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Shortcuts in knowledge mobilization: An ethnographic study of advanced nurse practitioner discharge decision-making in the emergency department

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Abstract

Aim: To understand how advanced nurse practitioners use knowledge to inform their discharge decision-making in the emergency department.

Background: Advanced nurse practitioner roles have developed globally in a wide range of healthcare settings, including the emergency department, over the past few years. The scope of practice and training vary widely between countries. Little is known about how they use clinical knowledge in the emergency department.

Design: An ethnographic study was undertaken in an emergency department in the North of England.

Method: Data were collected by observation (n = 5) and semi-structured interviews (n = 13) between September 2016 and June 2017. Interview transcripts and field notes were coded using Quirkos software. Thematic analysis was used to identify key themes.

Findings: In boundary blurring with medicine, advanced nurse practitioners in the emergency department need to make timely, autonomous discharge decisions. Knowledge mobilization is messy and complex; however, shortcuts facilitate autonomous discharge decision-making. More experienced advanced nurse practitioners rely less on shortcuts as they draw on experiential knowledge.

Discussion: Boundary blurring in the advanced nurse practitioner role in the emergency department, requires reliable knowledge shortcuts. Support from senior colleagues and accessible smartphone apps enable advanced nurse practitioners to efficiently make discharge decisions. This study adds to previous research on how knowledge is managed in boundary blurring.

Conclusion: Advanced nurse practitioners in the emergency department require timely access to relevant, up to date knowledge. This study has highlighted their preferred knowledge sources to inform discharge decision-making. In boundary blurring, shortcuts enable ANPs to use knowledge efficiently to inform patient care in the emergency department.

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Impact: The findings increase our understanding of how to equip advanced nurse practitioners with knowledge to facilitate clinical decision-making. Clinical managers should provide mentorship and relevant up to date knowledge shortcuts to ensure efficient, evidence-based discharge decision-making.

KEYWORDS

advanced nurse practitioners, boundary blurring, ethnography, knowledge mobilization, qualitative research, shortcuts

1 | INTRODUCTION

Accessing relevant knowledge is crucial in clinical decision-making. This is particularly important in advanced nurse practitioner (ANP) roles, which have developed rapidly internationally over the past four decades (Schober & Affara, 2006). In England, ANPs make autonomous decisions in assessing, diagnosing and treating patients, and the role is viewed as a key workforce strategy for meeting the increased demand for emergency services (Health Education England, 2017).

With increased autonomy comes an increased requirement for knowledge to support clinical decision-making, but little is known about how knowledge is accessed by ANPs in discharge decision-making in the fast-paced emergency department (ED) context.

2 | BACKGROUND

2.1 | Advanced nurse practitioner (ANP) role development

The National Health Service (NHS) in England is facing significant workforce pressures with 100,000 vacancies (The Health Foundation, 2018). ANPs are seen as one solution to the medical workforce shortage; taking on many roles traditionally associated with medicine (Allen, 2007; Freidson, 1988; Traynor, 2009). Mechanisms that promote the recruitment and retention of ANPs are vital in the current global context of workforce shortages (WHO, 2020).

Following the success of the Emergency Nurse Practitioner (ENP) role in the UK (Hoskins, 2011), ANPs have been introduced into EDs (The College of Emergency Medicine, 2015), where clinical decisions need to be made in a timely manner to meet the contextual pressures of workforce shortages, waiting time targets and bed shortages. Table 1 summarizes the differences between the UK ENP and ANP roles in the ED.

Boundary blurring between ANPs and doctors occurs by vertical substitution; the sharing of roles between professions of different levels of power (Nancarrow and Borthwick, 2005). The development of complex decision-making skills by ANPs, traditionally undertaken by doctors (Health Education England, 2017; Heale & Rieck Buckley, 2015), has faced some opposition from the medical profession,

particularly around referrals and diagnostic decisions (McMurray, 2011; Pulcini et al., 2010). This study focuses on the discharge decision, as it incorporates many of the key judgements in the management of patients in the ED.

Definitions have moved from a focus on advanced 'nursing' practice (International Council of Nurses, 2008) to a multi-professional view of advanced 'clinical' practice, underpinned by four pillars: clinical practice, leadership and management, education and research (Health Education England, 2017) (Table 2). These definitions lack detail regarding the level of training and support required by advanced practitioners, and how they use knowledge to make safe decisions (Dall'Ora et al., 2018).

2.2 | Knowledge mobilization in healthcare

Theories of knowledge mobilization (KM) in healthcare have been used to inform this study and interpret the findings (Wa-Mbaleka, 2017). The evidence-based practice (EBP) movement has argued that clinical decision-making should involve the appraisal and application of research evidence (Melnyk et al., 2014). However, in practice, clinical decisions are informed by many other types of knowledge (Gabbay & Le May, 2004) and are influenced by value judgements and clinical uncertainty (Bucknall, 2012).

It is important to distinguish between information, knowledge and evidence. Knowledge is described as how the flow of information is organized, in the light of the context and beliefs of the user (Nonaka, 1994). Evidence is defined as knowledge that is used to argue or persuade others (Davies & Nutley, 2008).

KM research aims to close the gap between theory (or evidence) and practice, improving the dissemination and implementation of research (Ward, 2017). It can be explored from one of two different perspectives (Davies & Nutley, 2008); first, from the perspective of knowledge developers and implementers, who design models and frameworks to improve research dissemination (DiCenso et al., 2005; Graham et al., 2006; Kitson et al., 1998; May et al., 2009; Rowley et al., 2012). Second from the perspective of knowledge-users, by exploring how their decisions are impacted by knowledge (Davies & Nutley, 2008), an approach adopted in this study, providing a useful theoretical lens (Braun & Clarke, 2006). The term 'knowledge mobilization' has been described as the movement of knowledge 'to where it can be most useful p 477'

TABLE 1 Differences between Emergency Nurse Practitioner (ENP) and Advanced Nurse Practitioner (ANP) in the UK Emergency Department (Adapted from the College of Emergency Medicine, 2015)

	Emergency Nurse Practitioner (ENP)	Advanced nurse practitioner (ANP)
Role/ area of practice	Traditionally work in the "minors" area seeing a range of injuries and illnesses defined by local parameters.	Work across all areas of the ED. Seeing all patients who present with undifferentiated problems with appropriate supervision.
Training	Ideally undertake a period of learning at a higher education establishment, focused on the care of minor injuries and illness. Independent prescribing useful, although they may utilise a wide scope patient group directive (PGD) in some trusts. Supervised practice is essential.	Required to have undertaken courses in advanced assessment and independent prescribing, which will typically be at Masters level. A period of supervised practice is an essential part of the training.
Equivalent UK 'Agenda for change' pay grade	During Training: 6-7 When qualified: 7	During Training: 7-8a When qualified: 8a
Required qualifications	Postgraduate certificate in minor injuries / illnesses from a recognised educational establishment or local training that is accredited.	MSc Advanced Practice or equivalent depending on educational establishment. Independent prescriber.

TABLE 2 Definitions of Advanced practice from the International Council of Nurses (2008) and Health Education England (2017)

Organisation	Definition of advanced practice
International Council of Nurses (2008)	"A registered nurse who has acquired the expert knowledge base, complex decision-making skills and clinical competencies for expanded practice, the characteristics of which are shaped by the context and/or country in which s/he is credentialed to practice. A master's degree is recommended for entry level (p7)".
Health Education England (2017)	"A level of practice characterised by a high level of autonomy and complex decision-making. This is underpinned by a master's level award or equivalent that encompasses the four pillars ...Advanced clinical practice embodies the ability to manage complete clinical care in partnership with patients/carers (p8)".

(Ward, 2017); however, the authors were open to looking at all of the ways that knowledge is used to inform discharge decision-making in the ED.

Gabbay and Le May (2004) explored KM from the individual and collective 'knowledge-users' perspective in primary care and found that clinicians rarely accessed research articles or guidelines, relying instead on, what they called 'clinical mindlines' defined as

Collectively reinforced, internalised tacit guidelines... informed by brief reading, but mainly by their interactions with each other and with opinion leaders, patients and pharmaceutical representatives and by other sources of largely tacit knowledge that built on early training and... experience

(Gabbay & Le May, 2004, p329)

Furthermore, they found that doctors and nurses used 'shortcuts' to access up to date knowledge, such as, professional networks, trusted colleagues and free magazines, rarely questioning the original source of the advice.

In this study shortcuts are defined as; the different ways knowledge is conveniently accessed in routine clinical practice, through conversations with colleagues, and/or clinical guidelines via smartphone apps. Learning from colleagues is not in itself a 'shortcut', rather the ad hoc requests for advice during clinical work. The workplace is an important learning environment, where nurses value their colleagues' experience, knowledge, support and role modelling (Davis et al., 2016). Smartphone applications (apps) have previously been found to be useful in accessing emails, journals, drug formularies, clinical decision tools and medical calculators (Curran et al., 2019; Moore & Jayewardene, 2014; Wyatt & Krauskop, 2012).

There is a paucity of research on how ANPs use knowledge in their decision-making in the context of the emergency department.

influence knowledge mobilization in discharge decision-making were purposively sampled to enable the exploration of emergent findings.

3 | THE STUDY

3.1 | Aim

The aim of this study was to understand how ANPs use knowledge in discharge decision-making in the emergency department (ED).

3.2 | Design

Ethnography was used to explore knowledge mobilization in discharge decision-making by ANPs in the ED. This approach provides a rich, contextual, in-depth understanding of the naturally occurring clinical environment (Allen, 2007; Gabbay & Le May, 2010; Hammersley & Atkinson, 2007).

3.3 | Setting

The study was undertaken in a large teaching hospital emergency department, in the north of England treating adults only, open 24 hours a day, 7 days a week.

3.4 | Sampling strategy

Participants were purposively sampled (Patton, 2015). ANPs and trainee ANPs in the department were chosen for observation and interview. They were homogeneous in that they all had a background in nursing and had undertaken the same advanced practice master's modules, with some variation in their levels of training and experience, providing a range of data regarding proficiency in the role.

Senior nurses and doctors with knowledge of the ANP role in the ED context were sampled purposively following stakeholder engagement. Furthermore, senior clinicians who were observed to

3.5 | Recruitment

ANPs were sent an invitation and information sheet by email via the Nurse Consultant, their line manager, who was advised to emphasize the voluntary nature of participation. They were asked to contact the researcher by email if interested in taking part and were reassured that their line manager would not be informed of their decision. There was no way of the manager knowing whether people had agreed to participate or not. All five ANPs agreed to participate in the study (Table 3).

Eight senior clinicians with expert knowledge of the ANP role in the ED were identified by key stakeholders and contacted via email. Four declined to take part: one stated they lacked knowledge of the role, another said they were too busy, one did not respond and one had left the department.

Healthcare professionals observed to influence KM in discharge decision-making were approached during the fieldwork and asked if they would be interested in hearing about how to take part in the study (3 ED consultants and 1 senior nurse), all agreed to participate (see Table 4 for senior clinician characteristics).

3.6 | Ethical considerations

Ethical approval was gained from the university research ethics committee and NHS research governance approval was provided by

TABLE 3 Characteristics of ANP Participants (n = 5)

	Trainee ANPs	Experienced ANPs
Gender	2 female	1 male, 2 female
Years as a registered nurse	4-7 years	13-22 years
Years working in the ED	5-7 years	13-22 years
Years since completing ANP master's	Still training	2-4 years

Interviewee C = expert in context K = influenced KM	Role	Relationship to ANP
Senior clinician C1	Senior nurse	Line manager/ clinical educator
Senior clinician C2	ED consultant	ANP clinical supervisor
Senior clinician C3	Senior nurse	Nurse manager
Senior clinician C4	Senior nurse	Nurse manager
Senior clinician K1	ED consultant	Supports ANPs during clinical work
Senior clinician K2	ED consultant	ANP supervisor
Senior clinician K3	Senior nurse	Social care support
Senior clinician K4	ED consultant	Supports ANPs during clinical work

TABLE 4 Characteristics of Senior Clinician Participants (n = 8)

the hospital Trust. An emergency care patient and public involvement group provided valuable feedback on the research documents. Information sheets were sent to all participants and written consent was gained prior to data collection.

All other ED staff were informed about the study by posters and were asked to inform the researcher if they did not want to be observed. Patients were not recruited but were informed of the study through posters in waiting areas. Verbal consent was obtained from patients by the ANP prior to observation of the ANP, and the researcher was introduced as a nurse researcher studying how ANPs make discharge decisions. In protecting patient safety, the information sheet stated that any observed harm to patients or staff would be reported to the departmental manager.

Participants and the study setting have been anonymized. Although participants may not be identifiable by members of the general public, they may be identifiable by their peers (Allmark et al., 2009). Therefore, care was taken when selecting quotes to reduce the risk of identification. Data and personal information were handled according to the Data Protection Act (Great Britain, 1998).

3.7 | Data collection

Data were collected by 'negotiated interactive observation' (Wind, 2008) of ANPs ($n = 5$) over a 10-month period (September 2016–July 2017). ANPs were observed assessing patients and making discharge decisions for 2–3 hour periods over 36 days (90 hours of observation). Field notes were typed up following each period of observation, and data collection was discontinued on reaching saturation, when no new themes were identified (Fetterman, 2010).

Qualitative semi-structured interviews were conducted with ANPs and senior clinicians ($n = 13$) using a topic guide, in a quiet meeting room (Ritchie et al., 2014). Interviews lasted between 20 and 60 minutes (average 34 minutes), and were audio recorded using an encrypted digital recorder, then transcribed. A timeline of the ethnographic fieldwork is illustrated in Figure 1 and the duration of data collection is presented in Table 5.

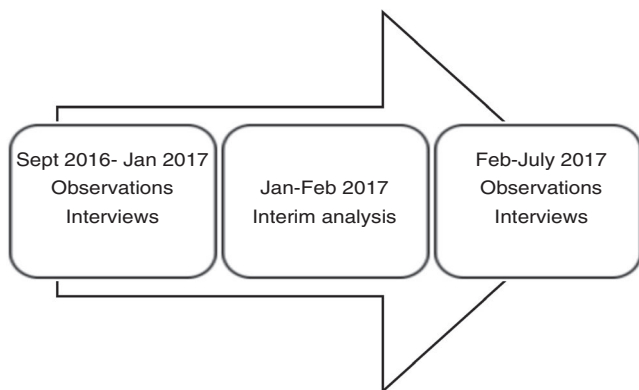


FIGURE 1 Timeline of Ethnographic Fieldwork

3.8 | Data analysis

Interview transcripts and observational field notes were managed using Quirkos (v1.4.1) computer assisted qualitative data analysis software (CAQDAS) and analysed using an inductive approach. Themes were developed and interpreted to generate explanations of participant and organizational practices (Braun & Clarke, 2006; Hammersley & Atkinson, 2007). All three members of the research team contributed to the development of the themes.

3.9 | Rigour

Lincoln and Guba's (1985) 'trustworthiness criteria' were followed to ensure credibility, transferability, dependability and confirmability of the findings. The quality of the analysis was strengthened through triangulation of data collection methods, reflexivity and attendance to discrepancies (Hammersley & Atkinson, 2007; Lincoln & Guba, 1985; Malterud, 2001b). Reflexive notes were made throughout data collection to aid interpretation and consistency. The researcher has a background in nursing, working in a range of healthcare settings, with previous experience of undertaking qualitative research in the healthcare setting. Credibility was further enhanced by prolonged engagement in the field (Lincoln & Guba, 1985). The lead researcher frequently met with members of the research team, which helped generate a consensus regarding data interpretation.

4 | FINDINGS

Two key themes were identified, explaining the context and nature of knowledge using by ANPs in discharge decision-making (Table 6). Theme one explores boundary blurring in ANP discharge decision-making, characterized by boundary blurring with medicine, and knowledge mobilization as mess and complexity. Theme two explores how *knowledge shortcuts* were mobilized to manage boundary blurring.

TABLE 5 Duration of ethnographic data collection

Type of data collection	Number of episodes	Duration (Hours)
Mapping observations	8	22
Observations of ANPs	28	67.5
ANP meetings	3	4.5
ANP interviews	5	2.5
Senior clinician interviews	8	4.5
Respondent validation	1	1
TOTAL	51	102

TABLE 6 Themes and sub-themes

Themes	Sub-themes
Boundary blurring in ANP discharge decision-making	Boundary blurring with medicine
	Knowledge mobilisation as mess and complexity
Shortcuts in boundary blurring work	Accessing information via smartphone apps
	Accessing advice from colleagues
	Experience and shortcuts

4.1 | Theme 1. Boundary blurring in ANP discharge decision-making

There was an organizational expectation for ANPs to work as medical substitutes, with pressure to meet ED waiting time targets. Their role was similar to that of medical registrars, assessing any patient presenting to the ED, planning and managing care. Various discharge options included: transfer to a ward, to their own home or to an alternative health or social care setting.

4.1.1 | Boundary blurring with medicine

Observation of ANPs ensured an in-depth understanding of their clinical working context in this emergency department and their role in autonomously assessing, diagnosing, treating and discharging patients. Role boundary blurring was evident in the allocation of work to ANPs and doctors, by the consultant in charge.

Following triage, patients are assigned to see either an ENP or a 'doctor or ANP' (if their problem is not a minor injury or illness). There were no circumstances where patients were allocated to a doctor rather than an ANP. This suggests that there is a comparable scope of practice between ANPs and their medical colleagues.

Observation of ANP 1: field note

ANPs assessed all patients presenting to the ED with undifferentiated conditions, regardless of age, social care needs, communication problems, or complexity.

'We see any patient that comes through. So the next in the box, anything from a cut finger to a heart attack, to a sepsis, to a stroke.

ANP 2 interview

Patients rarely present to the ED with obvious, isolated symptoms. Some patients have complex

problems that make discharge decision-making more difficult. These include those with social care needs (frail elderly/ substance misusers), symptoms of confusion, complex health problems, and non-English speakers.

Observation of ANP 3: field note

The scope of the ANP role was clearly very different from the staff nurses in the ED; they exhibited a greater level of autonomy and accountability, in contrast to the more traditional nursing roles.

The ANP described a huge learning curve from staff nurse to advanced nurse practitioner; "a completely different job with so much responsibility". She stated that the ANP training is trying to fit medical school into two years.

Observation of ANP 1: field note

In boundary blurring with medicine, while the ANP scope of practice was similar to medicine, the training and access to knowledge was not. ANPs did not always feel equipped with the knowledge to inform their decisions. On one occasion an ANP was uncertain about how to interpret a cervical spine X-ray, explaining that she had not been taught. ANP levels of knowledge did not always meet the expected scope of practice in fulfilling the medical substitution elements of their role.

You need a lot more knowledge in the ANP role than traditional nursing roles, and the more you know, the more you know you don't know. I still learn something new every day.

Observation of ANP 5: field note

They recognized the huge challenge they had undertaken in their new role and the life-long learning it would involve.

We're not trained in the minutiae that the doctors are trained in. Erm with the physiology, the pathophysiology, the anatomy etc. And that's the big gap in our knowledge that we find. And the master's course doesn't fill that void. So we rely very heavily on our medical colleagues to help us learn that.

ANP 5 interview

ANP training is very different from medical training. The duration of training is much shorter, with fewer opportunities for clinical placements and academic learning. Only by doing the job do ANPs consolidate their training and developed the knowledge required for autonomous practice.

ANPs experienced little conflict from other professional groups in expanding their professional boundaries. They did not see their role in terms of medical substitution, but more as a hybrid, taking on

traditional medical roles and maintaining elements of their nursing background:

We are nurses and that's our background and that's where we've come from, and it's important to keep that. And if I can and I'm not doing other things I'm not above doing any nursing roles if it helps and if I can. At the end of the day you're a senior nurse.

ANP 3 interview

Knowledge deficits were a barrier to fulfilling the medical substitution elements of the ANP role. Shortcuts to knowledge mobilization provided vital mechanisms for acquiring complex knowledge during routine clinical work.

4.1.2 | Knowledge mobilization as mess and complexity

The complexity of knowledge mobilization was evident through observing the wide variety of knowledge resources used by ANPs to inform their discharge decisions. The speed and volume of patients moving through the ED and the diversity of their problems meant that ANPs had to mobilize a diverse range of knowledge to inform discharge decision-making (Figure 2). ANPs sought advice from colleagues (consultants, ANPs, specialists), used technology

(computers and smartphones), relied on experience and training, referred to hospital notes of previous admissions, and information from patients and their carers.

Other barriers to accessing information included role ambiguity, limited resources (such as computers) and lengthy guidelines. Although the ANP role was well understood in the department, there was evidence of wider organizational confusion around the scope of the ANP role which hampered access to specialist knowledge.

I contacted the [haematology] specialist and introduced myself, and they replied 'I don't even know what one of those is. What even is an ANP?'...By the end of the conversation I think I'd won him round a bit, but why should I?

ANP 2 interview

A further barrier described by ANPs was the lack of computers available to search for clinical guidelines.

There's not enough workstations that are readily available within the department. You're always struggling to get on a computer.

ANP 3 interview

This was supported through the fieldwork, as ANPs were observed waiting in line behind colleagues to sit at computer desks. However,

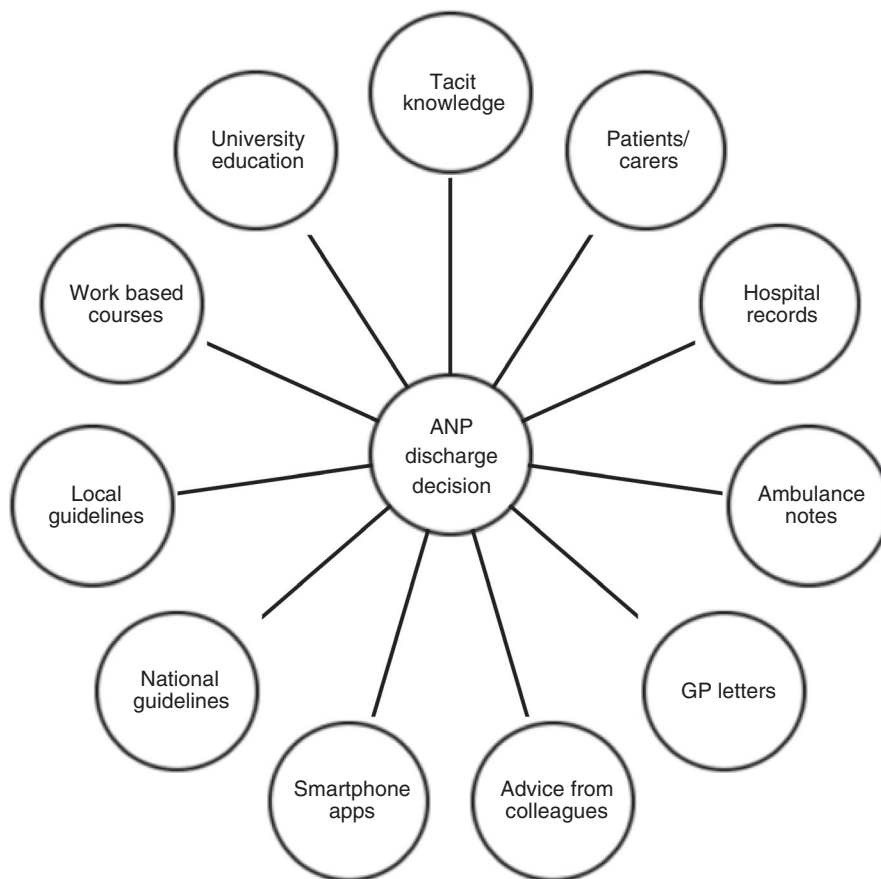


FIGURE 2 Knowledge that informed ANP discharge decisions

one consultant argued that there were enough computers in the department, but clinicians chose not to use them.

We've got a computer in every cubicle, the problem is people don't use them... It's a traditional thing, when people use a computer they like to sit down at it rather than stand in front of a computer at a patient's bedside... I think it's just where they're located, and the proximity to the patient.

ED consultant interview

In addition to these constraints, ANPs found clinical guidelines difficult to navigate due to the length of the documents and the time pressures to discharge patients, as highlighted when an ANP assessed a patient presenting with haematemesis.

The ANP found the national guideline for managing upper gastro-intestinal bleeds, scrolled through several pages of text...then said she couldn't find the summary so would look at it later.

Observation of ANP 4: field note

The structural constraints on KM were visible through the lack of understanding of the role amongst specialties and lack of resources. Shortcuts helped ANPs to manage some complex situations in boundary blurring, but the structural constraints remained.

4.2 | Theme 2. Shortcuts in boundary blurring work

In managing the complexity of knowledge mobilization, ANPs wanted knowledge that was both readily available and relevant. They preferred shortcuts in the form of smartphone applications (apps) and advice from more senior colleagues, however more senior ANPs drew on experiential knowledge, with less of a reliance on shortcuts; perhaps demonstrating increased confidence and progression towards greater autonomy, parallel to that of their medical colleagues.

4.2.1 | Accessing information via smartphone apps

ANPs used apps on their personal smartphones on a daily basis to access summaries of guidelines. On several occasions they referred to a head injury decision-tool, which was less time consuming than reading through the 60-page NICE (2014) head injury guideline. The app allowed users to quickly indicate whether any risk factors were present and what action to take, for example, with no risk factor, the suggested outcome was 'no CT required', but indicating 'yes' for certain factors resulted in an alert to arrange a 'CT within 1 hour'. In contrast to computers, smartphone apps were readily available, easy and quick to use and provided summaries of guidelines, often in the form of decision tools.

Being able to access guidelines on a phone is a lot easier than computers.

ANP 3 interview

The most commonly used apps were 'MED18' developed locally (name has been changed to maintain anonymity), the British National Formulary, a local antibiotic guide, Medscape, NICE and Google. Organizational support for using smartphones was reflected by the positive attitude of managers.

I think we're going to have to embrace technology... we've allowed people access to computers to aid decision-making, so this is just a computer in your pocket isn't it...it's the way forward I think.

Senior nurse manager interview

Although most participants supported the use of smartphone apps to access clinical information some raised concerns about the lack of governance around how they were kept accurate and up to date.

I worry a little bit that some of the local guidelines are used a bit less when you've got the app. For example... with the Well's score there are two different scores and you wouldn't necessarily know which one the organisation has agreed to have unless you read the local trust guidelines... so I think whilst they definitely have their place you need to be wary.

ED consultant interview

There was clearly a preference among ANPs to use apps in their decision-making, however concerns that they may not reflect organizational guidelines were evident.

4.2.2 | Accessing advice from colleagues

All ANPs, in particular the trainees, were observed frequently asking more senior ANPs and ED consultants for advice.

One trainee ANP was deciding whether to admit a patient who had presented with respiratory symptoms and a history of chronic obstructive pulmonary disease. She asked a more senior ANP for advice, who suggested that she admit the patient to exclude a pulmonary embolism.

Observation of ANP 4: field note

ANPs valued opportunities to ask quick questions when working in close proximity to senior colleagues, recognizing that ANPs in other settings lacked this important resource.

So we're lucky to work with consultants all the time... other areas don't have the support that we do here.

And they really, really struggle because that's where we get an awful lot of knowledge from, because we're not medically trained.

ANP 5 interview

Interprofessional knowledge sharing during daily work is clearly important to ANPs in consolidating their training in clinical practice, particularly among trainees, with less experience. Working closely with senior colleagues was essential to knowledge acquisition for trainee ANPs in boundary blurring.

4.2.3 | Experience and shortcuts

The findings indicate that the more experience the ANPs had, the less they relied on shortcuts; there were fewer occasions where they asked colleagues for advice, and they accessed other knowledge sources less frequently. This experiential knowledge was developed through situated learning; clinical experience and working alongside more experienced colleagues. It was clear that ANPs gained confidence and knowledge through seeing the same presentations again and again, suggesting that reinforcement led to more confidence and autonomy in boundary blurring.

Two years ago, I wouldn't have dared to discharge a patient. I wouldn't have felt as if I knew what I was doing, but now I've got another 2 years' experience under my belt, just seeing the same kind of presentations helps.

ANP 2 interview

Similarly, ED consultants associated success of the ANP role (in working autonomously) with a history of previous clinical experience.

I think the ones [ANPs] that have transitioned to being quite happy with discharge decisions are the ones with a lot more experience, life experience and have been around a lot longer.

ED consultant interview

Experienced ANPs were less dependent on accessing convenient sources of information during clinical work as they were more able to apply experiential knowledge to situations of uncertainty. This was evident during the fieldwork:

One ANP explained that she used to look at the smartphone apps to guide her clinical decisions about every patient, several times a day, whereas now she only refers to the apps once every other day.

Observation of ANP 5: field note

ANPs adapted to their new boundary blurring role by using knowledge shortcuts to build on their clinical mindlines, informing

autonomous discharge decisions in the ED. They benefitted from knowledge sharing in an interprofessional community of practice and access to up-to-date clinical decision-making tools.

5 | DISCUSSION

This study has explored how knowledge is accessed and used by ANPs in discharge decision-making. The findings indicate that the application of evidence to practice was essential to ANPs, particularly in light of the boundary blurring nature of the role. However, they did not purely acquire knowledge as outlined by the hierarchy of evidence; that is, by reading and appraising papers and applying them to practice (Sackett & Rosenberg, 1995). Instead, they accessed information in response to clinical decisions in the fast-paced ED context, through the shortcuts described in this paper.

Despite a wide range of knowledge sources available to ANPs in this study, they exhibited a preference for knowledge shortcuts. These shortcuts enabled ANPs to manage complex and time pressured clinical situations. They viewed senior colleagues as trusted and convenient sources of advice, supporting previous research, which has emphasized the importance of social networking and shortcuts in knowledge mobilization (Gabbay & Le May, 2010; Lave & Wenger, 1991). A potential problem with acquiring knowledge from colleagues is that it may be unreliable, whereas guidelines can be accessed on demand. There needs to be support for the development of up to date, evidence-based shortcuts that inform ANP practice.

In contrast to Gabbay and Le May (2004), who found that clinicians rarely accessed formal guidelines, ANPs in this study were keen to draw on evidence-based knowledge in situations of uncertainty, but in a short convenient format using smartphone apps. Previous studies found that smartphones offer flexibility and convenience in accessing clinical guidelines and tools (Moore & Jayewardene, 2014; Wyatt & Krauskop, 2012). ANPs in this study did not face opposition from senior managers to using smartphones in accessing clinical guidelines, unlike other studies, which revealed reservations among nurse managers in New Zealand and Canada about the professional and ethical use of such devices (Curran et al., 2019; McNally et al., 2017). One reason for this difference may be that supporting smartphone use enabled ANPs to fulfil the medical substitution role required by the organization.

The findings indicate that clinical experience reduced the need for more experienced ANPs to access shortcuts to inform discharge decisions. The study shows that trainees consulted their colleagues and used smartphone apps frequently. This was more often than their senior ANP colleagues who regularly made autonomous decisions without accessing further information. This illustrates the difference that experience in the advanced role makes to ANP decision-making in boundary blurring.

Previous literature describes the use of 'indeterminate knowledge' in healthcare decision-making, defined as a '*depth of experiential knowledge on which to intuitively draw*' (Abbott et al., 2007, p 416). This is used particularly by expert clinicians in complex decision-making in situations of uncertainty (Greenhalgh, 2014;

Traynor, 2009). The data here show the importance of indeterminate knowledge to ANPs in the ED context. In this way the findings mirror previous research that identifies the significance of tacit and practical knowledge in clinical decision-making (Estabrooks, 1998; Gabbay & Le May, 2010; Gerrish et al., 2008; Malterud, 2001a; Traynor, 2009).

This study highlights the need for transparency about knowledge gaps in boundary blurring, preferences on how evidence is used, and the importance of organizational support in ensuring knowledge is easily accessible through interprofessional knowledge sharing (Lave & Wenger, 1991).

The political drive to provide more cost-effective healthcare has led to an increase in the development of other advanced clinical practitioner (ACP) roles, such as pharmacists and physiotherapists (Health Education England, 2017). While this study focuses on nurses, it also provides important insights that may be useful in supporting other advanced healthcare roles both nationally and internationally (WHO, 2020).

5.1 | Limitations

Some may argue that undertaking data collection in a single site is a limitation as the findings apply to that group of participants only. However, this is usual in ethnographic fieldwork and allows for in-depth exploration and understanding (Hammersley & Atkinson, 2007; Silverman, 2013). The transferability of the findings to other UK and international settings could be explored in future research. A further potential limitation of observational methods is that there may be a focus on topics that reflect the researcher's own experiences and interests rather than those of the participants. Reflexivity and an extended time in the field have reduced this risk (Hammersley & Atkinson, 2007; Malterud, 2001b).

5.2 | Implications

The findings from this study have important implications for employers and policy makers in supporting ANP clinical decision-making, critical to promoting recruitment and retention (WHO, 2020). They highlight the value of interprofessional knowledge sharing, particularly in situations of significant boundary blurring, emphasizing the need for ongoing clinical supervision beyond ANP qualification. It is also important for clinical managers to acknowledge the reliance on smartphone apps by ANPs and to ensure they are evidence-based and relevant to the local context.

In the light of the growing number of ANPs across England, through national investment, the nursing profession needs to reconsider the most effective mechanism of supporting staff in these roles and ensuring patient safety. The development of recent frameworks has gone some way to providing much needed clarity (Health Education England, 2017); however, responsibility for continuing support and development needs to be provided at a local level.

6 | CONCLUSION

This study reports novel insights into the scope of the ANP role in the ED and preferred mechanisms for knowledge mobilization. The reliance on knowledge shortcuts via smartphone apps and interprofessional knowledge sharing adds to the theory of clinical mindlines. It is important to note that the use of smartphone apps as knowledge shortcuts could add to the complexity of knowledge mobilization through concerns about clinical governance raised by participants.

Future research should seek to increase our understanding of how ANPs and ACPs are deployed in other healthcare settings, and how they use knowledge in clinical decision-making. This will inform strategies to improve recruitment and retention, an important issue in the current UK and international healthcare context.

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CONFLICTS OF INTEREST

No conflict of interest has been declared by the author(s).

AUTHOR CONTRIBUTIONS

All authors have agreed on the final version and meet at least one of the criteria recommended by the ICMJE [<http://www.icmje.org/recommendations/>].

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