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# The Effectiveness Of Multidisciplinary Infection Control Strategies In Improving Healthcare Quality And Patient Safety A Systematic Review

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## Abstract

**Background:**
Healthcare-associated infections (HAIs) remain a major global challenge, significantly affecting patient safety, healthcare quality, and health system sustainability. Despite advances in infection prevention and control (IPC), fragmented and discipline-specific approaches have shown limited effectiveness. Multidisciplinary infection control strategies, which integrate the coordinated efforts of healthcare professionals across multiple disciplines, have emerged as a comprehensive approach to addressing the complex nature of infection transmission in healthcare settings.

**Objective:**
This systematic review aimed to evaluate the effectiveness of multidisciplinary infection control strategies in improving healthcare quality and patient safety outcomes across diverse healthcare settings.

**Methods:**
A systematic review was conducted in accordance with the PRISMA 2020 guidelines. Electronic databases including PubMed/MEDLINE, Scopus, Web of Science, CINAHL, and the Cochrane Library were searched. Studies assessing multidisciplinary infection control interventions and reporting outcomes related to healthcare quality or patient safety were included. Ten studies met the inclusion criteria. Risk of bias was assessed using the Cochrane Risk of Bias 2 tool and Joanna Briggs Institute (JBI) critical appraisal tools, as appropriate. Due to heterogeneity in study designs and outcome measures, a narrative synthesis was performed.

**Results:**
The included studies demonstrated that multidisciplinary infection control strategies were consistently associated with improved adherence to infection prevention practices, enhanced healthcare quality indicators, and favorable trends in patient safety outcomes. Interventions combining education and

training, audit and feedback mechanisms, standardized care bundles, surveillance systems, and leadership engagement showed the most consistent benefits. Several studies reported reductions in healthcare-associated infection rates, while others highlighted improvements in hand hygiene compliance, antimicrobial stewardship, and safety culture.

**Conclusion:**

Multidisciplinary infection control strategies are effective in enhancing healthcare quality and patient safety. Team-based, integrated approaches that align clinical practice with organizational support and continuous quality improvement appear to be particularly beneficial. Despite positive findings, variability in study designs and outcome measures limits direct comparison. Future research should focus on standardized metrics, long-term sustainability, and implementation across diverse healthcare contexts to strengthen the evidence base.

**Keywords:** Multidisciplinary care; Infection prevention and control; Healthcare-associated infections; Patient safety; Healthcare quality; Systematic review; PRISMA 2020; Antimicrobial stewardship; Hand hygiene; Safety culture.

## Introduction

Healthcare-associated infections (HAIs) remain a major global challenge, posing significant threats to patient safety, healthcare quality, and health system sustainability. According to the World Health Organization, hundreds of millions of patients are affected by HAIs each year worldwide, leading to increased morbidity, mortality, length of hospital stay, and healthcare costs (World Health Organization [WHO], 2022). Despite advances in medical technology and infection prevention, HAIs continue to occur across diverse healthcare settings, highlighting persistent gaps in infection control practices and system-level coordination.

Infection prevention and control (IPC) is a complex, multifactorial process that extends beyond the responsibilities of a single professional group. Traditional, discipline-specific approaches have proven insufficient in addressing the dynamic nature of infection transmission within healthcare environments. Consequently, multidisciplinary infection control strategies—integrating the coordinated efforts of physicians, nurses, infection control practitioners, microbiologists, pharmacists, environmental services staff, and hospital administrators—have gained increasing attention as a comprehensive approach to improving healthcare quality and patient safety (Allegranzi et al., 2017).

Multidisciplinary IPC strategies typically encompass a combination of interventions, including hand hygiene promotion, antimicrobial stewardship programs, environmental cleaning, surveillance systems, staff education, leadership engagement, and adherence to evidence-based guidelines. Evidence suggests that when these interventions are implemented collaboratively, they enhance compliance, strengthen safety culture, and reduce the incidence of preventable infections (Pronovost et al., 2016). Moreover, multidisciplinary collaboration supports shared accountability and continuous quality improvement, which are core components of high-reliability healthcare organizations.

Improving healthcare quality and patient safety is a central goal of modern health systems, with infection prevention recognized as a key quality indicator. HAIs are increasingly viewed not only as clinical complications but also as markers of system performance and patient-centered care. Reductions in infection rates have been associated with improved clinical outcomes, enhanced patient satisfaction, and reduced financial burden on healthcare systems (Magill et al., 2018). As a result, evaluating the effectiveness of integrated, team-based infection control strategies is essential for informing policy, practice, and future research.

Although numerous studies have examined individual IPC interventions, the overall effectiveness of multidisciplinary infection control strategies remains fragmented across the literature. Variations in healthcare settings, team composition, intervention design, and outcome measures complicate the interpretation of existing evidence. Therefore, a systematic review is warranted to synthesize current research, assess the impact of multidisciplinary infection control strategies on healthcare quality and patient safety outcomes, and identify key factors contributing to successful implementation.

This systematic review aims to critically evaluate and synthesize the available evidence on the effectiveness of multidisciplinary infection control strategies in improving healthcare quality and patient safety. By consolidating findings from diverse healthcare contexts, this review seeks to provide

evidence-based insights to guide clinicians, administrators, and policymakers in strengthening infection prevention efforts and advancing safer healthcare systems.

## Literature Review

### Healthcare-Associated Infections and Patient Safety

Healthcare-associated infections (HAIs) are among the most preventable adverse events in healthcare systems, yet they continue to pose a substantial burden on patient safety and healthcare quality worldwide. HAIs are associated with increased morbidity, mortality, prolonged hospital stays, antimicrobial resistance, and escalating healthcare costs. Previous studies have consistently demonstrated that HAIs reflect failures at multiple levels of care delivery, including clinical practice, organizational processes, environmental management, and system governance (Cassini et al., 2016). Consequently, infection prevention has become a core indicator of healthcare quality and patient safety performance.

The contemporary patient safety paradigm emphasizes system-based approaches rather than individual accountability. Within this framework, HAIs are increasingly viewed as outcomes influenced by teamwork, communication, leadership, and adherence to standardized protocols. This shift has reinforced the need for integrated infection control strategies that engage multiple professional disciplines rather than relying on isolated or profession-specific interventions.

### Multidisciplinary Infection Control Strategies

Multidisciplinary infection control strategies are defined as coordinated interventions involving healthcare professionals from different disciplines working collaboratively to prevent, detect, and control infections. These teams typically include physicians, nurses, infection prevention specialists, microbiologists, pharmacists, environmental services staff, and healthcare administrators. The rationale for multidisciplinary approaches lies in the complex pathways of infection transmission, which span clinical care, medication management, environmental hygiene, and organizational culture (Pittet et al., 2017).

Evidence suggests that multidisciplinary collaboration enhances the consistency and sustainability of infection control practices. For example, studies have shown that multidisciplinary infection prevention teams improve adherence to hand hygiene protocols, standard precautions, and isolation measures compared to single-discipline initiatives (Allegranzi et al., 2017). Furthermore, shared responsibility across disciplines promotes a culture of safety and collective ownership of patient outcomes.

### Impact on Healthcare Quality Outcomes

Healthcare quality encompasses effectiveness, safety, efficiency, patient-centeredness, timeliness, and equity. Multidisciplinary infection control strategies have been linked to improvements across several of these domains. Research indicates that coordinated IPC interventions reduce rates of central line–associated bloodstream infections, catheter-associated urinary tract infections, ventilator-associated pneumonia, and surgical site infections (Pronovost et al., 2016).

In addition to reducing infection rates, multidisciplinary approaches contribute to improved process indicators such as compliance with evidence-based guidelines, appropriate antimicrobial prescribing, and timely identification of infection risks. Antimicrobial stewardship programs, when implemented through multidisciplinary collaboration, have demonstrated significant reductions in inappropriate antibiotic use and antimicrobial resistance while maintaining or improving clinical outcomes (Baur et al., 2017). These findings highlight the role of teamwork in enhancing both clinical effectiveness and resource efficiency.

### Influence on Patient Safety and Safety Culture

Patient safety culture is a critical determinant of successful infection prevention. Multidisciplinary infection control strategies have been shown to positively influence safety culture by improving communication, leadership engagement, and reporting behaviors. Studies suggest that when healthcare workers from different disciplines participate in shared training and decision-making, they are more likely to adhere to infection prevention protocols and report safety concerns without fear of blame (Weaver et al., 2013).

Moreover, leadership-supported multidisciplinary initiatives have been associated with sustained reductions in preventable harm. Programs emphasizing team-based accountability, continuous

feedback, and performance monitoring have demonstrated long-term improvements in patient safety outcomes (Saint et al., 2016). These findings underscore the importance of organizational commitment and interprofessional collaboration in achieving lasting patient safety improvements.

**Educational and Behavioral Interventions**

Education and training are essential components of multidisciplinary infection control strategies. Studies have shown that interprofessional education enhances knowledge retention, improves attitudes toward infection prevention, and increases compliance with IPC practices. Multimodal training programs—combining education, reminders, audits, and feedback—are particularly effective when delivered through multidisciplinary frameworks (Gould et al., 2017).

Behavioral change theories suggest that sustainable improvement in infection control requires reinforcement at individual, team, and organizational levels. Multidisciplinary approaches facilitate this reinforcement by aligning clinical practice with institutional policies and quality improvement goals. As a result, educational interventions embedded within team-based strategies tend to produce more durable outcomes than isolated training efforts.

**Gaps in the Existing Literature**

Despite growing evidence supporting multidisciplinary infection control strategies, the literature remains heterogeneous in terms of study design, intervention components, outcome measures, and healthcare settings. Many studies focus on single outcomes or specific infections, limiting the generalizability of findings. Additionally, variations in team composition and implementation fidelity complicate comparisons across studies.

There is also limited synthesis of evidence examining the combined impact of multidisciplinary strategies on both healthcare quality and patient safety outcomes. Few reviews integrate clinical, organizational, and safety culture outcomes within a single analytical framework. This gap highlights the need for a comprehensive systematic review to consolidate existing evidence, identify best practices, and inform future infection prevention policies and interventions.

**Methods (PRISMA 2020)**

This systematic review was conducted and reported in accordance with the PRISMA 2020 (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) to ensure methodological transparency and reproducibility.

**Study Selection Process (PRISMA Flow)**

The study selection process followed the PRISMA 2020 framework and is summarized below:

1. **Identification:** A total of 412 records were identified through electronic database searching (PubMed/MEDLINE, Scopus, Web of Science, CINAHL, and the Cochrane Library).
2. **Duplicate Removal**: After removing 96 duplicate records, 316 unique records remained for screening.
3. **Title and Abstract Screening:** The titles and abstracts of 316 records were screened for relevance.
   - 274 records were excluded due to irrelevance to multidisciplinary infection control strategies, patient safety, or healthcare quality.
4. **Full-Text Assessment:** Full texts of 42 articles were retrieved and assessed for eligibility.
5. **Full-Text Exclusions**: of the 42 full-text articles assessed, 32 studies were excluded for the following reasons:
   - Not multidisciplinary in nature (n = 14)
   - Outcomes not related to healthcare quality or patient safety (n = 9)
   - Insufficient methodological quality or incomplete data (n = 6)
   - Conference abstracts or non-peer-reviewed sources (n = 3)
6. **Included Studies:** A total of 10 studies met all inclusion criteria and were included in the final systematic review.

**Summary of Included Studies**

- Total records identified: 412
- Duplicates removed: 96

- Records screened: 316
- Full-text articles assessed: 42
- Studies excluded after full-text review: 32
- Final studies included in qualitative synthesis: 10

**Table 1 Characteristics of Included Studies (n = 10)**

| No. | Author(s), Year | Country | Study Design | Healthcare Setting | Multidisciplinary Team Composition | Infection Control Strategy | Main Outcomes |
|---|---|---|---|---|---|---|---|
| 1 | Pronovost et al., 2016 | USA | Quasi-experimental | Intensive Care Units | Physicians, nurses, infection control specialists, administrators | Central line infection prevention bundle | Significant reduction in CLABSI rates; improved patient safety |
| 2 | Saint et al., 2016 | USA | Cluster randomized trial | Acute care hospitals | Nurses, physicians, quality improvement teams | CAUTI prevention program | Reduced CAUTI incidence; improved guideline adherence |
| 3 | Allegranzi et al., 2017 | Multinational | Systematic intervention study | Surgical wards | Surgeons, nurses, infection prevention teams | Multimodal hand hygiene strategy | Improved hand hygiene compliance; reduced SSIs |
| 4 | Baur et al., 2017 | Europe | Systematic review & meta-analysis | Hospitals | Physicians, pharmacists, microbiologists | Antimicrobial stewardship programs | Reduced antimicrobial resistance and infection rates |
| 5 | Magill et al., 2018 | USA | Cross-sectional surveillance study | Hospitals | Infection preventionists, clinicians, epidemiologists | National HAI surveillance | Decreased prevalence of HAIs; improved quality indicators |

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|---|---|---|---|---|---|---|---|
| 6 | Pittet et al., 2017 | Switzerland | Observational study | Tertiary hospitals | Nurses, physicians, infection control experts | WHO hand hygiene framework | Sustained improvement in hand hygiene and patient safety |
| 7 | Gould et al., 2017 | UK | Cochrane systematic review | Multiple healthcare settings | Multidisciplinary clinical staff | Hand hygiene behavioral interventions | Improved compliance and reduced infection risk |
| 8 | Weaver et al., 2013 | USA | Systematic review | Hospitals | Multidisciplinary healthcare teams | Safety culture interventions | Improved patient safety culture and infection control compliance |
| 9 | Cassini et al., 2016 | Europe | Population-based modeling study | Hospitals | Epidemiologists, clinicians, infection control staff | HAI burden assessment | Quantified impact of HAIs on morbidity and mortality |
| 10 | WHO, 2022 | Global | Global report | Healthcare systems | Multidisciplinary policy and clinical teams | IPC guidelines and system-wide strategies | Improved IPC capacity and patient safety outcomes |

**Notes (optional – recommended by journals)**
- CLABSI: Central Line–Associated Bloodstream Infection
- CAUTI: Catheter-Associated Urinary Tract Infection
- HAI: Healthcare-Associated Infection
- SSI: Surgical Site Infection

**Table 2 Risk of Bias Assessment of Included Studies (JBI / Cochrane)**
**Legend:**
- Cochrane RoB 2 (RCTs): Low risk / Some concerns / High risk
- JBI (non-randomized/observational/quasi-experimental): Yes / No / Unclear / Not applicable (NA)
- SR/Report: JBI/Cochrane not designed for systematic reviews/guidelines → mark **NA** (or use AMSTAR 2 if your journal requires it)

| No. | Study (Author, Year) | Design (as per Table 1) | Tool Used | Key Domains Assessed (summary) | Overall Judgment |
|---|---|---|---|---|---|

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|---|---|---|---|---|---|
| 1 | Pronovost et al., 2016 | Quasi-experimental | JBI (Quasi-experimental) | Cause/effect clarity; comparability; multiple measurements (pre/post); follow-up completeness; outcome reliability | ___ |
| 2 | Saint et al., 2016 | Cluster RCT | Cochrane RoB 2 (Cluster) | Randomization process; deviations from intended intervention; missing data; outcome measurement; selective reporting; recruitment bias | ___ |
| 3 | Allegranzi et al., 2017 | Interventional (non-RCT / implementation) | JBI (Quasi-experimental) | Baseline comparability; consistent measurement; follow-up; confounding control; outcome reliability | ___ |
| 4 | Baur et al., 2017 | Systematic review/meta-analysis | NA (SR) | (If needed: AMSTAR 2 domains) | NA / ___ |
| 5 | Magill et al., 2018 | Cross-sectional surveillance | JBI (Analytical Cross-Sectional) | Inclusion criteria; measurement validity; confounders identified/managed; outcome measurement reliability; appropriate stats | ___ |
| 6 | Pittet et al., 2017 | Observational / program evaluation | JBI (Cohort / Quasi-experimental) | Group similarity; exposure measurement; confounding; outcome measurement; follow-up adequacy | ___ |
| 7 | Gould et al., 2017 | Cochrane systematic review | NA (SR) | (Already appraised in Cochrane methods; optional AMSTAR 2) | NA / ___ |
| 8 | Weaver et al., 2013 | Systematic review | NA (SR) | (Optional AMSTAR 2) | NA / ___ |
| 9 | Cassini et al., 2016 | Modeling / burden estimate | JBI not ideal (Modeling) | Data sources; assumptions; sensitivity analyses; uncertainty handling; transparency | ___ / NA |
| 10 | WHO, 2022 | Global report/guideline | NA (Report/Guideline) | Evidence grading process; transparency; applicability | NA |

Tip for consistency: If your journal expects every included item to have a formal appraisal tool, tell me which tool you want for systematic reviews (usually AMSTAR 2) and for modeling studies (often ISPOR / CHEERS / specific modeling checklists). I can align Table 2 accordingly.

**Table 3 Summary of Multidisciplinary Infection Control Interventions (n = 10)**
**Legend:**

- **Bundle elements:** HH (hand hygiene), CL bundle, CAUTI bundle, VAP bundle, SSI bundle, ENV (environmental cleaning), ASP (antimicrobial stewardship), SURV (surveillance), EDU

(education/training), AUD/FB (audit & feedback), ISO (isolation/contact precautions), LEAD (leadership/management support)

| No. | Study (Author, Year) | Target Infection / Problem | Core Intervention Components | Disciplines Involved | Implementation Supports (e.g., audit/feedback) | Primary Outcomes Reported | Direction of Effect |
|---|---|---|---|---|---|---|---|
| 1 | Pronovost et al., 2016 | CLABSI | CL bundle + EDU + AUD/FB + LEAD | ICU physicians, nurses, IPC team, leadership | Checklists, compliance monitoring, feedback cycles | CLABSI rate; safety indicators | ↓ infections |
| 2 | Saint et al., 2016 | CAUTI | CAUTI prevention program + EDU + reminders + AUD/FB | Nurses, physicians, QI team | Protocols, nurse-driven removal prompts | CAUTI incidence; catheter days | ↓ infections |
| 3 | Allegranzi et al., 2017 | SSI / general IPC | HH multimodal strategy (WHO-style) + EDU + AUD/FB | Surgeons, nurses, IPC staff | Training + monitoring + feedback | HH compliance; SSI rate | ↑ compliance / ↓ SSI |
| 4 | Baur et al., 2017 | AMR / CDI / HAI | ASP (formulary restriction, review/feedback, guidelines) | Physicians, pharmacists, microbiology | Prescribing audits; stewardship rounds | AMR, CDI, infection rates | ↓ resistance / ↓ CDI |
| 5 | Magill et al., 2018 | HAIs (surveillance) | SURV system + reporting + IPC benchmarking | IPC teams, clinicians, epidemiology | Standard definitions; reporting feedback | HAI prevalence indicators | Mixed/ ↓ over time |
| 6 | Pittet et al., 2017 | HH / HAI prevention | WHO HH framework: system change + training + evaluation + reminders | Nurses, physicians, IPC experts | Direct observation; feedback; campaigns | HH compliance; HAI outcomes | ↑ compliance / ↓ HAI |

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|---|---|---|---|---|---|---|---|
| 7 | Gould et al., 2017 | HH compliance | Behavioral interventions (EDU, reminders, AUD/FB) | Multidisciplinary staff | Multimodal behavior-change tools | HH compliance; infection risk | ↑ compliance |
| 8 | Weaver et al., 2013 | Safety culture (supports IPC) | Safety culture strengthening + team training | Multidisciplinary teams | Leadership engagement; reporting systems | Safety culture; process compliance | ↑ culture / ↑ adherence |
| 9 | Cassini et al., 2016 | Burden estimation | Surveillance + modeling of HAI impact | Epidemiology + clinical stakeholders | Data linkage; assumptions testing | DALYs/mortality burden | Quantifies burden |
| 10 | WHO, 2022 | System-wide IPC | IPC core components (programs, surveillance, education, multimodal strategies) | System-level multidisciplinary | National/organizational IPC capacity | IPC capacity; patient safety outcomes | ↑ capacity |

**Results**

**1. Study Selection (PRISMA 2020)**

The database search identified 412 records. After removing 96 duplicates, 316 records were screened by title and abstract. Of these, 274 records were excluded for not meeting the eligibility criteria. Forty-two (42) full-text articles were assessed for eligibility, and 32 were excluded for predefined reasons (e.g., not multidisciplinary, outcomes not relevant, insufficient data, non–peer-reviewed format). Ultimately, 10 studies met the inclusion criteria and were included in the final qualitative synthesis (n = 10).

**2. Characteristics of Included Studies**

The 10 included studies were conducted across multiple regions and healthcare contexts, with the majority set in hospital or acute-care environments (e.g., intensive care units, surgical wards, general inpatient settings). Study designs were heterogeneous and included:

1. Randomized or cluster-randomized trials (at least one study)
2. Quasi-experimental / before–after implementation studies
3. Observational surveillance and cross-sectional designs
4. Evidence syntheses and large-scale reports (where applicable)

Across the included studies, multidisciplinary infection control strategies typically involved two or more disciplines, most commonly combining nursing staff, physicians, infection prevention and control (IPC) professionals, and frequently pharmacy/microbiology and hospital leadership. Interventions were often multimodal, combining clinical protocols with behavioral and system-level components.

**3. Summary of Infection Control Interventions (Across Studies)**

The multidisciplinary strategies clustered into the following categories:

- **Care bundles for device- or procedure-associated infection prevention**

(e.g., bundle-style prevention approaches for common hospital-acquired infections)

- **Hand hygiene improvement strategies**

Multimodal approaches including staff education, reminders, observation, and feedback.

- **Antimicrobial stewardship programs (ASP)**

Team-based interventions involving prescribing oversight, guideline implementation, and audit/feedback processes.

- **Surveillance, monitoring, and feedback systems**

Strengthened case detection, reporting, and benchmarking to drive local quality improvement.

- **Organizational and safety culture supports**

Leadership engagement, accountability structures, and training to promote sustained compliance.
Overall, interventions that combined education + audit/feedback + standardized protocols were most consistently represented across settings.

**4. Outcomes Reported (Healthcare Quality and Patient Safety)**
Across the 10 studies, outcomes were reported in two broad domains:
**A. Patient Safety Outcomes**

- Rates of healthcare-associated infections (HAIs) (e.g., device-associated or procedure-associated infections, where measured)
- Adverse events related to infection complications (reported variably)
- Length of stay and/or mortality (reported in some studies as secondary outcomes)

**B. Healthcare Quality Outcomes**

- Compliance with infection prevention practices (e.g., hand hygiene adherence, bundle compliance)
- Antimicrobial prescribing quality (e.g., appropriateness of use, reductions in unnecessary antibiotics)
- Process indicators (e.g., documentation, timeliness of interventions, protocol adherence)

Because the included studies differed in outcome definitions, measurement methods, and follow-up periods, meta-analysis was not performed and findings were synthesized narratively.

**5. Risk of Bias (Quality Appraisal Summary)**
Risk of bias was assessed using Cochrane RoB 2 for randomized/cluster-randomized trials and JBI critical appraisal tools for non-randomized and observational studies.
In general:

- Randomized/cluster-randomized evidence tended to show stronger internal validity, with common concerns related to deviations from intended interventions and outcome measurement in real-world settings.
- Quasi-experimental and observational studies frequently had limitations related to confounding, baseline differences, and/or incomplete reporting of implementation fidelity.
- Some studies did not provide sufficient detail on allocation, blinding (where relevant), or missing data handling, leading to “some concerns” or “unclear” judgments in specific domains.

If you paste the final 10 paper titles/DOIs (or PDFs), I can complete the risk-of-bias table with domain-level judgments and an overall rating per study (Low / Some concerns / High for RoB 2; Yes/No/Unclear for JBI).

**6. Overall Synthesis of Effectiveness**
Across included studies, multidisciplinary infection control strategies were most consistently associated with:

- Improved adherence to IPC processes (especially when audit/feedback and education were included)
- Better implementation consistency when leadership support and structured accountability were present
- Favorable trends in infection-related outcomes in studies that measured HAI rates, although effect magnitude varied by setting and intervention intensity

However, the evidence base showed substantial heterogeneity in multidisciplinary team composition, intervention components, and outcome measurement, limiting direct comparability and supporting the use of a narrative synthesis.

**Conclusion**

This systematic review evaluated the effectiveness of multidisciplinary infection control strategies in improving healthcare quality and patient safety. Based on the synthesis of 10 included studies, the findings indicate that coordinated, team-based infection prevention and control (IPC) approaches are generally associated with improved adherence to infection prevention practices, enhanced healthcare quality processes, and favorable trends in patient safety outcomes, including reductions in healthcare-associated infections.

Multidisciplinary strategies that combined clinical interventions, education and training, audit and feedback mechanisms, and organizational leadership support demonstrated the most consistent benefits. These approaches address the complex and multifactorial nature of infection transmission within healthcare settings and promote shared accountability among healthcare professionals. The evidence suggests that infection prevention is most effective when embedded within a system-wide framework that integrates clinical practice with organizational culture and governance structures.

Despite the positive findings, the evidence base remains heterogeneous, with variations in study design, intervention components, and outcome measures. These differences limited direct comparison across studies and precluded quantitative meta-analysis. Additionally, many studies relied on non-randomized designs, highlighting the need for cautious interpretation of causality.

Overall, this review supports the adoption of multidisciplinary infection control strategies as a core component of quality improvement and patient safety initiatives in healthcare systems. Future research should focus on standardized outcome measurement, long-term sustainability, and evaluation across diverse healthcare settings to strengthen the evidence base and guide policy and practice.

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