTAs); air pollution and health.

Practical competences: The student shall be able to:

- Perform risk assessment associated with components of the physical, radiological, chemical and biological environment, including the likely effect of future climate change;
- Based on information from epidemiological surveillance systems (e.g. national systems; WHO's HFA2000 database) accessible from, e.g. the internet:
 - Produce documentation (e.g. tables, figures, multimedia methods) on the relationship between material - physical, chemical and biological - environmental exposures (including the likely effects of climate change), and the health of European populations and population groups;
 - Identify population groups with elevated health risks and recognise their health

needs, e.g. children, groups living in areas of particular environmental stress (such as in areas suffering from industrial pollution), people occupied in risky occupations and their families, people living in areas at risk of natural disasters.

Health Policy; Economics; Organisational Theory and Management

Definitions

Economics

The science of utilisation, distribution, and consumption of services and materials and of setting priorities and decision making.

Policy

This is a course or method of action selected usually by a public or private body, at international, national or local level, from among alternatives to guide and determine present and future decisions.

Organisation

This is a collective structure for the purpose of systematising activities for a particular goal, including the planning and management of programmes, services, and resources.

Management

Is the process of strategy identification and implementation by motivating people together to accomplish desired goals efficiently and effectively.

Strategy

This consists of a formerly planned set of actions designed to deal with a problem or problems, including the following stages, which are cyclical in principle:

1. Problem identification/community analysis/situation analysis;
 - a. Population health;
 - b. Intervention system;
2. Selection of targets and identification of target groups;
3. Selection of intervention;
4. Implementation of intervention;
5. Follow-up and evaluation.

Intellectual competences: The student shall know and understand:

- Significant aspects of the modern history in at least one European country of:
 - Health policy;
 - Social policy;
 - Health services;
 - Social services;
 - Legislation affecting health and health services;
 - NGOs operating in the public health arena;

- Important concepts, including:
 - Strategy targets/objectives;
 - Market and market failure;
 - Gross National Product/Gross Domestic Product;
 - Inputs, processes and outcomes of health services;
 - Efficiency;
 - Elasticity;
 - Marginal analysis;
 - Opportunity cost;
 - Cost analysis related to health:
 - Cost of service;
 - Years of life lost;
 - Cost-effectiveness;
 - Cost-utility;
 - Cost-benefit;
 - Quality assurance and quality development;
 - Equity;
 - Acceptance and acceptability;
 - Need and demand;
 - Operational management and coordination of activities (logistics);
 - Leadership style;
 - Management of change;
 - The learning organisation;
 - Organisational governance;
 - Intersectoral collaboration;
 - Programme implementation;

- SWOT analysis (Strengths-Weaknesses-Opportunities-Threats);
- Development modelling;
- Main principles for the organisation of health systems;
- Concerning health and social services in at least one European country:
 - Components, structure and organisation;
 - Economics;
 - Functioning;
 - Legal aspects;
 - Regulation;
 - Management;
 - Human resources;
 - Decision processes;
 - Production/outputs;

- Main principles and methods of evaluation of public health policies, strategies, programmes, and institutions, including:
 - General principles of evaluation;
 - Health economic evaluation;
 - Health technology assessment;
 - Evaluation of comprehensive strategies;

- Main principles underlying health impact assessment;
- Limitations of market principles in the finance and organisation of health care;
- The role of national, European and international organisations in the development of public health, such as:
 - WHO;
 - EU;
 - NGOs;

- National, European, international and global public health strategies, e.g.:
 - WHO's strategies, e.g. HFA200, Health21, Health2020, Ottawa charter, and their successors;
 - EU's strategies, e.g. 'Together for health – a strategic approach for the EU2008-2013', the Europe 2020 Strategy, and their successors;
 - The public health strategy of at least one European country;

- The role of national, European and international commerce in supporting or hindering the development of public health interventions to improve population health, e.g.:
 - The tobacco industry;
 - The alcohol industry;
 - The farming and food industries;
 - The pharmaceutical industry;
 - The military industry;
 - Insurance companies.

Practical competences: The student shall be able to:

- Develop and describe a public health strategy based on standard public health methods and guidelines, including:
 - The identification of stakeholders and establishment of potential partnerships – for potential intersectoral joint working - for the development and implementation of strategies;
 - The identification of opportunities for intersectoral collaboration;
 - The identification of structural, cultural and behavioural barriers to the implementation of strategies;
- Perform a health economic assessment of a given procedure, intervention, strategy or policy, e.g.:
 - Cost-effectiveness assessment;
 - Cost-utility assessment;
 - Cost-benefit assessment;
- Perform a SWOT analysis of a programme, an institution or a procedure;
- Identify relevant documentation needs and sources for the the development of a public health strategy to meet a population health challenge.

Health Promotion: Health Education, Health Protection and Disease Prevention

Definitions

Health promotion

Health promotion consists of activities to improve or protect health and to prevent disease.^{1,2}

Health education

Consists of activities designed to increase awareness and to influence favourably attitudes and knowledge relating to the improvement of health on both a personal and on a community basis.

Health protection

Consists of policies and activities based on legislative or on other means seeking to promote healthier environments, within which healthy choices are easier to make.

Disease prevention

This includes all measures taken to prevent diseases or injuries.

Competences

Intellectual competences: The student shall know and understand:

- Significant aspects of the history of health promotion theory and practice, including main health promotion charters, e.g. Ottawa;
- The definitions of:
 - Health education;
 - Health protection;

- Disease prevention;
- The definitions of types of disease prevention:
 - Primary prevention;
 - Secondary prevention;
 - Tertiary prevention;
- Central concepts applied in health promotion, e.g.:
 - Empowerment;
 - Holism;
 - Community development;
 - Participation;
 - Capacity building;
 - Social marketing;
 - Health advocacy;
- Major social, behavioural and biomedical theories and models underlying:
 - Health education, including behaviour change, e.g.:
 - Stages of change theory;
 - Social-psychological theory;
 - Diffusion theory;
 - Health protection systems, e.g.:
 - Communicable disease control;
 - Environmental health management;
 - Accident prevention systems;
 - Disease prevention, including:
 - Primary prevention;
 - Secondary prevention;
 - Tertiary prevention;
- The basic theories underlying communication skills – the basic principles of:
 - Learning processes;
 - Strategic communication;
 - Marketing;

- Basic principles and methods used in health promotion practice
 - Health education, including information on methods for behavioural modification relating to:
 - Basic health assessment;
 - Common risk factors;
 - Common factors improving health;
 - Relevant use of health services;
 - Health protection, including:
 - Communicable disease control;
 - Environmental health management;
 - Accident prevention systems;
 - Protection from occupational hazards;
 - Primary prevention programmes, including:
 - Prevention of infectious disease, e.g. immunisation programmes;
 - Prevention of non-communicable diseases and of intentional and unintentional injuries;
 - Secondary prevention programmes (screening), including the criteria to be satisfied before a screening programme is set up;
 - Tertiary prevention;
- The effectiveness and cost-effectiveness of major health promotion programmes as documented by scientific methods (evidence of effect and costs);
- Major health promotion policies and strategies in at least one European country.

Practical competences: The student shall be able to:

- Identify population health challenges relevant for health promotion at various levels of social and political organisation, from global to local;
- Communicate effectively public health messages – including risk analysis - to lay, professional, academic and political audiences, by use of modern media, e.g. written media and audio-visual techniques;
- Design and describe a health promotion strategy, using standard public health tools;
- Write a policy proposal, including :
 - Title page;
 - The concrete health challenge;
 - Scientific background and consequential policy options;

- Policy recommendations;
- References.

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¹ Tannahill A. What is health promotion? *Health Ed J* 1985; 44:167-8.

² Downie RS, Tannahill C, Tannahill A. *Health Promotion: Models and Values*. Oxford: Oxford Medical Publications, 1996.

Ethics

Definition

Ethics is the branch of philosophy focusing on distinctions between right and wrong. ¹

Competences

Intellectual competences: The student shall know and understand:

- Major ethical theories and concepts relevant for public health, including human rights concepts;
- Significant aspects of the history of ethics, including historical examples of misuse of public health principles for political ends;
- Significant aspects of the history of ethics;
- Important ethical concepts, e.g.:
 - Autonomy/self decisiveness;
 - Paternalism;
 - Uninvited intervention;
 - Responsibility;
 - Respect;
 - Acceptability and acceptance;
 - Non-discrimination;
 - Human rights;
- Good epidemiological practice and good clinical practice ('best practice'), including ethical aspects of data handling, confidentiality, security, privacy and disclosure;
- Ethical dimensions of:
 - Public health strategy making, including the ethical challenges of each individual stage of a strategy;
 - Professionalism in relation to the implementation of responsibilities and
In the context of accountability in an institutional context;
- Ethics committee systems and requirements for ethical approval of public health research in at least one European country.

Practical competences: The student shall be able to:

- Identify ethical aspects of concrete public health interventions, strategies and policies;
- Demonstrate the implementation of basic ethical principles in public health strategy-making, such as a non-discriminatory approach to target populations and in human resources management;
- Respect and adhere to ethical principles regarding data protection and confidentiality regarding any information obtained as part of professional activities;
- Prepare an application to the ethics committee system within the context of appropriate research governance, as determined in one particular country.

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- ¹ Encyclopædia Britannica; <http://www.britannica.com/EBchecked/topic/194023/ethics>; extracted 23rd August 2011.
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