



**EVIDENCE SYNTHESIS**  
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# ESI Summer School

## Introduction to Systematic Reviews and Other Evidence Syntheses

*Build your evidence synthesis skills: hands-on training  
in systematic reviews at University of Galway*

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**HRB** An Bord  
Taighde Sláinte  
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# Introduction to Evidence Synthesis: Summer School on Systematic Reviews and Beyond

## Overview:

Systematic reviews and evidence syntheses are powerful tools that compile and evaluate all relevant research on a particular question, providing a high-quality evidence base for decision-making. They are crucial for informing policy, guiding practice, and identifying future research needs—not just in health but across various sectors.

Join us for our Summer School at University of Galway from May 20th to 22nd, 2025, for a hands-on three-day summer school on “Introduction to Evidence Synthesis.” This course is tailored for beginners and those looking to refresh their skills. While the focus is on health, the methods taught are applicable in multiple fields. Through interactive lectures, discussions, and practical exercises, you’ll learn how to conduct systematic reviews and evidence syntheses that can influence research and policy decisions.

## Learning outcomes:

By the end of this summer school participants will:

- Understand the importance and principles of evidence synthesis, including systematic reviews.
- Understand how to formulate clear and focused research questions using appropriate frameworks.
- Learn how to develop a systematic review protocol following established guidelines.
- Know how to conduct comprehensive literature searches across multiple databases and sources.

## Date/Time:

May 20, 21, & 22nd 2025

## Location:

Mairtin O’Tnuthail  
Theatre, Arts Millennium  
Building, University of  
Galway

## Places:

100

## Fee:

**General admission**  
(researchers, academia,  
clinicians etc): €300

**Student: €200**

**Industry: €600**

**Public and patients:**

Please email [esi@universityofgalway.ie](mailto:esi@universityofgalway.ie)

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# Introduction to Evidence Synthesis: Summer School on Systematic Reviews and Beyond

- Gain knowledge of selecting relevant studies and extracting necessary data effectively.
- Understand the principles of assessing the risk of bias in different types of studies using standard tools.
- Understand the principles of both quantitative and qualitative synthesis methods.
- Be introduced to tools like GRADE to evaluate the certainty of evidence.
- Understand the application of these methods to their own research or professional practice across various sectors.
- Connect with peers and experts.

## Audience

Beginners and those with some knowledge seeking to learn or refresh their skills in evidence synthesis, Systematic review authors, guideline developers, health and social care professionals, academics, researchers, postgraduate students, policy and decision-makers, Evidence Synthesis Ireland Fellows and other professionals, anyone interested in evidence synthesis methods.

## Pre-requisites:

- Laptop required
- A basic understanding of research methods (not limited to health research)
- An interest in learning or enhancing knowledge on systematic reviews and evidence synthesis

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# Introduction to Evidence Synthesis: Summer School on Systematic Reviews and Beyond

## Day 1, 20th May: Foundations of Evidence Synthesis

**09:30 – 10:00**

**Welcome and introduction – Prof Declan Devane, University of Galway**

- Course objectives and overview
- Introduction of instructors
- Brief history and importance of evidence synthesis

**10:00 – 11:00**

**Understanding evidence synthesis – Prof Declan Devane, University of Galway**

- Types of evidence synthesis (systematic reviews, meta-analyses, scoping reviews, etc.)
- Key principles and steps in the evidence synthesis process
- Differences between traditional literature reviews and systematic reviews
- Interactive poll: Identifying different types of reviews from examples

**11:00 – 11:15 Break**

**11.15 – 12:05**

**Formulating research questions – Dr Linda Biesty, University of Galway**

- Frameworks for question formulation
- Defining scope and objectives
- Importance of a well-formulated question
- Individual laptop activity: Developing a research question using a provided template

**12:05 – 12:55**

**Developing protocols - Dr David Moher, Ottawa Hospital Research Institute  
(live remote stream) PRISMA-P guidelines for protocol development**

- Key components of a systematic review protocol
- Importance of registration (e.g., PROSPERO)



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# Introduction to Evidence Synthesis: Summer School on Systematic Reviews and Beyond

## Day 1, 20th May: Foundations of Evidence Synthesis

**12:55 – 14:00 Lunch**

**14:00 – 14:45**

**Comprehensive search strategies – Kavita Kothari (Japan) - live remote stream**

- Principles of comprehensive searching
- Database selection (e.g., MEDLINE, Embase, CENTRAL)
- Building search strings (Boolean operators, MeSH terms, free text)
- Grey literature and additional sources
- Demonstration: Constructing a search strategy for a given research question

**14:45 – 15:00 Break**

**15:00 – 15:45**

**Study selection and screening - Dr KM Saif Ur Rahman, University of Galway**

- Developing inclusion and exclusion criteria
- Title/abstract and full-text screening processes
- Introduction to screening tools (e.g., Covidence, Rayyan)
- Individual laptop activity: Screening a set of abstracts using an online tool

**15:45 – 16:00**

**Day 1 recap and Q&A**

- Review of key concepts
- Open forum for questions and discussion



# Introduction to Evidence Synthesis: Summer School on Systematic Reviews and Beyond

## Day 2, 21st May: Data Management and Critical Appraisal

**09:30 – 10:45**

**Data extraction and management – Dr KM Saif Ur Rahman, University of Galway**

- Designing extraction forms (paper-based vs. electronic)
- Types of data to extract (study characteristics, outcome data, etc.)
- Strategies for managing extracted data
- Tools for data management
- Individual laptop activity: Extracting data from a sample study using a provided electronic form

**10:45 – 11:00 Break**

**11:00 – 12:15**

**Assessing risk of bias - Prof Declan Devane, University of Galway**

- Concept of bias in primary studies
- Overview of risk of bias tools (e.g., Cochrane RoB 2 for RCTs, ROBINS-I for non-randomised studies)
- Common domains of bias (selection, performance, detection, attrition, reporting)

**12:15 – 13:15 Lunch**

**13:15 – 14:00**

**Practical session: Risk of bias assessment – Prof Declan Devane, University of Galway**

- Individual laptop activity: Participants apply risk of bias tool to a sample study
- Live polling to compare assessments across the group
- Instructor-led discussion of challenging aspects and best practices

**14:00 – 14:15 Break**



# Introduction to Evidence Synthesis: Summer School on Systematic Reviews and Beyond

## Day 2, 21st May: Data Management and Critical Appraisal

**14:15 – 15:45**

**Quantitative synthesis methods – Prof Martin O'Donnell, University of Galway**

- Introduction to meta-analysis
- Fixed-effect vs. random-effects models
- Heterogeneity assessment ( $I^2$  statistic, forest plots)
- Subgroup analyses and meta-regression
- Demonstration: Conducting a simple meta-analysis using software
- Individual laptop activity: Interpreting meta-analysis results

**15:45 – 16:00**

**Day 2 recap and Q&A**

- Review of key concepts
- Open forum for questions and discussion

## Day 3, 22nd May: Synthesis Methods and Knowledge Translation – 22nd May

**09:00 – 10:30**

**Introduction to GRADE: Assessing certainty of evidence – Dr Nuala Livingstone, Cochrane Collaboration**

- Overview of GRADE approach for assessing certainty of evidence
- GRADE domains: risk of bias, inconsistency, indirectness, imprecision, publication bias
- Distinction between risk of bias and overall certainty of evidence
- Creating and interpreting Summary of Findings tables
- Introduction to GRADEpro software
- Individual laptop activity: Rating certainty of evidence and creating a Summary of Findings table



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# Introduction to Evidence Synthesis: Summer School on Systematic Reviews and Beyond

**Day 3, 22nd May: Synthesis Methods and Knowledge Translation – 22nd May**

**10:30 – 11:00 Break**

**11:00 – 12:15**

**Qualitative synthesis methods and GRADE-CERQual. Dr Linda Biesty, University of Galway**

- Overview of qualitative synthesis approaches (e.g., thematic synthesis, meta-ethnography)
- Introduction to GRADE-CERQual for assessing confidence in qualitative synthesis findings
- Individual laptop activity: Applying GRADE-CERQual to sample qualitative findings

**12:15 – 13:15 Lunch**

**13:15 – 14:30**

**Integrating quantitative and qualitative evidence – Prof James Thomas, University College London (live remote stream)**

- Approaches to mixed methods reviews
- Challenges in synthesising diverse evidence types
- Case study presentation: Synthesising quantitative and qualitative evidence on a public health intervention

**14:30 – 14:45 Break**

**14:45 – 15:45**

**Technology and tools in evidence synthesis - Prof James Thomas, University College London (live remote stream)**

Overview of key tools and automation in evidence synthesis

- Demonstration of major platforms (e.g., Covidence, Rayyan)
- Machine learning applications in systematic reviews
- Individual laptop activity: Hands-on experience with screening tools
- Group discussion: Integration of tools into review workflow





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# Introduction to Evidence Synthesis: Summer School on Systematic Reviews and Beyond

**Day 3, 22nd May: Synthesis Methods and Knowledge Translation – 22nd May**

**15:45 – 16.15**

## **Course wrap-up and final Q&A**

- Review of key learning points
- Discussion on applying skills in participants' work contexts
- Resources for further learning and support
- Final Q&A and course evaluation

**16.15 close**

## **Tickets Terms and Conditions:**

Tickets are available for the full three days only. Group registration rate is available for groups of more than 5 attendees and can be paid by invoice. All other payments are via Eventbrite. You do not require a PayPal account to make payment via the PayPal facility on Eventbrite. ESI is a non-profit organisation. ESI charges a nominal fee for workshops in order to cover costs associated with events and reduce the incidence of no-shows. Fees are subsidised via funding from Health Research Board (HRB) and the Health and Social Care, Research and Development (HSC R&D) Division of the Public Health Agency in Northern Ireland.

Upon request by email, refunds for event withdrawal made prior to seven days before the event will be fully refunded. Requests made seven days or less before the event will only be refunded, provided the place can be reallocated to the event wait list.

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