

Critical Appraisal Course for Emergency Medicine Trainees

Module 4

Studies Evaluating Service Organisation and Delivery

Changes to the organisation and delivery of services

- Triage processes
- Educational interventions
- Staffing
- Protocols and guidelines
- Facilities, e.g. short stay, CDU

Issues in evaluation

- Randomised v non-randomised studies
- Cluster (group) randomisation
- Historical v contemporaneous controls
- The Hawthorne Effect
- Sustainability
- Generalisability

Randomisation

- Protects against bias and confounding
- May be impossible, impractical or unethical
- Randomisation of individual patients requires simultaneous availability of alternative services
- If individual patients cannot be randomised, we may be able to randomise groups

Cluster (group) randomisation

- Randomise groups of patient receiving the same form of care or service

E.g.

- Randomise time period (days of week)
- Randomise members of staff
- Randomised whole hospitals
- Randomise geographical areas

Advantages of cluster randomisation

- Overcomes bias associated with non-randomised methods
- Reduces “contamination” that may occur in individual patient randomisation
- May be feasible when individual randomisation is not

Disadvantages of cluster randomisation

- Allocation concealment not usually possible
- Patients, carers or researchers may choose when or where to access their desired service
- Patients may choose whether to enter the trial depending upon what service is available
- Standard statistical tests are not appropriate
- Need to take clustering of data into account
- Statistical power may be substantially reduced

Non-randomised methods

- Compare new service to previous service (historical controls) or service elsewhere (contemporaneous controls)
- Contemporaneous comparisons may be confounded by baseline differences
- Historical comparisons may be confounded by changes over time
- Using both historical and contemporaneous controls can overcome these problems

The Hawthorne Effect

- Seen in simple before-and-after intervention studies (historically controlled studies)
- People change their behaviour when they are being observed or monitored
- Any monitored intervention will lead to changes in processes and outcomes
- Changes revert when monitoring stops
- Blinding staff and patients to monitoring is difficult

Sustainability

- Changes in service delivery need to be sustainable
- What additional resources are required?
- What changes to staffing and working patterns were involved?
- What were the knock-on effects of changing the service?

Generalisability

- A new service may work in one setting but may not work elsewhere
- Staff: numbers, skills, experience & motivation
- Setting: resources, support services, facilities, specialties
- Patients: numbers, case mix, socio-economic status

Summary

- Randomised v non-randomised studies
- Cluster (group) randomisation
- Historical v contemporaneous controls
- The Hawthorne Effect
- Sustainability
- Generalisability

Any questions or comments?