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Commentary

From novice to expert: Exploring surgical First Assistants and the conceptual integration of their role in robotic surgery

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Abstract

Competing demands and pressures in health services in the United Kingdom have led to the creation of specialist roles in nursing. One such role is that of Surgical First Assistant (SFA). SFAs are specialist nurses or operating department practitioners who work in operating theatre departments and provide clinical assistance to surgeons and the wider clinical team. In this article, Benner's novice to expert framework is adopted to examine the progression and abilities of SFAs at different stages. A case study is also used to examine a nurse specialist's transition into the SFA role.

This article conceptualises the development and training needs of a SFA in an era where robotic surgery is enhancing practice in many specialities. Each SFAs journey is unique depending on their experiences and encounters within their operating theatre environment, and this may influence their progress and skill development which can affect their ability to maintain an expert level in practice. This paper suggests that through the development of a formalised and specialist robotics training pathway, SFAs may have scope for further practice development in this area.

Background context

The National Health Service (NHS) is a publicly funded organisation that prides itself on providing a wide range of healthcare services. This institution is divided into multiple organisations from a local to corporate level, collectively aimed at providing care and support to the population of the United Kingdom (UK). The NHS has seen an increase in patient interactions from 1.6 million per day in 2021/22 (NHS Confederation, 2023), to 1.7 million interactions in 2023/24, estimated at approximately 600 million patients per year, with primary care such as General Practice having the highest proportion of contact (Kings Fund, 2024). The NHS employs an estimated 1.5 million people (Buckingham, 2025) which makes it one of the largest employers in the world. The Office for National Statistics (ONS, 2025) reported a rise in population of 755,300 people midway through 2023 and 2024 within England and Wales. This shows the rate in the growth of the population, which outweighs the demands placed on the service.

The British Medical Association (BMA, 2025) identified the case load of patients waiting for an operation prior to the Covid 19 pandemic was 4.57 million and has significantly escalated to seven million patients. This outlines the overwhelming impact of workforce shortages, met with a greater demand for patient care, and is therefore producing challenges and complexities on service providers. Healthcare has proven to be a complex process that requires additional support and the promotion of clinical leaders integrating advanced strategies to improve the trajectory of each patient's journey (de Kok et al., 2023). One such strategy could be the role of specialist practitioners who may be introduced to alleviate some of the pressures currently seen with operation waiting times.

Current roles in the theatre environment – Role clarity and scope of practice

Traditionally, the theatre environment consisted of surgical doctors (from trainee to consultant), anesthetists, nurses, operating department practitioners (ODPs), theatre healthcare assistants, operating department assistants and porters. Nurses and ODPs may work in scrub (in the operating theatre), in anesthetics, or in the post-operative recovery room. With the demands in the NHS and the increase in specialist roles, a new role was introduced, that of the Surgical First Assistant (SFA)

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which will be examined below.

Surgical First Assistants

Surgical First Assistants (SFAs) are an extension of the main surgical team, that commonly consist of registered nurses or operating department practitioners which allows for enhanced interprofessional collaboration. The Royal College of Surgeons England (RCS England), clearly outline the scope of practice for a SFA known as indirect assisting, referring to the practitioner assisting under the strict supervision of the surgeon when carrying out duties such as:

- Haemostasias
- Retraction of anatomical structures
- Cutting sutures (superficial and deep)
- Closure of superficial wounds (dependent of training)

(RCS England, 2025)

Reflexive note

EW is a trainee Surgical Care Practitioner (SCP) at a UK Higher Education Institute (HEI) who specialises in bedside assistance in gynaecology, colorectal, general and urology robotic surgery at the Bristol Royal Infirmary Teaching Hospital. He is a qualified SFA and recently completed his MSc in Nursing. EW has an interest in the role of SFAs, SCPs and robotics, which is why he chose to examine the role of SFAs further in his Master's dissertation that forms the basis of this article. SG is a Senior Lecturer in Nursing working in a UK HEI who prior to her role in education worked in the theatre department of a large NHS Teaching hospital in England. FSB-A is an Associate Professor working in a HEI in Qatar. FSB-A also has experience working in the operating theatre department in Nigeria in a period when SFAs were unheard of. SG and FSB-A were also part of EW's Master's dissertation supervisory team.

Benner's novice to expert framework

Healthcare has been historically met with an array of different innovations and complexities which impact nursing practices. Adopting a nursing developmental approach supports standards of clinical performance, while contributing towards holistic and therapeutic advantages, along with stimulating a motivated workforce, with potential career progression (Kurtović, et al., 2024). The differentiation in skill acquisition amongst SFAs varies due to the level of exposure in the operating theatre. The involvement of theoretical models or frameworks can support the development of SFAs. Benner's (1982) "novice to expert", is one such framework. Relating to personal experiences, SFAs have been known to evaluate their practice and at times compare themselves to their predecessors, which can perpetuate a low level of confidence despite their efforts and competence.

Benner's (1982) "Novice to Expert," is a theoretical framework that can function as a systematic guide to support healthcare practitioners in measuring their level of clinical ability. This is conducted through a linear process influenced by the Dreyfus skill acquisition model, which outlines five stages of professional development: novice, advanced beginner, competent, proficient, and expert (Davis & Maisano, 2016; Gentile, 2012). This concept has been evident in literature along with healthcare institutions through renovating mentorship and leadership programmes, aimed to support students and registered nurses (Titzer et al., 2014). Being able to reflect on practice is an essential aspect of clinical development, and using Benner's novice to expert theoretical framework, alongside reflective practices can help nurses and SFAs understand their current level of competence within the surgical team and facilitate setting realistic developmental expectations. Reflection and the use of Benner's framework can support the progression of a SFA from assisting in a very task-focused manner to developing their anticipatory surgical practice.

Benner (1982) describes the different levels as follows:

- Level 1 Novice – beginners that may have no experience and no familiarity with the environment they are about to encounter and work in. They would need to be taught about the environment and situations they are likely to encounter.
- Level 2 Advanced beginner – an advanced beginner has encountered the environment and may be able to demonstrate some level of acceptable performance. They may have been provided with some mentorship or supervision and are becoming familiar with the rules of the environment. They may have some situational experience they can draw from this or previous environments.
- Level 3 Competent – this nurse may have been in the role for two or three years. They can plan and negotiate achievable goals. There is a sense of some mastery of skills and there is ability to manage and cope with different situations. Many nurses stay at this level as there is comfort in the standardisation (e.g., of procedures) and routines.
- Level 4 Proficient – with continued experience, encounter and practice, the competent practitioner moves to a proficient level. Decision making skills have been developed, and there is an experience-based ability to recognise situations and adapt. They can see the whole picture rather than specific aspects. The use of case studies is beneficial when teaching those at a proficient level, so new learning can be reviewed in context to a given situation/s.
- Level 5 Expert – the expert nurse has years of experience and knowledge and can use intuition to grasp situations. They have a deep understanding of situations. They will have an excellent knowledge of goals

and outcomes and will use highly skilled analytical ability and problem solving.

Theoretical perspectives: From novice to expert

Benner's (1982) theory has been historically popularised in acute ward settings but is beneficial in many situations. Benner's framework will now be applied to the role of a SFA in the operating theatre department setting.

Fluctuation between novice to advanced beginner

The initial phase of this segment begins with the newly qualified nurse residing in the capacity of novice to advanced beginner, with limited practical experience and would be exercising their theoretical knowledge obtained from university. A key underlying factor in suboptimal performance is the novice's struggle to bridge the gap between theoretical knowledge and clinical practice, which often results in reduced confidence and compromised care delivery (Urban & Barnes, 2020).This phase is described by Benner et al. (2009), as a pillar where their professional judgement is underdeveloped and relies on checklists and instructions along with being dependent on the guidance of their predecessors. A practitioner with less than one year of work experience will be considered a novice, or at most, an advanced beginner who possess limited clinical skills in patient care (Benner, 2001). Due to the economy of staff shortages, lack of supervision in the clinical environment poses a risk towards being able to deliver skilled nursing care independently which can affect patient outcomes (Narbona-Galves et al., 2024).

When considering the role of the SFA, the SFA would have had a minimum 2-years post-operative experience, or experience in a related background. Therefore, although they would be learning new skills, it could be suggested that they would not be deemed a novice. Further exploration would be beneficial in clarification as to whether a newly trained SFA truly resides at this stage. Examples from Tsuzuki et al., (2022) suggest that the assumption that limited experience equates to compromised surgical outcomes, is not objectively correct. In their study of 1,682 patients undergoing a total laparoscopic hysterectomy (TLH), 18 cases of organ injury were reported when a less experienced first assistant participated in bedside assisting. The study concluded that the inclusion of an inexperienced assistant did not significantly increase the risk of intraoperative injury, suggesting that surgical outcomes are not solely dependent on the assistant's level of experience. Although this paper's terminology relates to first surgeon assistant, it remains unclear as to whether other professional groups i.e. nurses were included in this paper.

In addition, Leggett et al. (2021), examined the performance of SFAs involved in a high volume of procedures. This discussed whether using a SFA for robotic gynaecology operations provide greater surgical variables, in comparison to a surgeon bedside assisting. The procedures involving SFAs resulted in a mean console time of 19.2 minutes; shorter compared to cases assisted by a second surgeon. Additionally, the mean estimated blood loss (EBL) was significantly lower by 47.7 cubic centilitres (cc) when a SFA was present. However, the distribution of cases between the two groups was uneven, with 62% of the 1,600 cases performed with a second surgeon and only 37.9% involving a SFA. SFAs primary role spanning both pre-and intra-operative phases along with the familiarity with the lead surgeons' preferences, surgical techniques, and regular exposure to similar procedures, may have been a contributing factor that improved operative efficiency. This expresses that although newly qualified SFAs are learning a new area of expertise and will adopt new skills, they would likely be above the level of a novice or advanced beginner. This is simply due to the background knowledge attained when working in their previous practice that can contribute to their new role. Therefore, it could be concluded that SFAs do not fall into the novice or advanced beginner as a practitioner despite learning new skills.

Competent by default

Benner's novice-to-expert framework suggests it is a linear process aimed at establishing whether expert status has been reached. However, the trajectory of a SFA's position alongside this is complex, particularly given the nature of nursing careers. Practitioners frequently transition between roles and specialties, which can alter their position on this pathway, resulting in the abilities and experience of practitioners being fluctuant (Bobay et al., 2009).

As previously mentioned, the minimum criterion of one to two years of post-registration experience is required to pursue a position or training to become a SFA. In line with Benner's model, this would situate the nurse as competent. Brykczynski (2017) characterises this stage as the practitioner's ability to navigate and respond effectively to the needs of individualised care. However, when a nurse transitions into a new role from a ward-based environment for example, to the operating theatre, transferability can cause anxiety and distress (Gohery & Meaney, 2013). The question then is, does such a transition result in a temporary decline in skill acquisition due to unfamiliarity with the operating theatre setting? Or, do existing clinical skills enhance the nurse's perceptual ability and adaptability in this new context? This highlights the dynamic nature of progressional competence, whereby background experience can serve as both a foundation and a challenge, depending on how it is applied and adapted within the demands of the new role. Consistent participation in clinical practice adopts a level of competence that translates into measurable intraoperative advantages, although this is not always guaranteed (Benner et al., 2009).

Barriers to reaching proficient and expert practice

Progressively, throughout a nurse's career they will be exposed to challenging and complex situations which will test and develop their knowledge and critical thinking (McHugh & Lake, 2010). Attaining a proficient or expert level of care when bedside assisting the lead surgeon is a developmental process that involves navigating and resolving complex problems in alignment with a practitioner's evolving capabilities. Experts are often perceived to perform complex tasks with great efficiency and ease, and this may appear challenging to novices (Schmidt et al.,1990). For instance, laparoscopic knot tying, a fundamental skill for SFAs has been shown to be completed seventeen times faster when carried out by experienced practitioners compared to novices (Haji et al., 2015). According to Lone and Lone (2016), a nurse's belief system and self-perception are critical determinants of professional performance. The roadmap to attaining expertise as a SFA is extensive yet deeply rewarding. While novice SFAs require the development of specific characteristics and adaptability to critical clinical situations, their capacity to contribute meaningfully to bedside assisting should not be underestimated. However, although nurses will reach the level of competence, many will not become experts (Benner, 1982).

Adapting specialist skills to new surgical contexts: A case study

A case study from Denton (2021) is used in this section to show the application of Benner's framework. Denton's (2021) case-study outlined the experience of a Clinical Nurse Specialist (CNS) undertaking an enhanced SFA qualification, and how this aligned with Benner's skill acquisition framework. A CNS is a registered nurse that holds either a Masters or Doctoral degree and possesses clinical diagnostic expertise. Their role involves implementing evidence-based strategies to alleviate illnesses through holistic and therapeutic interventions (Reed et al., 2021). The practitioner was encouraged to enrol in an SFA programme. Upon completion, the nurse experienced feelings of apprehension and nervousness, common reactions when facing the increased responsibilities of this new role. However, structured support systems, including regular feedback from mentors and consultants, contributed to a positive learning environment and the gradual development of competence.

A core finding from this study was that although the CNS found merging into the intraoperative duties challenging, she was able to apply her CNS background in clinics, enabling her to competently carry out post-operative follow-ups. This dual capability, combining direct intraoperative assistance with post-surgical patient education, enhanced the patient's understanding of the complexity of their procedure. Hall et al. (2016) emphasised that surgical assistants must remain composed, competent and confident, particularly when faced with challenging anatomical situations. Denton's case study demonstrated that experienced CNSs possess foundational qualities that align well with the demands of the SFA role, which reinforces the value of CNSs pursuing such career development opportunities. The ability to incorporate prior clinical knowledge proved to be a significant advantage. However, when confronted with unfamiliar surgical scenarios that were not routine in the clinical nurse specialist's role, it is reasonable to suggest that their skills acquisition fluctuated - from expert to proficient or even competent on Benner's (1982) framework. This illustrates that nurses from various clinical backgrounds may use their existing transferable skills and knowledge when transitioning into the SFA role, regardless of their previous specialty. This example explored how Benners' framework can be used to explore the limitations and strengths of practitioners learning new roles. Acknowledging these obstacles is crucial to fostering resilience, continued growth, and safe practice in the perioperative setting. It is important for nurses to reflect and be self-aware that although they may have reached expert status on Benner's framework in their current role, continuing professional development and new innovations in practice may mean a nurse will find themselves fluctuating along the novice to expert trajectory.

The future of SFAs and the rise of robotics

Surgical procedures are constantly changing and evolving. One change is the increased use of robotics in the theatre environment. This increase in popularity across various surgical specialities in the use of robotic-assisted surgery has been widely recognised in England. Recently, this was highlighted by NHS England and Getting It Right First Time (GIRFT, 2025), reporting that urology remains the leading speciality in using robotic procedures with rates of 42.2% in 2023/24; whereas ear, nose, and throat (ENT) remain at 1.8%.

Robotic technology is supported by developments in artificial intelligence (AI) and is continuously transforming patient outcomes. Evidence from Wah (2025) demonstrates a 25% reduction in operative times and a 30% decrease in complications for procedures involving robotic assistance. These improvements underpin the plan by NHS England (2025) to strategically upscale the delivery of robotic-assisted procedures from approximately 70,000 cases in 2023/24 to 500,000 annually by 2035. Nevertheless, the current lack of workforce planning and the insufficient support provided to surgeons raise questions about whether this is achievable. Therefore, to meet the ambitious targets of the NHS, robust training frameworks and a balanced distribution of skilled supporting staff would be required. Establishing structured development pathways for SFAs, particularly within robotic surgery, could help address these gaps and support the sustainability of a national program. However, insufficient skills, such as bedside assistance in robot-

ics for SFAs, can be a determinant factor that can be a hinderance towards surgery, or even operations being cancelled due to insufficient skills mix. The Perioperative Care Collaborative (PCC, 2018) established a position statement that enlists appointed duties for SFAs; working outside their scope of practice precludes direct assisting, which refers to the use of actively inserting instruments in the wound, which are the duties of the bedside assistant in robotic surgery. As it currently stands, there is no training pathway in robotics for SFAs. Surgeons, anesthetists, Surgical Care Practitioners (SCPs), scrub nurses/ODPs and support workers, all attain critical roles and are provided with introductory or in-house training to support learning curves.

Currently, the absence of substantial and nationally recognised robotic training pathways (Lanfranco et al., 2004) specific to Surgical First Assistants (SFA), is problematic when considering the continued development of SFAs and their own transition from novice to expert. Although SFAs are skilled practitioners, their future role in this domain remains uncertain. Collectively, Brian et al. (2023), Hill et al. (2023), and Moller et al. (2024), emphasise the significance training for all levels of practitioners can have as there are currently inconsistent and poorly constructed training pathways which serve as a limitation in producing effective learning opportunities. Establishing such a training pathway in robotics could allow SFAs to bridge workforce gaps, enabling advanced practitioners and doctors to focus on other aspects of robotic surgery where their expertise is most needed. Such a training pathway could influence the practice of first assistance, could contribute towards patient safety, improve outcomes, and theatre flow. Overall, Albani et al. (2007) highlight that continuity of care and safety in robotic-assisted surgery can be enhanced when accessible and structured training opportunities are in place to support improving the trainee's level of proficiency.

Despite its growth in popularity across the NHS, the position of SFAs and their specified role surrounding robotic systems, such as the Da Vinci robotics system, appears to be unregulated. The limited opportunities for operative training, lack of experience met with a satisfactory skill mix, are contributing factors that negatively impact the flow of team dynamic (Aveling et al., 2018). In contrast, in the United States, the scope of practice and contribution towards surgical interventions and outcomes for SFAs in robotic operations, is clearly outlined. Surgical Care Practitioners (SCPs) are the successors in robotic practice, due to their presence and involvement in robotic assistance, however, statistical data to quantify this group remains unclear (Gulati et al., 2016). This makes it difficult to compare if the demand in robotic surgery is being met by the current staff involved. SFAs could be seen as an alternative that could work in conjunction with SCPs to fulfil staffing needs. However, there is no clear and governed, approved SFA robotic curriculum in the UK, in comparison to the United States of America (USA). Although evidence has shown the positive outcomes with SFAs being capable to assist for major operations in robotics across the world, in England, there has been overwhelming evidence that SFAs are working outside their scope of practice, particularly in robotics as this would require direct intervention (Clinical Services Journal, 2025).

The global nature of the lack of training has been reflected in studies such as Wilkinson et al. (2020), who explored laparoscopic surgical training in rural North-East India. Their findings reveal access to real-time surgical experience is highly inconsistent and was often complex by a lack of structured curricula, or service demands in other departments. In such contexts, learning is frequently opportunistic rather than generic, which undermines the standardisation of skills and compromises surgical competency. As Carpenter and Sundaram (2017) advocate, the solution lies in the development of an inclusive and comprehensive robotic training program that not only accommodates surgeons, but the wider perioperative team. Such resources should be incorporated into structured simulation, mentorship, and defined progression pathways, enabling all practitioners, regardless of grade or background, to acquire the competencies necessary to contribute meaningfully to robotic-assisted surgery.

Thomas and Kellgren (2017) argue that aligning Benner's theoretical framework with educational pathways requires a conceptual structure that incorporates simulation-based learning and prioritises theoretical foundations that underpin skill acquisition. These are two fundamental factors that help in the attainment of enhanced motor skills and new competencies which are essential in surgical training. This could be relevant when considering robotic training for SFAs. Gallagher and Traynor (2008) emphasise that this developmental process is a prerequisite for advancing surgical technique and overall performance. For SFAs to continue to develop in contemporary operating theatre departments, it is imperative that their involvement in robotics is examined. The continued advances in robotics and the strategic vision of NHS England (2025) which aims to see further increases in robotic technology use, highlights the need for SFAs to establish a presence in this area.

Conclusion

Population increases and healthcare service demands have led to many specialist nursing roles developing. One such role that has been examined in this article is that of the surgical first assistant. Surgical first assistants have an important role in the operating theatre department. Extensive, accredited training has led to a wider recognition of their role and development. Continuing professional development and reflection allow SFAs to continuously examine their roles against contemporary nursing and operating department practices. Benner's novice to expert framework continues to serve as a guide

to support healthcare practitioners to assess their ability and identify development needs along the framework trajectory. Transition into the SFA role may see an expert nurse from a different clinical background find themselves moving to a lower ability level on the framework. Examination of nurses' competence and ability against Benner's framework has allowed a deeper exploration of SFA development and it is apparent that each SFAs journey will be unique depending on their experiences and encounters within their operating theatre environments.

Undertaking this examination of the SFA role has identified implications for practice and areas for further research. It is important to highlight that dependent on the individual encounters and experiences, SFAs may face difficulties progressing their skill development and therefore maintaining that expert level in practice. The focus of SFAs is becoming a forgotten concept in the healthcare field when related to robotic bedside assistance, where their presence is absent and when utilised in this field, it breaches their scope of practice. One key hinderance is the lack of guidance and practical training on fundamental advances in robotics technology, once SFA status is reached. The lack of confidence can ensue due to the SFAs scope of surgical practice as the boundaries imposed through the SFA curriculum may be seen to inhibit their development in robotics. This is due to their skill levels being incompatible with what is necessary to be a proficient bedside assistant. This can lead to lack of confidence towards surgical approaches due to the limited scope of practice allowed in this new specialism. To protect this group, it would be essential to integrate an official training pathway that not only guides them through the process of developing their skills but also provides a theoretical outlook. There are also implications and opportunities for further research around the role of the SFA and robotics. Robotic surgery is here to stay and by adapting to change and embracing the continuum of opportunities presented with robotics, SFAs could benefit from role development through structured training that allows them to continue to enhance their practice and professional development.

Reflective questions

1. Where do I currently position myself on the novice–to-expert continuum as a Surgical First Assistant, nurse or healthcare practitioner, and what evidence from my practice supports this self-assessment?

2. How do I perceive the future development of robotic surgery, and what potential opportunities or challenges might it create for the expanding role of the Surgical First Assistant?

3. What parameters, competencies, or professional frameworks could be developed or strengthened to guide and support the integration of Surgical First Assistants within robotic surgical teams?

Authorship contribution statement

EW: Conceptualisation, Writing – original draft, Writing – review and editing, SG: Conceptualisation, Writing – review and editing, supervision. SB-A: Conceptualisation, Writing – review and editing, supervision.

Declaration of competing interest

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