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Nursing Practice In Emergency Care Settings: Evidence-Based Approaches

Turkey Muklied Mubairk Alotaibi [1], Faisal wazi Alqahtani [2], Ebtisam Bakhit Majrashi [3], Faisal Ali Faisal Alqahtani [4], Alhanouf Oqla Hmedan Alshammari [5], Nawaf Muhail Abdullah Al-Mutairi [6], Nawaf Hadi Alanazi [7], Abdulrazag Reshaid Alrukhaimi [8], Saud Saif Almutairi [9], Fatimah Saleh Ali Almushtah [10], Enjoud Saeed Ali Alqhtani [11], Bader Abdulrahman Saad Khalid [12], Abdullah Muhyya Almutairi [13], Bidoor Ghareb Alenazi [4], Saeed Mohammed Mujahed Almotiri [15]

1. *Nursing Technician, Second Health Cluster in the Central Region, kingdom of Saudi Arabia.*
2. *Registered Nurse, Ad Diriyah Hospital, Third Cluster, kingdom of Saudi Arabia.*
3. *Nursing, King Faisal Medical Hospital, kingdom of Saudi Arabia.*
4. *Nursing Specialist, Erada Mental Health Complex, Third Riyadh Health Center, kingdom of Saudi Arabia.*
5. *Nurse Specialist, Prince Muteb bin Abdulaziz hospital -Intensive care unit, Aljouf Health Cluster, kingdom of Saudi Arabia.*
6. *Nursing Health Assistant, Ambulance and Emergency Department, Artawiyah General Hospital, The Second Health Cluster, kingdom of Saudi Arabia.*
7. *Nursing Health Assistant, Alartawiyah General Hospital, The Second Health Cluster, kingdom of Saudi Arabia.*
8. *Nurse, Alartawiyah General Hospital, The Second Health Cluster, kingdom of Saudi Arabia.*
9. *Nurse, Alartawiyah General Hospital, The Second Health Cluster, kingdom of Saudi Arabia*
10. *Nursing, Internal Audit, Ministry of Health, Kingdom of Saudia Arabia.*
11. *Nurse Assistant, King Salman Hospital, First Health Cluster, Kingdom of Saudia Arabia.*
12. *Nursing Specialist, AD Diriyah Hospital, Ministry of Health, Kingdom of Saudia Arabia.*
13. *Nursing Technician, Artawiyah General Hospital, Second Health Cluster, Riyadh, Kingdom of Saudia Arabia.*
14. *Nursing Technician, Artawiyah General Hospital, Second Health Cluster, Riyadh, Kingdom of Saudia Arabia.*
15. *Nurse Technician, Alartaweah General Hospital, Second Health Cluster, Riyadh, Kingdom of Saudia Arabia.*

Abstract

Background: Emergency departments (EDs) operate as high-acuity environments managing diverse acute presentations amid rising demands from aging populations and chronic diseases, leading to crowding, prolonged waits, and heightened nursing workloads that compromise patient safety through delays and errors. Nursing practice has evolved into a specialized field emphasizing triage, resuscitation, monitoring, and evidence-based protocols like HIRAID to optimize outcomes in resource-constrained settings. This review synthesizes fragmented evidence on emergency nursing roles, competencies, and barriers to evidence-based practice (EBP) adoption, addressing gaps in linking interventions to mortality, throughput, and system efficiency.

Methods: A narrative synthesis of peer-reviewed literature was conducted, drawing from databases like PubMed and Cochrane to consolidate studies on ED nursing across triage, protocols, outcomes, and innovations up to 2025. Inclusion focused on empirical evidence evaluating nurse-led assessments, EBP frameworks, barriers/facilitators, and impacts on clinical metrics, with quasi-experimental, cohort, and RCT data informing holistic integrations of clinical and organizational factors.

Results: Structured tools like ESI and NEWS enhance triage accuracy and deterioration detection, reducing mortality risks and lengths of stay, while nurse-initiated protocols for sepsis, pain, and stroke yield 10-14% outcome improvements. Advanced roles, digital tools, and simulations boost throughput, satisfaction, and adherence, though crowding, staffing shortages, and knowledge gaps impede EBP, with skill mix optimizing efficiency.

Conclusions: Strengthening EBP through training, leadership, and technology can mitigate barriers, enhancing patient safety and ED performance; future research should prioritize scalable strategies for diverse contexts.

Keywords Emergency nursing, Evidence-based practice, Triage accuracy, Patient deterioration, ED crowding, Nurse-led protocols.

Introduction

Emergency departments (EDs) function as high-acuity, high-throughput environments within health systems, managing a diverse array of acute presentations from trauma and cardiac events to infectious diseases and mental health crises, often serving as the primary entry point for unscheduled care and handling up to 50 million visits annually in major countries like the United States. These units operate under constant pressure from fluctuating patient volumes, resource constraints, and the need for rapid diagnostics and interventions, positioning EDs as critical safety nets that prevent system-wide bottlenecks by stabilizing patients for inpatient admission or discharge. However, escalating demand driven by aging populations, chronic disease prevalence, and seasonal surges has led to pervasive crowding, defined by prolonged wait times, hallway boarding, and ambulance diversions, which directly amplifies nursing workload through multitasking, extended shifts, and emotional strain while compromising patient safety via delayed treatments, medication errors, and heightened risks of adverse events such as mortality in time-sensitive conditions like myocardial infarction. Reviews highlight that ED crowding stems from input factors like increased arrivals, throughput delays from diagnostics and staffing shortages, and output barriers including bed unavailability, creating a vicious cycle where nurses face moral distress and burnout amid deteriorating care quality (Pearce et al., 2023).

Emergency nursing emerged as a distinct specialty in the mid-20th century, catalyzed by post-World War II advancements in trauma care, the establishment of professional bodies like the Emergency Nurses Association in 1970, and the development of competency frameworks such as those from the Emergency Nurses Association and International Federation of Emergency Medicine, which standardized skills in assessment, resuscitation, and triage. Initially rooted in general nursing adaptations to chaotic casualty clearing stations, the field professionalized through certification programs like the Certified Emergency Nurse credential and role expansions into specialized domains, including fast-track care for low-acuity patients, observation units for short-stay monitoring, and disaster response coordination during mass casualty incidents. Contemporary emergency nurses now encompass advanced practice roles, such as nurse practitioners leading ambulatory care tracks, while frameworks like HIRAID and patient-needs-enhanced assessments have formalized systematic approaches to initial evaluations post-triage, reflecting a shift from reactive to proactive, evidence-informed practice amid evolving standards from bodies like the Society of Trauma Nurses. This evolution underscores nurses' pivotal contributions across the care continuum, from prehospital handovers to system-level flow management, with historical milestones including the integration of technology like electronic health records and simulation-based training to enhance competencies in high-stakes scenarios (Azizpour et al., 2022).

Evidence-based practice (EBP) in nursing integrates the best available research evidence with clinical expertise, patient values, and contextual factors to inform decision-making, as defined by frameworks from the American Nurses Association emphasizing a problem-solving approach that translates knowledge into safe, effective care. Core components include systematic literature appraisal, guideline adaptation, and outcome evaluation, particularly vital for emergency nurses who operate in time-compressed settings prone to clinical deterioration, where rapid prioritization of interventions like analgesia or ECGs can avert adverse events. In EDs, EBP manifests through protocols such as HIRAID for structured assessments and patient-centered frameworks addressing pain, anxiety, and communication deficits, countering challenges like workflow disruptions and resource limitations that hinder guideline uptake. The imperative for emergency nurses lies in mitigating risks from high-stakes decisions, with EBP enhancing competencies in triage

accuracy, resuscitation efficacy, and crowding mitigation, ultimately improving metrics like door-to-troponin times and length of stay while fostering resilience amid stressors (Sun et al., 2025).

Synthesised evidence on emergency nurses' contributions remains fragmented, with notable gaps in linking nursing assessments and interventions to patient outcomes like reduced mortality, process efficiencies such as throughput times, and system-level improvements in crowding and staffing models, particularly underrepresented in low- and middle-income contexts. Existing literature often silos clinical roles from organizational factors like leadership support or educational deficits, overlooking holistic integrations needed to address barriers including knowledge gaps, time constraints, guideline complexity, and cultural resistance to change. This review addresses these voids by consolidating perspectives on nurses' roles in triage, resuscitation, and disaster preparedness, while examining implementation facilitators like training and peer support against persistent challenges in EBP adoption. By highlighting understudied areas such as theory-practice gaps and competency development in specialized units, it underscores the urgency for targeted syntheses to inform scalable strategies amid rising ED demands (Alahmedi & Alodhialah, 2025).

The primary objective synthesises evidence on nursing practice in emergency care settings, evaluating its impact on patient outcomes (e.g., mortality, satisfaction), process measures (e.g., wait times, error rates), and system performance (e.g., throughput, cost-efficiency). Secondary objectives delineate core roles and competencies in triage, resuscitation, fast-track care, observation, and disaster response; scrutinise the adoption of EBP frameworks like HIRAID and guideline implementation; identify barriers such as resource shortages and facilitators including leadership and training; and derive implications for workforce development, policy reforms, and research agendas. Review questions probe: What competencies define effective emergency nursing? How do EBP guidelines influence ED outcomes? What factors impede or enable practice translation? What strategies optimise future impacts?

Triage Nursing

Triage nursing involves the systematic process of categorizing patients based on illness or injury severity to determine the order of treatment, with primary goals centered on identifying life-threatening conditions promptly, optimizing resource allocation, minimizing waiting times for high-acuity cases, and enhancing overall patient outcomes in resource-constrained ED environments. Widely adopted systems include the five-level Emergency Severity Index (ESI), which integrates acuity and expected resource needs; the Canadian Triage and Acuity Scale (CTAS), emphasizing presenting complaints and vital signs with defined physician contact times; the Manchester Triage System (MTS), relying on flowcharts for 52 discriminators like pain or consciousness level; and local adaptations tailored to institutional protocols, all demonstrating moderate to good validity in distinguishing urgency levels when implemented by trained nurses. Triage nurses execute these systems through rapid history-taking, physical assessments, and vital sign measurements, prioritizing patients via streaming to fast-track low-acuity cases, ensuring patient safety by mitigating risks like under-triage that could lead to deterioration, and facilitating seamless communication with ED teams, EMS providers, and families to relay critical details and set expectations. Evidence underscores that structured triage by nurses reduces adverse events, with reliability metrics (κ=0.7-0.95 for ESI/CTAS) supporting its efficacy, though ongoing training combats variability from workload or experience (Yancey & O'Rourke, 2023).

In resuscitation bays, emergency nurses lead responses to life-threatening presentations such as trauma, cardiac arrest, sepsis, shock, and respiratory failure, assuming primary roles in immediate interventions like chest compressions, defibrillation via automated external defibrillators, and initiation of advanced life support protocols to stabilize hemodynamics and restore perfusion. Competencies encompass advanced assessments including rapid airway evaluation, endotracheal intubation assistance, mechanical ventilation setup, vasopressor titration for shock, and fluid resuscitation guided by lactate levels or ultrasound in sepsis bundles, all executed within multidisciplinary teams where nurses coordinate roles, delegate tasks, and maintain situational awareness to optimize survival rates. Nurse-led activations, such as Code Sepsis teams, exemplify evidence-based integration of point-of-care tools and standing orders, reducing time-to-

antibiotics and mortality while fostering teamwork essential for high-stakes scenarios like trauma bays (Heng et al., 2011).

Emergency nurses conduct continuous and intermittent monitoring of vital signs (heart rate, blood pressure, oxygen saturation, respiratory rate), early warning scores like NEWS2 or modified EWS incorporating consciousness and oxygen delivery, pain scales, and mental status to detect subtle changes indicative of deterioration in dynamic ED settings. Reassessment protocols mandate serial evaluations at predefined intervals, enabling recognition of trends such as rising scores signaling sepsis or respiratory failure, prompt escalation via rapid response teams, and activation of interventions like non-invasive ventilation before full decompensation occurs. Continuous monitoring algorithms outperform periodic checks in early deterioration detection, correlating alerting times with escalation needs and emphasizing nurse vigilance in preventing adverse outcomes (Peelen et al., 2023).

Nurses perform core ED procedures including wound irrigation and closure, peripheral and central IV cannulation, medication administration via bolus or infusion (analgesics, antiemetics, antibiotics), splinting for fractures, and support for non-invasive ventilation like CPAP/BiPAP, all adhering to sterile techniques and evidence-based protocols to prevent complications. Protocol-driven care amplifies efficacy through nurse-initiated orders in sepsis bundles (lactate measurement, cultures, fluids), stroke pathways (NIHSS scoring, thrombolytic prep), and chest pain protocols (ECG, troponin, antiplatelets), streamlining therapy and improving compliance with time-sensitive goals. These interventions, embedded in nurse-led workflows, enhance throughput and safety, with training ensuring competency in high-volume settings (Gomez et al., 2025).

Effective handover practices utilize structured tools like SBAR to transmit comprehensive patient data between shifts, EMS arrivals, and inpatient transfers, minimizing omissions that contribute to errors while interdisciplinary huddles coordinate with specialists for seamless flow. Charge nurses and clinical leaders oversee bed management, patient streaming, staffing allocation, and throughput metrics, intervening in bottlenecks to maintain departmental efficiency amid crowding. Nurses bridge EMS, diagnostics, and wards, advocating for resources and leading debriefs to refine processes (Smeulers et al., 2014).

Emergency nurses deliver emotional support through therapeutic presence, anxiety mitigation via clear explanations, and family inclusion in updates during crises, recognizing psychosocial distress as integral to holistic care. Patient education on diagnoses, treatments, and discharge plans empowers self-management, while family-centred approaches like unrestricted visitation reduce psychological burden and enhance satisfaction. Cultural safety entails responsive adaptations to diverse beliefs in time-critical contexts, fostering trust and equity via tailored communication (Secunda & Kruser, 2022).

Structured Assessment Frameworks

In emergency care settings, structured assessment frameworks such as HIRAID (History, Identify Red Flags, Assessment, Interventions, Diagnostics, communication, and reassessment) provide emergency nurses with a systematic approach to patient evaluation post-triage, addressing gaps in standardized care that contribute to clinical variation and undetected deterioration. Multicenter studies demonstrate that implementing HIRAID significantly reduces inpatient deterioration events within 72 hours of emergency department (ED) admission, with quasi-experimental data showing a drop from 27% to 13% in deterioration linked to ED care, alongside decreased treatment delays (from 28.3% to 15.1%) and failures in escalating abnormal vital signs (from 20.2% to 6.9%). Additionally, HIRAID improves time to analgesia, patient satisfaction, and medical handover quality, as evidenced by step-wedge randomized controlled trial protocols across 31 Australian EDs targeting 20% reductions in deterioration and analgesia delays, with feasibility testing confirming its acceptability among nurses. The integration of primary survey (ABCDE: Airway, Breathing, Circulation, Disability, Exposure) and secondary survey approaches further strengthens nursing assessments by enabling simultaneous rapid evaluation of life-threatening issues followed by detailed history and examination, as shown in ED studies where ABCDE was applied completely in 83%

of unstable patients with higher triage urgency, influencing timely actions in intensive care and trauma contexts (Curtis et al., 2023).

Major triage scales like the Emergency Severity Index (ESI), Manchester Triage System (MTS), and others exhibit varying validity and reliability in EDs, with ESI version 2 demonstrating reliable stratification across sites (kappa values indicating strong agreement) and low mortality gradients (25% for level 1 to 0% for level 5), though mistriage remains prevalent impacting waiting times, admissions, and critical outcomes. MTS shows moderate to substantial inter-rater reliability (kappa 0.55-0.78), influenced by nurses' clinical experience, emergency service tenure, and discriminator choice over flowchart selection, ensuring safe priority setting despite variability. Undertriage risks withholding interventions from severe cases, increasing mortality, while overtriage diverts resources, yet ESI outperforms three-tier systems in sensitivity, specificity, and resource allocation, with regular retraining enhancing accuracy regardless of experience. Nursing knowledge, specialized training, and decision-making profoundly affect triage accuracy and streaming; refresher programs boost categorization precision, with experienced nurses leveraging intuition and cognitive factors for better reliability, as simulation and theoretical training improve performance in high-pressure scenarios (Sax et al., 2024).

Early warning scores (EWS), such as the National Early Warning Score (NEWS), are widely implemented in EDs to facilitate risk stratification based on vital signs, significantly impacting escalation of care by predicting adverse outcomes like mortality (AUC 0.82 for 30-day), ICU admissions (AUC 0.72), CPR needs, and unplanned escalations, outperforming qSOFA in admitted patients. Implementation studies, including stepped-wedge designs, link NEWS to reduced time between alerting scores and subsequent observations, lower in-hospital mortality, cardiac arrests, and lengths of stay, with scores ≥6 or ≥7 signaling higher risks and prompting vital sign frequency increases and medical reviews (from 3.2% to 26.4%). Nurses play a central role in EWS measurement, interpretation, and response, using tools like NEWS and Individual EWS to guide deterioration detection amid workload pressures, though delegation to less experienced staff occurs; ward culture, patient acuity familiarity, and competencies determine escalation efficacy, with frameworks standardizing actions for timely physician involvement (Asgarzadeh et al., 2024).

Pain Assessment and Management

Pain represents one of the most common presenting complaints in ED populations, affecting approximately 55-70% of adult patients upon arrival, with prevalence varying by demographics such as age, socioeconomic status, and acuity level; however, documentation remains inconsistent, as nurses often underestimate patient-reported intensity due to challenges in subjective assessment tools and high workload pressures. Evidence supports nurse-initiated analgesia protocols using validated scales like the Numeric Rating Scale or Visual Analog Scale, which correlate with improved pain relief when integrated into triage workflows, yet barriers including fear of opioid dependency, incomplete physician orders, and overcrowding delay timely administration, leading to prolonged suffering and dissatisfaction. Pharmacological approaches led by nurses, such as intranasal fentanyl or ketamine for select cases alongside non-pharmacological methods like positioning, distraction, or cryotherapy, demonstrate significant short-term reductions in pain scores, with systematic reviews confirming nurse-driven multimodal strategies outperform physician-only models in speed and efficacy, though sustained implementation requires overcoming knowledge gaps and institutional policy hurdles (Abdolrazaghnejad et al., 2018).

Nurse-driven components form the backbone of sepsis bundles, including early lactate measurement, fluid resuscitation, and antibiotic timing within the first hour, alongside stroke protocols emphasizing door-to-needle times for thrombolysis under 60 minutes and chest pain/ACS pathways featuring rapid ECG acquisition and troponin trending, all of which rely on triage nursing vigilance to activate multidisciplinary responses. In trauma resuscitation, nurses coordinate massive transfusion protocols, airway management, and hypothermia prevention per Advanced Trauma Life Support guidelines, ensuring seamless integration with physician-led interventions during golden hour windows. High nursing adherence to these protocols

yields measurable improvements, such as reduced door-to-antibiotic times from over 3 hours to under 1 hour correlating with 10% lower long-term mortality in sepsis cohorts, shorter door-to-needle intervals slashing stroke disability rates, decreased ACS revascularization delays, and overall mortality drops of up to 14% in bundle-compliant trauma cases, underscoring the direct link between protocol fidelity and process metrics like length-of-stay and ICU admissions (Guo et al., 2014).

In crowded ED environments prone to aerosol-generating procedures and high patient turnover, nurses execute core infection prevention through rigorous hand hygiene compliance exceeding 80% during peak hours, strategic PPE donning for droplet/contact precautions, single-room isolation for suspected cases, and meticulous care of indwelling devices like central lines to avert catheter-associated infections. Evidence from multicenter audits confirms these practices curtail transmission rates of respiratory pathogens by 40-60%, with nurse-led environmental decontamination and cohort nursing proving vital amid surges. During outbreaks and public health emergencies, emergency nurses spearhead screening algorithms, contact tracing, vaccine point-of-distribution clinics, and surge capacity planning, drawing on disaster preparedness training to mitigate infectious threats like sepsis or novel viruses, with studies highlighting their role in reducing hospital-acquired infections by 25% through proactive surveillance and guideline enforcement (Liang et al., 2018).

Nurse-led discharge planning incorporates risk stratification tools to identify vulnerable patients, delivering tailored education via teach-back methods on medication reconciliation, symptom monitoring, and red-flag warnings for deterioration, alongside scheduling follow-ups to bridge gaps in primary care access. Structured safety netting, including verbal reinforcement and written instructions with contact protocols, empowers patients during transitions, particularly for high-risk groups like the elderly or those with comorbidities. Robust evidence from randomized pilots and cohort studies shows these interventions slash 7-30 day ED revisits by 7-50%, boost medication adherence up to 20%, and elevate satisfaction scores by 15-30 points on standardized scales, with nurse coordinators proving cost-effective in averting readmissions through enhanced self-management and continuity (Sakashita et al., 2025).

Implementation of Evidence-Based Practice in Emergency Departments

Emergency nurses often exhibit moderate baseline knowledge and positive attitudes toward evidence-based practice (EBP), though self-efficacy and engagement vary, with many perceiving gaps in higher-level evidence gathering skills despite access to basic resources. Studies highlight that pre-intervention assessments reveal emergency nurses rating their EBP knowledge as moderate, with cultural EBP scores higher at the unit level than organizationally, and significant correlations between attitudes, self-efficacy, and implementation behaviors. Interventions like randomized controlled trials demonstrate that EBP education can enhance these domains, peaking at six months post-training before gradual decline, underscoring the need for sustained strategies to maintain gains in skills and behaviors among emergency nurses (Koota et al., 2021).

Relationships between EBP competence and quality of care indicators show positive associations, where higher EBP proficiency correlates with improved patient outcomes, reduced variability in care, and better adherence to standards in high-pressure emergency settings. Competent emergency nurses demonstrate abilities in developing evidence-based care plans, coordinating interdisciplinary teams, and applying research to acute patient management, linking directly to metrics like timely interventions and error reduction. However, baseline self-assessments indicate room for growth, particularly in translating knowledge to practice amid dynamic ED demands, emphasizing EBP competence as a key driver for elevating overall care quality indicators (Adombire et al., 2024).

The "flow culture" in emergency departments prioritizes patient throughput and bed availability, creating tensions with guideline adherence and screening routines, as these are often perceived as impediments to rapid patient progression. Nurses report that nutrition screening and similar protocols halt workflow, fostering guilty consciences over nonadherence and prioritizing newcomers' differing focuses, which

undermines evidence-based routines in favor of expediency. Organisational pressures exacerbate this, with ED overcrowding from nonurgent visits, staffing shortages, and bed unavailability leading to delayed treatments, higher costs, and deteriorated patient conditions, all of which diminish nurses' capacity for consistent EBP delivery (Charan et al., 2025).

Time pressure, crowding, and performance metrics profoundly shape nurses' EBP implementation, as clinicians balance work demands to maximize flow, often sidelining research-supported practices under ambulance diversion risks and seasonal surges. Overcrowding intensifies stress, burnout, and turnover among ED nurses, prolonging wait times and compromising care quality, with unnecessary visits due to absent standard procedures further straining resources. These dynamics highlight how metric-driven cultures inadvertently prioritize volume over evidence, necessitating strategies to reconcile flow imperatives with guideline fidelity for sustainable EBP uptake (Guerrero et al., 2024).

EBP education programs, journal clubs, advanced practice roles, and mentorship in EDs yield measurable outcomes, including boosted attitudes, knowledge, self-efficacy, skills, and behaviors, with journal clubs enhancing clinical relevance, confidence, and practice changes through tailored, engaging formats. Mentorship programs for transitioning nurses foster support, empowerment, teamwork, and morale, while residency integrations with EBP projects demonstrate cost savings, such as optimized medication administration, alongside improved workflow and patient care. These interventions, combining didactic, project-based, and coaching elements, elevate clinicians' EBP beliefs and organisational readiness, directly benefiting safety and professionalism in fast-paced ED environments (de Beer et al., 2025).

Integrating EBP into orientation and professional development for emergency nurses builds foundational competencies through simulation-based training, workshops, and residency exemplars, empowering novices to question outdated practices and drive improvements. Programs emphasizing core emergency skills alongside EBP projects equip graduate nurses with tools for guideline application, enhancing confidence and reducing transition stress in critical roles. Continuous development via interprofessional orientations and tailored workshops sustains these gains, fostering a culture where EBP becomes embedded in daily professional growth and acute care delivery (Roncallo et al., 2020).

Electronic health records (EHRs), order sets, clinical decision support systems (CDSS), and surveillance tools transform ED nursing by automating vital monitoring, ensuring accurate documentation, and facilitating rapid overviews, thereby easing daily workflows. Nurses report these digital aids increase efficiency in blood product administration and reduce pressure, allowing greater patient focus amid acute demands. Broad applications support diagnostic decisions, guideline adherence, medication management, and situational awareness, with intelligent CDSS at triage enhancing professional judgment and clinical outcomes when properly validated (Leonardsen et al., 2024).

Digital tools significantly boost guideline adherence, triage accuracy, and deterioration monitoring in ED nursing, with EHR alerts prompting protocol activation and improving utilization across cohorts. Validated CDSS integrations lead to better decision-making, resource optimization, and patient safety, though implementation phases are crucial for measuring key performance impacts. Despite occasional communication shifts or role adjustments, these technologies overall elevate care quality by bridging evidence to practice in real-time emergency scenarios (Holmes et al., 2015).

Advanced and Extended Emergency Nursing Roles

Emergency nurse practitioners (ENPs) and other advanced practice roles in emergency departments (EDs) encompass a broad scope of responsibilities, including comprehensive patient assessments, ordering and interpreting diagnostic tests, prescribing treatments from predefined protocols, and managing low- to moderate-acuity cases across diverse presentations such as abdominal pain, chest pain, and minor injuries. These roles have expanded significantly, with an estimated 25,000 ENPs in U.S. EDs alone, supported by rigorous educational preparation, national certification, and state-specific credentialing that ensures

competence in high-stakes environments. Outcomes demonstrate high diagnostic accuracy, comparable to physicians, with ENPs achieving adherence to evidence-based guidelines for conditions like acute coronary syndrome and showing low rates of clinically important errors (around 9-10%), while excelling in history-taking and reducing unplanned follow-ups. Evidence further highlights cost-effectiveness through optimized resource use, enhanced patient satisfaction (often exceeding 90% willingness to return), improved throughput via shorter clinician-to-discharge times (e.g., 5.9 vs. 8.9 hours), and maintained safety profiles with no major adverse events in large cohorts (Roche et al., 2017).

Nurse-led clinics and fast-track services in EDs target minor injury/illness streams, observation units, and follow-up care, where advanced nurses independently manage low-acuity patients, perform rapid assessments, initiate protocols for diagnostics and treatments like analgesics or troponin tests, and facilitate timely dispositions including safe discharges (up to 75% of cases). These models significantly reduce waiting times, ED length of stay (LOS), and did-not-wait rates, with examples including 186-minute reductions in time to analgesics, 79-minute drops in troponin processing, and overall LOS decreases of 25 minutes for admitted patients, while boosting proportions seen within four hours from 83.9% to 96.3%. Impacts extend to alleviating ED crowding by enhancing patient flow, lowering left-without-being-seen (LWBS) rates, and sustaining quality of care through high patient satisfaction and continuity, as seen in interventions that cut re-attendance and improved self-care abilities without compromising safety. Operational fast-track systems further link to broader quality metrics like shorter hospitalization waits and reduced errors in triage timing (Vella et al., 2024).

Emergency nurses play pivotal roles in leadership, clinical governance, and policy through guideline development, audits, quality improvement initiatives, and incident reviews, fostering patient safety, evidence-based practice, and accountability via rapid decision-making, team coordination, and resource management in unpredictable settings. These contributions manifest in transformational and shared leadership models that promote resilient cultures, constructive error analysis, continuous learning, and alignment of practices with strict criteria, ultimately driving systemic improvements in health outcomes. Nurses influence policy and service design by participating in regional emergency care planning, surge capacity strategies, interprofessional collaboration, and workflow optimizations such as nurse-initiated protocols or navigators that address overcrowding, enhance ED efficiency, and support equitable, patient-centered care amid challenges like staffing shortages and pandemics. Integration of leadership with governance pillars like risk management and clinical effectiveness strengthens organizational transformations, positioning nurses as key architects of sustainable emergency systems (Nadarajan et al., 2020).

Paediatric Emergency Nursing

Paediatric emergency nursing demands specialized approaches to assessment, triage, communication, and family involvement due to children's unique physiological, developmental, and psychological needs in crowded emergency departments. Nurses employ validated tools like the Paediatric Assessment Triangle (PAT) for rapid prioritization, which proves effective in both prehospital and hospital settings for guiding interventions and determining care levels, while emphasizing training to ensure accuracy. Evidence-based protocols for common emergencies such as sepsis and trauma reduce morbidity and mortality through standardized care, with studies showing up to 40% less treatment variability and 15% lower mortality when adhered to rigorously; family-centered communication enhances satisfaction and outcomes by addressing parental emotional needs, reducing anxiety during invasive procedures, and incorporating parental urgency estimates into triage for better accuracy. Safety considerations include minimizing overcrowding via quality improvement initiatives from networks like PECARN, integrating telemedicine for rural access, and fostering family presence to lower pain and anxiety without procedural disruptions (Tørisen et al., 2024).

Geriatric patients in emergency settings present complex challenges from multimorbidity, frailty, cognitive impairment, and polypharmacy, necessitating tailored nursing assessments using tools like the Clinical Frailty Scale within comprehensive geriatric assessments to inform multidisciplinary care plans. Nurses

implement geriatric-focused protocols that prioritize early frailty identification, coordinated referrals, and interventions to avert delirium, falls, and functional decline, as systematic reviews highlight the need for pharmacologic and non-pharmacologic strategies in emergency departments to shorten delirium duration and severity. European expert recommendations endorse delirium prevention through environmental modifications, medication reviews, and mobility aids, while models for subspecialty guidelines address geriatric syndromes to optimize care amid resource constraints. These approaches mitigate risks by adapting critical care services, conducting multidisciplinary meetings for individualized plans, and disseminating tools like ADEPT for recognition and management as core competencies (Tan et al., 2022).

Emergency nurses play pivotal roles in evaluating self-harm, suicidality, agitation, and substance-related crises, applying de-escalation skills rooted in verbal techniques like active listening, empathy, and calm tone, alongside nonverbal cues such as body language and personal space respect to build rapport and avert escalation. Collaboration with mental health teams involves triage tools, risk assessments, and structured frameworks like Safe Steps, which enhance relational capabilities, reduce restrictive practices through simulation training, and address ethical/legal issues in psychiatric emergencies. Competencies for acute mental health triage encompass psychopathology knowledge, law familiarity, and crisis intervention to manage behaviours effectively, with forensic nursing strategies emphasizing emotional intelligence and early warning responses. These evidence-based methods promote safer environments by legitimizing proactive engagement and restructuring unit dynamics for better patient-staff interactions (Price et al., 2024).

In disasters and mass-casualty incidents, emergency nurses execute triage using uniform regional protocols to allocate scarce critical care resources, prioritizing surge capacity activation only when augmentation fails under declared emergencies. Lessons from pandemics underscore nursing roles in triage, infrastructure planning, and resilience, with mass casualty management demanding efficient resource rationing to maximize survivors amid overwhelming casualties. Evidence supports coordinated systems for MCI response, including rapid personnel mobilization within 15-90 minutes of surges, and adaptations from COVID-19 highlighting nurses' contributions in preparedness, ethical rationing, and public health integration. These practices enhance outcomes through pre-planned overflow strategies, regional cooperation, and post-event evaluations to bolster adaptation and staff readiness (Christian et al., 2014).

Clinical Outcomes

Emergency nursing assessments and interventions directly impact mortality, morbidity, complication rates, unplanned ICU admissions, and patient deterioration by enabling early recognition and response to critical changes. Studies show that higher proportions of registered nurses in staffing mixes correlate with reduced 30-day mortality and failure-to-rescue rates, as nurses provide vigilant monitoring and rapid interventions that prevent escalation of conditions like sepsis or cardiac events. Nurse staffing levels, skill mix, and competencies further modulate these outcomes; for instance, each additional patient per nurse increases mortality risk by 7%, while baccalaureate-prepared nurses contribute to 5% lower death rates through enhanced clinical judgment and evidence-based practices in high-acuity environments. In emergency departments (EDs), where patient acuity varies unpredictably, optimizing nurse-to-patient ratios and specialized training reduces complication rates and unplanned transfers, underscoring nursing's pivotal role in stabilizing trajectories and averting adverse events (Feller et al., 2023).

Nursing-driven processes enhance ED throughput, including reduced waiting times, length of stay (LOS), and time-to-treatment for critical interventions like analgesia, antibiotics, or thrombolysis, while promoting adherence to evidence-based protocols. Nurse-initiated interventions, such as analgesia protocols and triage optimizations, shorten time-to-treatment metrics and lower LOS by up to 37 minutes compared to standard triage, directly addressing overcrowding through efficient flow management. Skill mix improvements and nurse-led initiatives, like fast-track units or team triage, further boost performance by decreasing left-without-being-seen rates and enhancing protocol compliance, which collectively mitigate delays that exacerbate patient risks. These outcomes reflect nursing's capacity to streamline care delivery, with

systematic reviews identifying 35 nursing-sensitive indicators where nurse actions measurably improve ED efficiency and resource utilization (Feller et al., 2023).

Nursing care shapes patient and family satisfaction through effective communication, trust-building, and emotional support, particularly in high-stress ED encounters. Evidence links nurse-led care to higher satisfaction scores, driven by empathy, clear explanations, and reduced wait times, with vulnerable groups like children, elderly, and culturally diverse patients reporting amplified benefits from tailored assessments and family-centered approaches. For elderly patients, nurse interventions addressing comorbidities and discharge planning enhance perceived quality, while culturally sensitive communication fosters trust and reduces anxiety in diverse populations. Overall, these experiences correlate with nursing competencies in holistic care, where patient-centered metrics like satisfaction with triage and support predict loyalty and compliance with follow-up (Oyegbile & Brysiewicz, 2023).

Emergency nurses face unique stressors, yet evidence-based practices link job satisfaction, reduced burnout, and resilience to improved retention and organisational performance. Moderate burnout levels (over 60%) prevail due to high workloads, but enriched skill mixes and supportive environments lower turnover intentions by enhancing resilience and professional fulfillment. Organisational outcomes benefit from strong safety cultures, where nurse-led innovations reduce incident rates and demonstrate cost-effectiveness through fewer adverse events and optimised staffing. Prioritising nurse competencies and collaboration fosters these gains, yielding lower turnover and safer systems overall (Twigg et al., 2021).

Barriers and Facilitators to Evidence-Based Emergency Nursing Practice

Individual-level factors significantly influence the adoption of evidence-based practice (EBP) among emergency nurses, encompassing knowledge gaps, attitudes toward research utilization, self-efficacy in applying evidence, and perceived clinical autonomy in high-pressure environments. Knowledge deficits often manifest as unfamiliarity with research methodologies, limited skills in critically appraising evidence, and challenges in translating findings into actionable protocols amid rapid decision-making demands characteristic of emergency departments (EDs). Attitudes toward research can be shaped by skepticism regarding its relevance to chaotic ED workflows, where immediate patient stabilization often supersedes systematic evidence integration, compounded by low EBP self-efficacy which studies show remains moderate even post-education, with improvements peaking at six months before declining. Clinical autonomy further complicates this, as nurses navigate tensions between evidence-driven interventions and institutional protocols prioritizing throughput efficiency over individualized care. Professional identity plays a pivotal role, with emergency nurses viewing themselves as frontline responders whose role clarity emphasizes rapid triage and stabilization rather than research advocacy, often leading to ethical dilemmas when flow pressures such as boarding patients due to inpatient shortages conflict with patient-centered, evidence-informed care. These factors interconnect, where a strong professional identity rooted in autonomy can facilitate EBP if supported by training, yet ethical perspectives prioritizing holistic care clash with utilitarian demands to minimize door-to-door times, perpetuating resistance (Alsadaan & Ramadan, 2025).

Organizational and environmental factors represent systemic hurdles to EBP in emergency nursing, prominently including suboptimal staffing levels, heterogeneous skill mixes, excessive workloads exacerbated by ED crowding, and inefficient departmental layouts that hinder seamless patient flow and evidence application. Insufficient staffing, particularly in private and specialized hospitals, correlates negatively with EBP intentions ($r = -0.17$ to -0.35), as high nurse-to-patient ratios delay evidence-based assessments like timely antibiotic administration in sepsis cases, while skill mix imbalances limit knowledge dissemination. Workload intensifies during crowding, where throughput bottlenecks from ancillary service delays and boarding consume resources, reducing time for guideline adherence; ED layouts with poor visibility and equipment accessibility further impede rapid EBP execution, such as protocol-driven pain management or resuscitation algorithms. Access to resources remains inconsistent, with barriers like unavailable digital tools, outdated guidelines, inadequate education programs, and limited

equipment (e.g., for point-of-care testing) undermining implementation, while management support or its absence determines whether policies prioritize EBP through resource allocation or perpetuate tradition-bound practices. Leadership experience positively influences facilitators like policy support (p=0.015), yet environmental pressures like prolonged lengths of stay during peaks strain even supportive structures, highlighting the need for institution-wide solutions beyond ED capacity expansions, which merely amplify boarding without addressing root causes (McKenna et al., 2019).

Interprofessional and cultural factors profoundly shape evidence-based emergency nursing practice, where teamwork dynamics, mutual respect across disciplines, and communication patterns either enable or obstruct EBP integration in multidisciplinary ED teams. Effective interprofessional collaboration requires structured communication to mitigate errors, as simulation-enhanced training fosters role clarity and psychological safety, enabling nurses to assert evidence-based recommendations during resuscitations or handoffs; however, hierarchical barriers and poor patterns hinder this, particularly when physicians override nursing input on protocols. Cultural competence emerges as critical in diverse ED populations, demanding responsiveness to patients' beliefs, language barriers, and socioeconomic vulnerabilities during disasters or surges, where minority groups face heightened risks due to distrust or access disparities; nurses must balance evidence with culturally tailored care, such as adapting pain assessments for non-verbal cues in immigrant patients, yet gaps in training perpetuate biases. These factors intersect, as interprofessional respect enhances cultural responsiveness while communication training improves outcomes in high-stakes scenarios, underscoring the need for ongoing education to align diverse team perspectives with EBP standards (Eisenmann et al., 2018).

Strategies to overcome barriers to evidence-based emergency nursing practice emphasize multifaceted, evidence-informed approaches like appointing clinical champions, establishing EBP councils, allocating protected time, and embedding structured quality improvement (QI) programs tailored to ED contexts. Clinical champions frontline nurses or managers drive change through peer mentoring, as seen in initiatives sustaining screening protocols like intimate partner violence assessment, where self-nominated teams navigate complexities via daily reinforcement and executive buy-in; EBP councils facilitate guideline adaptation, while protected time counters workload barriers, allowing journal clubs or audits. QI programs, informed by frameworks like Theoretical Domains, address individual and organizational gaps through iterative cycles, with training yielding sustained gains in attitudes and self-efficacy. Professional organizations like the Emergency Nurses Association (ENA) bolster these via standards, position statements on violence prevention or pediatric readiness, and resources promoting safe practice, advocating zero-tolerance policies and competencies for EBP translation. Integrating these maximizes impact, with leadership commitment essential for resource reallocation and cultural shifts (Saberi et al., 2025).

Emerging Trends and Innovations in Emergency Nursing Practice

Digital health technologies, including telehealth, virtual triage, and teleconsultation, have transformed emergency nursing workflows by enabling remote patient assessments, real-time consultations with specialists, and efficient triage decisions that reduce unnecessary emergency department visits. These tools integrate seamlessly into nursing practice through platforms that support video-based evaluations, symptom analysis algorithms, and nurse-led virtual follow-ups, particularly for non-critical cases such as minor injuries, wound monitoring, or post-discharge care, thereby optimizing resource allocation and enhancing patient flow in high-volume settings. Studies highlight improved clinical outcomes, such as fewer escalations to full emergency care and better management of episodic conditions, with telenursing demonstrating high provider satisfaction and potential for disaster response by minimizing physical exposures and enabling flexible workforce deployment (Nejadshafiee et al., 2020).

The implications of these digital innovations extend to greater access for underserved populations, enhanced patient safety through early detection and remote monitoring, and the evolution of nurse competencies to include digital literacy, virtual communication skills, and ethical decision-making in remote scenarios. Tele-emergency support addresses disparities in rural or remote areas by providing hub-

and-spoke models where nurses conduct limited physical exams via telemedicine, leading to dispositions like on-site management or targeted transfers, while also supporting family presence and reducing risks like violence or infections. However, challenges such as communication limitations, reliance on patient-reported data, and needs for standardized training underscore the requirement for new competencies in technology integration, patient safety protocols, and interdisciplinary collaboration to ensure equitable and safe implementation across emergency nursing practice (Subramanian & Pamplin, 2024).

High-fidelity simulation and in-situ drills have become cornerstone methods for training emergency nurses in complex skills like resuscitation, trauma management, disaster response, and handling rare events, replicating real-world chaos to improve team dynamics, role clarity, and nontechnical skills such as communication and leadership under pressure. These immersive scenarios, often conducted in emergency departments or simulation labs with durations of 40-60 minutes followed by structured debriefing, target high-stakes situations including blunt trauma with pneumothorax, traumatic brain injury, or mass casualty incidents, fostering interprofessional teamwork in low-volume rural centers where live exposures are limited. Evidence shows these approaches enhance performance in actual resuscitations, boost provider confidence, and address gaps in pediatric or high-acuity care, making them cost-effective despite initial investments when compared to traditional training (Knapp, 2023).

Lifelong learning frameworks in emergency nursing emphasize continuous competency assessment, credentialing, and micro-credentialing to bridge gaps between education and practice, particularly for new graduates transitioning to high-pressure environments requiring triage proficiency, clinical reasoning, and specialized procedures. Programs integrate simulation with competency-based evaluations, specialist training, and ongoing education platforms to maintain skills in evolving areas like bioterrorism readiness or advanced life support, promoting self-directed learning and performance documentation through certification models. These strategies not only elevate perceived competence and patient safety but also support career progression, with higher education levels and positions correlating to stronger emergency nursing capabilities, ultimately enhancing care quality across the workforce (Olson et al., 2008).

Artificial intelligence and predictive analytics tools are revolutionizing emergency nursing by offering risk prediction for patient deterioration, sepsis onset, or departmental crowding, allowing nurses to intervene earlier through real-time alerts from electronic health record data analyzed via machine learning models like logistic regression, neural networks, or ensemble methods. These AI systems outperform traditional scores such as qSOFA, MEWS, or SIRS in accuracy (e.g., AUROC up to 0.96), enabling proactive monitoring in ICUs or emergency departments, reducing mortality, rehospitalizations, and lengths of stay by facilitating timely antibiotics or fluid management. Nurses play pivotal roles in deploying these tools for decision support, integrating outputs into workflows for sepsis screening or crowding mitigation, with prospective evidence showing clinical benefits in diverse settings including non-ICUs (Islam et al., 2023).

Ethical and practical considerations for AI integration into nursing workflows include ensuring data privacy, addressing algorithmic biases in retrospective validations, and balancing automation with human oversight to avoid over-reliance that could compromise nuanced clinical judgment. Challenges encompass cross-population robustness, needs for clinician training on interpreting AI outputs, and prospective implementation to confirm reductions in sepsis-related outcomes amid resource constraints. Frameworks stress multidisciplinary validation, minimal data requirements for broad applicability, and policies for accountability, positioning nurses as key interpreters to maximize benefits while mitigating risks like diagnostic errors in high-stakes emergency care (Authors et al., 2022).

Expanding scopes of practice for emergency nurses now encompass contributions to community-based urgent care, hospital-at-home models, and integrated unscheduled care systems, where nurses lead triage, home visits, virtual assessments, and care transitions to alleviate emergency department burdens. In hospital-at-home programs, nurses conduct twice-daily visits with telemedicine support, managing acute conditions like those requiring hospital-level care directly from patients' homes, screened via emergency department evaluations for suitability including caregiver competence and home safety. These models,

including fast-track, minor injury, or geriatric streams, yield outcomes like shorter lengths of stay, lower costs, reduced left-without-being-seen rates, and comparable or superior results to physicians, fostering continuity and self-care abilities (Galiana & Haseltine, 2019).

Integration of emergency nursing expertise across the acute care continuum involves nurse practitioners in generalized, pediatric, or orthopedics models, alongside patient navigators aiding older adults' transitions, and community services preventing admissions through proactive interventions. Unscheduled home consultations by registered nurses handle tasks from wound care to emotional support, promoting cost-effective alternatives that enhance recovery and reduce psychological burdens. This evolution supports policy priorities for innovation amid overcrowding, with advanced practice roles optimizing primary-to-acute flows and demonstrating sustained improvements in metrics like wait times and resource use (Horvath et al., 2023).

Conclusion

Emergency nursing in high-acuity settings demands evidence-based approaches to optimize patient outcomes amid persistent challenges like crowding and resource constraints. Synthesizing roles from triage to advanced interventions reveals nurses' pivotal impact on mortality reduction, throughput efficiency, and satisfaction through structured frameworks like HIRAID, EWS, and protocol-driven care. Future directions emphasize digital innovations, simulation training, and expanded scopes to bridge EBP gaps, fostering resilient systems via leadership, interprofessional collaboration, and policy reforms.

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