

**Programme: Novel methods and approaches in health risk assessment**

November 18-22, 2019

Karolinska Institutet, room "Gunnar Höglund", Berzelius väg 3, floor 4, Solna

Course leaders: Johanna Zilliacus and Annika Hanberg

<b>Monday Nov 18</b>	<b>Tuesday Nov 19</b>	<b>Wednesday Nov 20</b>	<b>Thursday Nov 21</b>	<b>Friday Nov 22</b>
9.00-9.30 Welcome and introduction to the course (JZ)	9.00-9.45 Literature search (search terms, subject headings, data bases) (KM, LM)	9.00-9.45 Extraction of data from studies (AH)	9.00-9.45 Integration of data and weight of evidence approaches (AH)	9.00-9.45 Presentation and discussion of group work
9.30-10.30 Introduction of participants	9.45-10.15 Coffee break	9.45-10.15 Coffee break	9.45-10.15 Coffee break	9.45-10.15 Coffee break
10.30-11.00 Coffee break	10.15-11.00 Literature search (search terms, subject headings, data bases)	10.15-11.00 Methods for assessment of in vitro, in vivo and epidemiological studies (AB)	10.15-12.00 Text mining (IA)	10.15-12.30 Presentation and discussion of group work
11.00-12.00 Introduction to novel methods and approaches in risk assessment (AB)	11.15-12.00 Literature search (search terms, subject headings, data bases)	11.15-12.00 Methods for assessment of in vitro, in vivo and epidemiological studies		
12.00-13.00 Lunch	12.00-13.00 Lunch	12.00-13.00 Lunch	12.00-13.00 Lunch	12.30-13.00 Course ending
13.00-13.45 Overview of systematic review methodology (JZ)	13.00-13.45 Selection of studies (inclusion/exclusion criteria) (AH)	13.00-13.45 Exercise on assessment of studies	13.00-13.45 Uncertainty (JZ)	13.00-17.00 Take home exam uploaded at 17.00
13.45-14.15 Coffee break	13.45-14.15 Coffee break	13.45-14.15 Coffee break	13.45-14.15 Coffee break	
14.15-15.00 Defining scope, purpose and question for a risk assessment (JZ)	14.15-15.00 Exercise on selection of studies	14.15-15.00 Meta analysis (AH, OG)	14.15-17.00 Group work	
15.15-16.00 Exercise on scope, purpose and question for a risk assessment	15.15-17.00 Group work	15.15-17.00 Group work		
16.15-17.00 Group work				

**Teachers:**

AB – Anna Beronius, IMM, KI

AH – Annika Hanberg, IMM, KI

IA – Imran Ali, IMM, KI

JZ – Johanna Zilliacus, IMM, KI

KM – Klas Moberg, Karolinska Institutet Library, KI

LM – Lotta Mathiesen, Karolinska Institutet Library, KI

OG – Olena Gruzieva, IMM, KI

## **Course information**

### **Purpose of the course:**

The purpose of the course is to give the student knowledge and understanding of how to perform a health risk assessment using systematic review methodology and other novel approaches.

### **Learning outcomes:**

After the course the student should be able to:

- define and analyse the scope and purpose of a health risk assessment to identify the specific questions to address
- apply and critically discuss methods to identify, assess and integrate scientific evidence in a health risk assessment
- critically discuss the need for and importance of transparency in health risk assessment

### **Content of the course:**

The course includes novel methods and approaches for reaching evidence-based conclusions in health risk assessment. The scope and purpose of a health risk assessment is analysed with the aim to define specific questions related to risk assessment. Different types of scientific evidence that are used in a health risk assessment are identified. Methods for performing a systematic review are practiced, including searching for scientific studies, selection of studies, extraction of data from studies and assessment of reliability and relevance of studies. Methods for assessment of in vitro, in vivo and epidemiological studies are introduced and discussed. Integration of scientific evidence in weight of evidence approach is addressed. The importance of addressing uncertainty in health risk assessment is highlighted. The need for and importance of transparency in health risk assessment is discussed.

### **Content of individual teaching and learning activities:**

Introduction to novel method and approaches in risk assessment

- Principles of risk assessments
- Aims of risk assessments
- Need for transparency
- Guidelines and activities

Overview of systematic review methodology

- Why systematic reviews
- Steps in a systematic review

Defining scope, purpose and question for a risk assessment

- Why should the scope, purpose and question be defined
- Role of risk managers
- How to define scope, purpose and question

Exercise on scope, purpose and question for a risk assessment

- Analysis of risk assessment questions (PECO)
- Practise to define a risk assessment question (PECO)

Literature search (search terms, subject headings, data bases)

- How to identify search terms based on (PECO) question
- How to use subject headings (MeSH terms)
- Defining search strings with Boolean operators
- Choice of data bases

- Collect results from literature search into reference management software (EndNote)
- Practice literature search in PubMed
- Practise how to collect results into EndNote

#### Selection of studies (inclusion/exclusion criteria)

- Concept of relevance of studies for question
- Need to clearly define inclusion/exclusion criteria
- Selection in different tiers (abstract and full-text)
- Reporting of selection of studies

#### Exercise on selection of studies

- Practice how to define inclusion/exclusion criteria

#### Extraction of data from studies

- Need to clearly define the data to be extracted
- Coding systems
- Examples of tables for data extraction

#### Methods for assessment of in vitro, in vivo and epidemiological studies

- Concepts of study quality, risk of bias etc.
- Different methods available
- Applicability and pros and cons of different methods

#### Exercise on assessment of studies

- Practice on how to use different methods and tools for assessment of studies

#### Meta analysis

- What is a meta analysis
- When can it be done

#### Integration of data and weight of evidence approaches

- Need to integrate data from different lines of evidence/evidence streams
- How to integrate the data
- What is weight of evidence and how can it be used

#### Text mining

- What is text mining and why can it be useful in risk assessment
- Methods and tools for text mining

#### Uncertainty

- What is uncertainty in risk assessment and why is it important
- Methods to describe and quantify uncertainty

#### Group work

- In the group work the participants will analyse systematic reviews
- Oral presentation of group work

#### Take home exam

- Short answer questions on factual knowledge of important principles
- Essay question/reflection on transparency in risk assessment