

## **2<sup>ND</sup> REAL WORLD DATA EPIDEMIOLOGY –**

### **OXFORD SUMMER SCHOOL**

*Lady Margaret Hall, Oxford*

19/06/2017 – 23/06/2017

#### CONFIRMED SPEAKERS

D Prieto-Alhambra (NDORMS, University of Oxford)

A Judge (NDORMS, University of Oxford)

PR Rijnbeek (Erasmus University Medical Center, Netherlands)

I Petersen (University College London, United Kingdom)

S Perez-Gutthann (RTI-HS, Barcelona)

I Douglas (LSHTM, London, United Kingdom)

J Leal (HERC, University of Oxford)

R Pinedo-Villanueva (NDORMS, University of Oxford)

E Molero (SYNAPSE Research Management Partners, Spain)

Bart Vannieuwenhuysse (IMI-EMIF and Janssen Research and Development)

A Silman (NDORMS, University of Oxford)

A Delmestri (NDORMS, University of Oxford)

W Forrester-Barker (NDORMS, University of Oxford)

MS Ali (NDORMS, University of Oxford)

A Bourke (THIN, IMS Health, United Kingdom)

A Lübbecke-Wolff (University of Geneva, Geneva Arthroplasty Registry, Switzerland)

G Collins (Centre for Statistics in Medicine, NDORMS, University of Oxford)

N Lea (University College London, United Kingdom)

D Dedman (Clinical Practice Research Datalink (CPRD), MHRA, London, United Kingdom)

C Allen (Pharmacoepidemiology Research and Intelligence Unit, MHRA, London, United Kingdom)

S Khalid (NDORMS, Oxford)

V Ehrenstein (Clinical Epidemiology, Aarhus, Denmark)

**Course Director & Co-Director:**

Prof D Prieto-Alhambra, Associate Professor and Co-Chair of the Big Health Data User Group, NDORMS, University of Oxford.

Prof A Judge, Associate Professor and Chair of the Big Health Data User Group, NDORMS, University of Oxford.

**Course administrator:**

Ms Paloma O'Dogherty ([paloma.odogherty@ndorms.ox.ac.uk](mailto:paloma.odogherty@ndorms.ox.ac.uk))

**Target audience:** Pharmacists, clinicians, academics (including statisticians, epidemiologists, and related MSc/PhD students); Industry (pharmacy or device) or Regulatory staff with an interest in the use of routinely collected data for research.

**Learning Goals:** By the end of the course, delegates will:

1. *DATA DISCOVERY AND VALIDATION STUDIES:* Gain an understanding of the existing sources of routinely collected data for epidemiological research, and on how to perform validation studies to assess their quality
2. *EPIDEMIOLOGICAL STUDY DESIGN/S:* Be able to discuss common types of study for the use of such data, including cohort, case-control, and case only studies.
3. *PHARMACO- AND DEVICE EPIDEMIOLOGY:* Be aware of the applications of real world data in both pharmaco and device epidemiological studies, including drug/device utilisation and safety research.

4. *PREDICTION MODELLING*: Learn basic concepts on the design and evaluation of prognostic/prediction models developed using real world data.
5. *BIG DATA METHODS*: Be familiar with the basics of big data methods (including machine learning), and examples of their potential applications in ‘real world’ epidemiology.
6. *“REAL WORLD” SOLUTIONS*: Understand relevant issues and learn potential solutions applied to the use of ‘real world’ data: a) data management and information governance, b) interaction with industry and regulators, c) stats/methods: missing information, bias, confounding, misclassification

**Dates**: 19<sup>th</sup> of June to 23<sup>rd</sup> of June 2017

**Venue**: Lady Margaret Hall college, Oxford ([www.lmh.ox.ac.uk](http://www.lmh.ox.ac.uk))

**Duration**: 1 working week, 30 hours

**Registration**: Places can be booked now [here](#).

Registration will be on a ‘first arrived first served’ basis. Fees are as follows:

	Non-for-profit organization		For-profit organization	
	Residential*	Non-residential <sup>0</sup>	Residential*	Non-residential <sup>0</sup>
Early Bird (before 30/04/2017)	£ 1,300	£ 850	£ 1,550	£ 1,100
Regular Fee (from 01/05/2017)	£ 1,500	£ 1,100	£ 1,800	£ 1,350

<sup>0</sup> **‘Non-residential’ fees** cover course registration and materials, refreshments, lunch for five days (from the 19<sup>th</sup> to the 23<sup>rd</sup> of June/2017), and 1 social dinner at Lady Margaret Hall college on Monday.

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\* 'Residential' fees cover additional bed & breakfast accommodation (check-in Sunday, check out Friday) and four dinners (excluding Thursday) at Lady Margaret Hall.

For more information about the registration process, please contact the course administrator ([paloma.odogherty@ndorms.ox.ac.uk](mailto:paloma.odogherty@ndorms.ox.ac.uk)).

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## COURSE PROGRAMME

### DAY 1 (19/06/2017)

#### **MORNING SESSION – INTRODUCTION AND DATA DISCOVERY**

- 08.30-09.00h: Registration, Housekeeping, and Introductions [D Prieto-Alhambra, Oxford]
- 09.00-9.30h: 'Real world' data: strengths and limitations [A Bourke, IMS-THIN]
- 9.30-11.00h: Real world data sources. Chair: Daniel Prieto-Alhambra, Oxford.
  - Drug Utilisation Databases [D Prieto-Alhambra, Oxford] 15’;
  - Primary Care records databases: a few examples [A Bourke IMS-THIN; D Dedman CPRD; D Prieto-Alhambra SIDIAP] 45’;
  - Drug and Device Registry/ies [D Prieto-Alhambra, Oxford] 10’;
  - Hospital data: HES [A Judge, Oxford] 10’
  - QUESTIONS 10’

#### **COFFEE BREAK: 11.00-11.30h**

- 11.30-12.30h: INTERACTIVE SESSION 1: conduct your own ‘live’ drug utilisation study [D Prieto-Alhambra, Oxford]

#### **LUNCH: 12.30h-13.30h**

#### **AFTERNOON SESSION – STUDY DESIGNS USING REAL WORLD DATA 1**

- 13.30-14.30h: Study Designs in RWD Epidemiology 1: Case-control and Cohort studies [I Douglas, LSHTM] 60’

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TEA BREAK: 14.30-15.00h

- 15.00-16.00h: INTERACTIVE SESSION 2 (in groups): design a RWD study [D Prieto-Alhambra, Oxford; I Douglas, LSHTM]

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**DAY 2 (20/06/2017)**

**MORNING SESSION – STUDY DESIGNS (2)**

- 08.30h-09.00h – REGISTRATION
- 09.00h to 10.00h - Study Designs in RWD Epidemiology 2: Case only designs [I Douglas, LSHTM] 60'
- 10.00h to 11.00h – Study Designs in RWD Epidemiology 3: Validation studies [V Ehrenstein, Aarhus] 60'

COFFEE BREAK: 11.00-11.30h

- 11.30h to 12.30h - INTERACTIVE SESSION 3 (in groups): design a case only / a validation study [V Ehrenstein, Aarhus; I Douglas, LSHTM]

LUNCH: 12.30h-13.30h

**AFTERNOON SESSION – HANDLING MISSING DATA**

- 13.30-14.30h: GUEST LECTURE: Multiple imputation of missing data [I Petersen, UCL] 45' + 15' Q&A. Chair: V Ehrenstein, Aarhus

TEA BREAK: 14.30-15.00h

- 15.00h to 16.00h – INTERACTIVE SESSION (4): describing missing data patterns [I Petersen, UCL]

**DAY 3 (21/06/2017):**

**MORNING SESSION – PHARMACO-EPIDEMIOLOGY**

Chair: A Silman, Oxford.

- 08.30h-09.00h – REGISTRATION
- 09.00-10.00h – Introduction to pharmaco-epidemiology: Drug Utilisation, Drug Safety, and RMM Effectiveness [S Perez-Gutthann, RTI-HS]
- 10.00-11.00h - Advanced Methods in Pharmaco-epidemiology: Propensity Scores, Disease Risk Scores and Instrumental Variables [MS Ali, Oxford]

COFFEE BREAK: 11.00-11.30h

- 11.30-12.30h – INTERACTIVE SESSION (5): designing a pharmaco-epi study [S Perez-Gutthann, RTI-HS; M S Ali, Oxford]

LUNCH: 12.30h-13.30h

**AFTERNOON SESSION – HEALTH ECONOMICS**

- 13.30h to 14.30h - Introduction to Health Economics using RWD [J Leal & R Pinedo-Villanueva, Oxford]

TEA BREAK: 14.30-15.00h

- 15.00h to 16.00h - INTERACTIVE SESSION (6): populating a Markov model using Real World Data [J Leal, R Pinedo-Villanueva & Ed Burn, Oxford]



**DAY 4 (22/06/2017)**

**MORNING SESSION – PREDICTION MODELLING & BIG DATA**

- 08.30-09.00h – REGISTRATION
- 09.00-10.00h – Prediction Modelling using real world data [G Collins, Oxford]
- 10.00-11.00h – Big Data Methods in Epidemiology and Healthcare [S Khalid, Oxford]

COFFEE BREAK: 11.00-11.30h

- 11.30-12.30h – INTERACTIVE SESSION (7): interpreting predictive models performance [S Khalid & Gary Collins, Oxford]

LUNCH: 12.30h-13.30h

**AFTERNOON SESSION – DATABASE MANAGEMENT & HARMONIZATION**

- 13.30-14.00h - Data models for real world data [A Delmestri, Oxford].
- 14.00-14.30h - Harmonization for multi-database studies [P Rijnbeek, Erasmus University]
- 14.30-15.00h - Project Management in Real World Epidemiology [E Molero, SYNAPSE Managers]

TEA BREAK: 15.00h - 15.30h

- 15.30-16.30h – INTERACTIVE SESSION (8): checking data quality outputs [P Rijnbeek, Erasmus University]

**DAY 5 (23/06/2017)**

**MORNING SESSION – DEVICE EPIDEMIOLOGY & TIME SERIES ANALYSES**

- 09.00-09.30h – REGISTRATION
- 09.30-10.15h – Time series analyses [A Judge & S Hawley, Oxford]
- 10.15-11.00h – Introduction to device epidemiology [A Lübbecke-Wolff, Geneva]

COFFEE BREAK: 11.00 – 11.30 h

- 11.30-12.30h – INTERACTIVE SESSION (9): analysing risk minimisation measures effectiveness using interrupted time series methods [S Hawley & D Prieto-Alhambra, Oxford]

LUNCH: 12.30h-13.30h

**AFTERNOON SESSION – REAL WORLD EPIDEMIOLOGY: WORKING WITH INDUSTRY AND REGULATORS. INFORMATION GOVERNANCE**

- 13.30-14.00h - The regulators' perspective [C Allen, MHRA] 30'
- 14.00-14.30h - The industry's perspective [B Vannieuwenhuyse, IMI-EMIF and Janssen Research and Development] 30'
- 14.30-15.15h - Information Governance in RWD Epidemiology [N Lea, UCL] 45'

15.15h – Conclusions, Closure, and Departure