

# PUBH 7015 INTRODUCTION TO CLINICAL EPIDEMIOLOGY

**Credit Points** 10

**Legacy Code** 401173

**Coordinator** Andrew Page ([https://directory.westernsydney.edu.au/search/name/Andrew Page/](https://directory.westernsydney.edu.au/search/name/Andrew%20Page/))

**Description** This subject aims to impart the principles of population based (epidemiologic) evidence to the understanding of variations in the outcome of illness and the reasons thereof (Clinical Epidemiology) thereby providing the framework for finding the best answers to "real world" questions about clinical practice and health care. Individuals taking this course (who usually have a health care background) acquire the basic skills required to understand the fundamental questions about the effectiveness of clinical therapies, usefulness of screening and diagnostic tools, prognosis and disease causation and gain the skills required of effective Evidence-Based Medicine practitioners.

**School** Medicine

**Discipline** Epidemiology

**Student Contribution Band** HECS Band 2 10cp

**Level** Postgraduate Coursework Level 7 subject

**Equivalent Subjects** PUBH 7016 - Introduction to Epidemiology

**Restrictions**

Students must be enrolled in a postgraduate program.

**Assumed Knowledge**

A background in health care is desirable.

## Learning Outcomes

On successful completion of this subject, students should be able to:

1. Generate a critical question leading up from a health scenario
2. Locate, navigate and extract relevant data from important sources of health information
3. Examine critically, synthesise and evaluate the basic principles underlying validity of the results of health care outcome studies
4. Evaluate quantitatively the usefulness of diagnostic and screening tests in health care practice
5. Examine critically, synthesise and evaluate point estimates (effect sizes) used in clinical epidemiology
6. Examine critically, and evaluate principles underlying precision of the effect sizes reported in health care research
7. Understand and apply the principles underlying the translation of research results to health care practice
8. Integrate and apply results (generalise) to specific health care problems

## Subject Content

1. Introduction and critical questioning: Knowledge gaps during the course of practice and asking foreground questions to fill these gaps, and focused questions that lead to effective search and appraisal strategies. This would involve development of critical questioning, identifying the specific patient population (P), the type of intervention in question (I), a comparison/control condition (C), and the outcomes for the patient population (O), or PICO. The different study designs used to

answer critical questions – descriptive, observational and experimental designs and their strengths and weaknesses.

2. Acquiring the information: The use of citation and synthesised (evidence based) library databases.
3. Are the results valid? - Sources of error in evidence such as random error, systematic error (bias) and confounding. Minimizing sources of error that decrease validity in clinical trial design eg allocation concealment, randomisation, blinding, matching, and 'loss to follow up'. Effect modification and causality.
4. Quantitative aspects of diagnosis/screening: Sensitivity, specificity, PPV, NPV and likelihood ratios. Introduction to ROC methods.
5. Effect size: Point estimates (measures of association, effect sizes) used in clinical epidemiology such as ratios, proportions, rates, OR, RR.
6. How precise were the study estimates?: Use of descriptive (data types, measures of central tendency and dispersion, normal distribution) and inferential statistics (hypothesis testing) in clinical research studies including P-values and confidence intervals.
7. Are the valid results important: Principles underlying the translation of research results to health care practice. Clinical as opposed to statistical significance and absolute risk indices such as RD, ARR, NNT.
8. Critical appraisal: Critical appraisal of epidemiological evidence, including assessment of study validity, synthesis of results, and consideration of applicability to a given clinical context
9. Systematic reviews, and meta-analysis: Overview and critical appraisal of systematic reviews. Interpreting findings from meta-analyses
10. Judging applicability: Generalizing results to specific health care problems, the threats to generalizability of research findings and the use of adequate sampling models in this respect. The inter-relationships between patient preferences, the clinical state, research evidence and clinical expertise.

## Assessment

The following table summarises the standard assessment tasks for this subject. Please note this is a guide only. Assessment tasks are regularly updated, where there is a difference your Learning Guide takes precedence.

Type	Length	Percent	Threshold	Individual/Group Task
Short Answer	3,000 words	60	N	Individual
Short Answer	Throughout semester	40	N	Individual

Prescribed Texts

- Doi SA. Understanding Evidence in Health Care: Using Clinical Epidemiology; ISBN: 9781420256697; Publisher: Palgrave Macmillan; Edition: 1st edition, 2012

Teaching Periods

## Autumn (2022)

**Online**

**Online**

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## Parramatta - Victoria Rd

**Day**

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## Spring (2022)

### Online

#### Online

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### Parramatta - Victoria Rd

#### Day

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### Parramatta - Victoria Rd

#### On-site

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