THE UNIVERSITY OF ARIZONA COLLEGE OF PHARMACY
Center for Health Outcomes & PharmacoEconomic Research

Meta-Analysis Training Program

Learn to design, conduct, interpret, and publish robust meta-analyses!

June 18-20, 2018
The University of Arizona
College of Pharmacy
Tucson, Arizona

Sponsored by
The University of Arizona
College of Pharmacy

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An Overview of the Meta-Analysis Program

This 3-day, hands-on course will enable participants to:

- Evaluate published meta-analyses
- Identify and address bias in meta-analyses
- Design a study protocol for meta-analysis
- Optimize searches for data sets
- Design and build an extraction database
- Quantify and interpret heterogeneity
- Differentiate fixed and random-effects models
- Incorporate sub-group analysis and meta-regression
- Interpret, critique, and summarize results for publication

Who should attend?

- Personnel in healthcare policy, pharmaceutical and biomedical industries, or academic research with an entry to intermediate knowledge level
- Participants should bring their own laptops installed with Excel to complete interactive exercises

Training Program Faculty

Ivo Abraham, PhD, RN
Professor of Pharmacy Practice & Science
The University of Arizona College of Pharmacy

Jason Hurwitz, PhD
Research Scientist
Center for Health Outcomes & PharmacoEconomic Research
The University of Arizona College of Pharmacy

Christopher S Lee, PhD, RN, FAHA
Professor and Associate Dean for Research
Connell School of Nursing
Boston College

Jennifer Martin, MA
Associate Librarian, Arizona Health Sciences Library
Clinical Instructor, Department of Pharmacy Practice & Science
The University of Arizona College of Pharmacy

Marion Slack, PhD
Professor, Department of Pharmacy Practice & Science
The University of Arizona College of Pharmacy

WORKSHOP REQUIREMENTS
Participants need to bring a laptop with Excel to participate in workshops.

Meta-Analysis Training Program
Agenda

Monday, June 18, 2018

8:00-8:30 am — **Breakfast, registration, welcome and Introduction**

8:30-9:00 — **Value of Meta-Analysis: Why do it?**
Ivo Abraham, PhD, RN
- Discuss the use and importance of meta-analysis
- Identify advantages and disadvantages of meta-analysis

9:00-10:00 — **Meta-Analysis Review**
Marion Slack, PhD
- Using a published meta-analysis, identify techniques, terminology, and core concepts
- Discuss effect size and use of PRISMA criteria

10:00-10:15 — **Break**

10:15-12:15 pm — **Literature Search Techniques for Meta-Analysis**
Jennifer Martin, MA
- Identify appropriate databases
- Develop database search strategies
- Describe methods to document strategies
- Conduct a series of database searches; evaluate the strategies and results

12:15-1:15 — **Lunch**

1:15-2:45 — **Protocols for Meta-Analysis**
Marion Slack, PhD
- Define criteria to develop a protocol with purpose statement
- Discuss use of PICOS + E (population, intervention, comparator, outcome(s) of interest, study design, and exclusion criteria)
- Develop items for a screening and data extraction tool

2:45-3:00 — **Break**

3:00-4:30 — **Screening Studies and Data Extraction**
Jason Hurwitz, PhD and Marion Slack, PhD
- Identify candidate studies from literature utilizing a screening tool
- Obtain data for a meta-analysis using the data extraction tool
- Incorporate study data into a small data set for meta-analysis and interpret results (effect estimates, forest and funnel plots)

4:30-4:45 — **Complete daily evaluation**

Tuesday, June 19, 2018

8:00-8:30 am — **Breakfast**

8:30-10:30 — **Within- and Between-Study Estimates of Effect and Variability**

Christopher S Lee, PhD, RN, FAHA, FAAN, FHFSA

- Describe estimates of effect and precision using means, binary data, correlations, and point estimates
- Calculate variance, standard error, confidence intervals, and effect sizes

10:30-10:45 — **Break**

10:45-12:00 pm — **Fixed and Random Effects Models**

Christopher S Lee, PhD, RN, FAHA, FAAN, FHFSA

- Discuss the assumptions that underlie fixed and random effects models
- Compare procedures and products associated with fixed and random effects models
- Calculate weights for each study using fixed and random models, and calculate a summary effect
- Compare and contrast fixed and random effects model results

12:00-1:00 — **Lunch**

1:00-1:45 — **Fixed and Random Effects Models** (continued)

1:45-2:30 — **Quantifying and Interpreting Heterogeneity**

Christopher S Lee, PhD, RN, FAHA, FAAN, FHFSA

- Compare and contrast metrics of total dispersion (Q), total to excess dispersion (Q-df), between-study variance (τ^2), and signal-to-noise ratio (I^2)
- Conduct a random effects meta-analysis
- Interpret the summary effect and the metrics of heterogeneity

2:30-2:45 — **Break**

2:45-3:30 — **Quantifying and Interpreting Heterogeneity** (continued)

3:30-4:30 — **Special Topics: Network Meta-Analysis**

Ivo Abraham, PhD, RN

- Compare and contrast approaches of direct and indirect treatment comparisons using meta-analytic approaches
- Discuss the benefits of network meta-analysis
- List potential criticisms of network meta-analysis

4:30-4:45 — **Complete daily evaluation**

Wednesday, June 20, 2018

8:00-8:30 am — **Breakfast**

8:30-10:30 — **Examining Bias in Meta-Analysis**

Christopher S Lee, PhD, RN, FAHA, FAAN, FHFSA

- Explain publication bias using funnel plots, contour-enhanced plots, and non-parametric trim and fill
- Discuss tests for small study effects
- Describe classic and Orwin's fail-safe N
- Interpret the results of tests of publication bias
- Describe the results of Egger's test of small study effects
- Analyze published meta-analyses that use trim and fill and fail-safe N

10:30-10:45 — **Break**

10:45-11:20 — **Special Topics: Meta-Analysis of Data Sets & Single Case Research**

Jason Hurwitz, PhD

- Compare and contrast issues in analyzing data from publications vs from original data sets for separate studies
- Describe why multilevel modeling is needed to analyze nested data
- Demonstrate techniques for pooling a series of n-of-1 trials
- Discuss how single case research generates practice based evidence

11:20-11:45 — **Jeopardy Game: What Have You Learned?**

11:45-12:45 pm — **Lunch**

12:45-1:45 — **Sub-group Analysis and Meta-Regression**

Christopher S Lee, PhD, RN, FAHA, FAAN, FHFSA

- Describe situations when subgroup analyses are appropriate
- Identify procedures and products associated with sub-group analysis
- Describe incorporation of covariates using meta-regression
- Discuss interpreting data output from multivariate meta-regression

1:45-2:45 — **Evaluating Published Meta-Analyses**

Jason Hurwitz, PhD

- Discuss the process to critique and evaluate meta-analyses
- Review and critique a well done and a flawed meta-analysis
- Learn to use common evaluation tools (AMSTAR, PRISMA, MARS)

2:45-3:00 — **Break**

3:00-3:30 — **Evaluating Published Meta-Analyses** (continued)

3:30-4:15 — **Special Topics: Meta-Analysis - Special Considerations**

Christopher S Lee, PhD, RN, FAHA, FAAN, FHFSA

- Describe the hierarchical summary receiver operating characteristic (HSROC)
- Discuss evaluating sensitivity & specificity with diagnostic odds ratios
- Identify issues involving cross-over trials or cluster-randomized trials

4:15-4:30 — **Complete daily evaluation and close of program**

Registration

Venue

All sessions will be held at The University of Arizona College of Pharmacy.
Drachman Hall-Pulido Center
1295 N. Martin Ave.
Tucson, AZ

Lodging

Area hotels offer lodging at reasonable rates and close proximity to the college

Tucson Marriott University Park
520-792-4100

Arizona Inn
800-933-1098

Aloft Tucson University
520-908-6800

Please use the online registration process at https://events.pharmacy.arizona.edu/metaanalysis OR complete the registration form and return it with your payment. The registration fee includes all sessions, training materials, daily breakfast, lunch, breaks, and a certificate of completion.

REFUND POLICY: A refund (less $450 cancellation fee) will be available for cancellations received in writing by June 1, 2018.

Registration fees paid to The University of Arizona Foundation are not considered a tax-deductible gift contribution.

Persons with a disability may request a reasonable accommodation, such as sign language interpreter, by contacting the Office of Continuing Education, 520-626-3020, email: continuinged@pharmacy.arizona.edu. Requests should be made as early as possible to allow time to arrange the accommodation.

For further information:

Office of Continuing Education
The University of Arizona
College of Pharmacy
PO Box 210202
Tucson, Arizona 85721-0202

Phone: (520) 626-3020

Email: continuinged@pharmacy.arizona.edu
Web address: www.pharmacy.arizona.edu/hope
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Online Registration

https://events.pharmacy.arizona.edu/metaanalysis

If not using the online system,
please return registration form below:

Registration Form

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NAME _____

DEGREE _____ POSITION _____

AFFILIATION _____

ADDRESS _____

CITY _____ STATE _____ ZIP CODE _____

TELEPHONE _____

EMAIL ADDRESS _____

Registration fee:
- ◯ Professional: $2,000
- ◯ ACCP Member: $1,600
- ◯ Trainee (Fellows/Residents/Graduate students): $750
- ◯ University of Arizona Employee/Student

Please indicate method of payment:

- ◯ Check made payable to the **The University of Arizona Foundation**
- ◯ Visa ◯ Mastercard ◯ American Express

Card Number _____ Expiration Date _____

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Please return completed registration form and payment to:

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