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Heart to Heart: Norwegian-Russian multilevel
educational collaboration in CVD epidemiology



PhD course

Advanced Epidemiology of Cardiovascular Diseases

National Medical Research Center for Preventive Medicine
of the Ministry of Healthcare of the Russian Federation,
Moscow

16-20 September 2019

- Curriculum
- Syllabus

CURRICULUM

CREDITS:

5 ECTS

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LANGUAGE OF INSTRUCTION

English

COURSE DESCRIPTION

Cardiovascular diseases (CVDs) comprise the leading cause of morbidity and mortality worldwide. Key risk factors include hypertension, smoking, elevated cholesterol, elevated glucose levels and diabetes, obesity, and physical inactivity.

CVD epidemiology is a discipline studying distribution and determinants of CVDs in the population. It encompasses application of general epidemiologic methodology to a more narrow and special field of CVDs. The ultimate aim of CVD epidemiology is to provide a basis for prevention of the disease.

Russia has one of the highest CVD mortality rates in the world. In 2015, the mortality rate in Russia was four times higher than in England and Norway. To investigate this phenomenon, in 2015-2018 a large cross-sectional study of CVD was conducted as a part of the International Project on Cardiovascular Disease in Russia (IPCDR) with population samples from Arkhangelsk and Novosibirsk. In 2015-2016, the seventh cross-section of the long-term study of population health was conducted in Tromsø, Norway (Tromsø 7). The IPCDR's cross-sectional study has been originally designed to be comparable to the Tromsø 7, and this has laid basis for Heart to Heart (H2H) - a joint plan for a series of comparative studies to identify, quantify and explain differences in CVD and its risk factors between Russia and Norway. The H2H data platform makes a solid basis for training public health specialists on both sides of the border with emphasis on CVD epidemiology and that has become a ground pillar for this course to appear. The course is run by the leading IPCDR and Tromsø 7 researchers with an expectation that the students will use (or already use) the H2H data for their research projects.

The purpose of the course is to impart knowledge of using epidemiological and statistical methods in studies of CVDs at population level. A special emphasis is made on building competence for undertaking CVD research on the basis of the H2H data. For that reason, the course includes practical classes where artificial analogues of IPCDR and Tromsø 7 data subsets are analyzed by use of statistical software (Stata).

At the entry of the course, the students are required to have basic knowledge of epidemiology (basic concepts, study designs, measures of effect), statistics (descriptives, parametrics and non-parametrics, analyses of contingency tables, simple regression analysis) and basic skills of using statistical softwares (e.g., R,

Stata, SPSS, Stata, Epi Info). The students are also expected to come to the class with a laptop with installed Stata.

Teaching is concentrated in one intensive classroom gathering (5 days) at which lectures are combined with practical data processing and analysis sessions, group work and discussions. In order to fully benefit from the course, a student has to read the course literature and work independently on preparatory home assignment during 3-4 weeks before the classroom gathering. The final assessment of students is performed via written take-home examination that has to be completed within 6 weeks after the classroom gathering.

TARGET GROUPS

Group 1. International PhD students

International PhD students are the first priority group. Four PhD students from UiT can be accepted with expenses covered. In case of competition, preference is given to students who work with H2H data.

Group 2. Russian research-level students and junior researchers

Russian research-level students (aspirants, doctorants) and junior researchers are welcome to apply for the course. The preference is given to representatives of the National Medical Research Center for Preventive Medicine (the host institution). Three representatives of the Northern State Medical University (Arkhangelsk) and three representatives of the Novosibirsk State Medical University (the project consortium partners) can be accepted with travel expenses covered. In case of competition, preference is given to students who works with H2H data.

Group 3. Practical doctors and Public Health practitioners

Practical doctors and Public Health practitioners who work with CVD prevention are also invited to apply for the course. In this group, priority is given to representatives of Health Ministries of Federal and Regional levels.

Good knowledge of English (upper intermediate level) is a prerequisite for being accepted for groups 2-3. The required knowledge of English shall be documented by an internationally recognized proficiency test (TOEFL written form – min. 550 points, TOEFL computer based – min. 213 points), or by a certificate of completing an educational program where English was the language of instruction.

Maximum number of students in the course - 30.

LEARNING GOALS

Upon satisfactory completion of the course, students will:

- have knowledge of the of global burden of CVDs and substantive questions in CVD epidemiology;

- be familiar with the study designs and examples of epidemiologic research in the CVD field, understand relative merits of different designs, be able to select a suitable study design for a particular research question;
- be familiar with the design and methodological principles of IPCDR's "Know your heart" cross-sectional survey, the Tromsø 7 study, and the H2H – a comparative study of CVDs in Russia and Norway;
- appropriately use fundamental epidemiologic and statistical concepts and terms in relation to CVD research at population level;
- become acquainted with principles and methods of epidemiologic monitoring in Russia that aims to assess effectiveness of national preventive measures;
- have an understanding of the basic concepts of random error, bias and confounding;
- acquire basic practical skills of epidemiologic CVD research, including designing a study, statistical data analysis using Stata statistical software (descriptive statistics, comparisons of independent samples, regression);
- get acquainted with selected univariate and multivariate regression methods which are commonly applied to epidemiologic research of CVDs;
- acquire skills of interpreting of results and critical evaluation of published CVD research.

TEACHING METHODS

- One classroom gatherings (5 days) including lectures, individual and group practical exercises, seminars, data analysis
- Web-based in-class teaching: some of the teachers participate via Skype
- Sources of educational information: lectures, textbooks, scientific publications

EXAMINATION

- What is to be tested: knowledge of concepts and methods of CVD epidemiology, skills in applying knowledge in practice
- Type of examination: take-home exam
- The final course grade is given on the basis of final take-home exam
- Presence at the classroom gathering is compulsory for passing the course
- Grading: PASSED/FAILED (2 sensors)
- A student has a right to be given two opportunities to re-sit the final take-home examination after having got the grade "FAILED"

DATE FOR EXAMINATION

Take-home examination hand out date 20.09.2019 hand in date 18.10.2019.

COURSE LITERATURE

- Compulsory course literature
- Epidemiology and Prevention of Cardiovascular Disease: A Global Challenge Second (2nd) Edition by Darwin R. Labarthe; 2011. Link: https://shdrc.skums.ac.ir/dorsapax/userfiles/file/CVD_Epidemiology_Labarthe_2011.pdf
- Epidemiology : Beyond the Basics 3rd EDITION by Moyses Szklo and Javier Nieto. Jones & Bartlett Publishers, 2014 (chapters 4-8)
- S. Juul, M.Frydenberg. An Introduction to Stata for Health Researchers, Fourth Edition. Stata Press, 2014 (chapters 6-12)
- Articles (will be provided by teachers)
- Recommended additional preparatory reading for refreshing basic knowledge of epidemiology and statistics
- Basic epidemiology by R. Bonita, R. Beaglehole, T. Kjellström: http://apps.who.int/iris/bitstream/handle/10665/43541/9241547073_eng.pdf?sequence=1
- Concepts of Epidemiology: An integrated introduction to the ideas, theories, principles and methods of epidemiology by Kenneth Raj S. Bhopal. Link: https://skums.ac.ir/dorsapax/userfiles/file/Epidemiology_Concepts_2002.pdf

STUDENT WORKLOAD

Preparatory assignment (incl. reading of approx. 500 pages):	52 hours
Classroom gathering (5 days)	40 hours
Home exam (incl. reading of approx. 350 pages):	56 hours
Total:	144 hours

HOW TO APPLY?

The application shall contain:

- Letter of application (free format)
- CV (containing a complete overview of education, supervised professional training and professional work)
- Copies of:
 - *diploma and transcript from a Master's degree or equivalent*

- *documentation of required English skills*

Application shall be emailed to Tormod Brenn at UiT e-mail tormod.brenn@uit.no.

Deadline for applications from international students - **25 June, 2019**.

Deadline for applications from Russian students - **15 August, 2019**.

Advanced Epidemiology of Cardiovascular Diseases

TIME TABLE

Classroom gathering, 16-20 September 2019

<u>Monday, 16th</u>	10.30	11.00	12.30	13.30	15.00	15.30	17.00
Introduction, student presentation (45 min) OD/AK/AVK Types and global burden of CVDs (45 min) IN	B R E A K	Study designs in CVD research (45 min) IN IPCDR and "Know your heart" cross-sectional survey (45 min) AK	L U N C H	Tromsø Study 7: focus on CVDs in cross-sectional and longitudinal perspectives (45 min) IN Heart to Heart (H2H) a comparative study of CVDs in Russia and Norway (45 min) AK	B R E A K	What can we gain from H2H? Group work on research questions and study designs (45 min) Summary discussion (45 min) AK, IN, AI, AVK	
<u>Tuesday, 17th</u>	10.30	11.00	12.30	13.30	15.00	15.30	17.00
Socio-demographic risk factors (45 min) AVK Social inequalities in CVD and health in Norway (45 min) IN	B R E A K	Public Health development in the Russian Federation and need for epidemiologic data for decision making (45 min) AVK Epidemiological monitoring of risk factors for chronic non-communicable diseases in Russia (45 min) SS	L U N C H	Intro to Stata and the training dataset (45 min) AK Data management and descriptive statistics in Stata (45 min) AK	B R E A K	Group work with data samples (60 min) and summary discussion (30 min) AK/OI	
<u>Wednesday, 18th</u>	10.30	11.00	12.30	13.30	15.00	15.30	17.00
09.00							

Life style risk factors JB	B R E A K	Selection bias in CVD research (45 min) SC Selection of instruments, measurement error and validation (45 min) SC	L U N C H	Comparing independent groups on categorical variables in Stata (45 min) OI Comparing independent groups on numeric variables in Stata (45 min) OI	B R E A K	Group work with data samples (60 min) and summary discussion (30 min) AK/OI, SC	
Thursday, 19th 09.00	10.30	11.00	12.30	13.30	15.00	15.30	17.00
Arterial hypertension and lipid profiles SM Obesity and diabetes AI	B R E A K	Resting heart rate TB/SS Confounding and interaction in CVD research DL/SC	L U N C H	Overview of regression analyses in Stata OI	B R E A K	Group work with data samples (60 min) and summary discussion (30 min) AK/OI/SC	
Friday, 20th 09.00	10.30	11.00	12.30	13.30	15.00	15.30	17.00
Structural and functional CVD phenotypes in a population context SM	B R E A K	eHealth - possibilities of using digitized health records for CVD research DL/GL?	L U N C H	What explains the decline in CVD mortality in Western countries? DL	B R E A K	How to reduce the CVD burden in Russia?*	Summary discussion ALL
Teachers: AI – Asii Imaeva, AK- Alexander Kudryavtsev, AVK - Anna Kontsevaya, DL - David Leon, ES - Ekaterina Sharashova, JB – Julia Balanova, IN - Inger Njølstad, KK - Kamila Kholmatova, OI - Olena Iakunchykova, SC- Sarah Cook, SM - Sofia Malyutina, SS - Svetlana Shalnova, TB - Tormod Brenn, GL - guest lecturer (to be decided)							

* An alternative is to have **Group work : possible H2H-based research projects (60 min)** followed by **Summary discussion (30 min)**