

1 The history of children's perioperative care

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Why history is important

We may question what place history has in perioperative care today, care that is, by definition, modern, technical and advanced. There are several reasons why it can be useful to pause for a while and consider what history has to offer. We can learn from what has gone before, from the mistakes that have been made and also from the way that practitioners have managed to advance the discipline and improve the care that can be provided to the surgical child. History also gives our discipline a depth that it would not otherwise have. Perioperative nursing is not just a discipline that is going places, it has a past, too, and a history that is rich and fascinating.

The written history of perioperative nursing as a speciality of nursing, rather than surgery, is difficult to find, and needs rigorous research and examination. Most of the written history is about the development of operating theatre nursing during times of war (Holder, 2003a,b, 2004a–c; Rae, 2004a,b), or about its development as an adjunct to the surgeon (Cumber, 2006; Nelson, 2007). A critical history of the speciality is badly needed.

What is perioperative nursing?

The lack of a single and inclusive definition of the speciality makes historical investigation difficult. The term 'perioperative nursing' emerged in the 1970s (McGarvey *et al.*, 2000), and in 1978, the Association of Operating Room Nurses in the USA defined it as encompassing engagement with the patient from the initial decision to undertake surgery to the final discharge of the patient from the outpatient clinic. By 2006, this had changed little, with the following definition on the website of the Association of Operating Room Nurses (USA). However, a search in 2008 showed it is not possible to find this definition again:

AORN defines the term "perioperative nursing" as the practice of nursing directed toward patients undergoing operative and other invasive procedures. AORN recognizes the "perioperative nurse" as one who provides, manages, teaches, and/or studies the care of patients undergoing operative or other invasive procedures, in the preoperative, intraoperative, and postoperative phases of the patient's surgical experience. Perioperative nurses work on the surgical front lines, so no one is better qualified or has the capacity to advocate for and ensure patient safety in the surgical setting. Association of Operating Room Nurses (2006)

Other definitions are scarce. Nursing within the perioperative environment is implied in the definition of the Association for Perioperative Practice in the UK, but there is no definition of the perioperative nurse: 'the area utilised immediately before, during and after the performance of a clinical intervention or clinically invasive procedure' (Association for Perioperative Practice, 2005). The Australian College of Operating Room Nurses Standards for Perioperative Nursing contain the following definitions:

Perioperative: The period before, during and after an anaesthetic, surgical or other procedure.

Perioperative Environment: The service area where the provision of an anaesthetic, surgical or other procedure may be undertaken.

Perioperative nurse: A nurse who provides patient care during the perioperative period.

Australian College of Operating Theatre Nurses (2006).

While the American and Australian definitions are for and about nurses, the shortage of nurses in the UK and the governmental financial restrictions placed on the National Health Service have led to the emergence of other practitioners such as 'operating department practitioners'. These technicians are being educated by nurses (Shields & Watson, 2007) without a realisation of the effects of such roles on the nursing profession.

In 1999, at the Association of Operating Room Nurses (AORN) national conference in the USA, members decided to change the organisation's name to the Association for Perioperative Registered Nurses (Editorial, 1999) and in so doing ensured that the term 'perioperative' nursing became part of modern language. It is probably the case that such broad definitions of perioperative nursing are not yet universally accepted. Most practitioners would confine the term 'perioperative nursing' to that care which is given in and around the theatre suite (Association for Perioperative Practice, 2005).

While the discipline's focus is still on the patient in the operating theatre, paediatric perioperative nurses are beginning to see their role as something broader, as child patients cannot be properly understood by their need for surgery alone. Their proper care requires an understanding of the child as a child, as a member of a family and as a person with a life outside the theatre suite.

A brief history of perioperative nursing

War is always good for the development of health sciences, in particular, those related to surgery, and perioperative nursing is no exception. The Crimean War (1853–1856) and the American Civil War (1861–1965) saw the emergence of nurses who assisted with surgery (Holder, 2003a; Schultz, 2004). During First World War, technology and machines became the cornerstone of armed conflict, and surgery developed exponentially, as did operating theatre nursing (Holder, 2004a–c; Rae, 2004a,b). Similar rates of advances in knowledge occurred during Second World War, the Korean War and the Vietnam War, and in all armed conflicts since then (Bassett, 1992; Biedermann, 2002). Much of the development of surgery took place on the battlefield, and throughout history we see both women and men providing nursing care (Holder, 2003b; Schultz, 2004).

However, it is necessary to note that for the most part, the individuals concerned were not members of any discipline of nursing and would not have regarded themselves as professional nurses. Furthermore, there was a lack of organisation to the often *ad hoc* services that were provided. It was this deficiency that brought Florence Nightingale to fame. While the existence of nursing during ancient battles is interesting, it is only from the time of Florence Nightingale and perhaps the mid-19th century when we can say that the history of perioperative nursing begins. This should not be surprising, for nursing as a discipline, that is, an organised body of people who saw themselves as nurses, did not exist much before this time. In fact, both paediatric nursing and perioperative nursing came about because of the growth of the hospital as a means of providing health care. By the mid-19th century, most large towns in Britain and Western Europe possessed a general hospital and by the end of that century, most large towns also had a children's hospital (Lomax, 1996).

For paediatric perioperative nursing to exist on any scale, there first needed to be hospitals for children and surgeons working within those hospitals. Such history does not begin much before the middle of the 19th century (the first children's hospital in Britain opened in 1852). At that time, almost all surgery were orthopaedic or associated with the repair of wounds. Additionally, children's hospitals often provided only medical care; surgery was hardly considered part of the medical profession and most children's hospitals did not possess an operating theatre. Over the next 100 years, paediatric surgery tended to develop more from adult surgery in the general hospitals than it did from the activities of the medically orientated children's hospitals. This slowed its development and resulted in paediatric surgery and paediatric perioperative care being largely a 20th century invention. In other words, there were about 50 years (between about 1850 and 1900) when paediatric perioperative care developed especially slowly. However, paediatric surgery and perioperative nursing did benefit from the fact that practitioners came to work with children, already having experience of adult surgery. Children's hospitals, on the other hand, with their focus on medical care, were often ill prepared to develop surgical services for children. Well into the 20th century, this schism between the general and children's hospitals affected perioperative paediatric nursing to a degree that was both deep and dysfunctional. Even today, perioperative paediatric nurses can sometimes align themselves more to theatre nursing than to paediatric nursing. We can learn from the mistakes of the past and ensure that perioperative and paediatric nurses work together to progress their mutual interest for the benefit of children having surgery.

An overview of the history of surgery

Historically, there are two forms of surgery, 'external' and 'deep'. External surgery avoids the opening of body cavities and is concerned with skin wounds, fractured bones, etc. Deep surgery involves the opening of body cavities such as the peritoneum and the thorax. The history of deep surgery is relatively recent. Although external surgery was practiced in ancient Egypt, Rome, Greece and Arabia, deep surgery was considered too risky, especially in children (Figure 1.1). Even relatively simple procedures such as appendectomy appeared only in the last 150 years. However, external surgery, involving the skin, associated tissue and bones, has been practiced

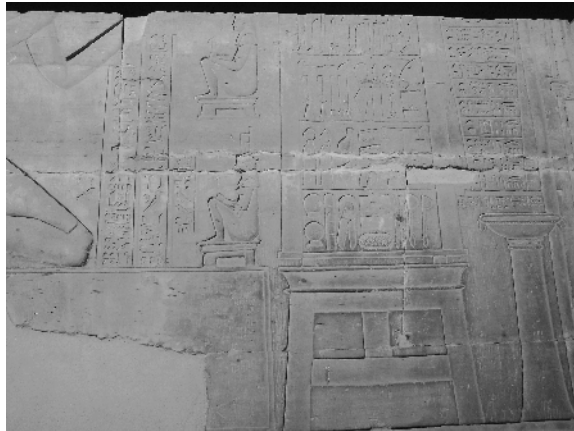


Fig. 1.1 Hieroglyphs of surgical instruments, Kom Ombo Temple, Aswan, Egypt, 2nd century BC.

for at least as long as historical records exist. Cranial surgery and cutting for (bladder) stone are exceptions to this rule and were carried out in ancient times (Mariani-Costantini *et al.*, 2000).

In 1755, Samuel Johnson defined chirurgery (surgery) as ‘the art of curing by external applications’ (Johnson, 1755). This shows that at this time, deep surgery did not exist and that almost by definition, surgeons did not give medicine or open body cavities. The prescription of medicine was the province of the physician; however, the labels for medical and nursing trades-people were often confused, especially in the provinces where multi-tasking was much more in evidence. Wyman (1984) points out that the labels ‘surgeon’ and ‘apothecary’, which should have been quite distinct, were in fact often confused. The label ‘surgeon’ has at times been taken to mean a ‘general practitioner’, inferring that surgeons were less well qualified than physicians, and tended to have a broad field of practice. It is largely for this reason that general practitioners are said to work from ‘surgeries’. ‘Surgery’ was a label for the practice of someone qualified in only the cruder aspects of medicine.

We have noted two exceptions to the historical division of external and deep surgery: the procedures cutting for stone (lithotomy) and trephination of the skull that have been practiced for hundreds of years. These procedures were not at all safe, especially when practiced on children, but were measures of last resort. Trephination was carried out to relieve intracranial pressure, much as it might be practiced today. Cutting for stone, too, is, more or less, a procedure that we would see practiced on adults today. However, in the past and for reasons that are quite unclear (Ellis, 2001), children commonly suffered from bladder stones and so lithotomy was a procedure of paediatric surgery.

Deep surgery depended on the advent of anaesthesia and of antibiotics. By the time these developments were available in the late 19th century, surgery was becoming an educated and professionalised discipline. So it is that we see two almost separate surgical histories. There is an ancient history of the management of wounds and fractures. Here, surgeons were a wide range of individuals, perhaps best understood by the archetypal barber-surgeon of the 16th to 19th centuries, whose practices could

be identified by a white pole on which bloody rags were hung to dry in the wind. The red-and-white pole, still seen outside the barber's shop, is what remains today of this once more varied craft.

Surgery's reputation as being an educated, professional occupation is a relatively new invention. Even 100 years ago, surgeons were widely considered to be a lower class of medic; they were often poorly educated and were considered trades-people. Prior to the mid 19th century, surgeons were not considered to be professionals but would have received on-the-job training of one sort or another. The surgeon's practice was thought crude, even barbaric in an age when practical work was not a proper activity for the well-heeled and well-educated classes. If we go back further, to the medieval period, we find that surgery was a dangerous occupation for if the patient died, the surgeon could forfeit his or her own life (Rawcliffe, 1997; Editorial, 2003). In a sense, surgery has often been a courageous activity. The early cardiac surgeons (20th century) were not at risk of losing their own lives even where their developing practices had fatal consequences for the patient. Even so, their reputation and their careers were often very much at risk (Waldhausen, 1997). The history of child surgery seems fashioned by courage, individuality and brave-endeavour. Children's perioperative nurses were part of the courage that was played out time and time again as endeavour upon endeavour turned once-hazardous procedures into operative events that were both safe and routine. Paediatric perioperative nursing is still developing as a discipline, despite a long and interesting history. Like any developing discipline, its practitioners also require a degree of courage. Frontiers of practice were never pushed forward by a rigid adherence to rules.

The development of perioperative nursing

Both barber-surgeons and bonesetters were largely trades-people who learned their craft from being apprenticed to a surgeon or from being born into a family of barber-surgeons or bonesetters (Adams, 1997). Before the migration of surgical education into universities, it was not at all uncommon for a surgeon to be female (Jonson, 1950; Talbot & Hammon, 1965; Clark, 1968). In 1563, a certain Mother Edwin was called in to St. Thomas' Hospital, London to treat a boy's hernia (Wyman, 1984). The division between surgeons and nurses was once very blurred. Wyman (1984, p. 32) offers the example of Margaret Colfe (1564–1643) who was the wife of the vicar of Lewisham. Her memorial stone reads 'having bene above 40 yeares a willing wife, nurse, mid-wife, surgeon, and in part physitian to all both rich and poore ... [*sic*]'. However, male surgeons often sought to exclude female practitioners (Clark, 1968). From the mid-19th century males have dominated medicine. Even within the 20th century Gellis (1998) recalls working in a leading American children's hospital on the day that the first female doctor was employed, when the whole medical staff wore black armbands in protest.

The dominance of medicine today makes it all too easy to view children's surgery from a medical perspective. In fact, the roles of surgeon, nurse and paramedic have changed constantly through the years and are changing even today. History shows us that in the past nurses have performed surgery (Wyman, 1984; Wolff & Wolff, 1999). Robinson (1972) reports that between 1923 and 1948, an outpatient sister at a Scottish hospital routinely performed minor operations, often administering the anaesthetic

herself. Similarly, surgeons have been active in caring for the child patient both before and after the operation. Wolff and Wolff (1999) note the existence of sub-surgeons (*subchirurgen*) between 1750 and 1850 in Germany and Austria. These individuals were trained in medical or surgical schools and taught by qualified doctors rather than surgical trades-people. The curriculum included wound care (debridement, etc.) and nursing. Some of the graduates worked as nurses, supervisors of nursing and some as country doctors. These sub-surgeons belonged to a sub-professional class. The sub-surgeons died out in the mid-19th century, the result of the professionalisation of medicine and the newly created profession of nursing. Nurses were then available to manage the patient's perioperative care, making the *subchirurgens* unnecessary.

We understand perioperative care as an activity that has been, and still is, performed by a variety of people. Today, it is often assumed that surgery is the province of the surgeon, a registered medical practitioner. However, history would beg to differ and even today English law does not confine the practice of surgery to medical surgeons; indeed chiropodists, nurses, acupuncturists and others, all perform techniques that are surgical in that they are invasive.

Key discoveries in perioperative care

Much of the history of surgery is directly related to a number of key discoveries. One of the most important was the discovery by Lister of antiseptics in ca. 1870. Lister's work, however, took some time to be accepted (Porter, 2003). Florence Nightingale energetically adopted the principles of antiseptics, despite her initial rejection of germ theory. Much of Nightingale's ideology was based on accepted methods of managing a large household with their heavy emphasis on discipline and cleanliness (Nightingale, 1860). While Lister's work on antiseptics struggled to be accepted by an inflexible medical brotherhood, Nightingale's influential work became widely accepted and gave credence to it (Larson, 1989). This is one example of the way in which the development of surgery has been dependant on nurses. However, nursing's important role in the development of surgery has often been hidden. This is the result, in part, of nurses failing to write about their endeavours (Nightingale being an exception) and of the subjugation of nurses by a male-dominated medical hierarchy.

The first effective anaesthetic (chloroform) was introduced around 1847 and it is this single discovery that marks the effective beginning of deep surgery (Porter, 2003). Chloroform and the anaesthetics that were developed after it, freed the surgeon from being confined to the treatment of superficial wounds, dental disease and fractures. Radiography was discovered in 1895 and unlike Lister's work on antiseptics, the use of x-rays quickly became an important tool to aid diagnosis. More complicated surgery and more complex procedures were at the forefront of scientific discoveries and became associated with surgeons who were increasingly well educated. This, in time, would enable surgery to be considered properly part of the medical profession.

The change of direction brought about by advances in surgery, secondary to the introduction of anaesthetic and antiseptics, is illustrated in an excerpt from an article by E.P.:

I have often heard my mother describe an incident in her early life; it would be between the years 1828 and 1832. She was the youngest daughter, and had much of the care of two brothers, both younger. The one next to her in age developed, when about two years' old,

a small lump on the temple. He was a very bright, lively child. The lump was first like a smooth pea, and slowly grew on and on. The doctor attending said he could do nothing as it was too near the brain. As the lump grew the child did not lose intelligence, but merely became an invalid, as the head was too heavy to hold up, and at the last could only lie down, with the huge mass resting on the shoulder. The doctor had a picture painted of the child, but the artist represented him as sitting up playing with a whip, a vein stretched over the tumour. One night it burst, the blood spurting to the ceiling, and before morning the child died. The doctor asked permission to hold an autopsy, which was granted, as my grandfather was a man who desired to do everything to help on science. Seven doctors came to the little old-world Devonshire cottage. I have heard the younger brother say how pleased he was to see the seven doctors' horses at the cottage door, but my mother's recollection was very different. She stifled her sobs and crept upstairs, silently and gently raised the old latch and through the round latch-hole, saw her father standing looking on whilst the doctors worked. She saw the large growth removed, the skull under it smooth and thin; the skull was opened, showing the one half of the brain well developed for a child, the half under the growth shrivelled and compressed, and she heard the doctor's words to her father: "If we had only had the courage to try, this could have been removed, like a lump of fat; but, thanks to you, sir, the next patient we have may live." The child was carried to his grave by his sisters in white, the coffin suspended by white ropes. His picture is in some museum, I do not know where. Old surgery was conservative and death dealing; the new is daring and life saving. (E.P., 1905, p. 399)

Early beginnings of surgery for children

Radical approaches became characteristic of surgery in the late 19th and 20th centuries. History is often changed by just a few individuals who stand out, not so much for their chances in life or for their education but for their individuality, determination and courage. So it is with paediatric surgery. William Ladd became a full-time surgeon in the USA in 1936. Ladd was ahead of his time in appreciating that if paediatric surgery was to develop, it would need to be recognised as a separate speciality with special training for those involved and specialised nurses to provide the required care. The recognition he called for did not come until 1974 (in the USA), after 33 years of frustrated effort. By the development of techniques to deal with oesophageal atresia, malrotation of the gut (Ladd's procedure), extrophy of the bladder and cleft lip, Ladd proved that children's congenital conditions were amenable to surgery (Hendren, 1998).

In the UK, Denis Browne (Williams, 1999) was perhaps Britain's first full-time paediatric surgeon. In 1954 he helped found the British Association of Paediatric Surgeons and became its first president (Dunn, 2006). He did much to develop children's surgery, and without the professional infrastructure that exists today. All this was achieved in the early and middle years of the 20th century and against a backdrop of hostility towards children's medicine and especially toward children's surgery. Denis Brown was a fighter, a characteristic perhaps strengthened by his service in Gallipoli and France during the First World War (Smith, 2000).

It was due to the endeavours of Ladd, Browne and those they influenced and encouraged that by 1950 all had changed; surgery was then a heroic activity.

Paediatric surgery possessed new confidence, experimentation was expected and (Figure 1.2) new techniques thrived:

In September 1946, Barbara was born with a cleft soft palate, and owing to the professional observation of the nurse, consultations took place, when it was decided that before reaching the age of one year, plastic surgery should be performed. When a month or two old, this child was attacked by bronchitis, but by careful nursing, was able to be taken to the famous Plastic Surgery Centre at East Grinstead on the appointed date. An operation on this minute mouth was performed, and after a few weeks in hospital the child was returned to her parents with some simple directions for the care of her mouth. Before she was two years of age, she was gaily chattering away in "Harry Hemsley's Horace" dialect, but within another year she was able to compete in conversation with any normal child of her own age. Now, at four years old, thanks to the devoted services of the eminent Surgeons practising at the Plastic Surgery Centre at East Grinstead, she is the possessor of a full set of baby teeth, if slightly uneven, and is a most intelligent child, with a delightful sunny disposition. Mankind in general, and our heroic servicemen in particular ... owe much to the miraculous performance of Plastic Surgery. (Anonymous, 1950, p. 118)

In more recent years, neonatal surgery has been an important development (Adzick & Nance, 2000a,b). By the 1970s, sufficient work had been done in this field for texts on baby surgery to be produced for nurses (Young & Martin, 1979). This area of work is almost impossible to visualise outside a construct of experimentation and endeavour. Perioperative nurses had to become more knowledgeable. At the same time, nurse education was rapidly becoming more academic with nursing's migration into the university sector. Developing in the last 15 years, prenatal surgery will probably become another milestone in the history of paediatric surgery (Koop, 1997; MacKenzie & Adzick, 2001) (see Chapter 9). These advances confront nursing with important challenges and an increasing need both for professional organisation and education.



Fig. 1.2 Operating theatre in the 1960s.

Surgeons and children's perioperative nurses work collaboratively in the interest of the child. Both disciplines have contributed to the development of children's surgery and neither could have existed independently of the other. It is probably the case, however, that the role of the perioperative nurse in history has not been given the prominence that it deserves. The challenges faced by perioperative nurses today are not as new as we may have assumed. In truth, perioperative nurses have been involved in the development of children's surgery from its very beginning.

The growth of paediatric surgery

One of the earliest paediatric hospitals in Europe was the *l'hôpital des enfants malade* in Paris, which existed as a hospital from 1802. There were one or two general hospitals (which were in existence prior to the children's hospitals) which opened children's wards. For example, Guy's Hospital in London opened a children's ward in 1848 and the London Hospital opened one in 1840 (Lomax, 1996). However, these were short-lived, and on the whole, children were admitted to adult wards, something of which Florence Nightingale approved. It was not until ca. 1920 that most general hospitals possessed children's wards and performed paediatric surgery (Lomax, 1996). By this time, the specialist children's hospitals mostly practiced only medicine. Physicians and surgeons distrusted each other, with physicians regarding their practice as essentially more intellectual. Charles West, the founder of The Hospital for Sick Children, Great Ormond Street, London, is known to have had a poor view of surgery and saw no need for the hospital to employ a surgeon (Twistington-Higgins, 1952). However, some surgery must have been practiced in the early days of Great Ormond Street because the surgeon Timothy Holmes was working there when he published his text 'Treatise on the surgical treatment of the diseases of infancy and children' in 1868 (Lomax, 1996). He moved to St. George's Hospital in London that same year, indicating perhaps that surgery at Great Ormond Street was a less than consistent service. Timothy Holmes' surgery would have been limited to the treatment of wounds and of bone and joint disease.

Children's surgery for bladder stones seems to have been fairly commonplace until the beginning of the 20th century, when for reasons that remain unclear (Ellis, 2001), the condition became uncommon. It was not until the 20th century that surgery for congenital conditions such as cleft lip and club foot became relatively commonplace, as did tonsillectomy and adenoidectomy, and the first closed repair of intussusception, performed by Jonathan Hutchinson, took place at the London Hospital (Lomax, 1996). However, the specialist children's hospitals were still doing mainly minor and more specialist surgery. Even by 1900 most major and trauma surgery was being undertaken in general hospitals where children's services were often poorly developed. There was competition between the children's and general hospitals which resulted in a lack of cooperation. The general hospital's insistence on being general prevented specialist services from developing. At the same time, the children's hospital's emphasis on medical treatment and more specialist surgery meant that the general hospitals were still performing an essential role by providing major and trauma surgery. Professional rivalry has often been dysfunctional in the development of specialist services.

Before the speciality of paediatric surgery began to develop, what surgery did take place was performed by general and anatomically specialist surgeons. From

these early years in the mid-20th century, medicine and nursing were both institutional in delaying the progress of paediatric surgery. Paediatric surgery and the specialist paediatric nursing upon which it so depended were subjected to resentment and antipathy from general surgery and general nursing. It took 25 years for paediatric surgery to be recognised as a separate discipline in the USA in 1970 (Koop, 1993). Koop set up the first neonatal intensive care unit in the USA (Pennsylvania Children's Hospital) with a grant from the US Children's Bureau. Previous attempts to set up the unit had been thwarted by the hospital's failure to acknowledge that neonatal intensive care required specialist nurses. In Britain, the same antagonism to the development of paediatric surgery can be discerned. The British Association of Paediatric Surgeons did not come about until 1954, 26 years after the establishment of the British Paediatric Association (Forfar *et al.*, 1989), the forerunner of the Royal College of Paediatric and Child Health. In his review of a lifetime of work in paediatric surgery, Koop (1993) recalls that paediatricians would allow children to die of correctable surgical pathology rather than suffer the ignominy of making a referral to a paediatric surgeon. This seems all the more strange because medical paediatrics was itself a small and poorly recognised discipline. Gellis (1998) recalls working as a paediatrician in the mid-20th century and of not being allowed to go to the neonatal unit without a specific invitation.

The lack of acceptance of paediatric surgery in the wider world of medicine and nursing meant that surgeons were working with few resources and almost always with no specialist nurses. As the head of paediatric surgery in a major US children's hospital, Koop recalls spending the night before surgery fashioning endotracheal tubes from urinary catheters because it was not possible to purchase endotracheal tubes small enough for babies. In this same way, Koop also recalls of the 1950s 'Rigid brass scopes were used to do laryngoscopy, oesophagoscopy and bronchoscopy because there were no flexible scopes. Patients (children) were never anaesthetised ... visibility was hampered by poor lighting and by the constant explosive splattering of saliva and other secretions over one's face and glasses' (Koop, 1993, p. 619). Gellis (1998) recalls wards full of children with outstretched arms receiving subcutaneous infusions because there were no paediatric-sized cannulae for intravenous infusions.

Conclusion: perioperative nursing of children

The struggle for the recognition of paediatric perioperative nursing still continues. Fotheringham (1994) notes that education programmes for adult anaesthetic and recovery nurses did not commence until the mid 1980s; today, similar programmes for paediatric perioperative nurses are rare. It is problematic for the small and under-represented speciality of perioperative children's nurses to organise and achieve recognition for the very specialist service they provide. It is easy for loyalties to be divided between theatre and paediatric nursing. However, history teaches us that divided loyalties and professional rivalry achieve nothing but failure. Perioperative paediatric nurses (whatever their qualification) have one thing in common, an overriding concern for the welfare of the surgical child. In this, they share their orientation with paediatric surgeons, paediatric anaesthetists and children's nurses. Just as in days of old, those (whatever their qualification) prepared to place children in their role title are in an important sense, part of one single profession.

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