Quality Improvement Initiatives to Improve Sepsis Recognition, Treatment and Post-Sepsis Care Across Healthcare Settings Globally and in New Zealand: A Scoping Review (2015–2023)

Report Details

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Section 1 Introduction

Sepsis is a life-threatening condition that arises when the bodies response to an infection injures its own tissues and organs, characterised by life-threatening organ dysfunction due to a dysregulated host response to infection. [1, 2] In 2017, there were an estimated 48.9 million cases and 11 million sepsis-related deaths worldwide, constituting nearly 20% of all global deaths. There is a high global incidence among children, with approximately 20 million cases yearly and 2.9 million deaths in those under five. Regional disparities highlight global inequality, with roughly 85% of both sepsis cases and related fatalities occurring in low- and middle-income countries. [3] Healthcare-associated infections, often resistant to treatment, are one of the most frequent adverse events during care delivery, leading to a higher risk of hospital mortality. [1] It is noteworthy that 23.6% of all hospital-treated sepsis cases globally are healthcare-associated, and in intensive care units, 24.4% of sepsis cases with organ dysfunction are acquired during the intensive care unit stay. [4]

In line with evolving guidelines, there has been a shift in the terminology used to describe sepsis. Earlier terms such as "severe sepsis," "blood poisoning," and "Systemic Inflammatory Response Syndrome (SIRS)" have been simplified to simply sepsis or sepsis with associated shock. Sepsis with associated shock is sepsis with profound circulatory, cellular, and metabolic abnormalities with elevated mortality risk. This standardisation of terminology aims to improve the clarity of sepsis definitions for clinical care, surveillance, quality improvement, and research. [5-7]

While sepsis is often preventable, its detection commonly occurs at advanced stages due to late or failed recognition of deterioration following initial infection. The onset of sepsis can be acute, and presents a complex array of symptoms, including rigors, confusion, breathing difficulty, and body pain. Vulnerable populations, such as the elderly, pregnant women, hospitalised patients, and those with chronic medical conditions, are at higher risk. The leading contributors to sepsis cases globally include diarrhoeal diseases and lower respiratory infections. However, non-communicable diseases are also significant contributors, with maternal disorders being a common complication. Both neonatal and maternal sepsis are primarily caused by pathogens like Streptococcus and Escherichia coli, which have shown considerable resistance to treatment. [1]

Prevention of sepsis involves early recognition and treatment of infections, good hygiene, vaccination, and appropriate nutrition. Hospitals must adhere to infection prevention and control rules, and early diagnosis with appropriate clinical management is vital. Treatment of sepsis or sepsis with associated shock usually involves close monitoring, intravenous fluids, oxygen, antimicrobials, and possibly vasopressors and other advanced care to improve outcomes. The World Health Organisation global response to sepsis, as outlined in Resolution WHA70.7, includes developing guidance, and enhancing collaboration to improve sepsis treatment and prevention. The challenge remains in determining how to most effectively achieve universal prevention, diagnosis, and management of sepsis. [1]

Mortality related to sepsis and septic shock significantly declined among critically ill patients in Australia and Aotearoa, New Zealand (New Zealand) from 2000 to 2012. A 2014 study showed that absolute mortality in sepsis decreased from 35% to 18%, representing an overall decrease of 17% and an annual rate of absolute decrease of 1%. The decline in mortality from sepsis was associated with an increase in home discharges and a smaller increase in discharges to rehabilitation, compared to other diagnoses. Without adjusting for comorbidities and older age, mortality was under 5% in critically ill patients. This reduction challenges notions that little progress has been made in managing sepsis. [8] A 2004 study reported the adult-population incidence of sepsis in Australian and New Zealand

intensive care units, with 11.8 patients per 100 intensive care unit admissions diagnosed with sepsis. This translated to an annual incidence of 0.77 per 1000 of the population, a figure falling in the lower range of estimates from the U.S. and the U.K. However, research in New Zealand reported a sharp increase in sepsis incidence of 62% over five years, most affecting the Māori, elderly, and "disadvantaged" populations. One study reported that 19% of Medical Emergency Team calls in a New Zealand hospital were triggered by sepsis. [9-11]

A study of Staphylococcus aureus bacteraemia, a risk factor for sepsis, in children found that incidence was higher in Māori children compared to overall study population. Further studies between 2009 and 2018 in New Zealand intensive care units showed that Māori were younger at intensive care unit admission with more co-morbidities, higher illness severity, and higher risk of sepsis, although no difference was found in mortality outcomes compared to "New Zealand Europeans". These findings are evidence of health and socioeconomic inequality for Māori in the community leading to higher intensive care unit admission rates for trauma and sepsis. [12-14]

There is currently large variation in sepsis management across New Zealand healthcare settings. The Te Tāhū Hauora Health Quality & Safety Commission (HQSC) has initiated a quality improvement project aimed at reducing harm linked to sepsis. In 2022, HQSC concluded a stocktake of sepsis management in New Zealand to assess the response to sepsis in acute and secondary care settings, with the intent of guiding future national quality improvement efforts related to sepsis. [14]

The goal of this scoping review was to review the most effective published studies from national and international quality improvement initiatives, implemented in various healthcare settings since 2015, that have addressed the early recognition, diagnosis, early management, and post-sepsis care of sepsis across all populations.

Section 2 Methods

Research Question

The scoping review sought to identify the most effective national and international quality improvement initiatives implemented in various healthcare settings since 2015 that have addressed the early recognition, diagnosis, early management, and post-sepsis care of sepsis across all populations.

Inclusion and Exclusion Criteria

The search methodology for this scoping review encompassed *a priori*-defined search strings, along with hand searching within article reference lists, websites, and key background materials, including the Sepsis Trust NZ National Sepsis Action Plan for Aotearoa, New Zealand and the HQSC stocktake of sepsis management in Aotearoa. [15, 16] Studies published before 2015 or those focusing on medication side effects, technical prescribing specifications, or disease progression, along with studies analyzing the extent or incidence of sepsis harm (unless conducted in New Zealand), were excluded.

Search Strategy

The search strategy targeted quality improvement initiatives relevant to addressing early recognition, diagnosis, early management, and post-sepsis care. Separate search strings were used for international and national publications.

International Publications:

Search string used was "sepsis"[Title] AND ("governance"[Title] OR "leadership"[Title] OR "prevention"[Title] OR "recognition"[Title] OR "management"[Title] OR "quality"[Title]), with filters set for the years January 2015– June 2023.

National Publications:

Search string included "sepsis"[Title/Abstract] AND "New Zealand"[Title/Abstract] OR "Aotearoa"[Title/Abstract], with filters set for January 2015– June 2023.

Additional Sources

In addition to the PubMed search, additional references were hand-searched from the results, and further sources such as websites, reports, and white papers were included in the scoping review as appropriate.

Data Extraction and Synthesis

Literature search results were screened for adherence to the inclusion criteria, and relevant data were manually extracted into tables. Subsequent synthesis of the most pertinent data and conclusions was organized by healthcare setting and relevance to the research question, highlighting gaps in the evidence base and allowing for preliminary comparisons of different quality improvement initiatives, including systems, processes, or practices relevant to reducing harm associated with sepsis.

Section 3 Results

The PubMed search resulted in a total of 1037 articles, with approximately 887 international and 150 national publications. After screening abstracts and full texts, data were extracted from 186 sepsis quality improvement publications. These included approximately 24 guidelines, 2 meta-analyses, 10 systematic reviews, 73 quality improvement initiative evaluations, 58 Sepsis quality improvement-related research studies, and 17 literature reviews. The healthcare settings encompassed approximately 20 in 'prehospital' primary settings such as maternity, general practice, community, etc, and 142 in hospital settings, which included about 28 in emergency departments, 23 in intensive care units, 11 in neonatal intensive care units, 11 in paediatrics, and 7 in ambulance settings. Many articles cover multiple types of settings—primary, hospital, and long-term care – and these are discussed in the most relevant sections of the report, as appropriate. All data extracted from the literature search can be found in the **appendix**, with key data, results, and conclusions from selected publications synthesised into the following sections of the scoping review – refer to the full text articles as necessary.

Section 3.1 Sepsis guidelines

The key sepsis guidelines identified in the literature search from 2015 to 2023 encompassed updates to international consensus definitions, criteria, and guidelines for the early detection and management of sepsis across varied populations, including both adults and children. This report summarizes selected guidelines published during the search period, documents released before 2015 were outside the intended scope.

In 2016, the "Surviving Sepsis Campaign: International Guidelines for Management of Sepsis and Septic Shock" was produced by a cohort of 55 experts from 25 international organisations. The updated guidelines aimed at refining the approach to managing both sepsis and septic shock, seeking to align practices. [17] The Surviving Sepsis Campaign Bundle underwent a significant update in 2018, introducing an "hour-1 bundle" for immediate resuscitation and management. This proactive approach emphasised the importance of timely intervention in sepsis care, reflecting the understanding that rapid response can be critical in saving lives. [18]

The "Third International Consensus Definitions for Sepsis and Septic Shock (Sepsis-3)" was published in 2017. This provided revised definitions and clinical criteria. By utilising the Sequential [Sepsis-related] Organ Failure Assessment (SOFA) score and quickSOFA (qSOFA) score, the guidelines aimed to streamline diagnostic processes and facilitate earlier recognition and management, thus enhancing patient outcomes. [19] In the same year, the National Institute for Health and Care Excellence (NICE) released comprehensive "Sepsis: recognition, diagnosis and early management" (NICE Guideline, No. 51.) guidelines focusing on the recognition, diagnosis, and early management of sepsis. [20] In 2019 the NICE guidelines on sepsis and acutely ill adults in hospital were amended stating that the National Early Warning Score (NEWS), NEWS2 had been endorsed by National Health Service (NHS) England. [21]

The "International pediatric sepsis consensus conference: definitions for sepsis and organ dysfunction in pediatrics" were published in 2005. [22] These first-generation paediatric definitions and criteria were developed to support clinical studies in paediatric sepsis, with a modification to adult SIRS criteria, as well as adjustments to definitions of sepsis and septic shock specifically for children. [22]

The Surviving Sepsis Campaign guidelines were updated again in 2021. It is noteworthy that Surviving Sepsis Campaign recommend against using qSOFA compared to SIRS, NEWS, or modified early warning system (MEWS) as a single screening tool for sepsis or septic shock [23]

The New Zealand Consensus Guidelines released in 2014, titled "The prevention of early-onset neonatal group B streptococcus infection," provided a framework for preventing early-onset neonatal GBS infection. Central to the guidelines was a risk-based group B streptococcus prevention strategy, deemed to be the most clinically and cost-effective in the New Zealand healthcare context. The guidelines advised against universal routine antenatal group B streptococcus screening. [24] In 2017, the Society of Obstetric Medicine of Australia and New Zealand (SOMANZ) introduced guidelines for the investigation and management of sepsis in pregnancy. This set of guidelines emphasised an approach tailored to pregnant women, recommending the obstetrically modified qSOFA (omqSOFA) for initial assessment, followed by the obstetrically modified SOFA (omSOFA) for a comprehensive assessment. [25] The same year, the Canadian Paediatric Society issued a position statement on "Management of the infant at increased risk for sepsis." [26] Furthermore, the "Surviving Sepsis Campaign International Guidelines for the Management of Septic Shock and Sepsis-Associated Organ Dysfunction in Children," published in 2020, presented evidence-based guidelines for managing paediatric septic shock and sepsis-associated organ dysfunction, marking a significant advancement in the standardisation of care for these critical conditions. [27]

Sepsis guidelines tailored to various specific populations and sepsis-related diseases are available. An example of this targeted approach is the "Spleen Australia guidelines for the prevention of sepsis in patients with asplenia and hyposplenism in Australia and New Zealand" from 2017. [28] Another example, in 2023, the Scientific and Standardization Committee of the International Society on Thrombosis and Haemostasis (ISTH) released a communication concerning sepsis-induced coagulopathy (SIC) in the management of sepsis. Introduced by the scientific standardization committees of the ISTH in 2019, the SIC scoring system was devised to detect the compensated phase of Disseminated Intravascular Coagulation (DIC) in sepsis. This detection can be critical as it may lead to overt DIC as the disease progresses. The SIC scoring system has proven to be effective, with a 60% incidence in sepsis patients and a mortality rate of ≥30%, thus aiding in patient selection for anticoagulant therapy. [29]

Section 3.2 Prehospital or ambulatory setting quality improvement initiatives

The literature reviewed from 2015 to 2023 showed a notable gap in the implementation or evaluation of sepsis quality improvement initiatives in the "prehospital" or ambulatory settings – including in maternity settings, a population the World Health Organisation has identified as particularly vulnerable to sepsis. [1]

3.2.1 Community

A 2019 review titled "The Role of Parental Concerns in the Recognition of Sepsis in Children" underlined the need for well-designed diagnostic accuracy studies to ascertain the value of parental concerns in sepsis recognition within the community and for acute care staff to utilize parental concern in sepsis screening. Future studies should explore whether incorporating parental concerns in sepsis screening tools enhances early diagnosis and treatment of children with sepsis. [30] An initiative in 2022 centred on the UK Sepsis Trust's community nursing sepsis screening tool, which showed that its

implementation can ameliorate patient outcomes, including mortality, morbidity, and overall patient experience. [31]

The implementation of the National Early Warning Score (NEWS) in patients with suspicion of sepsis, as part of a quality improvement project in the West of England from March 2015 to March 2019, was linked with improved outcomes, underscoring the value of standardising NEWS in secondary care and its introduction in community and primary care settings. [32]

In a comprehensive retrospective study in 2021 involving 2,683,049 patients and over 64 million health encounters in ambulatory settings across five US states, machine learning models were developed to predict a 2-year risk of sepsis using Electronic Health Record (EHR) data. These models accurately anticipated the 2-year sepsis risk, furthering understanding of sepsis risk and aiding future preventive care trials. Factors such as age, ethnicity, sex, average heart rate, and standard deviation of Body Mass Index (BMI) emerged as significant features in two models. This study illustrated the complex interplay between risk factors, including age and socioeconomic status, in the incidence and severity of sepsis, contributing to an enriched understanding of sepsis risk factors and potential pathways for prevention. [33]

3.2.2 Maternity (pre-hospital and hospital settings)

Within the context of New Zealand, two studies in 2018 emphasized the preventability of obstetric sepsis. One investigation reviewed 50 cases, finding that 50% were potentially preventable, mostly due to delays in diagnosis and treatment [34] Another study used the Geller preventability model, adapted for the New Zealand environment, to retrospectively review severe maternal morbidity (SMM) cases. It found over a third of SMM cases to be potentially preventable, often due to substandard provider care, with higher rates for racial/ethnic minority women, and major blood loss (39.4%), preeclampsia-associated conditions (23.3%) and sepsis (14.1%) as the most common causes. [35]

International literature included a 2019 US study that analysed 27 cases of pregnancy-related deaths from sepsis, identifying quality improvement opportunities to reduce maternal mortality, such as Maternal Early Warning Criteria, standardized guidelines from the Surviving Sepsis campaign, and comprehensive discharge education. [36] Furthermore, a 2021 review of maternal sepsis management in hospitals recommended early recognition and management tools like qSOFA, Modified Early Obstetric Warning System, and Sepsis in Obstetrics Score (S.O.S.), aiming to reduce maternal morbidity and mortality. [37]

3.2.3 Primary care, paediatric

A 2007 prospective study in primary care involving 3981 children aged 0–16 years, who presented with acute illness for a maximum of 5 days, focused on the diagnostic accuracy of signs and symptoms for serious infections. Out of these children, 31 were admitted to hospital with a serious infection (0.78%). The study found that serious infection could be excluded based on a limited number of signs and symptoms and utilized Classification and Regression Tree (CART) analysis to create a multivariable triage instrument. [38]

A 2021 ten-year retrospective review in a New Zealand primary care centre found a high incidence of paediatric septic arthritis in Māori and Pacific populations and called for consideration of environmental, socioeconomic, and microbiological trends in future health interventions. [39]

3.2.4 Primary care, adults

A 2015 national population-based study in New Zealand analysed the incidence and demographics of invasive group A streptococcal disease from 2002 to 2012. Clinical manifestations of group A streptococcal disease include puerperal sepsis. The study showed an increase in incidence, with the highest occurrence in the over 75-year age group and among Pacific peoples. [40]

3.2.5 Primary care, general practice, and dental practices

In the context of primary care in general practice (GP) and dental practices, several studies focused on understanding and improving the recognition and management of sepsis. In the Netherlands, a 2017 survey of 800 GPs (with 160 responses) focused on the clinical decision-making process in sepsis cases, illustrating that a GP's assessment of sepsis is complex and not solely reliant on vital signs. The study suggested that to enhance care for patients with sepsis, there needs to be a prospective examination of the diagnostic and prognostic value of assessing not only the vital signs and symptoms but also the GPs' 'gut feeling' and additional diagnostic tests in the primary care setting. [41] A subsequent 2018 retrospective study emphasized the significant role that GP cooperatives play in the prehospital management of sepsis, particularly in out-of-hours primary care. Their paper noted that the recognition of sepsis was challenging and that improvements in the management of sepsis should encompass not only patients with suspected infection but also those severely ill patients who exhibit no clear signs of infection. [42]

A study developed a new clinical prediction model specifically for the early recognition of sepsis in adult primary care patients. Recognising that established clinical scores used in hospitals such as the qSOFA, SIRS, and National Early Warning Score (NEWS) are not validated in the primary care setting, this study presented a novel model incorporating nine variables: age; tympanic temperature; systolic blood pressure; peripheral oxygen saturation; heart rate; respiratory rate; mental status (normal or altered); rapid progression of illness (yes/no); and rigors (yes/no). Additionally, three biomarkers were included: lactate; C-reactive protein; and procalcitonin. This innovative and simple model demonstrated its capability to accurately predict sepsis in acutely ill adult patients using these readily available clinical parameters. [43]

A 2020 service evaluation surveyed 357 dental professionals in Wales to assess their knowledge, confidence, and educational requirements concerning sepsis. The findings showed a significant need for postgraduate education on sepsis identification and management within dental teams. [44] The findings from the dentists could be a surrogate for addressing the gaps in knowledge in other New Zealand primary care settings, such as helplines and pharmacies.

3.2.6 Ambulance

The published research on sepsis quality improvement initiatives in ambulance and Emergency Medical Services (EMS) settings is more extensive than in other 'prehospital' contexts, likely due to the closer coordination with hospitals and readily available data.

A systematic review provided moderate-quality evidence that structured screening for sepsis, based on vital signs criteria, demonstrated modest sensitivity and specificity, indicating a need for further research to enhance diagnostic accuracy and explore improvements in EMS management. [45]

A series of studies have highlighted various efforts to improve prehospital sepsis recognition and care. While EMS personnel training has shown improvement in early recognition, prehospital antibiotics did

not impact survival. [46] The implementation of the PRESS (PREhospital SepsiS) protocol and EMS sepsis screening tools like the Surviving Sepsis Campaign 3-hour bundle has led to improvements in recognition rates and compliance for sepsis patients. [47, 48] In a single-centre retrospective study, early sepsis recognition by paramedics using the qSOFA score and a modified qSOFA score significantly reduced sepsis mortality and time to antibiotic administration, although correct diagnosis by paramedics out-of-hospital was limited to 25 of 263 patients. When sepsis was diagnosed, the median time to antibiotic administration was significantly lower (136 min compared to 206 min, $p = 0.0069$), and mortality was reduced from 23% to 8% ($p = 0.0292$). [49] These findings underline the potential for EMS protocols to enhance sepsis recognition and treatment, but they also indicate a need for continued refinement and study in the prehospital setting.

A qualitative assessment aimed at understanding the barriers, facilitators, and attitudes concerning the recognition and management of pediatric sepsis in the prehospital setting identified nine environmental factors, 21 negative factors, and 14 positive factors. Additionally, six interventions were pinpointed that could potentially enhance prehospital pediatric sepsis care. [50]

3.2.7 Patient education

In the context of patient education on sepsis prevention and early detection, a study conducted in 2022 compared two evidence-based health information formats—text-based and graphical—among 500 participants at higher risk for sepsis. The study found that the text-based format was more effective in promoting informed choice and enhancing risk and health literacy for the early detection of sepsis. [51] These findings underscore the importance of tailored information delivery in educating at-risk populations, potentially leading to more effective early detection and prevention strategies for sepsis.

The research within various “prehospital” healthcare settings highlighted the complexity of sepsis recognition, diagnosis, and management. From the development of predictive models and EMS protocols to the evaluation of different educational formats, research has shown both advancements and ongoing challenges.

Section 3.3 Sepsis quality improvement initiatives in hospital settings

From 2015 to 2023, the literature pertaining to sepsis quality improvement initiatives was more comprehensive in hospital settings, with most research coming out of emergency departments and intensive care unit settings.

3.3.1 New Zealand hospital setting quality improvement research highlights

The evaluation of changes in epidemiology and care for adults with sepsis in emergency departments to intensive care units during the Australasian Resuscitation in Sepsis Evaluation (ARISE) study in 2023 showed that sepsis-related admissions increased from 8% to 16%. However, more rapid intensive care unit admission and decreased early ventilation were neither sustained nor associated with reduced risk of death or hospitalisation duration. [52]

A 2015 study focusing on the implementation of the UK Sepsis Trust’s 'Sepsis Six' resuscitation bundle in 55 adult patients with confirmed sepsis in New Zealand resulted in improved bundle delivery, though patient mortality remained unchanged. [53] Implementation of a national health target, ‘Shorter Stays in Emergency Departments’, in 2017 did not lead to significant changes in treatment timing or care

adequacy for various clinical indicators. [54] A 2020 review on unplanned intensive care unit admissions following rapid response team reviews in Australia and New Zealand indicated higher sepsis rates among these patients, with similar adjusted mortality rates to those without reviews. [55]

A 2018 study analysed the association between nutrition status and outcomes in paediatric sepsis, finding that severe undernutrition correlated with higher intensive care unit mortality and severe overnutrition with longer intensive care unit stay. Severe overnutrition was seen in Australia/New Zealand (17%) and North America (14%). [56] Investigation into paediatric invasive meningococcal disease in Auckland from 2004 to 2020 highlighted the disproportionate effect on Māori and Pacific children, advocating for the inclusion of N. meningitidis serogroup B vaccine in the national immunisation schedule. [57]

Studies into the management of sepsis with hypotension evaluated the practices and effects of early versus late vasopressor therapy. Findings suggest early vasopressor use was associated with lower intravenous fluid volumes but had no impact on organ support or mortality, and that resuscitation practices for suspected sepsis with hypotension varied widely across Australia and New Zealand. [58, 59]

3.3.2 Paediatric sepsis in hospitals

A systematic review in 2022 appraised neonatal sepsis guidelines, including those by the American Academy of Pediatrics, Canadian Pediatric Society, NICE, and Queensland Maternity and Neonatal Services (QH), highlighting superior methodological quality in NICE and QH guidelines. [60] In Australia and New Zealand in 2017, an assessment of septic shock criteria at intensive care unit admission indicated mortality patterns specific to paediatric sepsis, supporting the need for specialized definitions for sepsis severity in children. [61] A 2020 UK study of 5,156 febrile children found that, based on Paediatric Sepsis Six interventions and NICE sepsis guidelines, care could be improved only in a minority with invasive bacterial infection or those admitted to paediatric intensive care unit. [62]

Comparisons were made between the Kaiser Permanente neonatal early-onset sepsis risk calculator and NICE guideline CG149 in infants, with NICE showing superiority in identifying early-onset sepsis (EOS) within 4 hours. [63] Similarly, Centers for Disease Control and Prevention (CDC) guidelines identified more EOS cases than the Kaiser-Permanente calculator within four hours of birth in a 2022 study in Israel. [64] A 2021 comparison of NICE guideline CG149 and the Sepsis Risk Calculator in managing EOS found that the latter could reduce antibiotic use by 78%, but required further safety evaluation. [65] In Italy, a study between 2016 and 2020 introduced a new combined strategy of Universal Serial Physical Examination (SPE) with the Neonatal EOS Calculator that significantly reduced laboratory tests and antibiotic treatments without increasing sepsis risk. [66]

A 2021 report detailed the successful implementation of a paediatric sepsis quality improvement program using the American College of Critical Care Medicine and Surviving Sepsis Campaign guidelines. [67] The U.S. Children's Hospital Association Improving Pediatric Sepsis Outcomes collaborative aimed to reduce mortality and incidence by 25% from baseline by December 2020, emphasizing a multicentre approach. [68]

In 2021, a paediatric sepsis quality improvement initiative saw the development and implementation of eLearning modules incorporating confidence-weighted testing, completed by 1,463 out of 1,754 nurses, advanced practitioners, and physicians. The confidence-weighted testing enhanced learning

by correcting misinformation and identifying institutional knowledge gaps for future improvement. [69]

A 2020 systematic review of sepsis alerts in emergency departments found limited evidence that these alerts could be set to high sensitivity. Although no high-quality studies demonstrated a difference in mortality, evidence suggested improvements in the process of care. [70] In a 2015 study, the comparison of physician judgment and an electronic algorithmic alert for identifying paediatric sepsis and septic shock showed that the electronic algorithmic alert was more sensitive, yet less specific, than physician judgment. [71] An evaluation in 2021 of compliance with the 2017 Canadian Paediatric Society recommendations for managing newborns at risk for early-onset sepsis found a high noncompliance rate of 47%, mainly due to "overzealous management". The study emphasised that future initiatives should aim to increase compliance, particularly in newborns at lower risk for EOS. [72]

In the context of paediatric sepsis in hospitals, research has underscored the superior methodological quality in NICE neonatal/infant sepsis guidelines. The need for specialised definitions for sepsis severity in children was supported by mortality pattern assessments in Australia and New Zealand. A high noncompliance rate in managing newborns at risk for EOS pointed to the necessity for increased guideline adherence in future initiatives.

3.3.3 Adult sepsis in hospitals

In the treatment of sepsis in hospitals, the focus on Early, Goal-Directed Therapy (EGDT) has been met with scrutiny. Studies conducted in New Zealand and other international locations, including the Australasian Resuscitation in Sepsis Evaluation Trial in 2019 and a patient-level meta-analysis in 2017, found that EGDT did not yield better outcomes than usual care for septic shock. Furthermore, comparisons have shown no significant differences in mortality between EGDT and usual resuscitation over various periods, with EGDT associated with higher hospitalisation costs. [73-76]

The implementation of the sepsis bundle by the US Centers for Medicare and Medicaid Services (CMS) across American hospitals has also resulted in mixed outcomes, according to multiple studies. A 2017 study on computerised decision support systems (CDSSs), found a modest but unsustainable increase in CMS sepsis bundle compliance. [77] A study in 2021 found that compliance with Severe CMS Sepsis and Septic Shock Early Management Bundle (SEP-1), including lactate measurements, blood culture collection, antibiotic administration, fluid administration, vasopressor application, and patient reassessment was associated with lower 30-day mortality and a shorter length of stay. [78] However, a 2018 study found that while some elements of the SEP-1 implementation positively impacted survival rates, the overall evidence quality was low. This finding was supported by a systematic review conducted in the same year that evaluated the 2015 SEP-1 bundle and its hemodynamic interventions in sepsis management, concluding that no high- or moderate-level evidence showed that SEP-1 or its related interventions improved survival rates in adults with sepsis. A more recent study in 2021, of 117,510 adult patients with suspected sepsis, also showed that SEP-1 implementation did not enhance sepsis outcomes, leading to the suggestion for alternate strategies. [79-81] Moreover, a 2020 analysis showed that safety-net hospitals (providing healthcare for individuals regardless of their insurance status or ability to pay) performed worse on Medicare's SEP-1 quality measure, highlighting disparities in care. [82] These diverse results emphasise the complexity of implementing uniform sepsis management protocols.

The Surviving Sepsis Campaign sepsis bundles have featured in many international quality improvement initiatives, using various methods to enhance sepsis management. One project, known as the Sepsis Reassessment Protocol Improvement Project, successfully employed educational modules on Surviving Sepsis Campaign guidelines, along with reminder system alerts, to enhance protocol knowledge and compliance. [83] A 2021 initiative used a registered nurse-initiated implementation tool that achieved the completion of essential tasks such as blood cultures and antibiotic administration within one hour. [84] In 2023, an impactful implementation of a new pathway specifically for septic patients in the emergency department consisted of systematic detection, staff education, and dedication of two rooms to the management of septic patients (Sepsis Unit), improving compliance with Surviving Sepsis Campaign bundles and reducing organ dysfunction and short-term mortality [85]

Despite positive results for Surviving Sepsis Campaign bundles and associated clinical tools, a 2015 systematic review showed the prevailing lack of consensus on Surviving Sepsis Campaign sepsis bundle components and timing goals, underlining the need for comparative effectiveness research and the establishment of metrics to evaluate sepsis recognition or diagnostic accuracy. This gap in standardisation further reinforced the call for future research to guide implementation. [86]

The UK Sepsis Trust's Sepsis Six bundle has been featured in several quality improvement initiatives, offering mixed results in various settings. In New Zealand, a 2015 clinician initiated implementation of the Sepsis Six resuscitation bundle in 55 adult patients with confirmed sepsis did result in improved delivery but showed no corresponding improvement in patient mortality, possibly due to a lack of resourcing to support the isolated initiative. [53] Another initiative using the Sepsis Six demonstrated a significant improvement in sepsis management among inpatients, leading to decreased hospital stay, morbidity, and mortality. [87] Further support for the Sepsis Six was found in a 2010 prospective observational cohort study involving 567 patients with sepsis, where the implementation of the Surviving Sepsis Campaign resuscitation bundle and Sepsis Six was associated with reduced mortality and more effective delivery of interventions. [88] A 2021 study in the UK also confirmed the effectiveness of the Sepsis Six bundle in improving patient mortality, reducing intensive care unit admissions, and shortening hospital stay length. [89] Moreover, a 2019 quality improvement programme targeting urology ward patients in the UK, utilising the Sepsis Six initiative alongside other protocols, resulted in marked improvements in both the speed and quality of sepsis management for inpatients [90] The evidence collectively underscores the potential benefits of the Sepsis Six bundle, although outcomes may vary depending on the implementation context.

Other notable sepsis Quality Improvement initiatives emerged from the scoping literature search. In Australia, a 2023 study employed the "Between the Flags" system designed for statewide implementation, comprising governance, standard observation charts, two-level clinical emergency response systems, an education programme, and evaluation. The study highlighted the challenges in early recognition and timely care bundle implementation for older general medical patients with hospital-acquired sepsis. [91] A 2015 initiative in Wales involved the implementation of various tools such as NEWS, sepsis screening tools, Patient Status at A Glance (PSAG) boards, sepsis response bags, and an antibiotic formulary. The collaborative learning set demonstrated effectiveness in improving sepsis care quality across the healthcare service. [92] The US-based Sepsis Early Recognition and Response Initiative (SERRI) implemented a five-item bedside SIRS/sepsis screening tool into electronic health record systems in 2016. The SERRI program has been effective in raising local awareness of

sepsis and demonstrated potential in enhancing sepsis care. [93] These initiatives collectively underline the diverse strategies employed across various regions to enhance early recognition and management of sepsis. Comparative studies were conducted to assess prognostic accuracy, with results favoring SOFA and PELOD-2 scores over SIRS, sepsis, or qSOFA for predicting outcomes in both adults and children with suspected infections. [94, 95]

Section 3.4 Long-term care and post-sepsis setting quality improvement initiatives

The research related to quality improvement initiatives in long-term care (LTC) and post-sepsis settings was considerably lacking, representing a significant evidence gap (in the years included in the search strategy).

In long-term care, a 2023 case study involving 24 deidentified publicly available Health and Disability Commissioner (HDC) cases across three large New Zealand aged residential care (ARC) organisations analysed complaints to the HDC about ARC facilities. Rapid deterioration, notably due to sepsis, was a significant factor in complaints, with nutrition/hydration issues also featuring prominently. The six main diagnoses as indicators of deterioration included nutrition/hydration (22%), sepsis (17%), wounds (17%), UTI/renal issues (15%), falls (15%), and respiratory issues (15%). [96]

A 2019 review on sepsis in older adults in long-term care facilities (LTCFs) emphasised the necessity of early diagnosis, focusing on changes in clinical, mental, and functional status, including pulse oximetry. [97] A 2016 study showed that interprofessional sepsis simulations in 19 LTCFs improved communication and early recognition of sepsis symptoms among Certified Nursing Assistants and Licensed Care Providers. [98] Post-sepsis studies include the 2022 REPRESS model, which outperformed LACE in predicting readmission risk in sepsis patients, indicating its potential relevance in post-sepsis quality improvement. [99]

A study from 2019 found that sepsis survivors have significantly worse health-related quality of life compared to the general (Dutch) population. [100] Qualitative analysis identified 11 health-related quality of life domains vital to sepsis survivors, emphasising the necessity of family support in overcoming the aftermath of sepsis. [101] A 2018 review on readmissions among sepsis survivors highlighted that they are at high risk for hospital readmission, with urgent need for prevention strategies focusing on peri-discharge processes and interventions that may impact readmission rates. [102]

These studies collectively indicate a need for research and innovative quality improvement strategies in long-term care and post-sepsis settings to enhance outcomes and address the evident gaps in knowledge and practice.

Section 3.5 Implementation of sepsis quality improvement initiatives

A 2022 study in a New Zealand emergency department examined perceptions and factors affecting sepsis management, identifying three major themes: clinical management, challenges and delays, and communication. The study illustrated the complex interactions between clinical and organisational structures. [103] A German Quality Network on Sepsis highlighted the barriers of time, staff shortages, and lack of participation from relevant departments, emphasizing that hospital-wide sepsis quality

improvement efforts must be a high priority for leadership. [104] Studies exploring network approaches and distributed leadership emphasized the importance of relationships, trust, and timely publication of meaningful data in supporting large-scale change. [105] Various initiatives demonstrated that nurse-led programs, integrated screening tools, and leadership programs can significantly reduce sepsis mortality and associated costs. [106, 107] A Norwegian focus group study in 2020 showed that external inspections of hospital emergency departments could enhance understanding of complicated care processes and reinforce organisational commitment to systemic quality improvements in sepsis treatment. [108]

A 2020 publication warned that efforts to treat sepsis based on protocolization and quality metrics could constrain clinician expertise and shift the focus from clinical pathways to metric compliance, potentially moving definitions of quality away from bedside care. [109]

Together, these studies provide insight into the challenges of successfully implementing sepsis quality improvement initiatives at scale. Successful implementation requires a holistic approach, considering the complex interplay between clinical management, organisational structures, leadership commitment, education, communication, and the prioritisation of patient-centred care over mere compliance with metrics and protocol.

Section 3.6 Innovations for implementation of sepsis quality improvement initiatives

The domain of quality improvement in sepsis care has seen a growing interest in integrating technological innovations. These include automated patient monitoring systems, electronic health record (EHR) tools, and telesepsis solutions.

Automated sepsis patient monitoring systems have shown potential in improving recognition and outcomes, yet the evidence remains inconclusive regarding their overall effectiveness. EHR tools have been implemented to increase sepsis bundle compliance, with one study demonstrating a substantial rise from 23% to 87%. Additionally, sepsis early warning systems within the EHR have been associated with more timely antibiotic administration. [110, 111] A partially automated end-to-end sepsis solution that included electronic medical record-linked monitoring, early detection, around-the-clock nurse navigators, and teleconsultation significantly improved compliance metrics compared to a "surveillance only" training period. [112]

The use of medical simulations and computer-based training has been explored to enhance the skills of clinical staff. Studies found that branching simulations and high-fidelity simulations can improve sepsis screening and management compliance, knowledge, and confidence among clinicians, although ongoing reinforcement may be necessary to sustain these skills. [113, 114] The development of online educational games, such as Septris, have been acknowledged for improving sepsis recognition and management in non-intensive care unit settings. [115]

While technological innovations offer promise in some areas, there are concerns that they may be costly, time-consuming, and lacking empirical validation. The prevailing view advocates for ensuring the fundamental elements of a sepsis quality improvement program are in place first, such as safe staffing levels and the empowerment of clinicians to exercise their expert judgment without introducing burden of additional digital administration.

Section 3.7 Health Economics and Outcomes Research

Health Economics and Outcomes Research (HEOR) analysis provides an essential view on the financial impacts of sepsis and the cost-effectiveness of various sepsis quality improvement initiatives. Although not initially within the scope of this review, the following HEOR studies were identified through the literature search.

A 2021 study exploring the cost of major infections with the potential to cause sepsis in New Zealand found that these infections are common among hospital inpatients, and the direct treatment costs are substantially higher for those presenting with or progressing to sepsis. [116] Another analysis in New Zealand assessed the healthcare expenditure and cost-effectiveness of adjunctive hydrocortisone versus placebo in septic shock patients, finding no reduction in total healthcare expenditure or improved outcomes. [117]

In Australia, the implementation of a whole hospital clinical pathway for sepsis management using the Sepsis-2 (SIRS-based sepsis) criteria, SIRS criteria, and qSOFA criteria led to significant improvements in patient outcomes and a reduction in costs. [118] A US study showed that the use of an early onset sepsis calculator for neonatal management yielded a net monetary benefit of $3998 per infant, mainly by averting unnecessary antibiotic treatment. [119] A 2019 initiative implementing a sepsis care quality improvement program across the health system in adults with suspected infection led to decreased mortality and length of stay and substantial cost-savings. [120]

A province-wide quality improvement initiative in British Columbia, Canada, aimed at reducing in-hospital sepsis rates and mortality through education and quality improvement showed a positive return on investment (ROI) into their quality improvement initiative, averting significant sepsis cases and deaths. The ROI was $112 for every dollar invested in the British Columbia Sepsis Network. [121]

This small selection of HEOR data indicate that sepsis quality improvement initiatives, when efficiently implemented, may not only enhance clinical outcomes but also provide significant economic benefits. These studies mentioned the potential importance of having a more extensive organisational mandate to drive change at scale, rather than targeting one hospital or service at a time, given the variance in impact due to factors like hospital size, funding model, and ease of implementation.

Section 3.8 Web resources

Information and resources about sepsis in New Zealand are available through various platforms, tailored to different needs and settings. The Sepsis Trust NZ (sepsis.org.nz) seeks to prevent unnecessary deaths by enhancing awareness of sepsis symptoms and signs and has a range of high quality resources available for the public and clinicians. The 2016 NICE clinical guidelines for Sepsis were contextualised for the New Zealand healthcare sector by BPAC (available at www.bpac.org.nz/guidelines/4).

Additionally, international sepsis networks and resources include:

- The NHS Sepsis clinical policy resources (https://www.england.nhs.uk/ourwork/clinical-policy/sepsis/)
- The Surviving Sepsis Campaign website (https://www.sccm.org/SurvivingSepsisCampaign/Home)

- The CDC Sepsis online resources (https://www.cdc.gov/sepsis/)
- The US Sepsis Alliance website (https://www.sepsis.org/)
- The European Sepsis Alliance website (https://www.europeansepsisalliance.org/)

Based on publications reviewed in this scoping review, the following organisations may be most relevant for potential future collaboration in developing and implementing a national sepsis quality improvement initiative in New Zealand:

- The UK Sepsis Trust, upon which many of the NZ Sepsis Trust resources are based (https://sepsistrust.org/)
- The Australian Sepsis Network, already actively collaborating with the Australian and New Zealand Intensive Care Society (ANZICS) (https://www.australiansepsisnetwork.net.au/)
- The 'Health Quality BC' 'BC Sepsis Network' (https://healthqualitybc.ca/improve-care/sepsis/), and the University of British Columbia action on sepsis research cluster (https://sepsis.ubc.ca/)

These resources and organisations generally utilise the Surviving Sepsis Campaign bundles or NHS/NICE guidelines, as well as other international guidelines and consensus documents, as the basis for regionally tailored approaches to sepsis early recognition, diagnosis, early management, and post-sepsis care.

Further analysis of additional international web resources related to sepsis quality improvement initiatives was beyond this report's scope, but the resources above provide comprehensive insights applicable to New Zealand's healthcare and community settings.

Section 4 Discussion

This scoping review, covering the period from 2015 to 2023, identified key areas of focus in the recognition, diagnosis, early management, and post-sepsis care of sepsis. Central to the findings were the necessity of a coordinated national approach, and the importance of leadership and adequate resource allocation in sepsis quality improvement initiatives. The review also highlighted the complexity in sepsis definition and guidelines, the potential, and limitations of new technology in sepsis management, the multifaceted factors influencing disparities in sepsis outcomes, and the need to build the right teams and navigate roadblocks for successful implementation. The evidence gaps in community, primary care, and long-term settings present opportunities for future research and policy formulation. These findings set the stage for a detailed exploration and contextual analysis of sepsis care, with implications for healthcare policy, clinical practice, and quality improvement in New Zealand.

This scoping review was limited to publications from 2015 to 2023; thus, the following discussion is confined to the findings within this timeframe and does not encompass studies prior to 2015 which may be essential to sepsis quality improvement. This discussion assumes some familiarity with two documents: the Sepsis Trust NZ's “A National Sepsis Action Plan for Aotearoa, New Zealand” and HQSC's “Stocktake of sepsis management in Aotearoa New Zealand.”

Briefly, the Sepsis Trust NZ’s consensus document recommended that practical steps to secure immediate gains in sepsis management included: adopting and implementing a National Sepsis Action Plan, seeking funding to establish the leadership and governance principles of a National Sepsis Network, promoting the uptake of sepsis quality improvement programmes in hospitals and acute care settings, re-prioritising infectious diseases and sepsis as major threats to public health and safety, recognising sepsis as an unjust and unfair additional health burden for Māori and Pacific people, representing inequity, and making use of existing data to describe the national incidence and economic burden. Additionally, Te Tiriti o Waitangi principles should underpin a National Sepsis Action Plan, making it core to ongoing efforts to improve Māori health. [15]

While summarising the HQSC's “Stocktake” is beyond this report's scope, the recommendations in section 5 of the stocktake are broadly supported by the reviewed research. [16] This discussion will focus on the reviewed research, highlighting aspects relevant to planning and executing a National Sepsis Action Plan for New Zealand.

Sepsis is fundamentally an inflammatory and endothelial disease mediated by the host immune response. [5] The use of steroids remains controversial, with no clear survival advantage despite common usage by many physicians. The emphasis in treatment outcome should focus on patient survival, not economic cost in intensive care units, with particular focus on the immune paralysis phase of sepsis, which accounts for over 80% of related mortalities. Identifying factors leading to immune-suppression, and understanding the molecular mechanism of immune cell death during sepsis, are important problems for current sepsis-related research. [122]

When evaluating sepsis incidence, one should be mindful of the definitions used. A 2017 study showed that new SOFA criteria increased the apparent sepsis incidence without affecting the mortality rate. [123] Moreover, not all guidelines are empirically based; some result from consensus and may not be relevant for every setting. A review of the 2016 Surviving Sepsis Campaign guidelines found that most recommendations were informed by indirect evidence. [124] Evidence also suggests that there are issues with the implementation and outcomes of certain protocols such as EGDT and the CMS SEP-1

bundles. However, NICE sepsis guidelines, Surviving Sepsis Campaign bundles, and the UK Sepsis Trust's Sepsis Six are supported by favourable studies. As the NZ Sepsis Trust has already adapted Sepsis Six resources and BPAC translated NICE guidelines for New Zealand healthcare settings, these present a robust foundation and network of professionals to guide the development of a national sepsis initiative.

The reviewed research indicates that factors related to the implementation of quality improvement initiatives often influence success, rather than the specific guideline or clinical tool selected. Leadership, adequate resource allocation and stakeholder involvement were identified as crucial in the success of sepsis quality improvement initiatives. Key barriers to success included lack of time, staff shortages, and inadequate department participation, underlining the need for leadership to prioritise hospital-wide sepsis quality improvement efforts. [104]

The importance of enabling clinical judgement was highlighted, with studies raising concerns about mandated universal protocols leading to potential harm and constraining clinical expertise. Clinicians should be allowed to use their judgement to adjust resuscitation based on individual patient needs, rather than being overly constrained by a universal approach. [79, 109] Conversely, noncompliance with recommendations, such as in the management of newborns at risk for early-onset sepsis, pointed to the need for targeted initiatives to increase adherence in some settings. [72]

Scaling quality improvement initiatives adequately emerged as significant, with the British Columbia Sepsis Network serving as an example of a coordinated approach. A British Columbia Sepsis Network study stressed the benefits of a provincial mandate, advocating for a more efficient, wide-reaching change over targeting individual hospitals. [121]

The need for caution with un-validated technological solutions was underscored in sepsis management. The 2022 Lancet editorial on digitising the prediction and management of sepsis emphasised that while so-called artificial intelligence (AI) has potential, it requires vigilant assessment, fine-tuning, and unbiased datasets, and stressed that AI tools are not yet validated. [125] In response to the COVID-19 pandemic, a 2022 study in New Zealand's mental healthcare sector showed an agile adaptation through technological and process innovations among mental health helplines and telehealth providers, offering positive examples of opportunities for enhanced service delivery but also highlighting challenges related to the sustainability and impact analysis of these innovations. [126]

Transparency emerged as essential for a successful sepsis quality improvement intervention implementation, achievable through prospective registration of sepsis quality improvement initiative protocols and the timely publication of outcomes in peer-reviewed journals, among other methods of increased data transparency. Collaboration with networks that regularly publish research and outcomes, such as the Health Quality British Columbia Sepsis Network, Australian Sepsis Network, and UK Sepsis Network, could be advantageous.

Awareness of factors underlying health outcome disparities was highlighted. A 2017 review showed that sex/gender impact on sepsis-related management and mortality is inconclusive and complex. [127] A separate 2018 review identified that racial disparities in sepsis management are influenced by multifaceted patient, community, and hospital-based factors. Recommendations included community-based efforts targeting primary care access in lower socioeconomic status neighbourhoods, and uniform vaccination coverage. [128]

In developing an evidence-based New Zealand Quality Improvement initiative roadmap, several aspects could be considered:

- ***Building the Right Teams***: A workgroup should encompass key stakeholders and frontline providers including nurses, pharmacists, respiratory therapists, and others such as a project manager, improvement specialist, unit-specific educator, family advisory board member, data analyst, EHR specialist, and administrative leadership representative. Regular meetings to review the program and analytics/metrics and the creation of evidence-based guidelines and metrics for interventions are crucial. [67] A study of the BC Sepsis Network illustrated the importance of distributed leadership, emphasizing relationships, trust, and timely data. [105]
- ***Identifying and Navigating Roadblocks***: Perception analysis and understanding factors that impede sepsis identification and management are important. Clinical management, challenges and delays, and communication have been identified as major themes that influence sepsis care. [103] A systematic review showed common barriers like staff shortages, delayed initiation of antibiotics, and poor teamwork skills. Conversely, facilitators include standard evidence-based sepsis management protocols, professional training, staff development, and simulation. [129]
- ***Utilizing Evidence-Based Tools***: Implementing educational modules, guidelines, and reminder system alerts improves protocol knowledge and compliance, as evidenced in the Sepsis Reassessment Protocol Improvement Project. [83]
- ***Addressing Evidence Gaps***: Large evidence gaps were noted in community, primary care, post-sepsis care, and long-term care facility settings. This presents an opportunity for New Zealand to contribute to international research through sepsis quality improvement initiative clinical trials tailored to these settings.

Conclusion

In conclusion, this scoping review underscores the imperative of a unified and coordinated approach in addressing sepsis management in New Zealand. Studies highlight the critical role of leadership, practical implementation strategies, awareness of health outcome disparities, and evidence-based decision-making. Moreover, this review emphasises the opportunities that lie in addressing existing evidence gaps, and the necessity of collaboration, transparency, and careful validation of technological solutions. These findings, in addition to the Sepsis Trust NZ's “A National Sepsis Action Plan for Aotearoa, New Zealand” and HQSC's “Stocktake of sepsis management in Aotearoa New Zealand,” can inform the planning, execution, and continuous refinement of a National Sepsis Action Plan for New Zealand.

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Appendix. International and New Zealand sepsis quality improvement PubMed literature search results sorted by healthcare setting (available in Excel format).

HCP, healthcare practitioner; NA, not applicable; NR, not reported; QI, quality improvement.

Year	Link	Title	Article type	Country	Healthcare setting (Primary, Hospital, Long-term)	N, Cohort	Intervention, variable	Conclusion	Clinical tool, QI tool, guideline	QI study (Y/N)	Equity data (Y/N)	HEOR data (Y/N)
2017	https://pubmed.ncbi.nlm.nih.gov/27920243/	Between the flags: implementing a safety-net system at scale to recognise and manage deteriorating patients in the New South Wales Public Health System	QI initiative, implementation	Australia	Hospital	NA	Implementation of a safety-net system called 'Between the Flags' (BTF) in public hospitals	Implementation of BTF led to a 42% decline in cardiac arrest rate and a 135.9% increase in Rapid Response rate.	'Between the Flags' (BTF) safety-net system'	Y	N	N
2022	https://pubmed.ncbi.nlm.nih.gov/34593705/	The Return on Investment of a Province-Wide Quality Improvement Initiative for Reducing In-Hospital Sepsis Rates and Mortality in British Columbia, Canada	QI initiative, implementation	Canada	Hospital	Aggregate data from Canadian Institute for Health Information on in-hospital sepsis rates and sepsis mortality.	British Columbia Sepsis Network aimed to reduce sepsis occurrence and mortality through education, knowledge translation, and quality improvement.	British Columbia Sepsis Network averted significant sepsis cases and deaths, yielding a positive return on investment.	Sepsis screening tools and protocols, British Columbia Sepsis Network.	Y	N	Y
2022	https://www.frontiersin.org/articles/10.3389/fmed.2022.882340/full	The German Quality Network Sepsis: Evaluation of a Quality Collaborative on Decreasing Sepsis-Related Mortality in a Controlled Interrupted Time Series Analysis	QI initiative, evaluation	Germany	Hospital	74 hospitals	Quality reports based on claims data, peer reviews, continuous quality management, and regular staff education	No significant effect on risk-adjusted mortality compared to national statistics. "A standardized survey among 49 local quality improvement leaders in autumn of 2018 revealed that most hospitals did not succeed in implementing a continuous quality management program or relevant measures to improve early recognition and treatment of sepsis. Barriers perceived most commonly were lack of time (77.6%), staff shortage (59.2%), and lack of participation of relevant departments (38.8%)."	German Quality Network Sepsis (GQNS) quality reports, peer reviews, and staff education	Y	N	Y
2023	https://www.frontiersin.org/articles/10.3389/f	Development and validation of risk-adjusted quality indicators for the long-term outcome of acute sepsis care in German	Research, observational	Germany	Hospital	35,522 patients hospitalized with sepsis or septic shock in 2014	Development of risk-adjusted quality indicators for acute sepsis care.	Risk-adjusted quality indicators for acute sepsis care incorporating both 90-	Risk-adjusted quality indicators based on health claims data.	N	N	Y

Year	Link	Title	Article type	Country	Healthcare setting (Primary, Hospital, Long-term)	N, Cohort	Intervention, variable	Conclusion	Clinical tool, QI tool, guideline	QI study (Y/N)	Equity data (Y/N)	HEOR data (Y/N)
	med.2022.1069042/full	hospitals based on health claims data						day mortality and long-term outcomes showed satisfactory predictive validity.				
2017	https://pubmed.ncbi.nlm.nih.gov/27661863/	Quality Improvement Initiative for Severe Sepsis and Septic Shock Reduces 90-Day Mortality: A 7.5-Year Observational Study	QI initiative, implementation	Germany	Hospital	All adult medical and surgical ICU patients with severe sepsis and septic shock.	Implementation of a quality improvement program over 7.5 years.	Quality improvement initiative increased compliance and reduced 90-day mortality over a 7.5-year period.	Resuscitation bundle elements, blood cultures before antibiotic therapy, adequate calculated antibiotic therapy, 1-2 L crystalloids within the first 6 hours, and greater than or equal to 6 L during the first 24 hours.	Y	N	NR
2020	https://pubmed.ncbi.nlm.nih.gov/32032273/	Surviving Sepsis Campaign International Guidelines for the Management of Septic Shock and Sepsis-Associated Organ Dysfunction in Children	Guideline	International	Hospital	Children with septic shock or other sepsis-associated organ dysfunction	Development of evidence-based guidelines for managing pediatric septic shock and sepsis-associated organ dysfunction	Guidelines provide a foundation for consistent care to improve outcomes and inform future research	Surviving Sepsis Campaign International Guidelines	N	N	N
2017	https://pubmed.ncbi.nlm.nih.gov/28101605/	Surviving Sepsis Campaign: International Guidelines for Management of Sepsis and Septic Shock: 2016	Guideline, consensus	International	Hospital	Large cohort of international experts (55 experts from 25 international organizations)	Updated guidelines for management of sepsis and septic shock	Substantial agreement on many strong recommendations for best care of sepsis patients	Surviving Sepsis Campaign Guidelines	N	N	N
2021	https://pubmed.ncbi.nlm.nih.gov/34643578/	Executive Summary: Surviving Sepsis Campaign: International Guidelines for Management of Sepsis and Septic Shock 2021	Guideline, update	International	Hospital	Patients with sepsis and septic shock	Updated guidelines for sepsis and septic shock management	Provided updated guidelines for sepsis and septic shock management	Surviving Sepsis Campaign Guidelines	N	N	N
2022	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8486643/	Surviving Sepsis Campaign: International Guidelines for Management of Sepsis and Septic Shock 2021	Guideline, update	International	Hospital	Patients with sepsis and septic shock	Updated guidelines for sepsis and septic shock management	Updated guidelines provide evidence-based recommendations for sepsis management	Surviving Sepsis Campaign guidelines	Y	N	N
2021	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8390911/	The Japanese Clinical Practice Guidelines for Management of Sepsis and Septic Shock 2020 (J-SSCG 2020)	Guideline	Japan	Hospital	Patients with or suspected of sepsis or septic shock	Revised guidelines for sepsis and septic shock management, including new areas like patient- and family-centered care, sepsis treatment system, neuro-intensive treatment, and stress ulcers	The guidelines aim to improve prognosis of sepsis and septic shock patients by assisting medical staff in making appropriate decisions	The Japanese Clinical Practice Guidelines for Management of Sepsis and Septic Shock 2020 (J-SSCG 2020)	Y	N	N
2020	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7340061/	Quality of evidence supporting Surviving Sepsis Campaign Recommendations	Guideline, commentary	NA	Hospital	96 recommendations from 2016 Surviving Sepsis Campaign guidelines were analyzed.	Analysis of the quality of evidence supporting sepsis management recommendations.	Most recommendations were informed by indirect evidence and	Surviving Sepsis Campaign guidelines	Y	N	N

Year	Link	Title	Article type	Country	Healthcare setting (Primary, Hospital, Long-term)	N, Cohort	Intervention, variable	Conclusion	Clinical tool, QI tool, guideline	QI study (Y/N)	Equity data (Y/N)	HEOR data (Y/N)
								non-systematic observations.				
2018	https://pubmed.ncbi.nlm.nih.gov/30482516/	Does the Severe Sepsis and Septic Shock Early Management Bundle (SEP-1) Improve Survival in Septic Adults?	Review	NA	Hospital	18/56563 met criteria. Septic patients receiving one or more SEP-1 interventions across 20 studies	CMS Sepsis Bundle SEP-1 interventions on survival of septic patients	SEP-1 implementation yielded mixed results; some elements improved survival, but overall evidence quality was low.	CMS Sepsis Bundle SEP-1	Y	N	N
2015	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4724896/	Variation in the Contents of Sepsis Bundles and Quality Measures. A Systematic Review	Systematic review	NA	Hospital	sepsis resuscitation and management bundles compared	Comparison of sepsis bundles and associated quality measures	Lack of consensus on sepsis bundle components and timing goals, need for comparative effectiveness research	Surviving Sepsis Campaign, National Quality Forum, Centers for Medicare and Medicaid, etc.	Y	N	N
2017	https://pubmed.ncbi.nlm.nih.gov/28320242/	Early, Goal-Directed Therapy for Septic Shock — A Patient-Level Meta-Analysis	Systematic review, Meta-Analysis	NA	Hospital	3723 patients at 138 hospitals in seven countries,	Early, goal-directed therapy (EGDT) for septic shock	EGDT did not result in better outcomes than usual care, associated with higher hospitalization costs	Early, goal-directed therapy (EGDT) for septic shock	Y	N	Y
2015	https://pubmed.ncbi.nlm.nih.gov/25885654/	Early goal-directed therapy in the management of severe sepsis or septic shock in adults: a meta-analysis of randomized controlled trials	Systematic review, meta-analysis	NA	Hospital	10 RCTs from 2001 to 2014 involving 4,157 patients with severe sepsis or septic shock	Comparison of early goal-directed therapy (EGDT) with usual care and early lactate clearance	EGDT was not associated with a survival benefit, and was associated with higher mortality compared to early lactate clearance	Early goal-directed therapy (EGDT)	Y	N	N
2022	https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0270711	Sepsis assessment and management in critically Ill adults: A systematic review	Systematic review	NA	Hospital	Nurses in critical care units, 31/1579 studies included	Interventions include education sessions, simulation, decision support or screening tools for sepsis, and evidence-based treatment protocols/guidelines.	Nurses have varying levels of knowledge, practices, and attitudes towards sepsis. No study has collectively targeted critical care nurses' knowledge, attitudes, and practice of sepsis management.	Sepsis protocols and screening tools based on the Surviving Sepsis Campaign (SSC) guidelines.	Y	N	N
2020	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7447166/	The Use of Patient Monitoring Systems to Improve Sepsis Recognition and Outcomes: A Systematic Review	Systematic review	NA	Hospital	19/345 articles were identified for inclusion: 4 systematic reviews and 15 individual studies.	Impact of automated patient monitoring systems (PMSs) on sepsis recognition and outcomes.	Automated sepsis PMSs have the potential to improve sepsis recognition and outcomes, but current evidence is mixed on their effectiveness.	Automated patient monitoring systems (PMSs)	Y	N	N
2018	https://pubmed.ncbi.nlm.nih.gov/29459977/	Evidence Underpinning the Centers for Medicare & Medicaid Services' Severe Sepsis and Septic Shock Management Bundle (SEP-1): A Systematic Review	Systematic review	NA	Hospital	HCPs	Evaluation of the 2015 SEP-1 bundle and its hemodynamic interventions in sepsis management	No high- or moderate-level evidence shows that SEP-1 or its hemodynamic interventions improve survival in adults with sepsis.	Severe Sepsis and Septic Shock Early Management Bundle (SEP-1)	N	N	N

Year	Link	Title	Article type	Country	Healthcare setting (Primary, Hospital, Long-term)	N, Cohort	Intervention, variable	Conclusion	Clinical tool, QI tool, guideline	QI study (Y/N)	Equity data (Y/N)	HEOR data (Y/N)
2023	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10045698/	Pediatric Invasive Meningococcal Disease, Auckland, New Zealand (Aotearoa), 2004–2020	Research, Observational Study	New Zealand	Hospital	319 cases in 318 children under 15 years with invasive meningococcal disease	Retrospective review of clinical, laboratory, and immunization data.	Māori and Pacific children disproportionately affected by preventable disease, advocating for inclusion of N. meningitidis serogroup B vaccine in the national immunization schedule.	NA	N	Y	N
2021	https://pubmed.ncbi.nlm.nih.gov/33444303/	Counting the cost of major infection and sepsis in New Zealand: an exploratory study using the National Minimum Data Set	Research, Observational Study	New Zealand	Hospital	Hospitalized patients diagnosed with a 'major infection' with the potential to cause sepsis and a subset with a high likelihood of clinical sepsis (1,868 discharges in 2016).	Retrospective analysis of the National Minimum Data Set using two code-based algorithms.	Infectious diseases with the potential to cause sepsis are common among hospital inpatients. Direct treatment costs are high for those who present with or progress to sepsis due to these infections.	NA	N	N	Y
2015	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4693057/	Improving the management of sepsis in a district general hospital by implementing the 'Sepsis Six' recommendations	QI initiative, implementation	New Zealand	Hospital	55 adult patients with confirmed sepsis	Implementation of the 'Sepsis Six' resuscitation bundle	Improved delivery of the Sepsis Six bundle, but no improvement in patient mortality	Sepsis Six resuscitation bundle	Y	N	N
2017	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5597865/	Evidence of High Mortality and Increasing Burden of Sepsis in a Regional Sample of the New Zealand Population	Research	New Zealand	Hospital	1643 patients with sepsis, 63% aged 65 or over, 17% admitted to ICU	Studied population-based incidence of sepsis from 2007 to 2012	Sepsis incidence increased by 62% over a 5-year period, most affecting Maori, elderly, and disadvantaged populations	International Classification of Diseases, Tenth Revision, Australian Modification	Y	Y	N
2020	https://pubmed.ncbi.nlm.nih.gov/32304417/	Unplanned ICU Admission From Hospital Wards After Rapid Response Team Review in Australia and New Zealand	QI initiative, evaluation	New Zealand, Australia	Hospital	97,181 unplanned ICU admissions from the ward, 55,084 cases after rapid response team review	Evaluation of ICU admissions after rapid response team review	Patients admitted to ICU after rapid response team review were more chronically and acutely ill, and more frequently had sepsis. Their unadjusted outcomes were worse, but after adjustment their mortality was similar.	Rapid response team review	Y	N	N
2023	https://pubmed.ncbi.nlm.nih.gov/37154081/	Preventing the overdiagnosis of chest sepsis in children: A quality improvement project	QI initiative, implementation	NR	Hospital	Children and young people diagnosed with and treated for 'chest sepsis' (exact numbers not specified in the abstract)	Implementation of measures to prevent overdiagnosis of 'chest sepsis'	Overdiagnosis, over-investigation, and over-treatment of children for 'chest sepsis' persist despite interventions.	British Thoracic Society and National Institute of Clinical Excellence sepsis guidelines	Y	N	Y
2023	https://www.ncbi.nlm.nih.gov/	Pediatric Sepsis: a Summary of Current Definitions and	Review	NR	Hospital	NA	management recommendations for	Early diagnosis, timely intervention with	Pediatric Early Warning Scores	N	N	N

Year	Link	Title	Article type	Country	Healthcare setting (Primary, Hospital, Long-term)	N, Cohort	Intervention, variable	Conclusion	Clinical tool, QI tool, guideline	QI study (Y/N)	Equity data (Y/N)	HEOR data (Y/N)
	pmc/articles/PMC10169116/	Management Recommendations					pediatric sepsis, including the use of Pediatric Early Warning Scores (PEWS) and sepsis "bundles of care".	antibiotics, fluid resuscitation, and vasoactive medications are key in sepsis management.	(PEWS), sepsis "bundles of care"			
2016	https://pubmed.ncbi.nlm.nih.gov/26845731/	The UK joint specialist societies guideline on the diagnosis and management of acute meningitis and meningococcal sepsis in immunocompetent adults	Guideline, update	United Kingdom	Hospital	Infectious diseases physicians, neurologists, acute physicians, intensivists, microbiologists, public health experts, patient group representatives.	Revised guidelines for managing adults with meningitis and meningococcal sepsis.	New guidelines include viral meningitis, update on antibiotic and steroid therapy, and follow-up recommendations.	AGREE 2 tool, GRADE system for grading recommendations.	Y	N	N
2019	https://www.ncbi.nlm.nih.gov/books/NBK552068/	2019 exceptional surveillance of sepsis: recognition, diagnosis and early management (NICE guideline NG51) and acutely ill adults in hospital: recognising and responding to deterioration (NICE guideline CG50)	Guideline, update	United Kingdom	Hospital	NR	Implementation of NEWS2 for early detection of sepsis	NEWS2 endorsed by NHS England for detecting acute illness, including sepsis	NEWS2 early warning score	Y	N	N
2016	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6297322/	Improving multidisciplinary severe sepsis management using the Sepsis Six	QI initiative, evaluation	United Kingdom	Hospital	Patients with a medical consultant diagnosis of 'sepsis' on post-take ward round (67 patients in 2014 and 54 patients in 2015).	Implementation of the Sepsis Six protocol and promoting teamwork.	Significant improvement in severe sepsis management, decrease in hospital stay, morbidity, and mortality.	Sepsis Six protocol	Y	N	N
2016	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4739425/	Bridging the gap between pragmatic intervention design and theory: using behavioural science tools to modify an existing quality improvement programme to implement "Sepsis Six"	QI initiative, implementation	United Kingdom	Hospital	34 health professionals involved in sepsis care (nurses, doctors, midwives)	Modification of existing Sepsis Six implementation using Theoretical Domains Framework (TDF) and Behaviour Change Technique (BCT) Taxonomy.	TDF and BCT Taxonomy useful for modifying existing QI intervention, compatible with pragmatic P-D-S-A cycle approach.	Sepsis Six care bundle, Theoretical Domains Framework (TDF), Behaviour Change Technique (BCT) Taxonomy, P-D-S-A cycle approach.	Y	N	N
2018	https://pubmed.ncbi.nlm.nih.gov/30087164/	Advancing quality in sepsis management: a large-scale programme for improving sepsis recognition and management in the North West region of England	QI initiative, implementation	United Kingdom	Hospital	7776 patients admitted with sepsis	Advancing Quality (AQ) Sepsis programme promoting a sepsis care bundle	AQ Sepsis programme reduced readmissions and hospital stays but not mortality	Advancing Quality (AQ) Sepsis programme, NEWS	Y	N	N
2010	https://pubmed.ncbi.nlm.nih.gov/21036796/	The sepsis six and the severe sepsis resuscitation bundle: a prospective observational cohort study	QI initiative, implementation	United Kingdom	Hospital	567 patients with severe sepsis	Implementation of the SSC resuscitation bundle and the sepsis six	SSC resuscitation bundle and sepsis six associated with reduced mortality, improved delivery of life-saving interventions	SSC resuscitation bundle, sepsis six	Y	N	N

Year	Link	Title	Article type	Country	Healthcare setting (Primary, Hospital, Long-term)	N, Cohort	Intervention, variable	Conclusion	Clinical tool, QI tool, guideline	QI study (Y/N)	Equity data (Y/N)	HEOR data (Y/N)
2021	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8189682/	Infectious Diseases Society of America Position Paper: Recommended Revisions to the National Severe Sepsis and Septic Shock Early Management Bundle (SEP-1) Sepsis Quality Measure	Guideline, position	United States	Hospital	NA	Recommendations for revising the SEP-1 Sepsis Quality Measure	SEP-1 should be limited to septic shock, to reduce antibiotic overuse and improve measure reliability	SEP-1 Sepsis Quality Measure	N	N	N
2018	https://link.springer.com/article/10.1007/s00134-018-5085-0	The Surviving Sepsis Campaign Bundle: 2018 update	Guideline, update	United States	Hospital	Patients with sepsis and septic shock	Introduction of an "hour-1 bundle" for immediate resuscitation and management of sepsis	The "hour-1 bundle" improves outcomes in patients with sepsis and septic shock	The "hour-1 bundle" from the Surviving Sepsis Campaign Guidelines	Y	N	N
2020	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7688252/	A Multimodal Sepsis Quality-Improvement Initiative Including 24/7 Screening and a Dedicated Sepsis Response Team-Reduced Readmissions and Mortality	QI initiative, implementation	United States	Hospital	4,102 patients diagnosed with sepsis, severe sepsis, or septic shock.	Implementation of a multimodal quality-improvement initiative.	Implementation of the initiative led to improved compliance with sepsis bundle interventions and reduced mortality and readmissions.	Sepsis bundle interventions mandated by the Centers for Medicare and Medicaid Services.	Y	N	N
2017	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5699141/	A quality improvement project to improve the Medicare and Medicaid Services (CMS) sepsis bundle compliance rate in a large healthcare system	QI initiative, implementation	United States	Hospital	All adult inpatients with sepsis from October 2015 to September 2016 QI intervention or variable: Implementation of computerised decision support systems (CDSSs) to increase compliance with CMS sepsis bundle	Implementation of computerised decision support systems (CDSSs) to increase compliance with CMS sepsis bundle	Modest increase in CMS sepsis bundle compliance associated with computerised decision support systems (CDSS) implementation, but gains were not sustained	CMS sepsis bundle, CDSSs	Y	N	Y
2023	https://pubmed.ncbi.nlm.nih.gov/36066850/	Quality Improvement to Promote Sepsis Reassessment: The Sepsis Reassessment Protocol Improvement Project (SRPIP)	QI initiative, implementation	United States	Hospital	33, clinicians	Implementation of educational modules on SSC guidelines and reminder system alerts for timely reevaluation of patients with sepsis and lactate monitoring	Education and reminder system alerts improve protocol knowledge and compliance	Surviving Sepsis Campaign (SSC) guidelines	Y	NR	NR
2023	https://pubmed.ncbi.nlm.nih.gov/36537146/	Quality Improvement Through Nurse-initiated Kaiser Sepsis Calculator at a County Hospital	QI initiative, implementation	United States	Hospital	53 chorioamnionitis-exposed infants pre-intervention	Nurse-initiated, Kaiser Sepsis Calculator-based program to decrease blood cultures and complete blood counts.	Implementation of the Kaiser Sepsis Calculator reduced testing and antibiotic utilization among chorioamnionitis-exposed infants.	Kaiser Sepsis Calculator	Y	N	Y
2022	https://pubmed.ncbi.nlm.nih.gov/34543250/	REadmission PREvention in SepSis: Development and Validation of a Prediction Model	QI initiative, implementation	United States	Hospital	Patients with sepsis who had unplanned 30-day readmissions (exact numbers not specified in abstract)	Development of REPRESS model for predicting readmission risk in sepsis patients	REPRESS model outperformed LACE in predicting readmission risk in sepsis patients	REPRESS model, LACE score	Y	N	N

Year	Link	Title	Article type	Country	Healthcare setting (Primary, Hospital, Long-term)	N, Cohort	Intervention, variable	Conclusion	Clinical tool, QI tool, guideline	QI study (Y/N)	Equity data (Y/N)	HEOR data (Y/N)
2019	https://pubmed.ncbi.nlm.nih.gov/30585981/	Sepsis Education Initiative Targeting qSOFA Screening for Non-ICU Patients to Improve Sepsis Recognition and Time to Treatment	QI initiative, implementation	United States	Hospital	60 sepsis patients (30 pre- and 30 posteducation)	Education on recognizing sepsis using qSOFA criteria and empowering nurses to trigger rapid response team (RRT) calls	Education improved time to recognition and time to intervention, and improved treatment compliance in non-ICU patients	qSOFA criteria, Rapid Response Team (RRT) calls	Y	N	N
2015	https://pubmed.ncbi.nlm.nih.gov/25517703/	Septris: a novel, mobile, online, simulation game that improves sepsis recognition and management	QI initiative, implementation	United States	Hospital	pregraduate and postgraduate medical learners (n = 156)	Septris, a mobile-accessible, case-based, online game for teaching early sepsis identification and evidence-based management.	Septris improved sepsis-related knowledge and skills in both pre- and postgraduate groups (P < .001).	Septris, an online game for sepsis education.	Y	N	N
2019	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7195842/	Patient outcomes and cost-effectiveness of a sepsis care quality improvement program in a health system	QI initiative, implementation	United States	Hospital	13,877 adults with suspected infection	Implementation of a sepsis care quality improvement program including multidisciplinary sepsis committee, education campaign, electronic health record tools, and a modified early warning system.	The sepsis care quality improvement program led to decreased mortality and length of stay in a cost-effective manner.	Sepsis-3 criteria, CMS sepsis management bundles, modified early warning system (MEWS)	Y	N	Y
2021	https://journal.chestnet.org/article/S0012-3692(21)03623-0/fulltext	Effects of Compliance With the Early Management Bundle (SEP-1) on Mortality Changes Among Medicare Beneficiaries With Sepsis	Research, observational	United States	Hospital	333,770 Medicare beneficiaries with sepsis, 140,504 compliant with SEP-1, 193,266 noncompliant.	Compliance with SEP-1, including lactate measurements, blood culture collection, antibiotic administration, fluid administration, vasopressor application, patient reassessment.	Compliance with SEP-1 associated with lower 30-day mortality and shorter length of stay.	CMS Early Management Bundle (SEP-1)	N	N	Y
2020	https://www.sciencedirect.com/science/article/abs/pii/S027795362030201X?via%3Dihub	Failing the metric but saving lives: The protocolization of sepsis treatment through quality measurement	Review	United States	Hospital	Patients with suspicion of sepsis	Implementation of quality metrics for sepsis treatment	Quality metrics for sepsis treatment reconfigure clinical care, prioritizing compliance and reporting over direct patient care	CMS and NYSDOH sepsis metrics	Y	N	N
2020	https://pubmed.ncbi.nlm.nih.gov/29088995/	A Multicenter Survey of House Staff Knowledge About Sepsis and the "Surviving Sepsis Campaign Guidelines for Management of Severe Sepsis and Septic Shock"	QI initiative, evaluation	United States	Hospital	133 Internal Medicine (IM) and Emergency Medicine (EM) departments across three institutions	Survey to assess knowledge, attitudes, and perceptions of sepsis and the Surviving Sepsis Campaign Guidelines	Need for additional education on Surviving Sepsis Campaign Guidelines and consistent feedback on sepsis management	Surviving Sepsis Campaign Guidelines	Y	N	N
2019	https://pubmed.ncbi.nlm.nih.gov/31434688/	Reducing Variability in the Infant Sepsis Evaluation	QI initiative, implementation	United States	Hospital	20,570 well-appearing infants ages 7 to 60 days evaluated for	Standardization of care for well-	The study improved evaluation, hospitalization, and	Novel, Reducing Variability in the Infant	Y	N	N

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		(REVISE): A National Quality Initiative				fever without an obvious source	appearing infants evaluated for fever	LOS, but didn't significantly change delayed treatment or missed bacterial infections.	Sepsis Evaluation (REVISE) initiative			
2015	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4880050/	Reductions in Sepsis Mortality and Costs After Design and Implementation of a Nurse-Based Early Recognition and Response Program	QI initiative, implementation	United States	Hospital	9,718 unique inpatients	Nurse-based early recognition and response program for sepsis, including a screening tool integrated into the electronic health record	Implementation of the program was associated with a decrease in inpatient sepsis-associated death rates from 29.7% to 21.1%, and lower hospital costs	Novel early sepsis screening tool integrated into the electronic health record	Y	N	Y
2015	https://www.sciencedirect.com/science/article/abs/pii/S1553725015410360?via%3Dihub	Using the Integrated Nurse Leadership Program to Reduce Sepsis Mortality	QI initiative, implementation	United States	Hospital	Nurses and other frontline clinicians	Integrated Nurse Leadership Program (INLP) for sepsis detection and management	Sepsis mortality decreased by 43.7% in participating hospitals	Integrated Nurse Leadership Program (INLP)	Y	N	N
2021	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8689388/	Association Between Implementation of the Severe Sepsis and Septic Shock Early Management Bundle Performance Measure and Outcomes in Patients With Suspected Sepsis in US Hospitals	QI initiative, implementation	United States	Hospital	117,510 adult patients with suspected sepsis, 114 US hospitals	Implementation of the CMS Severe Sepsis and Septic Shock Early Management Bundle (SEP-1)	SEP-1 implementation did not improve sepsis outcomes, suggesting the need for alternate approaches	CMS Severe Sepsis and Septic Shock Early Management Bundle (SEP-1)	Y	N	Y
2020	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6901718/	Sepsis quality in safety-net hospitals: an analysis of Medicare's SEP-1 performance measure	QI initiative, evaluation	United States	Hospital	2827 hospitals, 703 of which were safety-net hospitals	Analysis of Medicare's SEP-1 quality measure performance	Safety-net hospitals performed worse on Medicare's SEP-1 quality measure	Medicare's SEP-1 quality measure	Y	N	N
2021	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8389944/	Confidence-weighted Testing as an Impactful Education Intervention within a Pediatric Sepsis Quality Improvement Initiative	QI initiative, implementation	United States	Hospital, acute	1,463/1,754 completed the modules. Nurses, advanced practitioners, and physicians	Development and implementation of pediatric sepsis eLearning modules incorporating confidence-weighted testing.	Confidence-weighted testing enhanced learning by correcting misinformation and identifying institutional knowledge gaps for future improvement.	Pediatric sepsis eLearning modules incorporating confidence-weighted testing.	Y	N	N
2022	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9310818/	Surviving sepsis campaign: International guidelines for management of sepsis and septic shock in adults 2021 - endorsement by the Scandinavian society of anaesthesiology and intensive care medicine	Guideline, Endorsement	Scandinavia (Denmark, Norway, Sweden)	Hospital, Anaesthesiology and Intensive Care Medicine	NA	Endorsement of the Surviving Sepsis Campaign's 2021 guidelines; evaluated with (AGREE) II tool.	The guideline is endorsed as a useful decision aid for clinicians managing adults with suspected and confirmed sepsis and septic shock.	Surviving Sepsis Campaign's 2021 guidelines for management of sepsis and septic shock in adults.	Y	N	N
2016	https://pubmed.ncbi.nlm.nih.gov/27062628/	Metabolic emergencies and the emergency physician	Review	New Zealand	Hospital, ED; Primary, telehealth	Metabolic disorders or inborn errors of metabolism (IEM)	NA	The paper emphasizes the importance of considering inborn errors of metabolism	Healthline	N	Y	N

Year	Link	Title	Article type	Country	Healthcare setting (Primary, Hospital, Long-term)	N, Cohort	Intervention, variable	Conclusion	Clinical tool, QI tool, guideline	QI study (Y/N)	Equity data (Y/N)	HEOR data (Y/N)
								(IEM) in diagnosis and the utility of simple screening tests.				
2017	https://pubmed.ncbi.nlm.nih.gov/28494476/	Effect of the Shorter Stays in Emergency Departments time target policy on key indicators of quality of care	QI initiative, implementation	New Zealand	Hospital, Emergency Department	Five different indicators at different sites from 2006 to 2012	Implementation of a national health target called Shorter Stays in Emergency Departments.	No significant changes in time to treatment and adequacy of care for five different clinical indicators after implementation of the target.	Shorter Stays in Emergency Departments	Y	N	N
2017	https://pubmed.ncbi.nlm.nih.gov/28855237/	PREDICT prioritisation study: establishing the research priorities of paediatric emergency medicine physicians in Australia and New Zealand	Guideline, consensus	New Zealand, Australia	Hospital, Emergency Department	Paediatric Emergency Medicine (PEM) specialists from 14 PREDICT sites in Australia and New Zealand.	Prioritisation of research questions in paediatric emergency medicine using a two-stage, modified Delphi study.	Identified research priorities in PEM, guiding future research efforts within PREDICT.	Priority topics from both the Delphi and Hanlon process included high flow oxygenation in intubation, fluid volume resuscitation in sepsis, imaging in cervical spine injury, intravenous therapy for asthma and vasopressor use in sepsis.	Y	N	N
2015	https://pubmed.ncbi.nlm.nih.gov/25919571/	Fluid resuscitation for paediatric sepsis: A survey of senior emergency physicians in Australia and New Zealand	Research	New Zealand, Australia	Hospital, Emergency Department	110 of 120 senior medical staff in 12 Paediatric Research in Emergency Departments International Collaborative (PREDICT) Network centres.	Survey of fluid resuscitation practices for paediatric sepsis.	Paediatric sepsis managed largely according to guidelines; potential harm from fluid bolus resuscitation hasn't altered practice.	Published clinical guidelines for paediatric sepsis	Y	N	N
2021	https://pubmed.ncbi.nlm.nih.gov/34275667/	Early vs. Late Vassopressor therapy in the Management of Patients with Sepsis and Hypotension, A Multicenter Observational Study	Research, Observational Study	New Zealand, Australia	Hospital, Emergency Department	177 adult patients with suspected sepsis and hypotension	Early vs late commencement of vasopressor therapy in sepsis management	Early vasopressor use linked to lower intravenous fluid volumes, no impact on vasopressor use duration, organ support, or mortality	NA	Y	N	N
2020	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7496107/	The Australasian Resuscitation In Sepsis Evaluation: Fluids or vasopressors in emergency department sepsis (ARISE FLUIDS), a multi-centre observational study describing current practice in Australia and New Zealand	Research, Observational Study	New Zealand, Australia	Hospital, Emergency Department	591 patients	Describing haemodynamic resuscitation practices in ED patients with suspected sepsis and hypotension	Resuscitation practice varies widely, ranging from restricted volume/earlier vasopressor to liberal fluid/later vasopressor strategy	Surviving Sepsis Campaign guidelines mentioned	Y	N	N
2019	https://pubmed.ncbi.nlm.nih.gov/31324537/	Recognition, response and outcomes of sepsis: A dual site retrospective observational study	QI initiative, evaluation	Australia	Hospital, Emergency Department	96 adult patients with a primary ICD-10-AM discharge code related to sepsis.	Evaluation of clinical recognition, response strategies to sepsis,	Sepsis detection varies throughout patient's journey, early antibiotic	Sepsis Kills criteria, Sepsis Six strategies	Y	N	N

Year	Link	Title	Article type	Country	Healthcare setting (Primary, Hospital, Long-term)	N, Cohort	Intervention, variable	Conclusion	Clinical tool, QI tool, guideline	QI study (Y/N)	Equity data (Y/N)	HEOR data (Y/N)
							and outcomes of patients with sepsis.	administration was challenging, suggesting need for dynamic early warning systems.				
2018	https://pubmed.ncbi.nlm.nih.gov/30998886/	Implementation of guidelines for sepsis management in emergency departments: A systematic review	Systematic review	Australia	Hospital, Emergency Department	ED	Implementation of guidelines for the ED management of sepsis	Implementation of local sepsis management guidelines in EDs improves timeliness of care and may improve patient outcomes	NR (Paywall)	Y	NR	NR
2018	https://academic.oup.com/intqhc/article/30/10/802/5040792?login=false	Sepsis now a priority: a quality improvement initiative for early sepsis recognition and care	QI initiative, implementation	Canada	Hospital, Emergency Department	346 patients pre-intervention, 270 patients post-intervention, all meeting pre-specified sepsis criteria during the ED encounter	Development and implementation of a triage-based sepsis screening algorithm and treatment order-sets	Triage-based sepsis screening tool expedited and improved consistency of care, significantly improved initial resuscitation measures	Novel Triage-based sepsis screening tool and treatment order-sets (SNAP)	Y	N	N
2023	https://journals.lww.com/shockjournal/Abstract/9900/Sepsis_Unit_in_the_Emergency_Department__impact_on.221.aspx	Sepsis Unit in the Emergency Department: impact on management and outcome of septic patients	QI initiative, implementation	France	Hospital, Emergency Department	277 adult patients with infection	Implementation of a new pathway dedicated to septic patients within the Emergency Department, including an educational program, creation of a sepsis alert upon ED admission, and dedication of two rooms to the management of septic patients (Sepsis Unit)	Systematic detection, education, and per protocol organization with a Sepsis Unit dedicated to the early management of septic patients appears to improve compliance with SSC bundles, organ dysfunction, and short-term mortality.	qSOFA (Quick SOFA) Score for Sepsis Surviving Sepsis Campaign (SSC) sepsis bundles	Y	N	N
2022	https://pubmed.ncbi.nlm.nih.gov/36325382/	Epidemiology, management, and outcome of infection, sepsis, and septic shock in a German emergency department (EpiSEP study)	Research	Germany	Hospital, Emergency Department	1,278 patients with an infectious disease, of which 1,105 had an infection, 133 had sepsis, and 42 had septic shock.	Retrospective analysis of patient data for infection, sepsis, and septic shock management.	One in five ED patients suffered from an infection. Significant differences in epidemiology, management, and outcome of patients with infection, sepsis, or septic shock were found.	SEPSIS-3 definition, Quick Sequential Organ Failure Assessment score (qSOFA), SIRS, Prehospital Early Sepsis Detection (PRESEP), modified National Early Warning Score (MEWS), Sepsis-related organ failure assessment (SOFA), and Mortality in Emergency Department Sepsis (MEDS).	Y	N	Y

Year	Link	Title	Article type	Country	Healthcare setting (Primary, Hospital, Long-term)	N, Cohort	Intervention, variable	Conclusion	Clinical tool, QI tool, guideline	QI study (Y/N)	Equity data (Y/N)	HEOR data (Y/N)
2021	https://pubmed.ncbi.nlm.nih.gov/30252228/	Updates and Controversies in the Early Management of Sepsis and Septic Shock	Systematic review	International	Hospital, Emergency Department	Patients with sepsis	Review of latest evidence on sepsis and septic shock management, focusing on diagnosis and treatment.	Early, aggressive management of sepsis is recommended and has been shown to improve outcomes.	Sequential Organ Failure Assessment Score (SOFA), quick SOFA (qSOFA) score, Centers for Medicare and Medicaid Services (CMS) SEP-1 quality measure.	Y	N	N
2022	https://pubmed.ncbi.nlm.nih.gov/35051870/	The effectiveness of branching simulations in improving nurses' knowledge, attitudes, practice, and decision-making related to sepsis assessment and management	Research	Jordan	Hospital, Emergency Department	70 nurses with at least one year of experience in an emergency room (35 in intervention group, 35 in control group)	Branching simulations for improving sepsis assessment and management	Branching simulations improved nurses' knowledge, practice, and decision-making related to sepsis management.	Nursing Decision-Making Instrument	Y	N	N
2020	https://pubmed.ncbi.nlm.nih.gov/32970576/	Sepsis Alerts in Emergency Departments: A Systematic Review of Accuracy and Quality Measure Impact	Systematic review	NA	Hospital, Emergency Department	NA	Automated sepsis-alert detection systems in the ED	limited evidence available suggests sepsis alerts in the ED can be set to high sensitivity. No high-quality studies showed a difference in mortality, but evidence exists for improvements in process of care.	Automated sepsis-alert detection systems	Y	N	N
2017	https://pubmed.ncbi.nlm.nih.gov/28515132/	Inclusion of emergency department patients in early stages of sepsis in a quality improvement programme has the potential to improve survival: a prospective dual-centre study	QI initiative, implementation	Netherlands	Hospital, Emergency Department	1732 ED patients with suspected infection	Quality improvement programme for early stages of sepsis	Inclusion of ED patients in early stages of sepsis in QI programmes can reduce in-hospital mortality	NR (Paywall)	Y	N	NR
2022	https://pubmed.ncbi.nlm.nih.gov/34889063/	Exploring nursing and medical perceptions of sepsis management in a New Zealand emergency department: A qualitative study	Research	New Zealand	Hospital, Emergency Department	40 ED nurses and doctors participated in six focus group interviews.	Explored perceptions and perspectives regarding factors that impede sepsis identification and management.	Identified factors that limit and enhance capacity to recognise and respond to sepsis, and interactions between clinical and organisational structures affecting patient care.	NR (Paywall)	Y	N	N
2020	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7662430/	Promoting leadership and quality improvement through external inspections of management of sepsis in Norwegian hospitals: a focus group study	QI initiative, evaluation	Norway	Hospital, Emergency Department	Clinicians, managers, and inspection teams involved with the inspections of sepsis treatment in emergency departments at four different hospitals (47 participants).	External inspections of sepsis treatment in hospital emergency departments.	Inspections can enhance hospital management and staff's understanding of complicated care processes and help strengthen the organisational commitment to bring	External inspections as a quality improvement tool.	Y	N	N

Year	Link	Title	Article type	Country	Healthcare setting (Primary, Hospital, Long-term)	N, Cohort	Intervention, variable	Conclusion	Clinical tool, QI tool, guideline	QI study (Y/N)	Equity data (Y/N)	HEOR data (Y/N)
								about systemic quality improvements.				
2022	https://pubmed.ncbi.nlm.nih.gov/35263468/	New multivariable prediction model PEdiatric SEpsis recognition and stratification (PESERS score) shows excellent discriminatory capacity	Research, Observational Study	Spain	Hospital, Emergency Department	Febrile patients under 18 years (210 patients)	Development of a predictive scoring model for early recognition and assessment of paediatric sepsis	The proposed scoring model showed adequate discriminatory capacity and accuracy for early sepsis detection and severity prediction	PESERS score (a new multivariable prediction model)	Y	N	N
2015	https://pubmed.ncbi.nlm.nih.gov/26597979/	Protocolised Management In Sepsis (ProMISe): a multicentre randomised controlled trial of the clinical effectiveness and cost-effectiveness of early, goal-directed, protocolised resuscitation for emerging septic shock	QI initiative, implementation	United Kingdom	Hospital, Emergency Department	1260 adults with early septic shock (EGDT, n = 623; usual resuscitation, n = 620)	Comparison of early goal-directed therapy (EGDT) versus usual resuscitation	No significant difference in 90-day mortality between EGDT and usual resuscitation. EGDT had higher costs.	Early goal-directed therapy (EGDT)	Y	N	Y
2022	https://pubmed.ncbi.nlm.nih.gov/36137885/	Improving Sepsis Management Through the Emergency Quality Network Sepsis Initiative	QI initiative, implementation	United States	Hospital, Emergency Department	345 unique ED sites	Cross-sectional analysis of QI data obtained from American College of Emergency Physicians (ACEP) Emergency Quality Network (E-QUAL) and Centers for Medicare & Medicaid (CMS) for EDs that participated in the E-QUAL Sepsis Collaborative.	Preliminary sepsis QI data used for benchmarking showed weak but statistically significant correlation with subsequent publicly reported CMS SEP-1 scores.	ACEP E-QUAL and CMS SEP-1 scores	Y	N	N
2022	https://pubmed.ncbi.nlm.nih.gov/36180059/	Improving Initial Sepsis Management Through a Nurse-Driven Rapid Response Team Protocol	QI initiative, implementation	United States	Hospital, Emergency Department	32 adult patients	Implementation of a nurse-driven rapid response team protocol for suspected sepsis	The protocol reduced time to first-dose antibiotic administration by half and doubled the number of patients receiving appropriate fluid volumes.	Suspected sepsis protocol involving pertinent laboratory tests, blood cultures, intravenous broad-spectrum antibiotic administration, and a crystalloid bolus if indicated	Y	N	N
2021	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8739442/	Quality initiative to improve emergency department sepsis bundle compliance through utilisation of an electronic health record tool	QI initiative, implementation	United States	Hospital, Emergency Department	373 adult patients	Use of an electronic health record (EHR) tool for sepsis identification and management.	EHR tool usage increased sepsis bundle compliance from 23.3% to 87.2%.	Electronic Health Record (EHR) tool for sepsis identification and management.	Y	N	N
2022	https://pubmed.ncbi.nlm.nih.gov/34415866/	Improving Timeliness of Antibiotic Administration Using a Provider and Pharmacist Facing Sepsis Early Warning System in the Emergency	QI initiative, implementation	United States	Hospital, Emergency Department	598 adult patients	Sepsis early warning system-triggered flag in the EHR and EHR-based ED pharmacist notification	Intervention associated with shorter time to antibiotic administration without	Electronic health record-based sepsis early warning system	Y	N	N

Year	Link	Title	Article type	Country	Healthcare setting (Primary, Hospital, Long-term)	N, Cohort	Intervention, variable	Conclusion	Clinical tool, QI tool, guideline	QI study (Y/N)	Equity data (Y/N)	HEOR data (Y/N)
		Department Setting: A Randomized Controlled Quality Improvement Initiative						increase in undesirable interventions				
2019	https://publications.aap.org/pediatrics/article/144/4/e20190348/38467/Racial-Differences-in-Sepsis-Recognition-in-the	Racial Differences in Sepsis Recognition in the Emergency Department	Research	United States	Hospital, Emergency Department	97,338 ED visits, 56,863 (58.4%) from non-Hispanic blacks (NHBs) and 23,008 (23.6%) from non-Hispanic whites (NHWs)	Electronic sepsis alert system aimed at reducing racial differences in sepsis recognition	NHWs more likely to be treated for sepsis, difference identified in patients treated outside of the alert system	Electronic sepsis alert system	Y	Y	N
2014	https://pubmed.ncbi.nlm.nih.gov/24559576/	The DISPARITY Study: do gender differences exist in Surviving Sepsis Campaign resuscitation bundle completion, completion of individual bundle elements, or sepsis mortality?	Research, observational	United States	Hospital, Emergency Department	814 patients, mean age 66 years, 44.8% women, admitted to intensive care with severe sepsis or septic shock	Examining gender differences in Surviving Sepsis Campaign (SSC) resuscitation bundle completion rates	No gender disparities in bundle completion or in-hospital mortality	Surviving Sepsis Campaign (SSC) resuscitation bundle, EGDT	Y	Y	N
2022	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9553400/	Can an End-to-End Telesepsis Solution Improve the Severe Sepsis and Septic Shock Management Bundle-1 Metrics for Sepsis Patients Admitted From the Emergency Department to the Hospital?	QI initiative, implementation	United States	Hospital, Emergency Department	1,233 patients with a primary diagnosis of sepsis, present at admission	Implementation of a partially automated end-to-end sepsis solution including electronic medical record-linked automated monitoring, early detection, around-the-clock nurse navigators, and teleconsultation	The end-to-end sepsis solution significantly improved SEP-1 compliance compared to a "surveillance only" training period	The Severe Sepsis and Septic Shock Management Bundle (SEP-1)	Y	N	N
2015	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4639443/	Comparison of Two Sepsis Recognition Methods in a Pediatric Emergency Department	Research, observational	United States	Hospital, Emergency Department, Pediatric	19,524 pediatric patients with fever or hypothermia	Comparison of physician judgment and an electronic algorithmic alert for identifying severe sepsis/septic shock	Electronic algorithmic alert was more sensitive but less specific than physician judgment for recognizing pediatric severe sepsis and septic shock.	Electronic algorithmic alert based on American Academy of Pediatrics (AAP) Septic Shock Collaborative	Y	N	N
2019	https://pubmed.ncbi.nlm.nih.gov/30985391/	Quality of Life and 1-Year Survival in Patients With Early Septic Shock: Long-Term Follow-Up of the Australasian Resuscitation in Sepsis Evaluation Trial	QI initiative, evaluation	Australia, New Zealand, Finland, Hong Kong, and the Republic of Ireland	Hospital, Emergency departments in 51 hospitals	1,591 patients with early septic shock	Comparison of early goal-directed therapy versus usual care	Early goal-directed therapy did not reduce mortality or improve health-related quality of life at 6 or 12 months.	Early goal-directed therapy	Y	N	N
2023	https://onlinelibrary.wiley.com/doi/10.1002/nop2.1718	Evaluation of computer-based training and high-fidelity simulation to improve early	QI initiative, evaluation	United States	Hospital, general medical-surgical	47 nurses	developing, implementing, and evaluating an educational	CBT in conjunction with HFS can improve and sustain sepsis screening compliance	Educational tool: computer-based training (CBT) and	Y	N	N

Year	Link	Title	Article type	Country	Healthcare setting (Primary, Hospital, Long-term)	N, Cohort	Intervention, variable	Conclusion	Clinical tool, QI tool, guideline	QI study (Y/N)	Equity data (Y/N)	HEOR data (Y/N)
		recognition of sepsis on the adult general ward			ward in a large academic medical center		intervention using computer-based training (CBT) and high-fidelity simulation (HFS) to increase knowledge, confidence, and compliance of nurses identifying sepsis	and confidence among nurses identifying sepsis on a general ward. However, the improvements in knowledge of sepsis were not sustained over 90 days, indicating the need for a reinforcing learning activity during that period.	high-fidelity simulation (HFS)			
2019	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6350091/	Additional Telemedicine Rounds as a Successful Performance-Improvement Strategy for Sepsis Management: Observational Multicenter Study	QI initiative, evaluation	Germany	Hospital, ICU	1168 patients, 196 with severe sepsis and septic shock	Additional daily telemedicine rounds for sepsis management	Additional telemedicine rounds improved adherence to sepsis bundles	Surviving Sepsis Campaign's 3-hour and 6-hour sepsis bundles	Y	N	N
2017	https://pubmed.ncbi.nlm.nih.gov/27661863/	Quality Improvement Initiative for Severe Sepsis and Septic Shock Reduces 90-Day Mortality: A 7.5-Year Observational Study	QI initiative, implementation	Germany	Hospital, ICU	14,115 adult medical and surgical ICU patients with severe sepsis and septic shock.	Implementation of a quality improvement program over 7.5 years.	The quality improvement initiative was associated with increased compliance and a persistent reduction in 90-day mortality over a 7.5-year period.	Resuscitation bundle, blood cultures before antibiotic therapy, adequate calculated antibiotic therapy, 1-2 L crystalloids within the first 6 hours, and greater than or equal to 6 L during the first 24 hours.	Y	N	NR
2019	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6414230/	What matters most to sepsis survivors: a qualitative analysis to identify specific health-related quality of life domains	Research, qualitative	Germany	Hospital, ICU	15 purposefully sampled sepsis survivors	Understanding how HRQL is perceived by sepsis survivors	Identified 11 HRQL domains important to sepsis survivors	WHOQOL-BREF mentioned as a holistic QoL measurement instrument	N	Y	N
2019	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6811369/	International critical care nursing considerations and quality indicators for the 2017 surviving sepsis campaign guidelines	Review	International	Hospital, ICU	Nursing	Outlining nursing care considerations based on revised SSC guidelines	Ensuring nurses' awareness of SSC guidelines is essential to improve sepsis care	Surviving Sepsis Campaign (SSC) guidelines	N	N	N
2022	https://pubmed.ncbi.nlm.nih.gov/34325975/	Long-term costs and cost-effectiveness of adjunctive corticosteroids for patients with septic shock in New Zealand	Research, RCT	New Zealand	Hospital, ICU	Patients with septic shock who were part of the ADRENAL trial, 405 patients included.	Analysis of healthcare expenditure and cost-effectiveness of adjunctive hydrocortisone vs placebo in septic shock patients.	Adjunctive hydrocortisone did not reduce total healthcare expenditure or improve outcomes in septic shock patients.	NA	N	N	Y
2022	https://pubmed.ncbi.nlm.nih.gov/35728151/	Outcomes for Māori and European patients admitted to New Zealand intensive care units between 2009 and 2018	Research	New Zealand	Hospital, ICU	Māori and European patients	Retrospective analysis of ICU admissions, focusing on mortality, hospital stay, and sepsis incidence	Māori, despite being younger at ICU admission, had more co-morbidities, higher illness severity, and a higher risk of dying	NA	Y	Y	N

Year	Link	Title	Article type	Country	Healthcare setting (Primary, Hospital, Long-term)	N, Cohort	Intervention, variable	Conclusion	Clinical tool, QI tool, guideline	QI study (Y/N)	Equity data (Y/N)	HEOR data (Y/N)
								within 180 days when adjusted for age.				
2021	https://pubmed.ncbi.nlm.nih.gov/34154375/	Māori health outcomes in an intensive care unit in Aotearoa New Zealand	Research	New Zealand	Hospital, ICU	3009 ICU admissions over 15 years of age from 2014 to 2018, 982 were Māori.	Retrospective audit of health outcomes for Māori in ICU, aiming to identify inequities.	Significant ethnic inequity in ICU for Māori, higher admission rates for trauma and sepsis, no difference in mortality outcomes.	NA	N	Y	N
2018	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5816088/	Prognostic accuracy of age-adapted SOFA, SIRS, PELOD-2, and qSOFA for in-hospital mortality among children with suspected infection admitted to the intensive care unit	QI initiative, evaluation	New Zealand, Australia	Hospital, ICU	2594 children under 18 years admitted with infection to ICUs, 151 (5.8%) died, 949/2594 (36.6%) patients died or had an ICU stay of ≥ 3 days.	Validation of SIRS, age-adapted SOFA, quick SOFA, and PELOD-2 scores as predictors of outcome in children with suspected infection.	SOFA and PELOD-2 showed superior prognostic accuracy for in-hospital mortality and ICU stay of ≥ 3 days compared to SIRS, severe sepsis, or qSOFA.	SIRS, age-adapted SOFA, quick SOFA, and PELOD-2 scores.	Y	N	N
2004	https://pubmed.ncbi.nlm.nih.gov/14963646/	Adult-population incidence of severe sepsis in Australian and New Zealand intensive care units	Research	New Zealand, Australia	Hospital, ICU	5878 consecutive ICU admission episodes (691 patients diagnosed with 752 episodes of severe sepsis)	Determination of population incidence and outcome of severe sepsis in adult patients	11.8 patients per 100 ICU admissions diagnosed with severe sepsis; annual incidence of severe sepsis is 0.77 per 1000 of population	NA	N	N	N
2018	https://pubmed.ncbi.nlm.nih.gov/29660669/	The systemic inflammatory response syndrome criteria and their differential association with mortality	Research	New Zealand, Australia	Hospital, ICU	131,016 ICU patients with infection, organ failure and at least one SIRS criterion.	Assessed the prognostic equivalence and interchangeability of SIRS criteria in terms of their individual, combination-related, and high vs. low value association with hospital mortality.	Individual SIRS criteria, combinations of SIRS criteria, and low vs. high values for the white cell count and temperature criteria all had markedly different associations with hospital mortality.	Systemic Inflammatory Response Syndrome (SIRS) criteria	N	N	N
2015	https://pubmed.ncbi.nlm.nih.gov/25516454/	Association between early peak temperature and mortality in neutropenic sepsis	Research	New Zealand, Australia	Hospital, ICU	Neutropenic sepsis patients (N = 4027) and non-neutropenic sepsis patients (N = 114,040) admitted to ICUs.	Investigated the association between early peak temperature and mortality in neutropenic sepsis patients.	Early peak temperature below 36.5 °C in neutropenic sepsis patients is associated with increased mortality.	NR	N	N	N
2017	https://pubmed.ncbi.nlm.nih.gov/28486891/	Assessing contemporary intensive care unit outcome: development and validation of the Australian and New Zealand Risk of Death admission model	Research, Observational Study	New Zealand, Australia	Hospital, ICU	1,097,416 ICU admissions	Development of ANZROD0 model to predict hospital mortality using data available at ICU admission.	ANZROD0 model had acceptable calibration and discrimination, high correlations in all major diagnostic groups except cardiac surgery, trauma, and sepsis.	Australian and New Zealand Risk of Death admission (ANZROD0) model	Y	N	N

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2014	https://jamanetwork.com/journals/jama/fullarticle/1850096	Mortality Related to Severe Sepsis and Septic Shock Among Critically Ill Patients in Australia and New Zealand, 2000-2012	Research, observational, retrospective	New Zealand, Australia	Hospital, ICU	101,064 patients with severe sepsis or septic shock in 171 ICUs	Changes in mortality from 2000 to 2012 for severe sepsis with and without shock	Mortality rates for severe sepsis and septic shock declined significantly from 2000 to 2012. Absolute mortality in severe sepsis decreased from 35.0% (95% CI, 33.2%-36.8%; 949/2708) to 18.4% (95% CI, 17.8%-19.0%; 2300/12 512; P < .001), representing an overall decrease of 16.7% (95% CI, 14.8%-18.6%), an annual rate of absolute decrease of 1.3%, and a relative risk reduction of 47.5% (95% CI, 44.1%-50.8%).	NA	N	N	N
2019	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6937937/	Defining benefit threshold for extracorporeal membrane oxygenation in children with sepsis—a binational multicenter cohort study	Research, retrospective cohort study	New Zealand, Australia	Hospital, ICU	5062 children with sepsis and septic shock, 80 of which were treated with veno-arterial ECMO.	Use of extracorporeal membrane oxygenation (ECMO) in pediatric septic shock.	A sepsis mortality prediction model can define thresholds for survival benefit in children with septic shock considered for ECMO.	Surviving Sepsis Campaign guidelines.	Y	N	N
2017	https://pubmed.ncbi.nlm.nih.gov/28215126/	New sepsis definition changes incidence of sepsis in the intensive care unit	QI initiative, implementation	New Zealand, Australia	Hospital, ICU	3780 adult patients in 77 ICUs between 2009 and 2014	Adoption of new diagnostic criteria for sepsis based on SOFA criteria.	New SOFA criteria increases apparent sepsis incidence without affecting mortality rate.	SOFA criteria, SIRS criteria	Y	N	N
2023	https://pubmed.ncbi.nlm.nih.gov/35785438/	Temporal changes in the epidemiology of sepsis-related intensive care admissions from the emergency department in Australia and New Zealand	Research	New Zealand, Australia	Hospital, ICU	54,121 ICU admissions from the ED with sepsis over 21 years	Evaluation of changes in epidemiology and care for adults admitted from EDs to ICUs with sepsis during the Australasian Resuscitation in Sepsis Evaluation (ARISE) study	Sepsis-related admissions increased from 8.1% to 16.4%. More rapid ICU admission and decreased early ventilation during the ARISE study were not sustained nor associated with decreased risk of death or duration of hospitalisation.	NA	Y	N	N
2017	https://pubmed.ncbi.nlm.nih.gov/28220227/	Prediction of pediatric sepsis mortality within 1 h of intensive care admission	Research	New Zealand, Australia	Hospital, ICU	1697 children admitted with sepsis or septic shock	Assessment of septic shock criteria at ICU admission to define sepsis severity.	Importance of lactate, cardiovascular, and respiratory derangements at ICU admission for the identification of	Pediatric sepsis score derived using variables available within 60 min of ICU admission.	Y	N	N

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								children with higher risk of sepsis mortality.				
2017	https://jamanetwork.com/journals/jama/fullarticle/2598267	Prognostic Accuracy of the SOFA Score, SIRS Criteria, and qSOFA Score for In-Hospital Mortality Among Adults With Suspected Infection Admitted to the Intensive Care Unit	Research	New Zealand, Australia	Hospital, ICU	184,875 adults with an infection-related primary admission diagnosis in 182 ICUs	Comparison of SOFA score, SIRS criteria, and qSOFA score for predicting in-hospital mortality	SOFA score demonstrated significantly greater discrimination for in-hospital mortality than SIRS criteria or qSOFA	SOFA score, SIRS criteria, and qSOFA score	Y	N	N
2015	https://pubmed.ncbi.nlm.nih.gov/25776936/	Systemic inflammatory response syndrome criteria in defining severe sepsis	Research	New Zealand, Australia	Hospital, ICU	109,663 patients with infection and organ failure	Evaluation of SIRS criteria in defining severe sepsis.	SIRS criteria excluded one in eight patients with infection, organ failure, and substantial mortality.	Systemic Inflammatory Response Syndrome (SIRS) criteria.	Y	N	N
2015	https://pubmed.ncbi.nlm.nih.gov/25471555/	Mortality related to invasive infections, sepsis, and septic shock in critically ill children in Australia and New Zealand, 2002-13: a multicentre retrospective cohort study	Research	New Zealand, Australia	Hospital, ICU	11,574 children admitted to ICUs with severe infections	Retrospective analysis of severe infections in critically ill children.	Severe infections remain a major cause of mortality in paediatric ICUs.	NR	N	NR	NR
2015	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4552276/	Early goal-directed resuscitation of patients with septic shock: current evidence and future directions	Review	New Zealand, Australia, United States, United Kingdom	Hospital, ICU	patients diagnosed with septic shock	The study examined the effect of early goal-directed therapy (EGDT) on sepsis outcomes.	EGDT did not significantly decrease mortality in patients with septic shock compared to usual care.	The study used the EGDT protocol and the Surviving Sepsis Campaign (SSC) guidelines.	N	N	N
2023	https://www.frontiersin.org/articles/10.3389/fmolb.2023.1160146/full	A prognostic assessment predicated by blood culture-based bacteria clustering from real-world evidence: Novel strategies and perspectives on prevention and management of sepsis	Research, observational	United States	Hospital, ICU	2,339 sepsis patients from the Medical Information Mart for Intensive Care IV 2.0 (MIMIC-IV 2.0) critical care data set.	unsupervised machine learning (K-means clustering) to categorize patients based on their bacterial infections	Bacteria clustering in sepsis patients may provide novel strategies for sepsis prevention and management.	Third International Consensus Definitions for Sepsis and Septic Shock (Sepsis-3)	N	N	N
2007	https://pubmed.ncbi.nlm.nih.gov/17352661/	The outcome of patients with sepsis and septic shock presenting to emergency departments in Australia and New Zealand	Research	New Zealand, Australia	Hospital, ICU, ED	7649 patients admitted to ICUs from EDs with sepsis between 1997 and 2005.	Retrospective analysis of ICU admissions with sepsis, focusing on changes in incidence, treatment, and outcomes.	Incidence of sepsis and septic shock in ICU patients presenting to the ED increased since 1997, while hospital mortality decreased.	NA	N	N	N
2023	https://pubmed.ncbi.nlm.nih.gov/36987405/	Recognition and Management of Hospital-Acquired Sepsis Among Older General Medical Inpatients: A Multi-Site Retrospective Study	QI initiative, implementation	Australia	Hospital, inpatient	59 probable or confirmed cases of sepsis in "older general medical inpatients" with hospital-acquired sepsis; from 7 Queensland public hospitals	accuracy of early diagnosis, appropriateness and timeliness of response, and clinical outcomes	Early recognition of sepsis and timely implementation of care bundles are challenging in older general medical patients.	The study used the Between the Flags (BTF) system and the Queensland Adult Detection of Deterioration System (QADDS) for detecting deterioration.	N	N	N
2022	https://pubmed.ncbi.nlm.nih.gov/35099161/	Impact of the implementation of a Sepsis Code Program in medical patient management:	QI initiative, implementation	Spain	Hospital, internal medicine	653 patients with sepsis, divided into two cohorts	Implementation of a Sepsis Code Program	Sepsis Code Program implementation improved short-term	Sepsis Code Program, based on the recommendations of	Y	N	N

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		a cohort study in an Internal Medicine ward					in managing sepsis patients.	outcomes in patients, but treatment should be tailored individually	the Surviving Sepsis Campaign guidelines.			
2020	https://pubmed.ncbi.nlm.nih.gov/32170032/	Comparison of the management recommendations of the Kaiser Permanente neonatal early-onset sepsis risk calculator (SRC) with NICE guideline CG149 in infants ≥34 weeks' gestation who developed early-onset sepsis	QI initiative, evaluation	United Kingdom	Hospital, maternity	70 infants with early-onset sepsis	Comparison of Kaiser Permanente neonatal early-onset sepsis risk calculator (SRC) with NICE guideline CG149	NICE was superior to SRC in identifying asymptomatic cases of EOS within 4 hours	Kaiser Permanente neonatal early-onset sepsis risk calculator (SRC), NICE guideline CG149	Y	N	N
2016	https://pubmed.ncbi.nlm.nih.gov/26673587/	Activities of a Medical Emergency Team: a prospective observational study of 795 calls	Research	New Zealand	Hospital, Medical Emergency Team	795 MET calls for 630 patients, mean patient age was 64 years, 60% of all calls involved medical patients.	Analysis of triggers for MET calls and subsequent immediate management.	Majority of MET calls were made for a relatively small number of underlying conditions and triggers, suggesting the concept of 'MET syndromes'.	Medical Emergency Team (MET), Early Warning Score	Y	N	N
2016	https://pubmed.ncbi.nlm.nih.gov/27700145/	Routine Antibiotic Prophylaxis Is Not Required for Patients Undergoing Shockwave Lithotripsy: Outcomes from a National Shockwave Lithotripsy Database in New Zealand	Research	New Zealand	Hospital, Mobile Medical Technology vehicle	Over 10,000 stone cases treated with shockwave lithotripsy (SWL)	Assessment of routine prophylactic antibiotics' effectiveness in preventing urinary tract infection (UTI) after SWL	Routine antibiotic prophylaxis did not reduce clinical UTI after SWL in this cohort	NR	Y	N	Y
2016	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4892845/	The Sepsis Early Recognition and Response Initiative (SERRI)	QI initiative, implementation	United States	Hospital, multicentre	Adults	Implementation of a five-item bedside systemic inflammatory response syndrome (SIRS)/sepsis screening tool into electronic health record (EHR) systems.	The SERRI program has led to high levels of local awareness of sepsis and has shown potential in improving sepsis care.	SIRS/sepsis screening tool integrated into EHR systems.	Y	N	N
2022	https://pubmed.ncbi.nlm.nih.gov/34932840/	Centers for disease control and prevention guidelines identified more neonates at risk of early-onset sepsis than the Kaiser-Permanente calculator	Research, observational	Israel	Hospital, Neonatal	50 newborn infants with documented EOS	Comparison of CDC guidelines and KP calculator for EOS prediction	CDC guidelines identified more EOS cases within four hours of birth than the KP calculator	CDC guidelines, Kaiser-Permanente (KP) calculator	N	N	N
2015	https://pubmed.ncbi.nlm.nih.gov/26905989/	The prevention of early-onset neonatal group B streptococcus infection: New Zealand Consensus Guidelines 2014	Guideline, consensus	New Zealand	Hospital, Neonatal	NA	Guidelines for the prevention of early-onset neonatal group B streptococcus infection	A risk-based GBS prevention strategy is recommended as the most clinically and cost effective for the New Zealand context. Universal routine antenatal GBS screening is not recommended.	NA	N	N	N

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2023	https://fn.bmj.com/content/108/1/87.long	Impact of the new NICE guidance 2021 on management of early onset neonatal sepsis	QI initiative, evaluation	United Kingdom	Hospital, Neonatal	Infants born ≥34 weeks' gestation between 1 January 2020 and 29 February 2020, not directly admitted to NNU, started on antibiotics following NICE 2012 guidelines	Retrospective application of NICE 2021 guidelines and Kaiser Permanente Sepsis Risk Calculator (KP-SRC).	Not provided in the abstract	NICE 2021 guidelines, Kaiser Permanente Sepsis Risk Calculator (KP-SRC)	Y	N	Y
2021	https://karger.com/neo/article/118/5/562/828770/Comparison-of-NICE-Guideline-CG149-and-the-Sepsis	Comparison of NICE Guideline CG149 and the Sepsis Risk Calculator for the Management of Early-Onset Sepsis on the Postnatal Ward	QI initiative, evaluation	United Kingdom	Hospital, neonatal	1,066 infants out of 8,856 born at ≥34 weeks gestation and commenced on antibiotics for suspected early-onset sepsis (EOS).	Comparison of NICE guideline CG149 and the Sepsis Risk Calculator (SRC) in managing suspected EOS.	The SRC could reduce antibiotic use by 78.4% using an EOS incidence of 0.5/1,000 infants, but further studies are needed to evaluate its safety.	NICE guideline CG149 and the Sepsis Risk Calculator (SRC)	Y	N	N
2022	https://pubmed.ncbi.nlm.nih.gov/36009958/	Neonatal Early Onset Sepsis (EOS) Calculator plus Universal Serial Physical Examination (SPE): A Prospective Two-Step Implementation of a Neonatal EOS Prevention Protocol for Reduction of Sepsis Workup and Antibiotic Treatment	QI initiative, evaluation	Italy	Hospital, neonatal	3002 neonates born between 2016 and 2020, studied in three periods.	Comparison of three different workup algorithms for neonatal sepsis, including a new combined strategy of universal SPE with the EOS Calculator.	Combined strategy significantly reduced laboratory tests and antibiotic treatments without increasing risk of sepsis and mortality.	Neonatal Early-Onset Sepsis (EOS) Calculator, Universal Serial Physical Examination (SPE)	Y	N	Y
2022	https://www.frontiersin.org/articles/10.3389/fped.2022.891572/full	Quality assessment of clinical practice guidelines for neonatal sepsis using the Appraisal of Guidelines for Research and Evaluation (AGREE) II Instrument: A systematic review of neonatal guidelines	Systematic review	NA	Hospital, neonatal	Neonatal sepsis clinical practice guidelines (5 guidelines assessed); AGREE II instrument used for assessment	Quality assessment of clinical practice guidelines for neonatal sepsis	NICE and QH guidelines showed superior methodological quality	American Academy of Pediatrics (AAP 2018) (35 and 34 weeks); Canadian Pediatric Society (CPS 2017); National Institute for Health and Care Excellence (NICE 2021); and Queensland Maternity and Neonatal Services (QH 2020).	N	N	N
2018	https://pubmed.ncbi.nlm.nih.gov/29588295/	Early-onset neonatal infections in Australia and New Zealand, 2002-2012	Research	New Zealand, Australia	Hospital, neonatal ICU	386,423 live births, 454 infants had EONS (Early-Onset Neonatal Sepsis)	Retrospective analysis of EONS data collected longitudinally from 2002 to 2012	GBS most common cause of early sepsis, incidence lower than before intrapartum antibiotic prophylaxis, mortality of E. coli sepsis higher than GBS sepsis	NA	Y	N	N
2023	https://pubmed.ncbi.nlm.nih.gov/35705325/	Early-onset sepsis in very preterm neonates in Australia and New Zealand, 2007-2018	Research, Observational Study	New Zealand, Australia	Hospital, neonatal ICU	preterm neonates born at <32 weeks	Retrospective analysis of early-onset sepsis in very preterm neonates admitted to NICUs.	E. coli is a dominant microorganism of very preterm early-onset sepsis in Australia and New Zealand, with increasing rates, while	NA	N	N	N

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								GBS-associated mortality has decreased.				
2015	https://pubmed.ncbi.nlm.nih.gov/25808827/	Outcome comparison of very preterm infants cared for in the neonatal intensive care units in Australia and New Zealand and in Canada	Research	New Zealand, Australia, Canada	Hospital, neonatal ICU	Preterm infants (<32 weeks gestational age) in 29 ANZNN and 26 CNN units (9995 ANZNN infants, 7141 CNN infants)	Comparison of risk-adjusted neonatal intensive care unit outcomes	ANZNN infants had better outcomes in most measures, possibly due to differences in tertiary service provision, referral, and clinical practices.	NR	Y	N	N
2022	https://pubmed.ncbi.nlm.nih.gov/34664107/	Potential benefit from the implementation of the Kaiser Permanente neonatal early-onset sepsis calculator on clinical management of neonates with presumed sepsis	Research, observational	Greece	Hospital, neonatal ICU	≥34 weeks' gestation receiving empiric antibiotic therapy within the first 3 days of life in 7 NICUs.	Implementation of the Kaiser Permanente early-onset sepsis calculator (EOS-C) for managing neonatal sepsis.	EOS-C implementation could significantly reduce antibiotic exposure, invasive diagnostic procedures, and hospitalizations in late preterm and term neonates.	Kaiser Permanente early-onset sepsis calculator (EOS-C)	N	N	N
2019	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6386402/	Machine learning models for early sepsis recognition in the neonatal intensive care unit using readily available electronic health record data	Research, retrospective	United States	Hospital, neonatal ICU	Infants hospitalized ≥48 hours	Development of machine learning models for early sepsis recognition using EHR data	Machine learning models can identify infants with sepsis in the NICU hours prior to clinical recognition. Further research is warranted to assess potential performance improvements and clinical efficacy in a prospective trial.	Machine learning models using electronic health records (EHRs).	Y	N	N
2019	https://pubmed.ncbi.nlm.nih.gov/30692615/	Early onset sepsis calculator-based management of newborns exposed to maternal intrapartum fever: a cost benefit analysis	QI initiative, evaluation	United States	Hospital, obstetric, neonatal	Newborns >34 weeks gestational age exposed to maternal intrapartum fever	Use of an early onset sepsis calculator for management of neonates.	Calculator-based approach yields a net monetary benefit of $3998 per infant, largely by preventing unnecessary antibiotic treatment.	Early onset sepsis calculator.	Y	N	Y
2019	https://pubmed.ncbi.nlm.nih.gov/30761632/	Impact of a hospital-wide sepsis pathway on improved quality of care and clinical outcomes in surgical patients at a comprehensive cancer centre	QI initiative, implementation	Australia	Hospital, oncology	119 sepsis episodes post-surgery	Implementation of a standardised hospital-wide sepsis pathway	Sepsis pathway improved quality of care and clinical outcomes in cancer surgery patients	Hospital-wide sepsis pathway	Y	N	N
2018	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6045757/	Implementation of a whole of hospital sepsis clinical pathway in a cancer hospital: impact on sepsis management, outcomes and costs	QI initiative, implementation	Australia	Hospital, oncology	323 patients with sepsis (111 preimplementation, 212 postimplementation)	Implementation of a whole of hospital clinical pathway for sepsis management	Significant improvement in patient outcomes and reduced costs with the sepsis pathway	Sepsis-2 (SIRS-based sepsis) criteria, systemic inflammatory response syndrome (SIRS) criteria, quick sepsis-related organ failure assessment (qSOFA) criteria	Y	N	Y

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2017	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2532578/	Management of the infant at increased risk for sepsis	Guideline	Canada	Hospital, paediatric	Infants at risk for sepsis	Development of evidence-based practice guidelines for managing infants at risk for sepsis	Guidelines developed for managing infants at risk for sepsis, including those with GBS-positive mothers and those with mothers with unknown GBS status.	2017 Canadian Paediatric Society Position Statement for the management of newborns at risk for early-onset sepsis.	N	N	N
2021	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8077229/	Evaluation of compliance with the 2017 Canadian Paediatric Society Position Statement for the management of newborns at risk for early-onset sepsis: A retrospective cohort study	QI initiative, evaluation	Canada	Hospital, paediatric	Term and late pre-term newborns at risk for sepsis	Compliance with the Canadian Paediatric Society's 2017 recommendations for managing newborns at risk for early-onset sepsis.	Noncompliance rate with the CPS recommendations was high (47%), mainly due to overzealous management. Future initiatives should aim at increasing compliance, particularly in newborns at lower EOS risk.	2017 Canadian Paediatric Society Position Statement for the management of newborns at risk for early-onset sepsis.	Y	N	N
2023	https://pubmed.ncbi.nlm.nih.gov/36715271/	Implementing a screening algorithm for early recognition of sepsis in hospitalized children: a quality improvement project	QI initiative, implementation	Israel	Hospital, paediatric	324 children with 596 febrile episodes	Implementation of a screening algorithm for early recognition of sepsis in hospitalized children (vs control ward).	Adherence to vital signs measurements reached the goal of >90%, from 40% pre-intervention.	screening algorithm for sepsis was used, consisting of vital signs measurements, a pop-up alert, nurse's and physician's evaluation, and activation of a workup protocol.	Y	N	N
2017	https://pubmed.ncbi.nlm.nih.gov/28596289/	Paediatric sepsis, the under-recognised killer: quality improvement initiative of outreach teaching in paediatric sepsis	QI initiative, implementation	United Kingdom	Hospital, paediatric	Doctors in training	Outreach teaching programme for managing pediatric sepsis	Identified barriers to delivering care and shared results of a pilot teaching programme	NR	Y	NR	NR
2021	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7874527/	Development of a Quality Improvement Learning Collaborative to Improve Pediatric Sepsis Outcomes	QI initiative, implementation	United States	Hospital, paediatric	56 hospital-based teams across US children's hospitals.	Development of a multicenter quality improvement learning collaborative to improve sepsis outcomes.	The collaborative aims to reduce sepsis-attributable mortality and incidence of hospital-onset sepsis in children by 25% from baseline by December 2020.	The Children's Hospital Association Improving Pediatric Sepsis Outcomes (IPSO) collaborative, Key Driver Diagram (KDD).	Y	N	N
2020	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7056288/	Managing Diagnostic Uncertainty in Pediatric Sepsis Quality Improvement with a Two-Tiered Approach	QI initiative, implementation	United States	Hospital, paediatric	3,640 patients with suspected and confirmed sepsis from April 2012 to December 2017	Two-tiered clinical pathway for pediatric sepsis care	novel 2-tiered approach to pediatric sepsis quality improvement in varied emergency care settings improved process and outcome measures in severe sepsis while promoting stewardship and de-	Novel 2-tier sepsis program provided high-quality critical care in severe sepsis (Sepsis Stat), and, in possible sepsis, flexible evaluation and treatment that promoted stewardship (Sepsis Yellow).	Y	N	N

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								escalation where appropriate.				
2019	https://pubmed.ncbi.nlm.nih.gov/30720672/	Health-Related Quality of Life Among Survivors of Pediatric Sepsis	Research	United States	Hospital, paediatric	790 children aged 1 month to 21 years	Assessment of health-related quality of life following community-acquired pediatric sepsis.	Nearly one-quarter of children surviving hospitalization for community-acquired sepsis experienced a clinically significant deterioration in health-related quality of life.	Pediatric Quality of Life Inventory used for assessment.	N	Y	N
2005	https://pubmed.ncbi.nlm.nih.gov/15636651/	International pediatric sepsis consensus conference: definitions for sepsis and organ dysfunction in pediatrics	Guideline, consensus	International, Canada, France, Netherlands, United Kingdom, United States	Hospital, pediatric	NA	Modified adult SIRS criteria and definitions of severe sepsis and septic shock for children.	First-generation pediatric definitions and criteria developed to facilitate clinical studies in pediatric sepsis.	Pediatric definitions and criteria for SIRS, severe sepsis, and septic shock.	N	N	N
2016	https://jamanetwork.com/journals/jamapediatrics/fullarticle/2543280	Epidemiology and Mortality of Staphylococcus aureus Bacteremia in Australian and New Zealand Children	Research	New Zealand, Australia	Hospital, Pediatric and General	1153 Australasian children with Staphylococcus aureus bacteremia (SAB)	Study of the epidemiology, outcomes, and risk factors for mortality from SAB in children	Death from SAB in children was uncommon, but incidence was higher for infants and varied by treatment, ethnicity, and clinical presentation	NR	Y	Y	N
2020	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7527403/	Management of Children With Fever at Risk for Pediatric Sepsis: A Prospective Study in Pediatric Emergency Care	Research, prospective observational	United Kingdom	Hospital, Pediatric emergency department (PED)	5,156 febrile children aged 1 month−16 years, 2,130 (41%) had one or more warning signs of sepsis.	Evaluation of management of febrile children at risk for sepsis in PED	Delivery of sepsis care can be improved in only a minority of children with invasive bacterial infection (IBI) or admitted to PICU.	Pediatric Sepsis 6 (PS6) interventions, NICE sepsis guidelines	Y	N	N
2018	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6185775/	The association of nutrition status expressed as body mass index z-score with outcomes in children with severe sepsis: a secondary analysis from the Sepsis Prevalence, Outcomes and Therapies (SPROUT) study	Research	Multinational study conducted across 26 countries (including NZ)	Hospital, pediatric ICU	567 children with severe sepsis	Association of nutrition status (expressed as BMI z-score) with outcomes in pediatric severe sepsis	Severe undernutrition associated with higher ICU mortality, severe overnutrition associated with longer ICU stay in survivors	World Health Organization standards for BMI z-scores	Y	Y	N
2018	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6141202/	Readmissions Among Sepsis Survivors: Risk Factors and Prevention	Review	NA	Hospital, post-sepsis	Sepsis survivors	Review of risk factors and prevention strategies for hospital readmissions among sepsis survivors	Sepsis survivors are at high risk for hospital readmission, prevention strategies are urgently needed	NA	N	N	N
2016	https://pubmed.ncbi.nlm.nih.gov/26864327/	Prehospital management and identification of sepsis by emergency medical services: a systematic review	Systematic review	NA	Hospital, pre-hospital ambulance	Paramedics	Identification and management of sepsis in prehospital setting by EMS	moderate-quality evidence supporting structured screening for sepsis with vital signs criteria	Systemic inflammatory response syndrome criteria or a combination of vital	N	N	N

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								demonstrated modest sensitivity and specificity. Additional research to improve diagnostic accuracy and explore improvements in EMS management is needed.	signs for sepsis identification			
2021	https://www.thelancet.com/journals/lanres/article/PIIS2213-2600(17)30469-1/fulltext	Prehospital antibiotics in the ambulance for sepsis: a multicentre, open label, randomised trial	QI initiative, implementation	Netherlands	Hospital, pre-hospital ambulance	2672 included in the analysis (1535 intervention, 1137 usual care)	Early detection of sepsis, and administration of antibiotics in the ambulance	EMS personnel training improved early recognition and care, but prehospital antibiotics did not improve survival	NR	Y	N	Y
2022	https://pubmed.ncbi.nlm.nih.gov/35500527/	Implementation of an EMS protocol to improve prehospital sepsis recognition	QI initiative, implementation	United States	Hospital, Prehospital EMS	276 (55%) EMS patients were included for study analysis	Implementation of the PRESS (PREhospital SepsiS) screening and prehospital protocol to improve EMS provider sepsis recognition rates.	Implementation of the PRESS protocol improved sepsis recognition rates in the prehospital EMS setting.	The PRESS (PREhospital SepsiS) screening and prehospital protocol.	Y	N	N
2023	https://pubmed.ncbi.nlm.nih.gov/37141419/	Prehospital Recognition and Management of Pediatric Sepsis: A Qualitative Assessment	QI initiative, evaluation	NR	Hospital, Prehospital setting	Emergency Medical Service staff (focus groups)	understand barriers, facilitators, and attitudes regarding recognition and management of pediatric sepsis in the prehospital setting	identified nine environmental factors, 21 negative factors, and 14 positive factors pertaining to recognition and management of pediatric sepsis.	NR (Paywall)	Y	N	N
2019	https://pubmed.ncbi.nlm.nih.gov/30366742/	Early recognition of sepsis through emergency medical services pre-hospital screening	QI initiative, implementation	United States	Hospital, pre-hospital, ambulance	63 adults, 43 in pre-EMS tool group and 20 in post-EMS tool group.	Implementation of an EMS sepsis screening tool.	EMS sepsis screening tool improved 3-hour bundle compliance for sepsis patients.	Surviving Sepsis Campaign 3-hour bundle	Y	N	N
2022	https://www.sciencedirect.com/science/article/pii/S2588994X21000245?via%3Dihub#bib0430	Challenges in the recognition and management of paediatric sepsis — The journey	Review	Australia	Hospital, pre-hospital, ED, Peadiatric	Paediatric patients	Unified approach to sepsis care, including early recognition, management, and post-sepsis care	Despite progress, gaps in practice, research, and education in pediatric sepsis care remain. A unified approach is needed.	Australian National Action Plan for sepsis, Surviving Sepsis Campaign 2020 guidelines	N	Y	N
2021	https://pubmed.ncbi.nlm.nih.gov/34418337/	Out-of-hospital sepsis recognition by paramedics improves the course of disease and mortality: A single center retrospective study	Research, observational	Germany	Hospital, pre-hospital, EMS	263 patients diagnosed with sepsis after admission to the emergency department.	Impact of early sepsis recognition by paramedics on disease course and mortality.	Early sepsis recognition by paramedics significantly reduces sepsis mortality and time to antibiotic administration.	Quick Sepsis-related Organ Failure Assessment (qSOFA) score and a modified qSOFA score.	Y	N	N
2021	https://www.sciencedirect.com/science/article	Implementation of the Surviving Sepsis Campaign one-hour bundle in a short	QI initiative, implementation	United States	Hospital, short stay unit	32 patients with sepsis, nursing intervention	Implementation of the 2018 Surviving Sepsis	Use of a registered nurse-initiated sepsis implementation tool	2018 Surviving Sepsis Campaign guidelines,	Y	N	N

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	/abs/pii/S0964339720302O7X?via%3Dihub	stay unit: A quality improvement project					Campaign one-hour interventions	led to completion of blood cultures, initial lactate, and antibiotic administration within one-hour	sepsis implementation tool			
2023	https://www.jshoulderelbow.org/article/S1058-2746(23)00457-3/pdf	The Evaluation, Classification and Management of Septic Arthritis of the Shoulder: The Comprehensive Shoulder Sepsis System	Research	United States	Hospital, two tertiary care academic institutions	64 patients treated surgically for septic arthritis of the native shoulder joint	anatomically-based classification system and treatment algorithm for septic arthritis of the native shoulder joint	a systematic approach to septic arthritis of the shoulder may lead to more timely diagnosis and treatment	new classification system and treatment algorithm for septic arthritis of the shoulder	N	N	N
2019	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6567954/	Successful prospective quality improvement programme for the identification and management of patients at risk of sepsis in hospital	QI initiative, evaluation	United Kingdom	Hospital, urology ward	143 patients, 74 in the first cycle (preintervention) and 69 in the second cycle (postintervention)	Quality improvement interventions including education sessions, communication aids, and a department-specific sepsis protocol.	Quality improvement initiatives significantly improved the speed and quality of sepsis management for inpatients.	Sepsis six initiative, Scottish Patient Safety Programme, department-specific sepsis protocol	Y	N	N
2023	https://onlinelibrary.wiley.com/doi/10.1111/ajag.13141	Learning from complaints to the Health and Disability Commission Office: A case study into indicators of deterioration in aged residential care organisations in New Zealand	Research	New Zealand	Long-term, aged residential	24 deidentified publicly available HDC cases across three large New Zealand ARC organisations.	Analysis of complaints to the Health and Disability Commissioner about ARC facilities, with a focus on sepsis as a contributing factor to rapid decline and death.	Rapid deterioration, particularly due to sepsis, is a significant factor in complaints about ARC facilities. Nutrition/hydration issues also feature prominently.	NA	N	Y	N
2016	https://pubmed.ncbi.nlm.nih.gov/26633155/	Incorporating Interprofessional Evidenced-Based Sepsis Simulation Education for Certified Nursing Assistants (CNAs) and Licensed Care Providers Within Long-term Care Settings for Process and Quality Improvement	QI initiative, implementation	United States	Long-term, rest home	Certified Nursing Assistants (CNAs) and Licensed Care Providers in 19 long-term care facilities	Implementation of Interventions to Reduce Acute Care Transfers 3.0 tools in sepsis simulations	Interprofessional sepsis simulations improved communication and early recognition of sepsis symptoms	STOP and WATCH and SBAR tools	Y	NR	NR
2019	https://pubmed.ncbi.nlm.nih.gov/31617944/	Sepsis in Older Adults in Long-Term Care Facilities: Challenges in Diagnosis and Management	Review	United States	Long-term, rest home	Older adults in long-term care facilities	Challenges in diagnosing and managing sepsis in older adults	Early diagnosis of sepsis in LTCFs must focus on changes in clinical, mental, and functional status, and vital signs including pulse oximetry.	NR	N	N	N
2016	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4968574/	The Third International Consensus Definitions for Sepsis and Septic Shock (Sepsis-3)	Guideline, update	International	NA	Task force of 19 experts in sepsis pathobiology, clinical trials, and epidemiology	Updated definitions for sepsis and septic shock	Updated definitions and clinical criteria offer consistency for studies and facilitate earlier recognition and management of sepsis.	Sequential [Sepsis-related] Organ Failure Assessment (SOFA) score, quickSOFA (qSOFA) score	N	N	N

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2022	https://pubmed.ncbi.nlm.nih.gov/35430013/	Digitising the prediction and management of sepsis	Editorial	NA	NA	NA (Lancet)	Use of AI for early prediction and management of sepsis	AI has potential in sepsis management, but requires vigilant assessment, fine-tuning, and unbiased datasets	Sepsis-3 consensus, Epic Sepsis Model	N	N	N
2019	https://www.frontiersin.org/articles/10.3389/fped.2019.00161/full	The Role of Parental Concerns in the Recognition of Sepsis in Children: A Literature Review	Review	NA	NA	188/219 articles reviewed, 11 met the criteria	Review of literature on parental concerns in recognizing sepsis in children.	Urgent need for well-designed diagnostic accuracy studies to define the value of assessing parental concerns in sepsis recognition in acute care settings.	NA	N	Y	N
2017	https://sigmapubs.onlinelibrary.wiley.com/doi/10.1111/jnu.12295	Systematic Review of Gender Differences in Sepsis Management and Outcomes	Systematic review	NA	NA	Sex	Review of factors and outcomes associated with sepsis management based on gender differences	Gender impact on sepsis-related management and mortality is inconclusive and complex	Surviving Sepsis Campaign resuscitation bundle elements	N	Y	N
2017	https://pubmed.ncbi.nlm.nih.gov/29603898/	Sepsis: recognition, diagnosis and early management: © NICE (2017) Sepsis: recognition, diagnosis and early management	Guideline	United Kingdom	NA	NA	NICE	NA	NICE	N	N	N
2018	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6315577/	Factors Underlying Racial Disparities in Sepsis Management	Review	United States	NA	NA	NA	Racial disparities in sepsis management are influenced by patient, community, and hospital-based factors	NA	N	Y	N
2023	https://www.jthjournal.org/action/showPdf?pii=S1538-7836%2822%2907192-6	Communication from the Scientific and Standardization Committee of the International Society on Thrombosis and Haemostasis on sepsis-induced coagulopathy in the management of sepsis	Guideline, commentary	International	NR	51 studies	introduction of the sepsis-induced coagulopathy (SIC) scoring system by the scientific standardization committees of the ISTH in 2019. The SIC scoring system is designed to detect the compensated phase of DIC in sepsis, which can lead to overt DIC with disease progression.	The SIC scoring system is effective, with a 60% incidence in sepsis patients and a mortality rate of ≥30%, aiding in patient selection for anticoagulant therapy.	sepsis-induced coagulopathy (SIC) scoring system	Y	N	N
2021	https://journals.rcni.com/emergency-nurse/evidence-and-	Effectiveness of the sepsis six bundle in the management of acute adult sepsis in the UK	QI initiative, evaluation	United Kingdom	NR	Adult sepsis patients in the UK	Sepsis six care bundle	Sepsis six bundle improved patient mortality, ICU admissions, and hospital stay length.	UK Sepsis Trust Sepsis six care bundle	Y	N	N

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	practice/effectiveness-of-the-sepsis-six-bundle-in-the-management-of-acute-adult-sepsis-in-the-uk-en.2020.e2064/abs											
2023	https://jamanetwork.com/journals/jama/article-abstract/2800851	The Importance of Shifting Sepsis Quality Measures From Processes to Outcomes	Editorial	United States	NR	NR	Discussion on the CMS Severe Sepsis/Septic Shock Early Management Bundle (SEP-1) and its implications	Suggests a shift in sepsis quality measures from processes to outcomes	Centers for Medicare & Medicaid Services (CMS) Severe Sepsis/Septic Shock Early Management Bundle (SEP-1)	N	N	N
2023	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9994455/	Preventative Management of Sepsis-Induced Acute Respiratory Distress Syndrome in the Geriatric Population	Review	United States	NR	Elderly population (aged ≥65 years)	Review of current treatments of sepsis and possible measures to prevent sepsis-induced ARDS	potential therapeutic preventative measures for sepsis-induced ARDS	Sequential Organ Failure Assessment (SOFA) score, 2021 International Guidelines for the Management of Sepsis and Septic Shock, Surviving Sepsis Campaign Guidelines	N	N	N
2017	https://obgyn.onlinelibrary.wiley.com/doi/10.1111/ajo.12646	SOMANZ guidelines for the investigation and management sepsis in pregnancy	Guideline	New Zealand, Australia	Obstetrics and Gynecology	Pregnant women with sepsis or suspected sepsis	Guidelines for managing sepsis in pregnant women	Recommends the obstetrically modified qSOFA (omqSOFA) for initial assessment, and the obstetrically modified SOFA (omSOFA) for a more thorough assessment	Obstetrically modified qSOFA (omqSOFA) and obstetrically modified SOFA (omSOFA)	N	N	N
2019	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6772145/	Health related quality of life in sepsis survivors from the Prehospital Antibiotics Against Sepsis (PHANTASi) trial	Research	Netherlands	Post-sepsis	880 sepsis survivors	Investigated health-related quality of life in sepsis survivors.	Sepsis survivors have significantly worse health-related quality of life compared to the general Dutch population.	SF-36 questionnaire	Y	N	N
2007	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2099636/	Signs and symptoms for diagnosis of serious infections in children: a prospective study in primary care	Research	Belgium	Primary	3981 children aged 0–16 years with acute illness for a maximum of 5 days, 31 of which were admitted to hospital with a serious infection (0.78%).	Diagnostic accuracy of signs and symptoms for serious infections in children, creation of a multivariable triage instrument.	Serious infection can be excluded based on a limited number of signs and symptoms.	Classification and regression tree (CART) analysis used to create a triage instrument.	Y	N	N
2018	https://pubmed.ncbi.nlm.nih.gov/29460453/	Severe maternal morbidity due to sepsis: The burden and preventability of disease in New Zealand	Research	New Zealand	Primary	50 cases of obstetric sepsis	Review of cases for characteristics of infection and their preventability.	50% of sepsis cases were potentially preventable, mainly due to delays in	NR	Y	NR	NR

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								diagnosis and treatment.				
2015	https://pubmed.ncbi.nlm.nih.gov/25246363/	Increasing incidence of invasive group A streptococcus disease in New Zealand, 2002-2012: a national population-based study	Research	New Zealand	Primary	New Zealand population from 2002 to 2012	Analysis of incidence, demographics, and molecular epidemiology of invasive group A streptococcal (GAS) disease	Incidence of invasive GAS infections increased from 2002 to 2012, with highest incidence in the over 75-year age group and in Pacific peoples.	NR	N	Y	NR
2022	https://pubmed.ncbi.nlm.nih.gov/35137616/	Improving sepsis recognition through use of the Sepsis Trust's community screening tool	QI initiative, evaluation	United Kingdom	Primary, community	Nursing	Use of the Sepsis Trust's community nursing sepsis screening tool	Implementation of the tool can improve patient outcomes, including mortality, morbidity, and overall patient experience.	Sepsis Trust's community nursing sepsis screening tool	Y	N	N
2022	https://www.mdpi.com/2077-0383/11/13/3659	Text-Based vs. Graphical Information Formats in Sepsis Prevention and Early Detection: A Randomized Controlled Trial on Informed Choice	Research	Germany	Primary, community (online)	500 participants at higher risk for sepsis (aged ≥ 60 years and/or with pre-existing conditions)	Comparison of two evidence-based health information formats—text-based and graphical—for sepsis prevention and early detection	Text-based format was more effective in fostering informed choice and risk and health literacy for early detection of sepsis	Two evidence-based health information formats—text-based and graphical—designed for sepsis prevention and early detection	Y	N	N
2018	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5892763/	Sepsis recognition tools in acute ambulatory care: associations with process of care and clinical outcomes in a service evaluation of an Emergency Multidisciplinary Unit in Oxfordshire	QI initiative, evaluation	United Kingdom	Primary, community ambulatory	533 patients (median age 81 years), 316 with suspected infection, 120 requiring escalated care.	Evaluation of sepsis recognition tools (SIRS, NEWS, qSOFA, NICE criteria) in acute ambulatory care.	SIRS had the highest predictive value for escalated care; caution advised in using new NICE criteria in this setting.	SIRS, NEWS, qSOFA, NICE criteria	Y	N	N
2021	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8299345/	Ambulatory Risk Models for the Long-Term Prevention of Sepsis: Retrospective Study	Research, observational	United States	Primary, community, ambulatory	2,683,049 patients with over 64 million encounters across five states. Key data for predictive factors for sepsis over next 2 years, including equity-related metrics	Machine learning models predicting 2-year risk of sepsis using EHR data.	Developed models accurately predict 2-year sepsis risk, advancing understanding of sepsis and informing future preventive care trials.	Machine learning models using electronic health records (EHRs).	Y	Y	Y
2017	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6169959/	Recognition of sepsis in primary care: a survey among GPs	Research, qualitative	Netherlands	Primary, GP	800 GPs, 160 responses	Survey on clinical decision-making process in sepsis cases.	GP's assessment of sepsis is complex, not solely based on vital signs.	NA	Y	N	N
2018	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6144400/	Management of sepsis in out-of-hours primary care: a retrospective study of patients admitted to the intensive care unit	Research	Netherlands	Primary, GP, after hours	263 patients admitted to ICU due to community-acquired sepsis	Assessment of the role of GP cooperatives in prehospital management of sepsis	GP cooperatives play an important role in prehospital management of sepsis, recognition of sepsis proved difficult	NA	N	N	N
2016	https://pubmed.ncbi.nlm.nih.gov/26872797/	Exploring distributed leadership in the BC Sepsis Network	QI initiative, evaluation	Canada	Primary, hospital	Healthcare network	Exploration of the role of networks in supporting large-scale	Insights into distributed leadership, enablers and barriers	BC Sepsis Network	Y	N	N

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							change and improvement, specifically the BC Sepsis Network	within a network approach, importance of relationships and trust, and need for meaningful and timely data				
2019	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6920048/	Acute kidney injury from sepsis: current concepts, epidemiology, pathophysiology, prevention and treatment	Review	United States	Primary, hospital	NA	NA	Sepsis-associated acute kidney injury (S-AKI) is a common complication with high mortality. Early recognition and supportive treatment are crucial.	NA	N	N	N
2021	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8891392/	Best practices in pediatric sepsis: building and sustaining an evidence-based pediatric sepsis quality improvement program	Review, communication	United States	Primary, hospital	Pediatric patients	Implementation of a pediatric sepsis quality improvement program.	Successful implementation of a pediatric sepsis QI program, with challenges and lessons learned.	American College of Critical Care Medicine and the Surviving Sepsis Campaign guidelines.	Y	Y	Y
2020	https://www.nature.com/articles/s41415-020-2022-8	Knowledge of sepsis risk and management among dental professionals in Wales: a service evaluation	Research, survey	United Kingdom	Primary, hospital; dentists	357 dental professionals	Survey to assess knowledge, confidence, and educational requirements regarding sepsis among dental professionals.	Significant need for postgraduate education on sepsis identification and management among dental teams in Wales.	NR	Y	N	N
2019	https://pubmed.ncbi.nlm.nih.gov/30974075/	Quality Improvement Opportunities Identified Through Case Review of Pregnancy-Related Deaths From Sepsis	QI initiative, evaluation	United States	Primary, maternity	27 cases of pregnancy-related deaths from sepsis	Analysis of quality improvement opportunities (QIOs) in maternal death cases from sepsis.	Reducing barriers for women seeking care, recognizing early symptoms, and responding with appropriate treatment can reverse sepsis contribution to maternal mortality.	Maternal Early Warning Criteria, standardized guidelines from the Surviving Sepsis campaign, comprehensive discharge education.	Y	Y	N
2021	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8288480/	Top 10 Pearls for the Recognition, Evaluation, and Management of Maternal Sepsis	Review	International	Primary, obstetric	Pregnant or postpartum women with suspected sepsis	Early recognition, evaluation, and management of maternal sepsis	Early recognition and management of maternal sepsis can reduce maternal morbidity and mortality.	Bedside assessment tools like qSOFA, MOEWS, S.O.S., omqSOFA	N	N	N
2022	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9037184/	New clinical prediction model for early recognition of sepsis in adult primary care patients: a prospective diagnostic cohort study of development and external validation	QI initiative, implementation	Netherlands	Primary, out-of-hours primary care	357 acutely ill adult patients receiving home visits, 151 diagnosed with sepsis.	Novel model, 9 variables: age; tympanic temperature; systolic blood pressure; peripheral oxygen saturation; heart rate; respiratory rate;	Development and validation of a sepsis prediction model for adult patients in primary care. A simple model can accurately predict sepsis in acutely ill adult	Clinical scores used in hospitals, like the quick Sequential Organ Failure Assessment (qSOFA), systemic inflammatory response syndrome (SIRS), or National	Y	N	N

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							mental status (normal or altered); rapid progression of illness (yes/no); and rigors (yes/no). Furthermore, three biomarkers: lactate; C-reactive protein (CRP); and procalcitonin (PCT).	patients using readily available clinical parameters.	Early Warning Score (NEWS) are not validated in primary care.			
2020	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7147668/	Implementation of the National Early Warning Score in patients with suspicion of sepsis: evaluation of a system-wide quality improvement project	QI initiative, implementation	United Kingdom	Primary, pre-hospital	Patients with suspicion of sepsis	Implementation of National Early Warning Score (NEWS) across healthcare system	Implementation of NEWS in pre-hospital care associated with improved outcomes in patients with SOS	National Early Warning Score (NEWS)	Y	N	N
2021	https://pubmed.ncbi.nlm.nih.gov/32803355/	Ten-year retrospective review of paediatric septic arthritis in a New Zealand centre	Research	New Zealand	Primary, referral centres	103 children under 16 with presumed septic arthritis from 2008 to 2018.	Retrospective review of presentation, diagnosis, and management of paediatric septic arthritis.	High incidence of paediatric septic arthritis in Māori and Pacific populations in New Zealand.	NA	N	Y	N
2021	https://pubmed.ncbi.nlm.nih.gov/34346166/	Are we overlooking the rural patient journey when it comes to sepsis diagnosis and management?	Editorial	Australia	Primary, rural, community	Primary, rural ED	Discussion on the unique challenges faced in rural healthcare settings in sepsis management.	Greater representation of rural patients and EDs in Australian sepsis research is paramount in guiding future sepsis treatment protocols.	Surviving Sepsis Campaign guidelines		Y	
2017	https://www.sciencedirect.com/science/article/pii/S0883944117306214?via%3Dihub	Sepsis 3 from the perspective of clinicians and quality improvement initiatives	Review	Germany	Primary, secondary, and tertiary care	NA	Assessment of Sepsis-3 definitions in context of quality improvement initiatives	Sepsis-3 definitions created confusion, need clarification for bedside use and QI programs	Sepsis-3 definitions, SOFA score, qSOFA score	N	N	N
2017	https://pubmed.ncbi.nlm.nih.gov/28727403/	Recognition and Diagnosis of Sepsis in Adults: A Review of Evidence-Based Guidelines	Review	International	Primary, secondary, and tertiary care	Adult populations in acute care and emergency department settings, specialized health populations including pregnancy, post-pregnancy, and neutropenic cancer.	Guidelines for sepsis recognition, diagnosis, and early management.	Consistent recommendations for management and treatment of suspected sepsis across guidelines.	NICE guideline, Surviving Sepsis Campaign Guidelines, BC Sepsis Network guidelines, RCOG guidelines.	Y	N	N
2018	https://obgyn.onlinelibrary.wiley.com/doi/10.1111/aogs.13526	Preventability review of severe maternal morbidity	Research	New Zealand	Primary, secondary, and tertiary care	Pregnant or postpartum women admitted to an Intensive Care Unit or High Dependency Unit	Retrospective review of severe maternal morbidity (SMM) cases for potential preventability	Over a third of SMM cases potentially preventable, due to substandard provider care, higher rates for racial/ethnic minority women	Geller preventability model adapted for the NZ environment	Y	Y	N

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2017	https://pubmed.ncbi.nlm.nih.gov/27925427/	Spleen Australia guidelines for the prevention of sepsis in patients with asplenia and hyposplenism in Australia and New Zealand	Guideline	New Zealand, Australia	Primary, secondary, and tertiary care	Patients with asplenia and hyposplenism	Guidelines for the prevention of sepsis in patients with asplenia and hyposplenism	Provides recommendations for optimal antimicrobial prophylaxis and vaccination protocols for patients with asplenia and hyposplenism	NR (Paywall)	N	N	N
2017	https://www.ncbi.nlm.nih.gov/books/NBK553314/	Sepsis: recognition, diagnosis and early management	Guideline	United Kingdom	Primary, secondary, and tertiary care	People with sepsis, their families and carers, healthcare professionals	Recognition, diagnosis, and early management of sepsis	Provides guidance on sepsis recognition, diagnosis, and early management	NICE Guideline, No. 51	N	N	N
2017	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5565828/	Recognition, diagnosis, and early management of sepsis: NICE guideline	Guideline	United Kingdom	Primary, secondary, and tertiary care	NA	NICE guideline for sepsis recognition, diagnosis, and early management	Emphasizes early recognition and management of sepsis, using structured assessment and risk stratification	NICE guideline for sepsis	N	N	N
2015	https://pubmed.ncbi.nlm.nih.gov/25604031/	A national quality improvement initiative for reducing harm and death from sepsis in Wales	QI initiative, implementation	United Kingdom	Primary, secondary, and tertiary care	All clinical areas in all 18 acute hospitals in Wales.	Implementation of the National Early Warning Score (NEWS), sepsis screening tools, Patient Status at A Glance (PSAG) boards, sepsis response bags, and an antibiotic formulary.	Collaborative learning set is effective for improving sepsis care quality across a healthcare economy.	National Early Warning Score (NEWS), sepsis screening tools, Patient Status at A Glance (PSAG) boards, sepsis response bags, and an antibiotic formulary.	Y	N	N