INTRODUCTORY MEDICAL STATISTICS

To be held virtually on

May 2026 – Thursday 21st PM and Friday 22nd AM

Faculty: James Potts [course organiser],
Professor Maia Lesosky and Dr Chloe Bloom [co-presenters]
National Heart and Lung Institute (NHLI) at Imperial College London
Course administrator: Magda Wheatley

PROGRAMME

Thursday 21 May – Afternoon

Time	*Session number, lecture title and summary points covered*	*Presenter*
13.30 – 13.45	***Welcome and Introduction*** Welcome and introduction to the course. Illustration of use of Mentimeter (online voting tool) for classroom exercise	
13.45 – 14.50	1. **Basic epidemiological concepts** The hierarchy of evidence; Differences in study designs; The problem of confounding in observational studies. Classroom exercise	**Prof Maia Lesosky** Chair of Medical Statistics, NHLI
14.50 – 15.00	***Tea break***	
15.00 – 15.30	2. **Descriptive statistics** Calculating and interpreting descriptive statistics for different types of data (quantitative, ordinal and qualitative data): mean, median, mode, and standard deviation, percentiles, frequency distribution; Understanding the normal distribution and impact of skewness in the data. Classroom exercise	**James Potts** Medical Statistician, NHLI
15.30 – 16.00	3. **Inferential statistics – Estimation** Estimating parameters of interest in the population; Difference between standard error and standard deviation; Calculating and interpreting confidence intervals for means and proportions. Classroom exercise	**Dr Chloe Bloom** Associate Professor in Respiratory Epidemiology, NHLI
16.00 – 16.10	***Tea break***	
16.10 – 17.10	4. **Inferential statistics – Hypothesis testing** Testing a hypothesis and meaning of the p-value; Choosing a test based on the type of data and variable; Illustration of the t-test and the chi-squared test. Classroom exercise	**Prof Maia Lesosky**
17.10 – **17.30**	**Questions & Answers**	

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Friday 22 May – Morning

Time	*Session number, lecture title and summary points covered*	*Presenter*
9.00 – 9.30	5. **Type I and II errors in hypothesis testing** Understanding the two types of errors when testing a hypothesis; Multiple testing and ways to address it. Classroom exercise	**Prof Maia Lesosky**
9.30 – 10.00	6. **Sample size calculations** Sample size and power calculations - why we need them and what parameters we need to perform them; Examples of sample size calculations for: comparing proportions (binary outcome), and comparing means (continuous outcome)	**James Potts**
10.00 – 10.10	***Tea break***	
10.10 – 11.10	7. **Correlation and Simple Linear Regression** (continuous outcomes) Testing the relationship between two quantitative variables: correlation vs. regression; Parametric and non-parametric correlation; Concept and assumptions of simple linear regression; Links between correlation and simple linear regression. Classroom exercise	**James Potts**
11.10 – 11.30	8. **Multiple Linear Regression** (continuous outcomes) Moving from simple to multiple linear regression; Interpreting the results from multiple linear regression; Recognising the impact of confounding. Classroom exercise	**Dr Chloe Bloom**
11.30 – 11.40	***Tea break***	
11.40 – 12.10	9. **Different measures of risk** (binary outcomes) Relative vs. absolute measures of risk; Odds Ratio and Relative risk, and difference between them; Absolute Risk Reduction/Increase; Number Needed to Treat/Harm	**Dr Chloe Bloom**
12.10 – 12.40	10. **Simple and Multiple Logistic Regression** (binary outcomes) Understanding the basic concepts of logistic regression; Interpreting the results from simple and multiple logistic regression. Classroom exercise	**James Potts**
12.40 – **13.00**	**Questions & Answers** Final Q & A session; Some online statistics resources	

Accreditation is currently being sought of the Royal College of Physicians (6 CPD points)