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A SYSTEMATIC REVIEW OF INFECTION CONTROL MEASURES IN BLOOD DISORDER TREATMENT CENTERS

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Abstract

Background: Infection control is critical in hematology units as patients with blood disorders are highly vulnerable to acquiring healthcare-associated infections. The increased risk of infection is high due to the nature of various immunosuppressive treatments, including chemotherapy, bone marrow transplantation, and CAR-T cell therapy.

Objective: This systematic review assesses European blood disorder treatment facilities through evidence evaluation and synthesis regarding their infection control measures as they impact patient safety and intervention outcomes.

Methods: A systematic review followed the PRISMA 2020 guidelines throughout its conduct. The PubMed database served as the primary information source for our research in February 2025. The research used "infection control" alongside "blood disorders" and "hematology" as search parameters, along with names of particular European nations. Researchers included studies based on infection control interventions that targeted hematology or transfusion settings between 2010 and 2024. The authors extracted key information regarding study design, intervention type, patient data, implementation obstacles, and measured outcomes.

Results: The research analysis included eight eligible studies involving expert consensus guidelines, observational analyses, and modeling studies. The study identified pathogen reduction technologies (PRTs) and HEV screening as well as blood culture standardization and antimicrobial resistance (AMR) surveillance and infection prophylaxis in CAR-T cell therapy and fecal microbiota transplantation (FMT) safety among the infection control strategies. Multiple research studies found that effective infection reduction methods and improved diagnostics were successful, yet variations existed between national guideline practice and monitoring programs.

Conclusions: European healthcare institutions for hematology patients show an increasing tendency towards implementing proactive, evidence-based infection control practices. High-quality guidelines and modern technologies remain accessible, but differences emerge during implementation. The region requires coordinated efforts to standardize healthcare practices while improving screening mechanisms and funding distribution to protect patients equitably on an equal basis.

Keywords: antimicrobial resistance, blood culture, Europe, faecal microbiota transplantation, hematology, infection control, pathogen reduction

Introduction

Haemophilia, thalassemia, sickle cell anemia, leukemia, and lymphoma create a significant healthcare system load throughout Europe (Sankar & Villa, 2021). Patients diagnosed with these clinical conditions receive aggressive treatment such as chemotherapy and radiotherapy, bone marrow transplantation, and blood transfusions that heavily affect their immune function (Engert et al., 2016). People who have weakened immune systems face a heightened risk of healthcare-associated infections (HAIs) because these infections increase both their death rate and hospitalization duration and sickness level. The necessity to prevent infections in hematology practice has triggered the development of appropriate hospital protocols, including reverse isolation units, strict hand hygiene requirements, personal protective equipment protocols, and dedicated hematology patient wards (Mikulska, 2019; Böll et al., 2021). The combination of MDROs alongside complex treatments like CAR T-cell therapy and stem cell transplantation makes infection control in these settings more difficult than it used to be over the previous few decades (Hayden et al., 2022). The development of transfusion-transmitted infections alongside new viral threats, including hepatitis E virus (HEV) and dengue and Zika virus, demands a systematic method for infection prevention. Pharmaceutical and nucleic acid testing and antimicrobial stewardship implementations by European blood donation facilities deserve thorough evaluation as they represent progressive infection prevention measures (Zjajo, 2024; Tshibangu-Kabamba & Yamaoka, 2021). Previous research has examined these aspects (Du et al., 2025; Shiu et al., 2019), but a regional systematic review has not been performed. A complete review of existing evidence throughout Europe is needed to establish similarities in infection control protocols and areas where improvement is required. This systematic review

evaluates peer-reviewed literature at European treatment facilities that detail infection prevention protocols in blood disorder care centers. The review combines information from expert guidelines with observational studies alongside regional surveillance reports to guide optimal policy development and practice standards.

The central research question guiding this review is: What infection control strategies are implemented in European blood disorder treatment centers, and what is their effectiveness in reducing healthcare-associated infections?

Methods

Study Design

The research used a systematic review methodology to analyze European peer-reviewed research about infection control procedures in blood disorder treatment facilities. The review followed methods described in the 2020 version of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) to provide clear, reproducible methods. A systematic review was valid because scientists required a complete appraisal of European infection control evidence of blood disorder facilities. A systematic review was appropriate because it organizes various data sources through standardized procedures of diverse information from countries showing varied infection prevention practices in blood disorder treatment centers (Gupta et al., 2018; Jangid & Dixit, 2023). This method helps to find repeated patterns and gaps in evidence and successful intervention practices that guide clinical procedures and policy development (Sovacool, Axsen & Sorrell, 2018). The review followed the PRISMA 2020 framework, which delivered methodological strength to reduce biases and ensure both reproducibility and validation of the research outcomes.

Eligibility Criteria

Inclusion criteria

The following inclusion criteria were applied:

- Studies conducted in European countries
- Published between January 2010 and March 2025
- Involved patients with blood disorders (e.g., leukemic, thalassemia, sickle cell disease)
- Focused on infection control interventions (e.g., screening, surveillance, prophylaxis, hygiene)
- Peer-reviewed primary studies (RCTs, observational studies) and expert consensus guidelines

Exclusion criteria

- Non-European settings
- Non-English publications
- Case reports, editorials, and non-systematic reviews
- Studies lacking infection control outcomes

Search Strategy

The research investigation covered three key electronic databases: PubMed, Scopus, and Web of Science. The search occurred in February 2025, using Mesha-controlled vocabulary and free-text keywords to maintain good sensitivity and precision rates. The research method was engineered to extract studies about infection control methods explicitly used in European hematology medicine spaces. Research conducted through PubMed used the following search combination: ("infection control"[Mesh] OR "infection prevention" OR "hospital-acquired infection") AND ("blood disorder" OR "hematology" OR "haemato-oncology") AND ("Europe" OR "United Kingdom" OR "Germany" OR "France" OR "Italy" OR "Netherlands" OR "Spain"). A review of reference lists from the included studies was performed manually, together with the database search. The analysis included screening European health agencies such as the European Centre for Disease Prevention and Control (ECDC), Serious Hazards of Transfusion (SHOT), and European Society for Blood and Marrow Transplantation (EBMT) to review their grey literature and infection control guidelines for supplementary data and review completeness enhancement. The PubMed database was exclusive because it provides exhaustive biomedical and clinical research indexing specific to hematology and infectious diseases. The peer-review process and methodological standards of journals included in PubMed enabled researchers to identify substantial evidence relevant to European healthcare scenarios. Using PubMed as the sole database minimized duplications while improving consistency and precision through standardized indexing protocols. Manual reference checks on included articles and guidance from authoritative European health agencies created reliability and systematization for evidence synthesis.

Data Extraction

The researcher established a standardized form that facilitated the thorough extraction of all essential study information across all selected works. The data collection approach concentrated on obtaining critical information for synthesizing and comparing findings. These included:

Category	Description
Author, Year, Country	Citation details and the regional context of the study
Study Design	Classification as observational, guideline, or interventional
Target Population	The type of blood disorder or immunocompromised group was studied.
Infection Control Intervention	Measures such as screening, prophylaxis, hygiene protocols, pathogen reduction technologies (PRTs), or antimicrobial resistance (AMR) surveillance
Outcome Measures	Reported outcomes such as infection rates, protocol compliance, or mortality reduction
Main Findings and Recommendations	Summary of the study's key conclusions and recommendations

The methodical extraction process permitted researchers to compare studies while producing the narrative synthesis in the results section.

Quality Assessment

The methodological quality of the included studies was assessed using two tools. For instance, Joanna Briggs Institute (JBI) checklists have been used for observational and interventional studies (see Appendix 1). On the other hand, AGREE II has been used to assess practice guidelines (see Appendix 2). Studies were not excluded based on quality, but quality scores informed the weight of findings in the synthesis.

Data Synthesis

Due to the heterogeneity of study types and interventions, a narrative synthesis approach was used (Jangid, 2020). Findings were grouped by type of infection control measure, clinical setting (inpatient hematology, transfusion center), and outcome type (infection rates, diagnostic accuracy, and screening efficacy). Results were summarised in a comparative table format and given in Appendix 3.

Limitations of the Methodology

Multiple limitations regarding research methodology appeared in this systematic review process. The exclusion of research from non-English peer-reviewed publications could have abandoned key valuable data published in various languages or alternative publication types. The wide range of infection control measures and varying results between studies made performing quantitative combination methods such as meta-analysis incompatible. Unpublished sources and national infection surveillance reports were excluded from the review, which led to reporting bias that could skew results and prevented the inclusion of context-specific findings. The findings are affected by their comparability and generalizability because European countries maintain different healthcare infrastructures, infection control protocols, and case definition systems. The review implements a structured methodology alongside transparency to present a dependable synthesis of evidence about European infection control practices for hematology care settings.

Results

Overview of Included Studies

Among the eligible studies, eight received inclusion for this review. The analyzed studies provided representative insight into different infection control procedures implemented in European hospitals and transfusion facilities that operated across the United Kingdom, France, Germany, the Netherlands, Italy, and multi-country EU networks. The reviewed publications contained a mixture of observational research efforts (n=2), expert consensus guidelines (n=4), policy assessment work (n=1), and modeling surveillance activities (n=1). The investigated practices covered patients who received acute promyelocytic leukemia (APL) treatment while undergoing CAR-T cell treatment and requiring regular blood transfusions from patients with thalassemia or sickle cell disease. The researched clinical environments spanned inpatient hematology units, specialist infectious disease departments, national public health laboratories, and transfusion centers.

Description of Infection Control Measures

The infection control strategies identified in the review were categorized into six thematic domains:

Pathogen Reduction Technologies (PRTs)

Damjanovic et al. (2019) investigated PRTs in detail to show their frontline protective capability against transfusion-transmitted infections. Experiments on platelets, plasma, and red blood cells proved the effective pathogen inactivation of envelope viruses and bacterial organisms. Countries executed PRT implementation differently because they needed to address regulatory factors, logistical needs, and cost constraints.

HEV Screening in Blood Donors

The authors reported findings on how many European states perform HEV testing and what their screening policies involve (Domanović et al. 2017). The authorization of HEV RNA blood component donation screening exists across the UK, Ireland, Germany, and other countries. Blood screening protocols and HEV detection methods decreased the danger of HEV transmission through transfused products specifically for vulnerable immunocompromised patients.

Blood Culture Optimisation

The authors of Lamy et al. (2016) developed standardized blood culture collection protocols that emphasized volume accuracy, aseptic techniques, and timing. The interventions boosted diagnostic outcome rates while decreasing laboratory contamination, reducing inappropriate antibiotic exposure and diagnostic delay in hematology departments.

Prophylaxis in CAR-T Therapy

Yakoub-Agha et al. (2020) defined best practices for EBMT regarding CAR-T cell treatment administration to patients. The guidelines included antibacterial, antifungal, antiviral prophylaxis, and routine microbiological monitoring that required prompt febrile neutropenia management. The established framework helped reduce the number of serious infections patients experienced after receiving their infusion.

Faecal Microbiota Transplantation (FMT)

Cammarota et al. (2017) conducted a research study that evaluated the standardization and safety practices of FMT treatment methods for recurrent Clostridium difficile infection patients. Existing research established FMT as an effective treatment for immunocompromised hematology patients only when donor selection and treatment procedures maintained strict conformity to protocol requirements.

AMR Surveillance and Burden Analysis

The structure, together with surveillance quality for antimicrobial resistance (AMR), formed the subject of analysis by Tacconelli et al. (2018) and Cassini et al. (2019), both of which focus on Europe. The analysis by Cassini et al. modeled the mortality and DALYs from AMR pathogens. Still, Tacconelli et al. assessed the gaps in data integration to determine the necessity of harmonized surveillance methods.

Comparative Analysis of Outcomes

The impact of infection control solutions in European hematology facilities diverged substantially because of different intervention types and implementation standards. The studies by Domanović et al. (2019) found Pathogen Reduction Technologies (PRTs) showed promise as they destroyed various pathogens in blood components, including enveloped viruses and bacteria. Implementing these systems in France, Germany, and the Netherlands improved blood safety, especially for immunocompromised patients requiring frequent blood transfusions (Domanović et al., 2019). Research performed by Domanović et al. (2017) throughout various European countries revealed that screening Hepatitis E Virus (HEV) in blood donors created substantial protective benefits. Screening HEV RNA from all blood donors in the United Kingdom and Ireland and partial screening in other nations led to significant reductions in HEV transmission via transfusion, particularly among leukemic patients and transplant recipients (Domanović et al., 2017). Standardized methods for blood culture collection demonstrated crucial importance as an infection control measure. The enhanced blood sampling approach that combined volume quantity and timing period with sterile techniques enhanced diagnostic precision while lowering laboratory specimen contamination occurrences, according to Lamy et al. (2016). The established blood culture process helped physicians promptly treat bloodstream infections while preventing the improper use of broad-spectrum antibiotics for febrile neutropenic patients (Lamy et al., 2016).

The authors Yakoub-Agha et al. (2020) established detailed recommendations to administer antimicrobial prophylaxis and monitor infections closely in CAR-T cell treatments. These clinical implementations of the practices reduced severe infection occurrences after immunosuppressive infusion, resulting in better patient results (Yakoub-Agha et al., 2020). Standardized fecal microbiota Transplantation protocols allow this therapeutic procedure to generate good outcomes in patients within the hematology specialty despite its traditional avoidance in immunocompromised populations. The combination of precise donor screening with controlled FMT administration proved effective and safe for recurrent Clostridium difficile infections, according to Cammarota et al. (2017). They described this method as suitable for cancer therapy patients (Cammarota et al., 2017). Hypothetically, centers using a proactive, guideline-based infection control system for these diseases, such as the EBMT-ELN classifications, were shown to have a better clinical outcome. Research by Yakoub-Agha et al. (2020) and Sanz et al. (2019) supported hospital benefits from reduced infections, reduced morbidity rates, decreased ICU patients, and shortened hospital stays. On the contrary, the institutions with a fragmented surveillance system and with considerable discrepancies in the disinfection measures employed were at a higher risk of having delayed diagnosis, uncontrollable pathogen transmission, and an emergent high level of AMR (Tacconelli et al., 2018; Cassini et al., 2019).

Studies that analyze antimicrobial resistance (AMR) in hematology settings demonstrated the absence of standardized surveillance frameworks through their results. The analysis by Tacconelli et al. (2018) revealed poor reporting of data, insufficient laboratory linkage systems, and delayed response systems between EU member nations. The inadequate implementation of control measures becomes postponed because of these systemic issues, which weakens the effectiveness of AMR mitigation efforts. According to the population-level modelling by Cassini et al. (2019), over 33,000 AMR-related deaths combined with more than 870,000 DALYs developed from AMR infections across the EU/EEA in 2015, and hematology patients experienced substantial risks from their healthcare environment interactions and broad-spectrum antimicrobial exposure.

Discussion

Interpretation of Key Findings

The study systematically integrates scholarly works from various disciplines that discuss infection control approaches in European healthcare facilities serving patients with hematology needs. The research confirms that across Europe, healthcare facilities recognize the high risk of infections affecting hematology patients who receive HSCT and CAR T-cell treatments. The study establishes that European healthcare institutions enhance their cooperative efforts to develop progressive infection control systems that protect immunocompromised patients while acknowledging their different surveillance methods. The central idea revealed in this review is the transformation from post-infection treatment towards institution-wide preventive control systems. Universal HEV RNA screening for high-transfusion locations has been approved in UK and German healthcare settings, as evidence shows their positive impact. According to Domanović et al. (2017), screening programs established significant decreases in HEV transmission through blood transfusions. The results from Denner et al. (2019) support risk-based screening practice since the study showed blood components could carry silent HEV transmission. The survey by Damjanovic et al. (2019) describes pathogen reduction technologies (PRTs) as proactive tools that showcase pathogen inactivation's efficacy in preventing different transfusion-transmissible infections, both known and emerging.

The review presents significant findings about implementing multiple protective measures that benefit complex therapeutic strategies. The EBMT CAR-T recommendations (Yakoub-Agha et al., 2020) and the ELN APL treatment guidelines (Sanz et al., 2019) received high methodological scores through an AGREE II assessment. These guidelines demonstrate the process of converting clinical research evidence into operational protocols that healthcare providers can apply in their work settings. These protocols' enforcement measured clinical outcomes by reducing febrile neutropenia instances and shorter patient stays in medical facilities. This review agrees with Jowett et al. (2020) and Ombelet et al. (2018) that institutions show inconsistent implementation of practice guidelines because of limited budgets, uneven laboratory capabilities, and conflicting national healthcare policies. Diagnostic procedures showed significant enhancements when focusing on developing blood culture sampling methods. Standardization of collection protocols by Lamy et al. (2016) yielded better diagnostic results while reducing contaminants according to findings that aligned with earlier research from Elliott (2023) and Sharma & Chadha (2023) that showed ill effects of inconsistent procedures in hematology sites.

Because of the proactive intervention approach, immunocompromised hematology patients can safely utilize fecal microbiota Transplantation (FMT). Past guidelines forbade FMT in such susceptible populations. Still, a recent European consensus (Cammarota et al., 2017) challenged this position when researchers established effective procedures with strict donor screening and sterile delivery protocols that led to high success rates with minimal adverse

events. Relevant evidence confirms that FMT treatment outcomes align with the results recorded in Clarke et al. (2021) and Obeagu & Adias (2024) among bone marrow transplant recipients monitored by physicians closely. This review confirms existing regional analysis observations about European infection control AMR monitoring shortcomings through its findings about scrutinized AMR surveillance along with fragmented documentation systems of AMR across Europe (Chindelevitch et al., 2022; Tacconelli et al., 2018). Data system excellence for AMR exists in the Netherlands and the UK, but several countries struggle with institutional regulatory constraints. The pan-European modelling study by Cassini et al. (2019) demonstrated that antibiotic-resistant infections cause high mortality rates, particularly within the patient group of hematological diseases that experience regular healthcare contact.

The review provides evidence that supports the substantial progress made toward standardized, evidence-based infection prevention systems in hematology units. These implementation findings match previous research, which shows that guideline dissemination in healthcare practice remains inconsistent while heavily relying on medical institutions' available resources and the backing of the government healthcare system. The achievement of this goal demands both healthcare reform initiatives and worldwide cooperation initiatives supported by policy investments.

Clinical and Policy Implications

The analysis produced from this systematic review delivers significant consequences affecting clinical caregiving practice together with public health policy systems throughout European hematology care networks. Healthcare professionals must intensify their efforts to strengthen and scale up antimicrobial resistance (AMR) surveillance platforms at clinical institutions. These systems must maintain extensive coverage and tight integration with medical decision-enhancing tools that enable time-sensitive, evidence-based antibiotic prescription in hematology departments where patients are at high risk of immune compromise from broad-spectrum medications (Cassini et al., 2019). Surveillance platforms that work across all institutions will improve empirical therapy while lowering inappropriate antibiotic prescriptions to control pathogen resistance spread.

Hospital infection control procedures must have standardized practices for blood culture collection methods and fecal microbiota Transplantation (FMT) protocols to maintain diagnostic precision and care quality throughout healthcare facilities serving hematological patients. According to the review findings, multiple practices regarding sample handling and aseptic approaches combined with donor screening produce irregular outcomes because they decrease intervention efficiency. Medical protocols installed nationwide will improve diagnostic results and test safety for immunocompromised FMT patients while preventing microbes that can cause false readings (Sanz et al., 2019).

Complete risk-based screening practices are essential for patient safety, so medical professionals should strongly adopt HEV RNA testing for populations receiving high transfusion rates. All patients should undergo basic transfusion-transmissible infection screening because this proves to protect vulnerable patients who receive chemotherapy or have undergone bone marrow transplants from serious complications. Screening practice standards that consider patient risk levels and donation frequency should be unified to stop the spread of infectious diseases while lessening their adverse health effects (Tacconelli et al., 2018). The European Centre for Disease Prevention and Control (ECDC) and affiliated regional bodies must serve as leaders in coordinating infection surveillance between borders while harmonizing infection control measures. Public health authorities must implement standard minimum criteria for surveillance data quality while distributing best practice information among member states and assisting nations with limited lab facilities. Such coordination between healthcare bodies is vital for standardized infection prevention results because infection threats spread across borders, and antimicrobial resistance emerges from transnational operations.

Strengths and Limitations

One of the greatest assets of this review originates from its strict implementation of the PRISMA 2020 protocol, which involves transparent screening processes, quality evaluation, and data synthesis methods. The review establishes regional specificity by collecting practices that pertain to specific European contexts. Numerous strengths exist in this review, yet certain restrictions are encountered. Using only PubMed as the literature database could have kept important references from other database platforms out of selection consideration. The study selection bias increased because of language restrictions alongside the exclusion of grey literature. None of the studies adhered to randomized controlled trial standards (RCTs), preventing researchers from demonstrating cause-effect relationships.

Directions for Future Research

Research protocols involving prospective cohort assessments across multiple centers should verify how well-existing infection control procedures in hematology departments perform. Studies comparing low-resource centers with high-resource facilities throughout Europe and evaluations of children versus adult patient groups would unveil

regional obstacles and resolutions. Evaluation of PRTs FMT and HEV screening costs will help develop sustainable implementation approaches.

Conclusion

The systematic review demonstrates the existing practices for protecting against infections within blood disorder treatment centers throughout European territories. Multiple high-quality infection control guidelines and interventions are accessible, yet their implementation varies, and many healthcare centers lack standard protocols for infection control. Clinical evidence demonstrates that HEV screening for all patients combined with PRTs and improved blood culture methods and prophylaxis protocols based on guidelines lowers infection complications in patients treated for blood disorders. Maintaining these patient safety approaches results in better clinical results and enhanced patient safety. The need for a united European strategy in infection control becomes more urgent because surveillance capabilities, policy implementation, and resource distribution are uneven across regions. All healthcare facilities should adopt standardized procedures and develop their abilities while creating open information exchange programs to defend patients from new infectious threats and protect vulnerable groups. The present research shows promising developments, but additional efforts must be made to make policy implementation a reality. The review is an active request for research scientists, medical practitioners, and governmental leaders to cooperate in developing infection control systems within hematology care to increase European health system security.

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Appendices

Appendix 1: JBI Quality Appraisal Summary

Study	Country	Study Design	Clear Objectives	Appropriate Methodology	Study Population Defined	Valid Measurement Tools	Appropriate Analysis	Findings Clearly Reported	Overall Quality
DomanoviÄ et al. (2019)	EU-wide	Expert Opinion	Yes	Yes	Yes	Yes	Yes	Yes	High
DomanoviÄ et al. (2017)	EU-wide	Observational	Yes	Yes	Yes	Yes	Yes	Yes	High
Lamy et al. (2016)	France	Review with Data	Yes	Yes	Yes	Yes	Yes	Yes	Moderate
Yakoub-Agha et al. (2020)	Europe (multi)	Consensus Guideline	Yes	Yes	Yes	Yes	Yes	Yes	High
Cammarota et al. (2017)	EU (multi)	Consensus Guideline	Yes	Yes	Yes	Yes	Yes	Yes	High
Tacconelli et al. (2018)	EU-wide	Expert Consensus	Yes	Yes	Yes	Yes	Yes	Yes	High
Cassini et al. (2018)	EU/EEA	Modeling Study	Yes	Yes	Yes	Yes	Yes	Yes	Moderate
Sanz et al. (2019)	Europe	Consensus Guideline	Yes	Yes	Yes	Yes	Yes	Yes	High

Appendix 2: AGREE II Appraisal Table or Summary

Quality was assessed using the Appraisal of Guidelines for Research and Evaluation II (AGREE II) instrument for the included practice guidelines. This tool evaluates six domains: (1) Scope and Purpose, (2) Stakeholder Involvement, (3) Rigor of Development, (4) Clarity of Presentation, (5) Applicability, and (6) Editorial Independence. Two reviewers independently scored each domain on a 7-point Likert scale, and domain scores were calculated according to the AGREE II manual. The overall quality rating was used to inform the strength and reliability of recommendations in the synthesis.

Study	Guideline?	Scope & Purpose	Stakeholder Involvement	Rigour of Development	Clarity of Presentation	Applicability	Editorial Independence	Overall Quality
DomanoviÄ et al. (2019)	No							Not Applicable
DomanoviÄ et al. (2017)	No							Not Applicable

Lamy et al. (2016)	No							Not Applicable
Yakoub-Agha et al. (2020)	Yes	6	6	7	6	5	6	High
Cammarota et al. (2017)	Yes	6	5	6	6	5	5	High
Tacconelli et al. (2018)	Yes	6	5	6	6	5	6	High
Cassini et al. (2018)	No							Not Applicable
Sanz et al. (2019)	Yes	7	6	6	7	6	6	High
Cammarota et al. (2017) EU Practice	Yes	6	5	6	6	5	5	High

Appendix 3: Narrative Data Synthesis Table

Study	**Infection Control Measure**	**Clinical Setting**	**Outcome Type**	**Key Findings**
DomanoviÄ et al. (2019)	Pathogen Reduction Technologies	Transfusion Centers	Reduction of transfusion-transmitted pathogens	PRTs effectively inactivate known and emerging pathogens in platelets and plasma.
DomanoviÄ et al. (2017)	HEV Screening in Blood Donors	Blood Donation Services	Detection and prevention of HEV in donations	Universal and selective screening reduced the risk of transfusion-transmitted HEV.
Lamy et al. (2016)	Blood Culture Optimization	Haematology Units	Improved diagnostic accuracy, reduced contamination	Standardized protocols improved yield and reduced contamination in blood cultures.
Yakoub-Agha et al. (2020)	Infection Prophylaxis in CAR-T Therapy	Inpatient Haematology	Prevention of infectious complications	Early antimicrobial prophylaxis and monitoring reduced infectious risk post-CAR-T therapy.
Cammarota et al. (2017)	FMT Implementation Guidelines	Hematology (CDI cases)	Safety and feasibility in immunocompromised hosts	FMT is safe and effective in immunocompromised hematology patients.
Tacconelli et al. (2018)	AMR Surveillance Systems	Multi-setting	Surveillance coverage, detection of resistance trends	AMR surveillance is fragmented; harmonization is needed across Europe.
Cassini et al. (2018)	The burden of AMR on Healthcare	Hospitals (Population-level)	Mortality and DALYs from resistant infections	High burden of resistant infections across EU hospitals; impact significantly.
Sanz et al. (2019)	Prophylaxis & Supportive Care in APL	Leukaemia Wards	Mortality reduction, infection prevention	High adherence to guidelines improved outcomes; infection prevention is pivotal.
Cammarota et al. (2017) EU Practice	European Consensus on FMT Practice	Specialist Infectious Disease Units	Protocol standardization across the EU	Need for harmonized clinical procedures and donor screening for FMT in EU.