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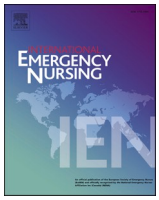

Review

Evaluation of an advanced nurse practitioner led emergency rapid assessment and treatment service

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ABSTRACT

Background: Emergency Departments (EDs) globally face persistent challenges, including overcrowding and workforce shortages, which negatively impact care quality and efficiency. Advanced Nurse Practitioners (ANPs) have demonstrated value in improving patient satisfaction, reducing wait times, and delivering cost-effective care. In Ireland, the ANP role is well-defined and regulated, supporting autonomous clinical practice.
Local problem: At Tallaght University Hospital (TUH), a significant proportion of ED presentations—abdominal pain, and chest pain was found to consume disproportionate clinical hours. A new ANP-led Emergency Rapid Assessment and Treatment (ERAT) service was introduced to target these low-acuity, high-contact-hour cohorts and alleviate ED pressures.
Method: This service evaluation, conducted between September 2022 and April 2025, assessed ERAT's feasibility, safety, impact on ED process times, and patient satisfaction.
Results: ERAT managed 2,518 patients, with no major adverse events or in-hospital deaths. Most patients (1,766, 74.8 %) were safely discharged. While overall ED length of stay did not differ, ERAT patients had significantly shorter clinician-to-discharge times (5.9 vs. 8.9 h, $p < 0.05$). Of the 56 abdominopelvic CT scans ordered, 42 scans (75 %) showed acute pathology. Eighty of the 85 (94.1 %) patients who completed a patient satisfaction questionnaire reported strong agreement that care met their expectations.
Conclusion: The ERAT service is a feasible, safe, and patient-centred model for managing targeted ED presentations. Findings support ANP-led services as an effective strategy to enhance ED efficiency, optimize care delivery, and improve patient satisfaction in acute care settings.

1. Background and problem statement

Globally, Emergency Departments (EDs) are challenged with overcrowding [1] and medical/nursing staffing recruitment and retention [2]. These factors negatively impact ED length of stay which is associated with in-hospital mortality [3]. In, Htay and Whitehead systematic review demonstrated the positive impact of advanced nurse practitioners (ANPs) on clinical and service-related outcomes such as patient satisfaction, waiting times and cost-effectiveness especially when directly compared to medical practitioner-led care [4].

ANP roles working within specified scopes of practice have been shown to deliver quality and efficient patient care reducing ED process times [4]. Recently Thompson et al, argued that ANPs are well-positioned and prepared to model and lead the implementation of person-centred care ED settings [5].

In Ireland, the registered ANP (RANP) role was first accredited in 2002 and is defined by the Irish Nursing and Midwifery Board of Ireland as a "career pathway for registered nurses, committed to continuing professional development and clinical supervision, to practice at a higher level of capability as independent, autonomous, and expert practitioners" [6]. Nurses can register as a Registered ANPs (RANPs) if they have successfully completed an approved Master of Science (MSc) in Nursing (Advanced Practice Nursing) programme. Nurses can be appointed in candidate ANP (cANP) roles while they are completing their advanced practice training. RANPs are regulated by the Nursing and Midwifery Board of Ireland. RANPs can initiate an investigation and

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management plan and complete an episode of care leading to discharge or referral to an appropriate service.

Tallaght University Hospital is based in the southwest of Dublin, Ireland with a catchment population of 450,000. The hospital's ED had 55,468 presentations in 2023. The Emergency Rapid Assessment and Treatment (ERAT) service was designed in the ED in line with service needs and in the interest of quality and integrated patient care. The ERAT service was planned to work alongside an already established and successful ANP led ambulatory care service that focusses on injury related presentations.

The target patient cohort was low acuity and non-injury related emergency presentations associated with high ED patient contact hours. Identifying the appropriate target patient cohort in was informed by a review of all ED attendances in 2023. There were 55,468 attendances to TUH ED in 2023. Of these, 13,890 patients (25 % of all ED presentations) were triaged as "abdominal pain", "chest pain" and "breathless" as per Manchester triage categorisation. The same data set showed that the presentations triaged as "abdominal pain", "chest pain" and "breathless" consumed 216,243 (31.8 %) of the total 680,388 h spent on patient care in our ED in 2023. The new service was designed for these specific cohorts and the agreed patient care pathways were designed within a defined scope of practice for the ANPs.

1.1. Project aim

This paper describes the design and evaluation the ERAT service. The primary aim of the evaluation was to quantify the number of patients seen by the ERAT service. The secondary aims were to quantify the number of adverse outcomes; ED disposition of patients by the ERAT service; ED length of stay of patients seen by ERAT service; positivity rate of abdominopelvic computed tomography (CT) scans ordered by the ERAT service for acute clinically significant pathology such as appendicitis, diverticulitis and bowel obstruction.

2. Methods

An ethical application was submitted, and no ethical concerns were identified by the joint research ethics committee of Tallaght University Hospital and St James's Hospital (Project ID: 4157). The project was classified and approved as a service evaluation by Tallaght University Hospital's Quality Safety Risk Management Department.

2.1. Study setting

Tallaght University Hospital ED is an adult department which sees patients who are aged 16 years and above. The ED is staffed by 7 whole time equivalent (WTE) emergency medicine consultants, 17 registrars, 12 senior house officers and 2 interns. The ANPs compliment consists of 2 WTE ERAT ANPs and 5.5 WTE ambulatory care ANPs.

The scope of the practice and inclusion criteria for ERAT service was agreed between the RANPs, consultant in emergency medicine lead for the ERAT service and the Director of Nursing (Table 1). The ERAT scope of practice is underpinned by locally agreed care pathways and bundles and/ or evidence based clinical decision rules (Table 1).

Table 1
ED presentations within ERAT scope of practice.

ED presentations within ERAT scope of practice
Acute respiratory illness
• Respiratory tract infections
• Acute exacerbation Chronic Obstructive Airway Disease and Asthma
• Pleuritic chest pain
Abdominal Illness/conditions
• Undifferentiated abdominal pain
• Acute urology conditions such as urinary tract infection and suspected renal calculi
Suspected cardiac presentations
• Suspected low risk acute coronary syndrome
Lower limb pain/swelling
• Suspected Lower Limb Deep Venous Thrombosis (DVT)

Exclusion criteria for ERAT service are detailed in Table 2. The ERAT ANPs manage patients aged between 16 and 65 years. Patients aged 65 years and older are excluded from the ERAT service due to the higher likelihood of complex presentations with multiple co-morbidities in older persons. Pregnant women are excluded given the added complexity associated with obstetric morbidity.

The ERAT ANPs autonomously assesses, diagnoses, prescribes, treats, refers or discharge patients who meet the service's scope of practice. If, upon review, a patient is found to meet exclusion criteria, they are referred to an emergency medicine clinician for assessment.

The clinical governance of patients seen by the ERAT remains with the emergency medicine consultants. The ERAT ANPs are clinically supervised by a consultant in emergency medicine and operationally report to the ED director of nursing. Since January 2025, there have been two registered ANPs working 07.30–20.30 h providing a seven-day service.

2.2. Training of the ERAT ANPs

In October 2022, two cANPs, candidate ANPs (cANPs) commenced their vocational training for the ERAT service while simultaneously completing their MSc in advanced practice nursing. Both cANPs had a combined experience of over 20 years' experience in emergency nursing. The cANPs completed a post graduate diploma in emergency nursing, certificate in advanced health assessment and a masters (MSc) in clinical practice. A consultant in emergency medicine mentored and supervised the cANPs.

The cANPs attended Trinity College Dublin for theoretical learning in advanced practice. The cANPs' competency in advanced practice, clinical decision-making, the prescribing of medicinal products, and the use of ionising radiation was assessed through ongoing evaluation and the successful completion of the academic portfolio.

The cANPs completed registration as RANPs and Registered Nurse Prescribers (RNPs) with the Nursing and Midwifery Board of Ireland (NMBI) and commenced in the roles as registered ANPs in 2024 and in January 2025 respectively. One cANP had deferred registration due to interim maternity leave.

2.3. Addition of the DVT ambulatory pathway to the ERAT scope of practice

In October 2024, the ED Clinical Operations Group elected that ED return patients on the suspected Deep Venous Thrombosis (DVT) ambulatory care pathway were to be seen by the ERAT service.

Patients who have a suspected lower limb DVT are booked by emergency clinicians to return for dedicated ultrasound Doppler slots. Following the Doppler ultrasound, patients are advised to present to the ERAT service for review. Patients with positive results, are referred to the acute medicine team for ongoing management. Patients with negative Doppler results, the ERAT service review the patients and organise an appropriate follow-up.

2.4. Measurement

The ERAT service was evaluated between 1st September 2022 and 30th of April 2025. The number of patients and their associated demographics seen by the ERAT service was collated. The number of undifferentiated unscheduled attendances and the number of scheduled return patients on the suspected lower limb DVT pathway were collated. Clinical presentation of unscheduled ED patients seen by ERAT service was categorized using the Manchester triage discriminators.

For the purposes of this evaluation, adverse outcomes were defined as patient mortality during period seen by ERAT service or unexpected

Table 2
Exclusion criteria for the ERAT service.

- Triage categories 1 and 2*
  * Triage Category 2 patients may be considered for the ERAT service following consultation with the emergency physician in charge. For example, a patient presenting with suspected renal colic may initially be triaged as Category 2 due to severe pain but could be suitable for the ERAT service once timely analgesia has been administered
- Patients under the age of 16 or over the age of 65
- Patients with Irish National Early Warning Score > 3 [7]
- Patients with multiple medical issues or complex past medical histories
- Pregnant patients
- Patients hemodynamically unstable, confused or agitated.
- Patients presenting with psychiatric related/ mental health related presentations
- Trauma and/or musculoskeletal related presentations

admission to critical care from the ERAT service.

Disposition patients seen by the ERAT service was collated including how many were discharged from the ED, how many were referred to inpatient teams and how many patients left before completion of treatment.

In the Donabedian model, process indicators assess the quality of healthcare by measuring the actual delivery of services [8]. In this study, the ED process indicators included total ED length of stay, and the ED process times from the ERAT ANP starting to see a patient to the time that they have discharged or referred the patient to an inpatient specialty.

The positivity rate for abdominopelvic CT scans ordered by the ERAT service between September 2024 and January 2025 for acute clinically significant pathology was collated.

The service evaluation also endeavoured to capture qualitative feedback from patients seen by ERAT service to inform service improvement. Patients seen by the ERAT service between January 2025 and April 2025, were offered the opportunity to complete a questionnaire anonymously. Patients were asked to rate on a 5-point Likert scale from strongly disagree to strongly agree if they considered if the ERAT ANP managed to deal with their issue to the patient's satisfaction and the communication and information provided by the ERAT ANP regarding their discharge or referral onward to specialty teams.

2.5. Data collection

Data pertaining to patients seen by the ERAT ANPs, in the study timeframe was collected on the ED information system, known as "Symphony ". The patient specific data points were collected: age, gender, Manchester triage presenting complaint categorisation; ED disposition; ED length of stay and ED process times.

Missing data was minimised as any missing data was retrieved by requesting the hard copies of patients' clinical charts to review their clinical records.

2.6. Statistical analysis

Descriptive statistics were performed. Data are expressed as mean for normally distributed continuous data and count (%) for discrete data. Independent *t*-test was used to compare means between two groups on the same continuous dependent variable. P value <0.05 was considered statistically significant.

3. Results

There was 153,317 number of attendances to TUH ED between 1st September 2022 and 30th April 2025. In the study timeframe, the ERAT service saw 2,518 ED patients on single episodes of care. There were 1705 females and 813 males in the cohort. The mean age of patients seen by the ERAT service is statistically significantly younger than the mean age of the entire cohort of patients (38.8 years of age versus 47.6 years of age, $p < 0.05$).

Most patients seen (n = 2,361), were unscheduled ED attendances and 157 related to return patients on the suspected lower limb DVT pathway (Fig. 1).

None of the patient cohort died in-hospital and there were no reported major adverse events reported pertaining to cases seen by the ERAT ANPs.

3.1. Clinical categorisation of unscheduled ED patients seen by ERAT service

The commonest presenting complaint as categorized by Manchester triage was abdominal pain (46.2 %), followed by chest pain (12.2 %) and urinary problems (4.7 %) (Table 3).

3.2. Disposition of patients seen by ERAT service

74.8 % of unscheduled ED patients (n = 1,766) seen by the ERAT service were discharged from ED with a discharge letter issued electronically to their GP detailing the outcome of the consultation. 752 patients were referred to inpatient specialty teams for ongoing management. One hundred thirty-nine patients (5.5 % of all ERAT patients) selected by the ERAT service for review had left the ED before seeing a clinician. The ERAT clinicians rang these patients and advised to return or otherwise follow up with their GP. Fifty patients were referred to urology outpatient on the agreed ureteric pathway for follow-up.

There were no reported major clinical adverse events reported.

3.3. ED process indicators

There was no overall difference in overall mean ED length of stay for patients seen by the ERAT service compared to all ED patients, 12.3 h versus 12.3 h, $p = 0.9$. There was a statistically significant difference in the meantime in hours from the clinician seeing patient to patient leaving the ED between the ERAT service and all patients 5.9 h versus 8.9 h respectively ($p < 0.05$).

The mean time from start of ERAT ANP seeing a patient to discharge or referral to an inpatient specialty for all patients during the study period was 2.74 h.

3.4. Positivity of abdominopelvic CT scans

Between September 2024 and January 2025, 218 patients were seen by the ERAT service. Of these, 56 (25.7 %) had abdominopelvic CT scans performed. 42 of the 56 (75 %) abdominopelvic CT scans had acute pathological findings. 14 patients who had normal CT were safely discharged home from the ED by the ERAT service.

3.5. Patient satisfaction with ERAT service

Between March and April 2025, 563 patients were managed by the ERAT service. 85 patients completed a patient satisfaction survey, representing a 15 % response rate. 80 (94.1 %) of respondents reported that they strongly agreed and 5 (5.9 %) of respondents agreed that the ERAT service managed to deal with the patient's satisfaction to the patients' satisfaction.

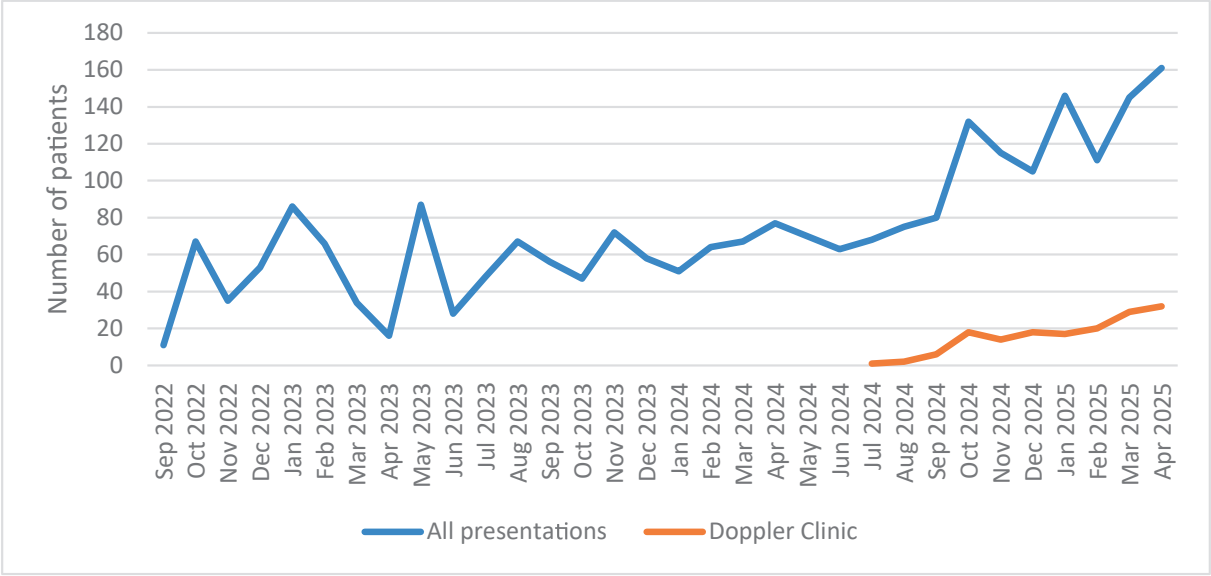

Fig. 1. Number of patients seen by ERAT service each month since September 2022 and in the follow-up Doppler clinic since July 2024.

Table 3
Patients seen by the ERAT service as categorised by Manchester Triage Discriminators. [*'Other combined' refers to patients who fell under other Manchester Triage categories but still met the inclusion criteria for the service.].

Manchester triage categorisation	Total number (% of total number of unscheduled ED patients seen by ERAT service)
Abdominal pain	1054 (41.9 %)
Limb problems	308 (12.2 %)
Chest pain	280 (11.1 %)
Urinary problems	126 (5 %)
Breathless	109 (4.3 %)
Back pain	60 (2.4 %)
Vaginal bleeding	57 (2.3 %)
Bleeding	54 (2.1 %)
Generally unwell	53 (2.1 %)
Unwell adult	35 (1.4 %)
Palpitations	24 (1 %)
Abscess	24 (1 %)
Other combined*	334 (13 %)
Total	2361 (100 %)

81 (96.4 %) of respondents reported that they strongly agreed and 3 (3.6 %) of respondents agreed that they were satisfied with the communication and information provided by the ERAT ANP regarding your discharge or referral onward to specialty teams. One patient did not answer this survey question.

4. Discussion

This service evaluation demonstrates that the implementation of an ANP led ERAT service is feasible, safe and improved ED process times for a targeted cohort of low-acuity, non-injury emergency presentations.

The ERAT service was strategically designed to address a subset of ED patients who requires high percentage of total patient contact hours such as abdominal pain and chest pain presentations. The structured and collaborative approach to defining the scope of practice for the ANPs, alongside robust governance and supervision, ensured the service was both clinically safe and operationally effective. This evaluation demonstrated that the ED process times relating to patients seen by the ERAT service were statistically significantly better in terms of time from clinician seeing patient to time to discharge. Overall, there was no overall difference in ED length of stay between all ED patients and the ERTA service. This may be confounded by external factors such as concurrent ED crowding and internal factors such as the ANPs being candidates in the early phase of the service and one being on leave for a proportion for study period. Most patients managed by the ERAT service were safely discharged, demonstrating the capability of ANPs to independently manage a wide range of conditions within their scope.

These findings support the growing body of evidence that ANPs can play a significant role in enhancing efficiency within EDs [9–14]. The study findings are consistent with an American study conducted by Tucker and Bernard in which they found the addition of nurse practitioners in the ED was associated with low admission rates, high patient satisfaction and reduced ED process times [15]. Furthermore, the evaluation, identified high satisfaction rates among patients regarding the clinical care and the clarity of communication. Griffin and McDevitt previously demonstrated that an Emergency ANP led service provided high-quality, safe, and effective care as evidence in high levels of patient satisfaction [10].

The role of Advanced Nurse Practitioners (ANPs) in comparison to physicians has been increasingly scrutinised in emergency and acute care, with the debate often centred on issues of education, clinical effectiveness, and patient acceptability. The evidence suggests that while ANPs can provide care that is safe, effective, and well-received by patients, there remain ongoing challenges in standardisation of training and in defining the boundaries of practice.

Educational preparedness represents a fundamental distinction between ANPs and physicians. Dover et al, highlighted considerable variability in educational routes into advanced practice, noting a lack of uniform standards across programmes [15]. This contrasts with the structured and regulated medical education pathway undertaken by physicians. The review emphasises that although ANPs often demonstrate advanced clinical skills, inconsistency in preparation may affect confidence in their ability to manage undifferentiated presentations independently. Strengthening postgraduate training and clinical mentorship for ANPs may therefore be essential to support role expansion and enhance equivalence with physician-led care.

In terms of clinical effectiveness, condition-specific studies provide important insights. For example, Lee et al demonstrated that a structured chest pain protocol implemented in a short-stay unit was both safe and effective, with outcomes supporting its use in nurse-led care models [16]. Such findings highlight how ANPs, when working within defined clinical pathways, can achieve results comparable to physicians. In an Australian study, Lee, Smith, and Jennings found that patients with low-acuity abdominal pain continued to experience long waiting times

despite the introduction of ANPs [16]. This suggests that while ANPs may improve throughput for some patient groups [17], complex or diagnostically challenging conditions may still require physician input or further integration of ANPs into early triage processes.

Patient satisfaction is a further area where ANPs often compare favourably to physicians. Jennings et al, reported high satisfaction rates among patients seen by ANPs in a metropolitan emergency department, with communication and interpersonal care frequently rated more positively than for physicians [18].

While ANPs consistently deliver high levels of patient satisfaction and achieve safe outcomes within structured protocols, concerns remain regarding educational variability and preparedness for highly complex, undifferentiated cases. The evidence suggests that ANPs are most effective when working within defined frameworks or managing lower-acuity presentations, whereas physicians continue to play a critical role in managing diagnostic uncertainty and complex care.

4.1. Limitations

In this study there were some limitations. While the sample size seen by the ERAT service was substantial, the patient satisfaction questionnaire had a small response rate, which may introduce response bias. The project team opted for a pragmatic questionnaire as the data generated was useful locally in our global assessment of the service. We acknowledge the inherent limitation of this approach rather than using a validated tool in terms of reliability and validity. Additionally, as this was a single-centre evaluation, findings may not be generalisable without adaptation to other institutional contexts, staffing models, or patient populations. Future studies could explore the long-term outcomes such as readmission rates, and cost-effectiveness analysis.

5. Conclusion

The ERAT service at Tallaght University Hospital demonstrates that ANPs can deliver safe, timely, and person-centred care to targeted low-acuity ED patients. The model reduced process times and contributed positively to patient satisfaction, supporting its feasibility and value in addressing ED patient flow challenges. With strong governance, defined scopes of practice, and professional collaboration, ANPs are well-positioned to lead innovative, high-quality care models in emergency medicine. These findings support broader adoption and future evaluation of similar ANP-led services.

CRediT authorship contribution statement

Doireann Deay: Writing – review & editing, Writing – original draft, Project administration, Formal analysis, Data curation, Conceptualization. **Orla O'Keefe:** Writing – review & editing, Writing – original draft, Project administration, Investigation, Formal analysis, Data curation, Conceptualization. **Mary Byrne:** Writing – review & editing, Project administration, Conceptualization. **Barry McBrien:** Writing – review & editing. **Aileen McCabe:** Writing – review & editing, Writing – original draft, Visualization, Supervision, Methodology, Investigation, Formal analysis, Conceptualization.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Patient and public involvement

Patients and/or the public were not involved in the design, or conduct, or reporting, or dissemination plans of this research.

Patient consent for publication

Not required.

Ethics approval

No ethical concern for this project was identified by the joint research ethics committee of Tallaght University Hospital and St James's Hospital (Project ID: 4157). The project was classified and approved as a service evaluation by Tallaght University Hospital's quality safety risk management department.

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