

AME College: a Clinical Research Training Program

Editorial Office

Editorial Office, AME Publishing Company, Guangzhou 510000, China

Correspondence to: Editorial Office, AME Publishing Company, Guangzhou 510000, China. Email: editor@amepc.org.

Submitted Aug 06, 2015. Accepted for publication Aug 06, 2015.

doi: 10.3978/j.issn.2072-1439.2015.08.15

View this article at: <http://dx.doi.org/10.3978/j.issn.2072-1439.2015.08.15>

Scientific research brings the perspective of a third eye to clinicians. For each young doctor who is aspiring to become an excellent clinician, it is a must. However, the promotion and conduct of clinical research in China is far from satisfactory due to various reasons. While many Chinese clinicians have accumulated rich clinical data, they are technically not able to design good clinical studies; meanwhile, they face many challenges to publish their findings in high-profile SCI journals. The vast majority of clinical evidences currently are based on foreign clinical trials. Thus, we initiated this “AME College: Clinical Research Training Program” with a focus to promote the clinical research-related knowledge. Our training courses will include, but not limited to, the following topics:

- Course 1: clinical research design and registration of research protocols (including writing of trial protocols, collection of trial data, and management and statistical analysis of research data);
- Course 2: applied statistics in medical research (including the selection of feasible statistical methods and its realization in statistical software);
- Course 3: skills for writing and publishing an article in a SCI-indexed journal (including manuscript writing, table making, image processing, manuscript submission, and communication with editors/peer-reviewers);
- Course 4: access to evidence-based medicine (EBM) resources and critical reading of evidences (including clinical evidence retrieval and a thorough understanding of the results of various clinical studies);
- Course 5: methodologies of systematic review/meta-analysis (methodological training sessions for beginners and intermediates);
- Course 6: advanced methodologies of systematic

review/meta-analysis (methodological training sessions for advanced trainees).

The delicately designed “AME College: Clinical Research Training Program” will be officially launched in August 2015. With strong supports from the AME lecturer panel both at home and abroad, our training program is dedicated to bringing the most practical clinical research skills and know-hows to our trainees and helping them to avoid any unnecessary mistake or error. We hope our efforts will help most Chinese clinicians to master the methodologies in clinical research, design more high-quality clinical trials, and make more voices from China be heard in top medical journals. Fighting!

Course planning and description

Clinical study design/applied medical statistics/tips for writing a scientific article

Scientific research is just like another eye, leg, or arm for a clinician. For each young doctor who is aspiring to become an excellent clinician, it is a must. However, in the real world, a large proportion of Chinese clinicians still conduct clinical research in an inappropriate or even wrong way of thinking. For example, the common mistakes or errors during clinical trial design include ambiguous inclusion criteria, inappropriate case selection, confusion between univariate and multivariate analysis, and inaccurate estimation of sample size. Also, in some studies, the recruited groups are imbalanced at baseline; the authors may arbitrarily set control group, regarding “arbitrariness” as “randomization”. Furthermore, the blinding is lack or inappropriate, the description of data collection is not appropriate, and, the statistical analytic method is misused... All these problems not only hinder a clinician’s career development but also do harm to the development

of medical sciences in China. In addition, some studies also have found that up to one third of research findings published in top medical journals including *N Engl J Med*, *JAMA*, and *Lancet* failed to stand the test of time. Due to the lack of knowledge and skills in writing scientific articles, many clinicians failed to publish their important clinical findings; as a result, their academic achievements cannot be recognized by international colleagues and many valuable clinical data become useless. It's like we caught good cards, but lost the game for not playing well. Therefore, it is particularly important to constantly carry out training on scientific research for clinicians.

Clinicians are always busy. How to help them to quickly identify a research topic, reasonably carry out research design, and properly select statistical analysis methods, and finally successfully publish their findings in a high-profile SCI journal has become an urgent and realistic task. Thus, AME launched this AME College with a target to carrying out training courses on clinical research design/applied medical statistics/scientific writing skills in major cities and collaborating hospitals across China. Compared with other training courses, the AME College has many features: all the courses are specifically designed for clinicians; statistics will be a training priority since it remains a challenge for most clinicians; and tailored training will be performed on the common mistakes/errors found in scientific articles written by Chinese doctors. The college will be launched by AME Publishing Company. Experts with rich "real world" experiences in clinical research design/applied medical statistics/scientific writing skills from China and abroad will be invited to teach in the training courses. Based on detailed true cases, they will share their own experiences through interactive learning modes including lectures, discussions, and exercises. Teaching assistants (TAs) will be also available to help the trainees to complete their exercises. All the courses are designed to be practical and simple. Furthermore, efforts have been made to ensure the curriculum design and teaching methods meet the thinking patterns of Chinese clinicians; in other words, the training content must be understandable, acceptable, and repeatable. The ultimate mission of AME College is to serve Chinese clinicians and promote the development of medical sciences in China.

Evidence-based medicine (EBM) and systematic review/meta-analysis training courses

EBM is an interdisciplinary approach emerging from

1980s that integrates clinical medicine, epidemiology, and statistics. As an applied discipline with a mission to address the challenges in health care, it remains one of the most important and active disciplines in medical sciences. Systematic review/meta-analysis is one of the key EBM methodologies that produce high-quality evidences. A solid understanding and proper application of systematic review/meta-analysis will help clinicians to deeply understand clinical epidemiology and statistics, enable them to correctly interpret the results of clinical studies published in medical journals, and facilitate the clinicians to improve their capabilities in clinical research design and in writing and publishing high-profile scientific articles. In return, it is also an integral part of clinical competence for clinicians.

The value of systematic review/meta-analysis has increasingly been recognized by Chinese clinicians in the past decade. The number of systematic review/meta-analysis written by Chinese authors has increased annually in the SCI database. Today, the number of systematic review/meta-analysis authored by Chinese scholars ranked fourth worldwide, surpassed only by the United States, the United Kingdom, and Canada. Although the number of Meta analyses has been large, their quality remains suboptimal. Few meta-analysis authored by Chinese scholars have high impacts. In addition, these articles often have much room to improve in terms of methodologies, reporting standards, and writing skills. Therefore, we invited top Chinese scholars with rich experiences in systematic review/meta-analysis to thoroughly explain the methodologies of systematic review/meta-analysis and share their skills and experiences in writing and publishing these articles. It is expected that this course will help to improve Chinese clinicians' capabilities in systematic review/meta-analysis and help Chinese authors to publish scientific articles with higher impacts, so as to promote the development and application of EBM in China.

Focusing on the preparation of systematic review, this course will include: an overview of EMB and systematic review; proposing a clinical research topic; statistical issues in meta-analysis; strategies and methods for searching EBM literature; quality evaluation for common clinical reports; systematic review/meta-analysis on interventions, diagnosis, etiologies, and prognostic factors; application of software such as Revman (version 5.3) and Stata (version 13.0) in meta-analysis.

Features: this course is designed to improve the trainees' actual capabilities in systematic review/meta-analysis by focusing on the following issues: what is systematic

review/meta-analysis? How to choose a topic? How to search related literature? How to conduct literature quality evaluation? How to retrieve data from the yielded literature? How to analyze and interpret data using software? What is the core process for writing a systematic review? Without any didactic and pedantic talks, the course is highly practical and will be given in case-based teaching workshop, whenever possible.

Advanced methodologies of systematic review/meta-analysis

Along with the wide spread of the knowledge of systematic review/meta-analysis, a growing number of clinicians have become interested in the advanced methodologies of systematic review/meta-analysis. In fact, the methodologies of meta-analysis have rapidly developed in recent years, as the traditional meta-analysis methods have shown many limitations when addressing some clinical issues. For instance, in the randomized controlled trials (RCTs), it is difficult to directly compare multiple different interventions targeting the same clinical condition. However, the users of the evidences are often eager to distinguish these interventions; then, how can such indirect comparisons be achieved by using a proper meta-analysis method? Also, for data describing dose-response relationships in etiological studies, can we merge them? These issues need to be addressed using non-classical meta-analysis methods. According to our tracing of systematic reviews/Meta analyses published in top medical journals, the acceptance of these articles is not only because the research topics are

important but also because the authors had adopted more sophisticated meta-analysis methodologies such as meta-analysis based on individual patient data (IPD) or network meta-analysis. Therefore, in our training course on the advanced methodologies of systematic review/meta-analysis, we will provide a good platform for trainees interested in systematic review/meta-analysis to share their knowledge and skills, so as to standardize and promote the application and development of advanced methodologies of systematic review/meta-analysis in China.

Again, this training course is designed to meet the real needs of trainees. The 3-day training course will cover topics including network meta-analysis methodologies, meta-analysis of rate, meta-analysis of count data, meta-analysis of dose-response relationships, meta-analysis of IPD, and meta-analysis of survival data. Again, with an attempt to increase the trainees' capability in conducting systematic review/meta-analysis, a case-based teaching mode will be adopted, along with the personal experiences shared by the lecturers. An open teaching mode integrating lectures, demonstrations, exercises, and discussions will be applied. Also, the trainees will be arranged to receive computer-based training and user data communication sessions, focusing on the usage of Stata, WinBUGS, R language, and ADDIS software, which main involves data processing, interpretation of program codes, drawing of network maps, and presentation of analysis results. Again, efforts will be made to ensure the training content is understandable, acceptable, and repeatable.

Course schedule

Course 1: clinical research design and registration of research protocols

Date	Time	Topics	Details
Day 1: morning	8:30 AM - 10:20 AM	An introduction to scientific thinking and methods in clinical research	Overview of clinical research; importance of clinical research; where does a clinical research idea come from; categories of clinical research; principles of clinical trial design; general process of a clinical study
	Tea break		
	10:30 AM - 12:10 PM	Statistical issues in clinical research; estimation of a reasonable sample size	Statistical issues in clinical research: concept of sampling distribution; type I and type II errors; case-based; estimation of various sample sizes using the PASS software; calculating the power of a test
Lunch break			
Day 1: afternoon	2:00 PM - 3:50 PM	Design and application of randomized controlled trials	Case-based introduction to parallel group design, crossover design, and N of 1 trial; methodological advances in real world research, empirical study, and other RCTs
	Tea break		
	4:00 PM - 5:50 PM	Randomization and blinding for RCTs	Case-based introduction to the production of random sequences (completely randomized design, stratified randomization, block randomization, and group randomization; allocation concealment; proper implementation and supervision of blinding
Day 1: evening	7:00 PM - 8:00 PM	Practice and exercises	Operation exercises according to the corresponding cases
Day 2: morning	8:30 AM - 10:20 AM	Collection, management, and statistical analysis of data obtained from RCTs	Case-based introduction to CRF form design, data collection, and data management; case-based introduction to statistical analysis of RCT data and realization in statistical software
	Tea break		
	10:30 AM - 12:10 AM	Principles for designing diagnostic accuracy studies and screening tests	Overview of the classification and proper application of diagnostic tests; principles for designing screening tests; case-based introduction to the key points and challenges in designing studies on diagnostic tests
Lunch break			
Day 2: afternoon	2:00 PM - 3:50 PM	Data collection, management, and analysis for diagnostic accuracy studies	Case-based introduction to the collection and management of data obtained from diagnostic accuracy studies: based on Med-Calculator and SPSS
	Tea break		Software-based data analysis, including the drawing of ROC curves and the calculation of sensitivity, specificity, and odds ratio
	4:00 PM - 5:50 PM	Principles for designing clinical studies on etiologies and prognostic factors	Case-based introduction to: design of a cohort study; design of a case-control study; protocol of a prognostic study; key points and challenges in study design

Course 1 (continued)

Course 1 (*continued*)

Date	Time	Topics	Details
Day 2: evening	7:00 PM - 8:00 PM	Practice and exercises	Operation exercises according to the corresponding cases
Day 3: morning	8:30 AM - 10:20 AM	Data collection, management, and analysis for etiological and prognostic studies	Data management and analysis for cohort studies and case-control studies, including the preparation of CRF table; data management using Epidata; data analysis based on appropriate statistical software
	Tea break		
	10:30 AM - 12:10 PM	Writing and registration of clinical research protocol	Case-based introduction to the development and writing of clinical research protocol; case-based introduction to the registration of clinical research protocol in ClinicalTrials.gov website
Lunch break			
Day 3: afternoon	2:00 PM - 3:50 PM	Data mining and analysis for clinical findings	Case-based introduction to multivariate analysis, multi-level analysis, and analysis of relationships among complex independent variables
	Tea break		Selection of appropriate analytic methods for data mining and analysis
	4:00 PM - 5:50 PM	How to write a clinical research report	Interpretation of the key points of CONSORT Statement, STROBE Statement, and STARD Statement; introduction to the proper application of various report styles

Note, please bring your own laptop (An operating system of Windows XP or newer is preferred).

Course 2: applied medical statistics

Date	Time	Topics	Details
Day 1: morning	8:30 AM - 9:10 AM	How can a clinician master statistics?	An inspiring and motivating talk is given to encourage the clinicians to try their best to learn statistics
	9:10 AM - 10:10 AM	Data types, descriptive statistics, and inference and hypothesis testing	Case-based introduction to data types and descriptions and definitions of statistical data. Case-based introduction to the essential concepts of statistical inference and hypothesis testing
	Tea break		
	10:20 AM - 10:50 AM	Establishment of a statistical information database	Case-based introduction to the operation and setup for database development (based on SPSS or other statistical software)
	10:50 AM - 11:20 AM	Management of the statistical information database	Case-based introduction to the management of statistical data (based on SPSS or other statistical software)
	11:20 AM - 11:40 AM	Practice and exercises (based on SPSS software)	Computer-based exercises according to the corresponding cases
	11:40 AM - 12:10 PM	General principles for selecting a proper statistical method	Introduction to the methods for selecting statistical tests based on data types (based on SPSS software)
	Lunch break		
	2:00 PM - 3:00 PM	Description of the counting statistics of measurement data	Measures of central tendency and dispersion; rate and proportion; judging a normal distribution; determination of outliers (abnormal values)
	3:10 PM - 4:30 PM	Basic concepts of <i>t</i> test and their realization in software	Case-based introduction to the essential concepts of <i>t</i> test and their realization in software One-Sample <i>t</i> Test. Realization of <i>t</i> test for paired samples and two independent samples in statistical software (mainly in SPSS)
Day 1: afternoon	Tea break		
	4:40 PM - 6:10 PM	Basic concepts of analysis of variance (ANOVA) and their realization in software	Case-based introduction to the essential concepts of F test and their realization in software; realization of five common ANOVA methods in statistical software (mainly in SPSS): complete randomization, random block, factorial design, repeated measurements, and analysis of covariance
	7:00 PM - 8:00 PM	Practice and exercises (based on SPSS software)	Computer-based exercises according to the corresponding cases
	8:30 AM - 9:50 AM	Basic concepts of chi-square test and their realization in software	Case-based introduction to grouped fourfold table, matched fourfold table, grouped $R \times C$ table. Stratified Chi-square test (mainly in SPSS); application of Chi-square test in clinical case-control study, cohort study, and RCTs; calculation of OR and RR and the inferences of these two parameters
	Tea break		
	10:00 AM - 11:30 AM	Basic concepts of non-parametric test and their realization in software	Case-based introduction to the difference between parametric and non-parametric tests and the selection criteria; five types of nonparametric statistical analysis methods: one-sample, two independent samples, K independent sample, two dependent samples, K dependent samples (mainly in SPSS)
	11:30 AM - 12:00 PM	Practice and exercises (based on SPSS software)	Computer-based exercises according to the corresponding cases

Course 2 (continued)

Course 2 (*continued*)

Date	Time	Topics	Details
Lunch break			
Day 2: afternoon	2:00 PM - 3:20 PM	Basic concepts of correlation analysis and their realization in software	Case-based introduction to: two correlation analysis methods: linear correlation and partial correlation. Basic concepts of correlation and their realization in software (mainly in SPSS)
	3:30 PM - 5:15 PM	Basic concepts of linear regression model and their realization in software	Case-based introduction to: principles, procedures, operation, and result interpretation of simple linear regression and multiple linear regression models; relationship and difference between correlation analysis and regression models
Tea break			
Day 2: evening	5:25 PM - 6:00 PM	Practice and exercises (based on SPSS software)	Computer-based exercises according to the corresponding cases
	7:00 PM - 8:00 PM	Practice and exercises (based on SPSS software)	Computer-based exercises according to the corresponding cases
Day 3: morning	8:30 AM - 10:00 AM	Basic concepts of Logistic regression models and their realization in software	Case-based introduction to: various Logistic regression model analyses: binomial (or binary), multinomial, and ordinal Logistic regression models and their realization in SPSS software as well as the result interpretation
	Tea break		
	10:10 AM - 11:30 AM	Basic concepts of survival analysis and their realization in software	Case-based introduction to: statistical descriptions of survival data: K-M methods life table method; hypothesis test in univariate survival analysis: log-rank test (mainly in SPSS)
	11:30 AM - 12:00 PM	Practice and exercises (based on SPSS software)	Computer-based exercises according to the corresponding cases
Lunch break			
Day 3: afternoon	2:00 PM - 3:20 PM	Basic concepts of Cox regression model and their realization in software	Case-based introduction to: various Cox regression models: analysis and result interpretation
	3:30 PM - 4:30 PM	Principal component analysis and factor analysis; cluster and discriminant analysis basic concepts and their realization in software	Case-based introduction to: two dimension reduction methods in principal component analysis and factor analysis: operation on two main different cluster analyses methods. The trainees are required to be able to categorize the samples and interpret the results, especially the interpretation of the results of icicles and tree diagrams (mainly in SPSS)
Tea break			
	4:40 PM - 5:40 PM	Overview of linear models and generalized linear models	General, mixed, and generalized linear models and their methods; applicable conditions of different linear models and their realization in software
	5:40 PM - 6:00 PM	Practice and exercises (based on SPSS software)	Computer-based exercises according to the corresponding cases

Note, please bring your own laptop (An operating system of Windows XP or newer is preferred).

Course 3: how to write and publish a scientific article

Date	Time	Topics	Details
Day 1: morning	8:30 AM - 10:00 AM	How can young scientists quickly publish their articles in an SCI-index journal?	Inspiring and motivating talk: thinking in a Western way; be more confident; key to publishing scientific articles; some success stories that are so easy and “without any technical content”. The trainees will find out that it is not so difficult for a clinician to publish his/her scientific article in an SCI-indexed journal!
	Tea break		
	10:15 AM - 12:00 PM	Tips and precautions of scientific writing and submission;	Idea and framework of a scientific article; topic, abstract, methods, results and discussion of a scientific article; how to select the journal that suits your research best; instructions to Authors and other submission considerations; practical submission skills from the perspective of peer review
Lunch break			
Day 1: afternoon	2:00 PM - 3:50 PM	How to improve the skills of reading medical literature?	Introduction to full-text quick search and literature reading based on cases and lecturers' own experiences; how to maximize information from specific literature; how to find good idea from literature; how to quickly improve yourself by maximizing the value of high-quality literature
	Tea break		
	4:10 PM - 6:00 PM	How to rapidly improve the scientific writing skills?	Case-based introduction & lecturer's personal experiences, including: the common grammar mistakes made by Chinese authors; however to effectively overcome Language barriers; how to polish the language; and ways to improve English writing ability
Day 2: morning	8:30 AM - 10:20 AM	How to rapidly publish a scientific article in SCI-indexed journal using the currently available clinical data?	Case-based introduction & lecturer's personal experiences. It is possible to publish a scientific article in SCI-index journal without conducting an experiment or clinical study!
	Tea break		
	10:40 AM - 12:00 PM	Statistical principles in scientific writing	Data types; statistical description; statistical inference; general principles for selecting a proper statistical method; common statistical errors in a scientific article and their causes; brief introduction to the common statistical methods in a scientific article and their realization in software
Lunch break			
Day 2: afternoon	2:00 PM - 3:00 PM	How to properly cite references in a scientific article?	Case-based introduction to the use of EndNote software, literature management, reference citation, revision of references, and quick revision of references when changing the target journal
	Tea break		
	3:10 PM - 4:20 PM	How to select a proper SCI-indexed journal and then submit your manuscript?	Case-based introduction & lecturer's personal experiences. Templates to be used during submission process (e.g., submission, revision, and rejection) and tips
	4:30 PM - 6:00 PM	How to effectively communicate with the editors and peer reviewers?	However to communicate with the editors? How to respond to the reviewers' comments? Precautions and tips of communication during submission

Course 3 (*continued*)

Course 3 (*continued*)

Date	Time	Topics	Details
Day 3: morning	8:30 AM - 10:10 AM	Common problems during the writing and publishing of scientific articles by Chinese authors	The common mistakes made by Chinese authors during scientific writing will be presented in cases; meanwhile, lecturers will give their solutions based on their rich experiences
	Tea break		
	10:20 AM - 12:00 PM	How to publish a scientific article in a high-profile SCI journal?	Case-based introduction & lecturer's personal experiences
Lunch break			
Day 3: afternoon	1:40 PM - 2:30 PM	Application of common office software in scientific writing	Introduction to the skills of using Microsoft Office software package (Word, Excel, and PowerPoint) in scientific writing; case-based demonstration of the approach to preparing simple and elegant tables that meet the requirements of the target journal
	Tea break		
	2:50 PM - 4:50 PM	Application of common CAD software in scientific writing	Teaching and demonstration of the use of common CAD software including GraphPad, Original, Photoshop, Adobe Illustrator, and PPT in scientific writing
	5:00 PM - 6:00 PM	Demonstration of the figure cropping skills	Introduction to the use of PowerPoint and Adobe Illustrator in figure cropping

Note, please bring your own laptop (An operating system of Windows XP or newer is preferred).

Course 4: access to evidence-based medicine resources and critical reading of evidences (an open course)

Date	Time	Topics	Details
Day 1: morning	8:30 AM - 9:10 AM	Overview of evidence-based medicine (EBM)	The concept of EBM; mission of EBM; evidence grading; misconceptions about EBM
	9:20 AM - 10:40 AM	4S pyramid of evidence resources	Aim of medical search; case-based demonstration of the principles for access to evidence-based medicine evidences
	10:50 AM - 12:00 PM	Critical reading of RCT reports	The trainees are required to master the principles for the critical reading of RCT reports and understand the message transferred by a report
Lunch break			
Day 1: afternoon	2:00 PM - 3:10 PM	Critical reading of observational study reports	The trainees are required to master the principles for the critical reading of observational study reports and understand the message transferred by a report
	3:20 PM - 4:30 PM	Critical reading of diagnostic accuracy study reports	The trainees are required to master the principles for the critical reading of diagnostic accuracy study reports and understand the message transferred by a report
	4:40 PM - 6:00 PM	Critical reading of systematic review/meta-analysis	The trainees are required to master the principles for the critical reading of systematic review/meta-analysis and understand the message transferred by the article

Course 5: systematic review/meta-analysis (for beginners and intermediates)

Date	Time	Topics	Details
Day 1: morning	8:30 AM - 9:20 AM	Overview of evidence-based medicine and systematic review/meta-analysis	The concept of EBM; The concept of EBM; evidence grading; misconceptions about EBM. The concept of systematic review/meta-analysis; misconceptions about meta-analysis
	Tea break		
	9:20 AM - 10:20 AM	A detained introduction to the preparation of systematic review/meta-analysis	Preparation of systematic review/meta-analysis
	10:35 AM - 12:00 PM	Reasonable construction of a clinical issue (based on PICOS principle)	How to formulate a clinical question based on the PICOS principle (case-based introduction)
	Lunch break		
Day 1: afternoon	1:30 PM - 2:00 PM	Brief introduction to medical literature search	Basics of the literature search; general search syntax; key word-based search principles
	2:00 PM - 4:00 PM	Evidence-based search based on PICOS principle/ demonstration of searching in Chinese and English databases	Precautions of search for preparing systematic review; cased-based introduction & case demonstration. Searching in the mainstream databases
	Tea break		
	4:15 PM - 4:45 PM	Reference management software: How to use Endnote X7	Demonstration of the use of EndNote: Use of EndNote, literature management, and importing/exporting literature, screening literature, and citation of references
	4:45 PM - 5:40 PM	Common statistical indicators in systematic review/meta-analysis	Introduction to the statistical methods and principles of meta-analysis; Case-based introduction to statistical indicators in meta-analysis; and principles for data collection in meta-analysis
Day 1: evening	7:00 PM - 8:00 PM	Practice and exercises	Computer-based exercises according to the corresponding cases
Day 2: morning	8:30 AM - 9:20 AM	Demonstration of the basic principles and application of data extraction	Case-based demonstration of data extraction for binary and constant variables
	9:30 AM - 11:30 AM	Demonstrating the use of RevMan 5.3 software	Case-based demonstration of the Meta merging of binary and constant variables in the software; merging of the special data forms (known effect size, confidence interval, etc.)
	Tea break		
	11:30 AM - 12:00 PM	Practice and exercises	Computer-based exercises according to the corresponding cases

Course 5 (continued)

Course 5 (*continued*)

Date	Time	Topics	Details
Lunch break			
Day 2: afternoon	1:30 PM - 3:50 PM	Quality evaluation of clinical studies	Principles of the quality evaluation of various clinical studies (interventional, diagnostic, etiological, and prognostic studies) and the application of quality evaluation tools
Tea break			
	4:00 PM - 6:00 PM	Use of Stata software in meta-analysis ¹	Realization of the Meta merging of various types of data (from interventional, diagnostic, etiological, and prognostic studies) in the software. Mainly case-based demonstrations, along with exercises
Day 2: evening	7:00 PM - 8:00 PM	Use of Stata software in meta-analysis ¹	Case-based demonstrations of Stata software, along with exercises
Day 3: morning	8:30 AM - 9:50 AM	Heterogeneity analysis in meta-analysis	Heterogeneity analysis based on the Stata software, including subgroup analysis and Meta regression (mainly based on case demonstration)
Tea break			
	10:00 AM - 11:00 AM	Sensitivity analysis in meta-analysis	Sensitivity analysis based on the Stata software (mainly based on case demonstration)
	11:10 AM - 12:00 PM	Detection of publication bias in meta-analysis	Drawing of funnel plots using the Stata software; assessment of a funnel plot symmetry; etc.
Lunch break			
Day 3: afternoon	1:30 PM - 2:30 PM	Analysis of sample systematic reviews on intervention studies	Using systematic reviews published in top medical journals as the sample articles, the lecturers will reconstruct their production processes
	2:40 PM - 3:40 PM	Analysis of sample systematic reviews on etiological studies	Using systematic reviews published in top medical journals as the sample articles, the lecturers will reconstruct their production processes
	3:50 PM - 4:50 PM	Analysis of sample systematic reviews on diagnostic studies	Using systematic reviews published in top medical journals as the sample articles, the lecturers will reconstruct their production processes
	5:00 PM - 5:30 PM	Q&A	Any question about clinical epidemiology, statistics, and systematic review

Note, please bring your own laptop (An operating system of Windows XP or newer is preferred).

Course 6: advanced methodologies of systematic evaluation/meta-analysis

Date	Time	Topics	Details	
Day 1: morning	8:30 AM - 5:30 PM	Traditional meta-analysis methods: an overview	Introduction to meta-analysis and development of meta-analysis methods	
	9:30 AM - 10:30 AM	Network meta-analysis (NMA): overview and development	Development of NMA and its principles and future directions	
	10:45 AM - 12:00 PM	Proposing an NMA question; construction of network chart; and literature search	Proposing a clinical question for NMA; construction of network relations; literature search for NMA	
	Lunch break			
Day 1: afternoon	1:30 PM - 2:50 PM	Bayesian meta-analysis: basic principles and application	Case-based introduction to the basic principles of Bayesian meta-analysis	
	2:50 PM - 4:00 PM	Data structure and applicable models or methods of NMA	Case-based introduction to the data structure of NMA	
	4:10 PM - 6:00 PM	Testing and treatment of heterogeneity and/or inconsistency	Case-based introduction to the heterogeneity and/or inconsistency of NMA. Testing and treatment methods	
	Day 1: evening	7:00 PM - 9:00 PM	Practice and exercises	Demonstration of the use of software including ADDIS, Gemtc, WinBUGS, Stata, and R for indirect comparison meta-analysis and drawing of network charts
Day 2: morning	8:30 AM - 9:30 AM	Evaluation of NMA publication bias and operation in software	Case-based introduction to the evaluation of NMA publication bias	
	9:40 AM - 10:50 AM	Model-based diagnosis and selection of the best model	Case-based introduction to model-based diagnosis and selection of the best model	
	11:00 AM - 12:00 PM	Exploring the sources of NMA heterogeneity	Mainly case-based introduction (R/Stata/WinBUGS)	
	Lunch break			
Day 2: afternoon	1:30 PM - 2:40 PM	Exploring the sources of NMA inconsistency	Mainly case-based introduction (R/Stata/WinBUGS)	
	2:50 PM - 4:00 PM	NMA power testing and sample size calculation	Case-based introduction to power testing and sample size calculation	
	4:10 PM - 6:00 PM	Experience sharing and demonstration	Mainly case-based introduction (R/Stata/WinBUGS) for restoring the production process	
	Day 2: evening	7:00 PM - 9:00 PM	Practice and exercises	Mainly case-based introduction (R/Stata/WinBUGS for NMA)
Day 3: morning	8:30 AM - 9:30 AM	Reporting criteria and evidence levels of NMA findings (e.g., GRADE)	Case-based introduction to the reporting criteria and evidence levels of NMA findings. Critical reading of NMA literature	
	9:40 AM - 10:50 AM	Demonstration of the meta-analysis of single rate	Mainly case-based introduction (Stata/R)	
	11:00 AM - 12:10 PM	Demonstration of the meta-analysis of count data	Mainly case-based introduction (Stata/R)	

Course 6 (*continued*)

Course 6 (*continued*)

Date	Time	Topics	Details
Lunch break			
Day 3: afternoon	1:30 PM -	Demonstration of the meta-analysis on	Mainly case-based introduction (Stata/R)
	2:50 PM	dose-response relationship	
	3:00 PM -	Demonstration of the meta-analysis of	Mainly case-based introduction (Stata/R)
	4:20 PM	IPD	
	4:30 PM -	Demonstration of the meta-analysis of	Mainly case-based introduction (Stata/R)
	5:45 PM	survival data	

Note, please bring your own laptop (An operating system of Windows XP or newer is preferred).

Acknowledgements

None.

Footnote

Conflicts of Interest: The authors have no conflicts of interest to declare.

Cite this article as: Editorial Office. AME College: a Clinical Research Training Program. J Thorac Dis 2015;7(8):E262-E274. doi: 10.3978/j.issn.2072-1439.2015.08.15