Background

- Healthcare-associated infection (HAI) affects millions of patients worldwide every year.
- Emerging antimicrobial resistance (AMR) presents therapeutic challenges to infected patients.
- Co-ordinated global action is needed to maximise the potential for prevention of HAI and contain AMR.
- Infection Prevention and Control (IPC) is recognised as a key strategy in this regard.
- The World Health Organization’s (WHO) guidance on the core components of IPC programmes is being revised with a view to basing this guidance on the best available evidence.

Objectives

WHO commissioned this systematic review of the literature on the effectiveness of national-level IPC programmes, which was conducted to:
1. Identify national core components for IPC programmes.
2. Provide an evidence base to develop new guidelines.

Methods

Inclusion criteria

- Intervention: National-level IPC programmes for HAI conducted in any healthcare setting.
- Outcomes: Related to HAI rates, mortality, morbidity, costs, behaviour and process.
- Design: Economic evaluations, cluster randomised trials (CRTs), non-randomised trials (NRTs), controlled before and after (CBA), and interrupted time series (ITS).

Literature search

- CENTRAL, CINAHL, EMBASE, MEDLINE, and WHO IRIS from January 2000 to December 2015.

Study selection

- Titles and abstracts screened by 3 reviewers (30% screened by independent reviewer).
- Full texts assessed by 1 reviewer. Uncertainties resolved via discussion with a 2nd reviewer.

Data extraction and quality assessment of individual studies

- Extracted data: Design, sample characteristics, interventions, outcomes, results.
- Minimum 20% conducted by 2 independent reviewers, remainder completed by 1 reviewer and checked by another. Disagreements resolved through discussion.

Quality assessment across studies

- The quality of the body of evidence was assessed using the Grading of Recommendations, Assessment, Development and Evaluation4 approach, where appropriate.

Results

- 25 studies (Figure 1) from high-income countries, mainly in North America (n = 18) and Europe (n = 4), were included.
- There were 9 ITS studies, 7 CRTs, 6 CBA studies, 1 NRT and 2 economic evaluations.
- 4 component themes were identified (Table 1).
- Most interventions focused on preventing a specified infection: central line-associated bloodstream infection (CLABSI) being the most frequent (Table 1).
- Individual studies demonstrated effectiveness; however, only 3 studies had a low risk of bias.
- The bodies of evidence of national-level multimodal IPC programmes and national-level IPC care bundles for CLABSI were low quality.

Discussion

- This review used a rigorous process to synthesise the existing evidence on the effectiveness of national-level IPC programmes.
- There is evidence of effectiveness with regards to each component theme. However, risk of bias was generally unclear or high, making the overall quality of the evidence low.
- 3 studies provided good quality evidence for the use of multimodal strategies and feedback in promoting hand hygiene compliance.
- The remaining 22 studies provide the best available evidence for the 4 component themes.

Conclusions

To improve the validity, outcomes and utility of future research, researchers should:
- Use behavioural theories, improvement science and quality improvement methodologies to inform intervention development and outcome measurement.
- Report the intervention content and methods in detail to enable replication.
- Evaluate interventions using CRTs, NRTs, CBAs, or ITS that are rigorously designed.
- Use robust statistical methods that account for missing data and differences between baseline outcomes and sample characteristics.

References


Figure 1 PRISMA Flow Diagram WHO Systematic Review of the Effectiveness of National-level IPC Programmes