CHAPTER FIVE

DISCUSSION

This study was designed to evaluate the success of a newly developed dental DGA service at Canterbury Hospital associated with UDH. The intention was to monitor prospectively the incidence of complications and parental satisfaction levels associated with the service. Up until 1999, UDH offered a limited general anaesthetic service for young children. Many of the preschool children were either managed in the dental chair with or without oral/nasal sedation or were referred to Westmead Centre of Oral Health (WCOH). In 1996, 3% of children from Central Sydney and South Eastern Sydney had dental treatment under general anaesthetic at WCOH (Alcaino et al 2000). The establishment of this new DGA service at Canterbury Hospital in 1999 has enabled young children to be treated under general anaesthetic at UDH and allowed an additional 4 children to be treated per week. This has provided better dental care for patients and increased the efficiency of treatment. By comparison, at WCOH an average of 16 children were treated under general anaesthetic per week in 1996 (Alcaino et al 2000).

Prior to discussing the results of this study it is important to evaluate and review the chosen methodology. In the study, 165 families were approached for the survey and 108 agreed to participate giving a response rate of 65.5%. The families that did not participate in the study either had language difficulties or simply did not want to. Of the families that participated, 7 could not be contacted for the second part of the questionnaire and were not included in the study. There is no doubt that this will bias the responses. A more critical look at the group of non-participants would be useful, particularly the Non-English speaking families. In future studies, there is a need to use translators to ensure that a more comprehensive view is considered.
In the present study, questionnaires were used to determine the frequency and duration of post-operative complications and to determine if the families were satisfied with the overall care provided. The information collected may indicate ways to improve patient care and identify ways to minimise complications and reduce the potential for medicolegal actions. A review of the dental literature indicates that the interview techniques for investigating satisfaction of dental DGA are often poorly described and not standardised (Smith and Young 1976, Perslidien and Magnusson 1980, O'Brien and Suthers 1983, Arc and Moore 1984, Enger and Mourino 1985, Holt et al 1991, Hempenstall and de Plater 1991, Fung et al 1993, Chye et al 1993). Information can be collected using either written questionnaires or verbal interviews, and questions can be asked directly or indirectly which will influence the frequency of complications reported. Patients responding to questionnaires tend to complain of more complications than patients responding to verbal interviews (Fahy and Marshall 1969, Fahy et al 1969). Direct questioning with specified words, such as ‘Do you have a sore throat?’, tend to give a higher incidence of complications reported than indirect questioning, such as ‘Do you have any aches, pain or discomfort at all since your operation?’ (Harding and McVey 1987). The current study used direct questioning with specified wording, and the questionnaires were completed by a telephone interview conducted by one investigator.

There are few prospective studies on complications associated with dental treatment under DGA. The majority of post-operative complications associated with dental DGA reported are minor and require no treatment (Smith and Young 1976, Holt et al 1991, Enger and Mourino 1985). In this study, there was a high incidence of minor complications with more than two thirds of the children experiencing at least one post-operative minor complication at discharge a frequency that increased by the next day. The most commonly reported minor complications in the study were hysteria, vomiting, oral pain, nausea and sore throat which were attributable to both the dental procedure and to the anaesthetic.
Only one child experienced a major complication and required admission to hospital on the day of the operation.

While minor complications are transient and have little potential for serious harm, they can cause patient dissatisfaction. In the current study, a large number of parents were satisfied with the overall anaesthetic care (93%) and were happy for their child to have the same DGA in future if needed (80%) despite the incidence of minor complications. This high level of patient satisfaction with dental DGA is similarly reported in western countries (Holt et al 1991, Chye et al 1993).

The present study did not investigate the number of children who had a previous general anaesthetic for dental treatment. The literature suggests that re-treatment is high (Almeida et al 2000) and there is a need to develop strategies to reduce re-treatment after dental DGA.
Patient Characteristics

Gender

In this study, only slightly more males than females were treated under DGA. There was no statistical difference. This is also reported in several studies (Holt et al 1999, Alcaino et al 2000). In other studies females were the main user of DGA (Holt et al 1991, Jamjoom et al 2001). However there is no real explanation for this.

Age

In the current study, most of the children treated under DGA at the UDH were young children, 86% were 6 years and younger with 54% being under 4 years of age. Alcaino et al (2000) found two thirds of children accessing DGA at Westmead Centre for Oral Health (WCOH) in Sydney Australia were 6 years of age and less. The difference between the two hospitals may reflect variation in referrals. While both hospitals are tertiary referral centres for dental treatment, at the UDH many parents and children still use the service as a primary health care provider. In addition, at the UDH a separate general anaesthetic list is organised for older children who were not included in this study. Preschool children constitute a large proportion of children using DGA in this study with the mean age of 4.9 years, a finding that is consistent with a number of studies in Australia (Chippendale et al 1988, Alcaino et al 2000) and other western countries (Smallridge et al 1990, Vermeulen et al 1991, Thompson 1994, Landes and Bradnock 1996, Jamjoom et al 2001). Retrospective longitudinal studies have reported trends in declining mean age for DGA with preschool age children being frequent users of the service (Wong et al 1998, Grant et al 1998). This reflects the polarising effect of caries within certain groups of children, and the unmet dental needs in preschool children due to lack of access to school dental services.
compared to school age children. Preschool children are often unable to receive
dental treatment in the conventional dental office due to behavioural problems, age
and extent of dental treatment, hence treatment is often accomplished using DGA.
By contrast, some studies found children aged 10 years and older made up a larger
proportion of DGA users. This is likely to be relate to orthodontic extractions and
minor oral surgical procedures (Smallridge et al 1990, Holt et al 1991, Holt et al
1999). In this study there were few children over the age of 7 (14%) using the
DGA service at Canterbury Hospital. This is because a separate DGA list is
provided at the UDH for children who weighed over 20 kg which often restricts its
use for preschool children. In addition, the majority of minor surgical procedures
were carried out at the UDH and the children tended to be older.

**Ethnicity**

Ethnicity was measured mainly by using both the language spoken at home and
the birthplace of the individual. The reason is that while 76 children were born in
Australia only 48 children spoke English at home. According to the Australian
Bureau of Statistics the language used at home reflects ‘active’ ethnicity (ABS
1986). The main users of DGA in this study were Australian (47.5%) followed by
Middle-Eastern (18.8%), European (11.9%) and Asian (10.9%) a pattern that is
consistent with the overall ethnicity of the Sydney population. A similar finding
was also reported by Alcaino et al (2000). In the earlier study, the authors also
reported a significant increase in the number of children accessing DGA from Asian
and Middle-Eastern background from 13% in 1984 to 24% in 1996. This trend is
continued in the present study as the total number of Asian and Middle-Eastern
children is 30%.

Very few Aboriginal children accessed DGA services in either the current study
(3%) or in the study from WCOH in Sydney (1.4%) (Alcaino et al 2000). This
appears consistent with the distributions of indigenous and non-indigenous people
in NSW. Indigenous people represent 1.8% of the population in NSW (NSW
Health Department 2000). In both studies at the UDH and WCOH, the suburbs of residence of the aboriginal children were not identified. However the Australian Bureau of Statistics reported that the Aboriginal populations in Central Sydney and South Eastern Sydney have relatively large proportion of young adults aged 20 to 39 years, while the Aboriginal populations in Western Sydney, South Western Sydney and Wentworth have relatively large proportions of children aged 0 to 9 years (NSW Health Department 2000). A recent study in Australia reported that 39% of urban Aboriginal children aged 1 to 3.5 years had early childhood caries (Seow et al 1999). This is a reflection of the fact that there is still untreated caries in young Aboriginal children although dental facilities are established for them. For example, in Sydney there are three Aboriginal Medical Services with Dental Clinics for Aboriginal patients. This suggests that in the indigenous communities there is a lack of education about oral health, about services available and how to access them. Cultural priorities may not support dental care practices.

A change in pattern of minority groups accessing DGA is not only observed in Australia but also in other western countries such as in the United States (Bohaty and Spencer 1992) and United Kingdom (Wong et al 1997). In a 10 year study of DGA in the UK there was a decrease in the number of Caucasian children and increase in number of Asian children being treated. The authors attributed this change in ethnic distribution pattern with a change in general population and a change in attitude in Asian families toward dental treatment from emergency extractions to comprehensive dental treatment (Wong et al 1997). However, in this study 84% of overseas children accessed the DGA service through self-routine or self-emergency referral which is similar to the findings from the other Sydney study where 50% of Asian and Middle-Eastern accessed DGA through the emergency department (Alcaino et al 2000). That is there are a disproportionate number of non-Australian families accessing the UDH and WCOH as primary health care providers and accessing DGA as a first line of treatment. This may be because parents of ethnic minority groups take their children to dental services only when they are in pain. This suggests that there is a need to examine specific
migrant and indigenous communities to identify ways of helping them access more local dental services and improve or increase awareness of oral health. While this study did not investigate whether non-Australian children had more dental extractions than Australians, in one study in Melbourne Australia, Asian children had significantly more dental extractions than European and other ethnic minority children (Chippendale and Storey 1988).

**Medical Conditions and Disability**

The children presenting for dental DGA were classified into two groups: 'no medical' and 'medical' condition. A large proportion of the children in the study had no medical problems (71%) and is similarly reported in other DGA studies (Holt et al 1991, Holt et al 1992, Alcaino 2000). This is because the main users of DGA are children with ASA 1 and 2 status. At UDH, children with significant medical conditions and/or with special needs are managed at the Sydney Children’s Hospital but access to general anaesthesia is restricted to one session treating two children per month. Others are referred to WCOH for dental treatment under DGA.
Demographics

Suburb of Residence

The DGA service is located in Central Sydney and in a majority of cases children resided in Central Sydney (38%) followed by South Eastern Sydney (28%) and South Western Sydney (22%). A number of children travelled very long distances to access DGA such as from Western Sydney (5 children) and Far Western Sydney (1 child) in NSW. At WCOH the DGA service not only serves the local population from Western Sydney (38%) and South Western Areas (31%) but also children living in rural areas of the New South Wales (NSW). This reflects that both specialised dental services in Sydney are the main DGA providers for children living in NSW especially children from South Western Sydney. This may suggest a need for a DGA service for dental treatment in South Western Sydney. In the UK, most children reside within a 10 mile radius of the DGA facility and a small number of children live more than 10 miles from the DGA (Smallridge et al 1990, Holt et al 1992, Wong 1997).

Referral Source

In this study the most common source of referral in the study was self referral (69%) with half the number of children attending because of acute dental problems. A small number of children were referred by external sources, mainly from school dental services (15%) and general dental practitioners (GDP) (9%). This highlights that a number of parents consider that the Children’s Dental Department at the UDH is a place for emergency care and not necessarily for regular dental care. The low number of children referred from external sources suggests a lack of awareness from the dental and medical professions that UDH provides dental treatment under general anaesthetic for children and may also be due to the previously restricted number of theatre sessions. With increased number
of theatre sessions available for children at the UDH there is a need to promote the
dental service provided at the UDH within the local community and health
professionals. Also it is important to foster a closer working relationship with
dental and medical colleagues, especially as the dental unit becomes established in
a medical hospital.

It would appear that WCOH in Sydney have a different referral base. While
patients were mainly self referrals (42% in 1984, 32% in 1996) there was
considerable number of referrals from GDP and school dental service which
increased over the 12 year period (Alcaino et al 2000). In contrast, in the UK the
major source of referral is by GDP and community dental services, and very few
self referrals (4-6%) (Smallridge et al 1990, Holt et al 1992, Shaw et al 1994,
Grant et al 1998). In Europe, children are mainly referred from GDP or
paediatrician, and self referral was comparable with the UK studies (Vermeulen et

Many preschool children attend the Children’s Dental Department at the UDH on
a ‘walk-in basis’ without a referral letter and at least half attend because of acute
dental problems. It is not surprising that preschool children tend to access dental
care through self-referrals since they are not exposed to dental screening and oral
health education at school dental clinics. There is a need to educate prevention of
dental diseases earlier such as at pre-natal classes and at the child’s immunisation
visits. It is important to educate parents that the first dental visit should happen
soon after the first primary tooth erupts at about 1 years of age, and ideally it
would be beneficial to commence dental screening in preschools. As in the
Alcaino and co-workers study (Alcaino et al 2000), there was a disproportionate
percentage of Asian and Middle-Eastern children accessing DGA as a primary
service.
**Referral Reasons**

In the study, the reasons for treatment under DGA were broadly classified into caries, trauma and anomalies. In several studies reasons for DGA included behavioural problems, too young, extensive treatment and medically compromised (Vermeulen et al 1991, Shaw et al 1994, MacCormac and Kinirons 1998). While it is clear that for some children there is more than one reason for referral, it would seem reasonable to use dental caries as the main category because regardless of behaviour if the child did not have the dental disease they would not need a DGA. Subdivision of the ‘caries’ category can then be done by age and it is reasonable to assume that the preschool children may require general anaesthetic as a result of their age whilst school children need DGA either because of extensive treatment needs or behaviour difficulties. Caries and its sequelae were the major reason for dental DGA (97%) which is comparable to studies in Australia (Alcaino et al 2000), developed countries (Vermeulen et al 1991, Holt et al 1992, Landes and Bradnock 1996, MacCormac and Kinirons 1998, Grant et al 1998) and in developing countries (Jamjoon et al 2001). A small number are referred in for trauma and dental anomalies, also confirming the findings of Holt et al 1992, Grant et al 1998 and Alcaino et al 2000.

It has been reported that children 10 years and younger are generally referred because of caries whereas children older than 10 years are referred more commonly for orthodontic extractions or surgical procedures (McLaughlin et al 1987, Smallridge et al 1990, Mason et al 1995, Grant et al 1998, Jamjoon et al 2001). In this study no children were referred for orthodontic extractions under DGA because it was often carried out in the dental chair with or without inhalational sedation. Orthodontic extractions were previously a common indicator for treatment under DGA in the UK. However recent studies suggest this trend has declined over the years and may be due to change of orthodontic philosophy towards non-extraction and encouragement to provide extraction under local anaesthetic with or without inhalation sedation (Landes and Bradnock 1996, Grant
et al 1998). Evidence suggests that inhalational sedation is a successful alternative to general anaesthetic for orthodontic extraction with children experiencing less complications and the time taken being shorter (Shepard and Hill 2000). In this study only a small number of children had a general anaesthetic for trauma (1 child) or dental anomalies (2 children). The reason for this is because these children accepted treatment carried out in the dental chair and some of them had surgical procedures conducted in the Oral Surgery Department at the UDH.

Waiting Time

Evidences suggest that the demand for treatment under DGA is increasing and is shown by increasing numbers of children and longer waiting times before treatment which ranged from 1 month to 13 months (Thomson 1994, Mason et al 1995, Wong et al 1997, Whyman 2000). At Westmead Centre of Oral Health Sydney the average waiting time for DGA treatment for children increased from 37 days in 1984 to 81 days in 1996 (Alcaino et al 2000). In the current study, the mean waiting time for treatment under DGA was 42 days. This is short and not unexpected as this is a new dental DGA service only established in 1999. We would expect this to waiting list to increase as the service becomes more well known. One patient had to wait for more than 90 days after attending the emergency department before treatment under DGA. This is because emergency extraction under inhalation sedation was performed when the child initially presented with pain and was cooperative. As there was still extensive dental work needed and the child was young it was felt that the remaining treatment was best completed under general anaesthetic. It is important to limit the duration of waiting time for dental treatment as if this exceeds 6 months it is almost impossible to treatment plan and prioritise. The differences in the waiting time before treatment with other studies are influenced by factors such as the number of DGA sessions available per week, the number of staff available and the length of time the service has been established.
Dental Treatment

An important advantage of DGA is that it allows dental treatment to be completed in one visit rather than with multiple local anaesthetics. It minimizes the stress and inconvenience of overnight hospital admission for the child and parents (O’Sullivan and Curzon 1991, Wong et al 1997). In addition, conditions under general anaesthetic favour good treatment and thus should minimize the risk of restorative failure. Preserving the primary teeth is important for aesthetic, speech, mastication and guidance of eruption of the permanent successor teeth. However, the general consensus in the dental literature is that there is a high incidence of further treatment required after DGA in a short space of time (Mitchell et al 1985, Thomson 1994, Jamjoom et al 2001). Legault (1972) found that of the 217 children, 39% required additional treatment within 16 months and 11% were retreated under general anaesthesia. O’Sullivan and Curzon (1991) reported 8.75% of 80 children required retreatment and 3% had to undergo a second general anaesthetic at a 2 year follow-up. Landes and Bradnock (1996) showed that 23% of children had more than one general anaesthetic for dental treatment and 13% were 4 year olds, but the time scale was not specified. A majority of children needing further treatment at a later date accept treatment in the dental surgery with local anaesthesia after regular ‘behaviour shaping’ at follow up visits (Legault et al 1972, O’Sullivan and Curzon 1991, Jamjoom et al 2001).

It appears that additional treatment needs after DGA are mainly due to new carious lesions rather than secondary caries or failed restorations. A recent study found that of the 42 children treated for early childhood caries (ECC) under general anaesthetic, 79% had new detectable carious lesions at subsequent recall visits and 17% required retreatment under general anaesthesia within 2 years following a full mouth rehabilitation (Almedia et al 2000). Eidelman et al (2000) analysed 34 children with ECC treated under DGA and reported that 59% needed additional treatment after 14 months. Most of the additional treatment was for new carious
lesions despite regular oral hygiene, and only 2% of restorations placed under
general anaesthetic had secondary caries. There were few secondary caries after
DGA because the primary molars were frequently restored with stainless steel
crowns and anterior teeth with strip composite crowns. The development of new
carious lesions in the short time after dental treatment suggests that conventional
prevention regime and conservative restorative treatment are not enough, and
consideration should be given to more aggressive restorative approaches under
general anaesthetic for ECC children.

The present study highlighted extensive dental treatment carried out under DGA
for young children. Children between the ages of 0 to 2 years had an average 4.83
primary teeth restored and 2.33 extracted. Children between the ages of 3 to 4
years had an average 6.27 teeth restored and 2.82 extracted. Children between the
ages of 5 to 6 years had 5.84 primary teeth restored and 3.50 primary teeth
extracted. In the UK, the average primary teeth restored was 3.92 and 3.26 primary
teeth extracted in children under the age of 5 years (Holt et al 1991). There is also
a difference in the pattern of dental treatment provided between the UDH and
WCOH. Alcaino et al (2000) reported a decrease in the mean number of primary
teeth restored from 4.84 in 1984 to 4.05 in 1996, but an increase in the number of
primary teeth extracted. Children requiring 5 to 8 extractions increased from 10%
in 1984 to 21% in 1996. In the current study, fewer children required 5 to 8
primary teeth extractions (16%). The differences in treatment may be related to
different treatment philosophy under general anaesthetic at the two dental units in
Sydney, with a more conservative approach at UDH than at WCOH. Also at UDH,
a shorter waiting time for treatment may mean that more teeth can be restored,
while a longer waiting time at WCOH means that caries may progress until
extraction of teeth is the only option available.

Subjects in the current study had very few surgical procedures performed
compared with those in the Alcaino et al study (Alcaino et al 2000) and those in
other developed countries (Holt et al 1991, Mason et al 1995). This reflects the
interests of the dentists in performing surgical procedures, and the resource and reputation of the hospital for providing such services. WCOH has a paediatric dentist who has developed particular expertise in minor surgical procedures such as surgical removal of supernumerary teeth and odontomes, soft tissue surgery such as gingivectomy and frenectomy, and orthodontic exposure and/or bonding, and has thus built a strong referral base. At the UDH most surgical procedures are referred to the Oral Surgery Department within the same hospital.
Timing of Appointment

The total time spent at the hospital including waiting time before treatment, total anaesthetic time and recovery ranged from 3½ hours to 12½ hours with an average of 6 hours. Two patients spent more than 12 hours in the hospital because the admission forms were filled out incorrectly by dental staff. Studies in dental DGA tend to report dental treatment time rather than the total time spent at the hospital. Holt et al (1991) reported the total time spent in the hospital ranged from 1 hour to 4 hours with a mean of 2½ hours. In general, the total anaesthetic time is influenced by hospital protocol, pre-operative waiting, dental procedure time, and recovery time.

In the study, the duration of time in the hospital was divided into six categories: waiting time before anaesthetic, induction time, duration of dental procedure, total anaesthetic time and the total time spent at the hospital. Not all these categories have been previously reported. Waiting for anaesthetic to start ranged from 20 minutes to approximately 7 hours with an average of 2 hours 20 minutes. Children that were booked first on the list waited the shortest period before anaesthetic as expected. The waiting for several hours before anaesthesia by a few children was due to lack of staggering the appointments when the service first opened and was rectified early in the study. That is initially all children were booked for 7.00am even if they were last on the list for the day.

The duration of the dental procedure ranged from 5 minutes to 2 hours, with two thirds of the procedures lasting 1 to 1½ hours. The short dental procedures were extractions of traumatised anterior primary teeth and were done often in the anaesthetic bay without intubation. Duration of the procedure may also be operator dependent and during this study there were 5 dentists involved in providing the treatment. A number of other studies have also reported an average duration of dental procedure of 1½ to 2½ hours and this reflects the time needed to do
multiple and complex restorations (Smith et al 1978, Persliden and Magnussen 1980, O’Brien and Suthers 1983). Dental procedures lasting less than 30 minutes have been reported and are frequently associated with minimal restorations, extractions and minor surgical procedures (Smith and Young 1976, Holt et al 1991, Hempenstall and de Plater 1991). Therefore the duration of the dental procedure is dictated by the treatment needs, treatment planning philosophy and the skill and expertise of the operator.
Morbidity

Pain

In the present study, the incidence of post-operative oral pain remained consistent in all four periods, 25.7% in recovery, 23.8% on the way home, 26.7% at home, and 20.8% the next day. A slightly higher incidence of pain occurred during the evening of the operation. There are few dental studies examining post-operative oral pain over a period of time but a higher incidence of oral pain has been reported at home. Hempenstall and de Plater (1991) found after surgical removal of third molars under general anaesthetic 16% complained of mild oral pain in recovery but at 24 hour post-operatively 42% had mild oral pain, 44% had moderate pain and 5% had severe pain. Holt et al (1991) noted that oral pain rose from 20% in recovery to 32% at home after dental treatment under DGA. This suggests that pain management at home is inadequate following dental DGA. In the study, children who were given local anaesthetic reported a higher incidence of oral pain at home. The reason for this may be that children with more aggressive treatment and extractions were given local anaesthetic and when the local anaesthetic wore off there was lack of appropriate post-operative pain management at home. While 47.5% of the children were given analgesic at home 20.8% of the children still complained of post-operative oral pain the next day. This suggests that there is a need to provide parents with clear instructions regarding the type, dose and frequency of analgesic to be given at home rather than to be taken as needed (Finley et al 1996, Romsing et al 1998, Walker 2000) and assessment would be useful.

In the current study, the incidence of pain in recovery would appear to be high given that the majority of children were given a combination of peri-operative analgesics and local anaesthetic. Paracetamol was given pre-operatively to 53.5% of the children so that it would be working maximally when the child woke from
anaesthesia, 98% were given analgesics intra-operatively of which 90% had fentanyl or a combination of fentanyl and paracetamol, and 43.6% were given local anaesthetic. Hempenstall and de Plater (1991) attributed the low incidence of oral pain in recovery to the use of local anaesthetic and oral analgesics. An explanation for the unexpected number of children reporting oral pain in recovery in the study is that pain assessment in young children is difficult. Measuring pain in children with limited verbal fluency and cognitive development requires both simple verbal descriptions and behavioural monitoring by an observer such as movement of the limbs or the torso, facial expressions and crying which are manifestation of pain (Grunau and Craig 1987, Manne et al 1992, McGrath 1998). Younger children tend to report a higher incidence of pain because of fear and distress (Manne et al 1992, Fung et al 1993). In the study, parents were asked to observe their child's behaviour and report whether their child felt oral pain after general anaesthetic. The results need to be interpreted with caution as parents may infer biases in the response and may reflect their own anxiety and their perspective on how much pain the child is experiencing (Manne et al 1992). Nurses tend to rate pain and distress in children based on overt behavioural distress (Manne et al 1992). However, it would be impractical and not economical to employ nurses to observe children's behaviour as pain was also monitored at home. The large number of young children in the study precluded the use of picture scale and visual analogue scale for pain assessment. This form of pain assessment is useful for future studies of pain in older children. In the study, 25.6% of the parents reported their child had experienced oral pain prior to discharge yet only 4.0% were given analgesic in the recovery room. This highlights the problem regarding the accuracy and consistency of young children's verbal description of their pain experience and parent's interpretation. Another possible reason for the high incidence of pain reported in recovery is that children may have attended DGA with their mother. It has been reported that children accompanied by their mother to dental DGA are more likely to complain of pain and may be related to the bond between the child and mother or a conscious or unconscious manipulation of the mother by the child (Fung et al 1993).
Other studies have also reported a high incidence of pain in recovery. Shepard and Hill (2000) compared orthodontic extractions carried out under either DGA or inhalational sedation and local anaesthesia. Significantly more children in the DGA group reported painful mouths in recovery (20.0%) compared to the sedation group (3.4%). This is because only oral paracetamol was given during the recovery period and the analgesic would not be working maximally. Fung et al (1993) found that the majority of children (57.5%), aged 5 to 13 years, reported post-operative pain within the first hour after dental extractions under DGA. The authors did not comment as to whether analgesics or local anaesthetic were given pre-operatively or during the procedure but children with moderate to severe pain on recovery from anaesthesia were given paracetamol before being discharged.

**Sore Throat**

The incidence of sore throat in the present study was low (12.9%) and remained consistent throughout the four periods studied. This compares favourably to other dental DGA investigations. Holt et al (1991) reported an incidence of 27%. Hempenstall and de Plater (1991) found 47% incidence of sore throat immediately post-operatively and 55% 24 hours post-operatively. Ogg et al (1983) reported an incidence of sore throat of 87.5% post-discharge. The incidence of sore throat in the medical literature ranged from 9% to 60% (Stewart et al 1975, Harding et al 1987, Alexander and Leach 1989, Mandoe et al 1992, Splinter et al 1994). The differences in the incidence of sore throat are due to different anaesthetic techniques used. Factors contributing to sore throat are endotracheal intubation, pharyngeal packing, tracheal tube size, inflation of the cuff and lack of lubrication of the tracheal tube (Fine et al 1988, Alexander and Leach 1989, Hempenstall and de Plater 1991, Christensen et al 1994). In this study, the techniques used to minimize trauma to the airway mucosa and post-operative sore throat included use of small intubation tubes to decrease mucosal contact, use of non-cuffed tubes to prevent cuff-trachea contact and topical local anaesthetics were sprayed into the larynx to enhance tolerance of the tube to minimize coughing and bucking. Due to
the nature of dental treatment with the presence of haemorrhage and large volumes of water from the handpiece and triplex syringe, pharyngeal packing is mandatory despite the increased risk of pharyngitis. To further minimize the incidence of sore throat a laryngeal mask airway (LMA) should be considered (Alexander and Leach 1989, Splinter et al 1994) for future dental extraction cases under DGA (Brimacombe and Berry 1995, Quinn et al 1996). Recently, a pharyngeal pack soaked in 0.2% tenoxicam solution, a non-steroidal anti-inflammatory agent, has been suggested to minimize inflammation of the pharyngeal mucosa and incidence of sore throats (Elhakim 1993, Elhakem et al 2000). The incidence of sore throat is also influenced by the interview technique. A higher incidence of sore throat is obtained by direct questioning compared to indirect questioning (Harding and McVey 1987).

In this study, a higher incidence of sore throat was reported when the total anaesthetic time exceeded 1½ hours although it was not statistically significant. Studies have reported that post-operative sore throat is not related to the duration of anaesthesia and difficulty of intubation (Loeser et al 1989, Arndt et al 1998). Christensen et al (1994) studied 1325 patients ranging from 18 to 70 years of age who had undergone gynaecological, orthopaedic, breast, thyroid or general surgery. The authors found a 14.4% incidence of sore throat that did not increase with multiple intubation attempts (range 1 to 8 attempts) or the duration of anaesthesia (range 20 to 480 minutes).

**Nausea and Vomiting**

Many children in the study experienced post-operative nausea and vomiting (PONV) in recovery and during the journey home but very few experienced PONV the next day. In the dental literature, a similar high incidence of PONV is reported in recovery (Smith and Young 1976, Enger and Mourino 1985, Hempenstall and de Plater 1991 and Holt et al 1991). However, the medical literature suggests that PONV is much more common after discharge than in
recovery (Carroll et al 1995). It may be that for non-dental general anaesthesia patients are given antiemetic drugs before major surgery more routinely to decrease the incidence and severity of PONV in recovery.

The incidence of vomiting in recovery was higher in the present study (31.7%) than that found by Holt et al (1991) (13.6%) and Smith and Young (1976) (18.9%). This may be associated with a longer mean duration of anaesthesia in the study (1 hour 38 minutes) compared to approximately 30 minutes reported by Holt et al (1991) and Smith and Young (1976). Long operations are associated with a higher incidence of PONV (Korttila 1992, Hitchcock 1997). Another possible explanation for the high incidence of vomiting in recovery in the present study may be due to forcing the child to drink too soon after dental treatment which can induce vomiting and also what the child is given to drink. O’Brien and Suthers (1983) reviewed the treatment of 1316 children following dental DGA over a 12 year period and reported 3.8% incidence of vomiting following anaesthetic. However, the results need to be interpreted with caution as it is a retrospective study. There is generally a poor agreement between interviews and hospital record, complications being more commonly reported by interview than in the record (Cohen et al 1994). It is interesting to note that in this study children who had no extractions had more PONV than children with extractions. This group of children may have had a history of motion sickness, emesis after previous anaesthetics or had a large meal in the evening. No children in the current study required admission to hospital from PONV. Although the impact of PONV in returning to normal activities was not investigated, 60% of the children were able to resume a normal diet within 24 hours and no parents called the health professionals for advice or treatment for PONV. The lack of intervention does not necessarily indicate a minimal problem and PONV is one complication that most patients are keen to avoid (Orkin 1992).

Transient PONV aside from being distressing, may place the patient at risk for complications, delay in discharging home, cause unanticipated hospital admission
and impede resumption of normal activities. Therefore every effort should be made by the anaesthetist to decrease this problem by identifying patients most at risk of PONV and developing appropriate prophylaxis and intervention strategies. Antiemetics have been used as both prophylaxis for patients at risk of post-operative nausea and vomiting, and treatment of post-operative nausea and vomiting. The drugs available include: prochlorperazine, metoclopramide, droperidol, antihistamines, anticholinergic agents and 5-HT3 receptor antagonists (Ondansetron). Ondansetron has been shown to be effective in the prevention and treatment of post-operative nausea and vomiting without causing sedation, extrapyramidal reactions or adverse cardiovascular effects, unlike the other antiemetic medications (Kenny 1994). It is important to provide parents with detailed instructions for preventing or managing nausea and vomiting episodes such as dietary cautions, drinking carbonated beverages and taking pain medication on a full stomach (Carroll et al 1995).

**Bleeding**

Post-operative bleeding can arise from extraction sites or the nose but often in the dental literature this is not clearly defined. The reported incidence of ‘bleeding’ ranges from 4% to 29% (Engar and Mourino 1985, Holt et al 1991). Hempenstall and dePlater (1991) reported an 8% incidence of epistaxis. In the present study, epistaxis was not common and may be related to good anaesthetic technique by the anaesthetist or it may be underestimated as the complication was not specifically identified in the questionnaire. Epistaxis is related to many factors such as type and size of the nasotracheal tube, use of nasal lubricants, immersing the endotracheal tube in hot water to make it softer and more pliable, careful manipulation by the anaesthetist, and the anatomy and status of the structures and tissues of the nasal passage (Hempenstall and dePlater 1991). Epistaxis and nasal trauma can be minimised by prior spraying of the nasal mucosa with a vasoconstrictor.
The reported incidence of bleeding from extraction sites in the present study was 6.9% in recovery and increased to 17.8% on the way home. Following extraction haemostasis was obtained using pressure with a packed gauze and with the use of local anaesthetic with a vasoconstrictor. Sutures or placement of surgical could also be used to control haemorrhage. Patients were given instructions for preventing and managing post-operative bleeding. It is not uncommon to have a slight haemorrhage oozing from the socket in the first few hours after extraction and would account for the reported oral bleeding on the day of the operation. Premature ambulation or an upset child may have caused some bleeding from the extraction sites on the way home. Despite the prevalence of oral bleeding no parents contacted the health professionals for advice and management. There was no incidence of oral bleeding the next day and no children required hospital admission for post-operative bleeding.

**Headache**

The incidence of post-operative headache experienced by children in the present study rose from 4% in recovery to approximately 10% on the way home and that evening, but decreased to 3% the next day. Shepard and Hill (2000) also reported a low incidence of headaches (8.6%) in recovery after orthodontic extraction under DGA. However, a higher incidence of headache has been reported (Smith and Young 1976, Holt et al 1991 and Hempenstall and dePlater 1991) with Young and Smith (1976) reporting that 81% of children experienced a headache whilst still in hospital and attributed these headaches to the use of halothane. It is thought that halothane affects the cerebral vasculature, blood flow and intracranial pressure with the duration being prolonged by the continuing effects of the agent (Hempenstall and dePlater 1991). Headaches are usually treated easily and successfully with non-narcotic analgesic and its use could account for the decrease in headaches on the evening of the operation.
Hysteria

In the study, parents were asked to observe and assess if the crying was prolonged. Hysteria or prolonged crying was reported in 37.6% of the children in the recovery period prior to discharge. This figure would appear to be quite high however prolonged crying has not been commented on in other studies examining complications associated with DGA. This suggests that most investigators may consider crying a normal reaction after emergence from anaesthesia. Shepard and Hill (2000) reported a 20% incidence of crying in the dental DGA group in the recovery period compared to 1.7% in the sedation group in children with a mean age of 12 years in both groups. Holt et al (1991) reported 8% incidence of prolonged crying. Crying after emergence of anaesthesia can be associated with various factors such as pain, stress, anxiety or anaesthetic agents (Wetchler 1987). Crying may be minimised by having the parent of the child in the recovery ward shortly after the operation. In the present study, no differences were found between children with or without extractions, and with or without local anaesthetic. A higher incident of crying was reported in children with a total anaesthetic time greater than 2 hours but the numbers were small and the results were not statistically significant.

Sleepiness

There was a high incidence of drowsiness or sleepiness on the way home from the hospital (69.3%) and that evening (51.5%). A similar high incidence of drowsiness has been reported in the dental literature. Holt et al (1991) reported 45% incidence of drowsiness following treatment under DGA. Smith and Young (1976) reported more patients were drowsy in the hospital (72.6%) than at home (46.3%). In the present study, the questionnaire did not directly ask about sleepiness in recovery but if it did the incidence would most likely be high.
Muscle Pain

Suxamethonium is a muscle relaxant that is associated with high incidence of muscle pain (Smith and Young 1976, Miller et al 1997). Suxamethonium also carries the risks of anaphylaxis and malignant hyperthermia. However, some anaesthetists still use it in DGA because it allows faster onset than do other non-depolarising muscle relaxants such as atracurium, vecuronium and rocuronium and for emergency situations requiring rapid intubation (Korttila 1995, Miller et al 1997). Holt et al (1991) used suxamethonium to facilitate intubation in the older children but did not specify the number of children that had suxamethonium and reported a 12% incidence of muscle pain. In the current study, suxamethonium was not used at all yet 3% of children experienced muscle pain arising only on the way home. Smith and Young (1976) also found a high incidence of muscle pain and stiffness in the hospital (27%) and at home (34%) in patients who, with the one exception, were not given suxamethonium. This result may reflect the general problem of asking leading questions in questionnaires resulting in inaccurate information on post-operative complications.

Admissions

Complications that result in admission of the child to a hospital can be attributed to anaesthetic, surgical or social reasons. In the present study, the single admission was the result of laryngospasm at extubation. Laryngospasm is a spasmodic closure of the larynx and can be induced by premature/early intubation under inhalation anaesthesia or occur at extubation (Persliden and Magnusson 1980 and O’Brien and Suthers 1983). Chy et al (1993) compared surgical removal of third molars under DGA and intravenous sedation. The authors reported 0.25% hospital admission rate in patients treated under DGA due to slow recovery from anaesthesia, prolonger hypotension and prolonged bleeding from an extraction site. The present study compares favourably with the results from other dental studies of a 2.5% hospital admission rate (Smith et al 1978 and Yee and Davis
1984). In non-dental DGA, the reported incidence of hospitalisation varies from less than 1% to 4% (Gold et al 1989, Korttila 1995).
Satisfaction with Service

It has been reported that patients undergoing dental treatment under DGA are generally satisfied with the service (Holt et al 1991, Hempenstal et al 1991, Podesta and Watt 1996). In this study parental satisfaction with the overall anaesthetic care was high (93%) except for one mother who was 'not satisfied' with the service because her child was crying hysterically. Six parents indicated 'somewhat satisfied' with the anaesthetic care either because a training anaesthetist administered the anaesthetic or they felt they waited too long for the anaesthetic induction. A third of the parents were unhappy about the wait time before induction, with a seven parents waiting for 5 hours and more before induction. Despite a bad experience of general anaesthetic by some families, many considered it a satisfactory form of treatment. Families appear to appreciate that DGA means that all necessary treatment can be completed in one visit, it does not involve intra-oral needles which many people including children reportedly dislike and the child can recover at home. The parent of the child that required hospital admission indicated they were very happy with the overall anaesthetic service.

The period prior to induction of anaesthetic is often described as the most tense and nervous for the parents (Hastings et al 1994). In the study 69% of the parents were worried about the anaesthetic while waiting for the anaesthetic, even though 63% of the parents felt they had received adequate information about the anaesthetic before coming to the hospital. The 37% of parents that were dissatisfied about the information provided on the anaesthetic may be explained by either poor communication between the dentists and parent in the outpatient clinic or by the lack of written information provided by the UDH staff. It is unacceptable that over a third of parents were dissatisfied with the information provided to them about the anaesthetic. To improve the level of understanding it is important to provide written information about the dental treatment and anaesthesia to parents. Anaesthetic information should include not only fasting requirements but also risk
of complications associated with general anaesthesia and pain management at home. Over 90% of the parents felt reassured after the pre-operative visit from the anaesthetist which suggests that this is a very important aspect of anaesthetic care. The pre-operative visit from the anaesthetist had a beneficial effect on parents overall satisfaction with the service (Whitty et al 1996).

It is apparent that attending for DGA treatment costs the families in terms of time taken off work, number of parents accompanying the child, in travelling and arrangement made for other siblings. In the study, 28.8% of the parents had to take time off work and some may have lost pay. Some families had to employ paid help (5.9%) to care for other children in order to bring only the child receiving treatment to the hospital. Holt et al (1991) reported a similar finding with 8.82% of families requiring paid help to mind the other children, but 76.7% of the parents had to take time off work and of these 36.7% had a loss in salary. This reflects that the DGA service at UDH caters to a large number of low income families because of the low number of parents taking time off work suggesting unemployment.

A majority of parents were happy to choose the same form of treatment again (80%). Only one clarified she would be unhappy to have the same treatment again because she felt hurried to leave after the general anaesthetic, the child was hysterical upon wakening and more restorations and extractions were carried out that she had been advised would probably be required. Some parents were unsure whether they would have treatment carried out in the same way for their child if it was necessary, despite indicating a high level of satisfaction with anaesthetic care and with the anaesthetist. This suggests that some parents still have reservation about general anaesthetic which may be due to concerns about the child’s reaction to the anaesthetic, fear that they may not wake up from anaesthetic and possibly the fact that the parents themselves may have had a negative experience under general anaesthetic as a child. Hastings et al (1994) reported that parents reservation of general anaesthesia can be overcome by the dentist’s
recommendation of the procedure and reflects the fact that dentists are seen as professional whose judgment is trusted and accepted.

Although the study found a high incidence of minor complications many parents were satisfied with the service. It would appear that parents equate quality of anaesthetic care not only with minimal or absence of complications but also adequate information given prior to the day of the operation, having post-anaesthetic sequelae explained and the period of time the child has to wait for treatment from arriving at the hospital.
CHAPTER SIX

CONCLUSION

At the beginning of this study four objectives were outlined with the main purpose of answering these postulates:

1. Children receiving dental care under general anaesthesia have specific demographic, socio-economic and cultural characteristics.

A majority of the children in the study came from Central Sydney Area, South Eastern and South Western Area. There was insufficient data to analyse socio-economic groups. Australian children who spoke English at home were the main users of the service, followed by Middle-Eastern, European and Asian children. There was a disproportionate high percentage of Asian and Middle-Eastern children accessing dental treatment under day case general anaesthetic as a primary service. Over 80% of the children in the study were 6 years and younger. Extensive dental treatment was performed in this young group of children. The average number of primary teeth restored was 5.54 and the average number of primary teeth extracted was 2.82.

2. The majority of children experience minor post-operative complications following dental care under general anaesthesia.

Two thirds of the children in the study experienced at least one post-operative complication at discharge and the number of children with complications increased the next day. Complications following dental treatment under DGA were predominantly minor in nature and transient. The common minor complications were hysteria, vomiting, oral pain, nausea, sore throat and oral bleeding which were related to both anaesthetic and dental treatment.
3. The majority of parents will agree to their child having treatment carried out in the same way again if needed.

The level of satisfaction with the overall anaesthetic care was high with 80% of the parents willing to have their child complete dental treatment in the same way again if needed. Satisfaction was related to the amount of information parents perceived they had received.
Limitations of Study

The limitation of this study is that the parents of 101 children surveyed may not be an accurate representation of all the children using DGA for dental treatment. A larger population size and use of an interpreter for Non-English speaking families would be more desirable. The accuracy and consistency of reporting post-operative complications in young children needs to be interpreted with caution as the description of symptoms is influenced by the child’s anxiety and age, and the parent’s experience and emotion.
CHAPTER SEVEN

RECOMMENDATIONS

There are several clinical areas that will need further work:

- To review the referral process for accessing DGA

If growth in demand for DGA continues at the rate at which it is currently the service will soon be at capacity. Mechanisms for screening and prioritorising children will need to be developed. A closer inspection of the mechanisms of referral and where possible a reduction in the use of DGA as a primary service provider warrants investigation.

- To identify specific sub-groups of users who access the service as primary care and evaluate their local services

In view of the disproportionately high number of Asian and Middle-Eastern children accessing the DGA service as a primary care service it would be useful to evaluate more closely the mechanisms by which these children enter the system. Providing accessible and culturally appropriate services more locally from which secondary referral for DGA can be made once initial assessment, prevention and treatment have been organized may prove to be beneficial.

- To monitor re-attendance rates over 2 to 5 years in order to evaluate the success of treatment.

Given the differences in the treatment protocols within the unit at United Dental Hospital compared with Westmead Centre of Oral Health further evaluation of the clinical outcome of the DGA service would be useful. It would appear that the philosophy of the UDH service tends to be more conservative whilst at Westmead

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over the past few years more extractions have been completed. An evidence-based approach to treatment planning under GA in this setting is badly needed.

- To develop a more comprehensive parental information package

Given that parental satisfaction was directly related to the amount of information they received it would seem appropriate to develop a parental information package to cover the process of DGA comprehensively. This should be made available to all parents regardless of language and culture.
APPENDIX 1

The American Society of Anaesthesiologists’ Physical Status Classification

Table 1: ASA Physical Status Classification

<table>
<thead>
<tr>
<th>ASA 1</th>
<th>A healthy patient</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASA 2</td>
<td>Mild to moderate systemic disease, no functional limitation</td>
</tr>
<tr>
<td></td>
<td>eg mild organic heart disease, diabetes, mild hypertension, anaemia, old age, obesity, mild chronic bronchitis</td>
</tr>
<tr>
<td>ASA 3</td>
<td>Severe systemic disease, some functional limitation</td>
</tr>
<tr>
<td></td>
<td>eg angina, severe diabetes, and cardiac failure</td>
</tr>
<tr>
<td>ASA 4</td>
<td>Severe systemic disease, incapacitating and a constant threat to life</td>
</tr>
<tr>
<td></td>
<td>eg marked cardiac insufficiency, persistent angina, severe respiratory, renal or hepatic insufficiency</td>
</tr>
<tr>
<td>ASA 5</td>
<td>Moribund patient not expected to survive for 24 hours with or without operation</td>
</tr>
</tbody>
</table>


ASA classifies patients into a number of grades according to their pre-operative physical status. The ASA grading does not include risks related to anaesthesia and operation. The original ASA Physical Status Classification was devised in 1941 and described seven ASA classes. In 1961, Dripp and co-workers proposed a simplified version of the original ASA classification consisting of five categories (Table 1) and it is still the most widely used classification (Keats 1978, Ament 1979, Rushman et al 1999).
APPENDIX 2

Paediatric Pain Assessment

The best pain assessment is one of self-reporting by the patient. Alternately an observer-reporting system such as reported by the nurse or parents can be used in situations where there are communication difficulties (Figure 2).

**Figure 2. Paediatric pain assessment**

<table>
<thead>
<tr>
<th>Visual scoring</th>
<th>None</th>
<th>A little</th>
<th>Some</th>
<th>A lot</th>
<th>Worst possible</th>
</tr>
</thead>
<tbody>
<tr>
<td>Verbal scoring</td>
<td>Patient</td>
<td>A little</td>
<td>Some</td>
<td>A lot</td>
<td>Worst possible</td>
</tr>
<tr>
<td>Observer scoring</td>
<td>Appears pain free</td>
<td>Appears comfortable except on moving</td>
<td>Appears uncomfortable</td>
<td>Appears distressed but can be comforted</td>
<td>Appears distressed</td>
</tr>
</tbody>
</table>

Source: Miller et al 1997
APPENDIX 3

Laryngeal Mask Airway

Laryngeal mask airway (LMA) was introduced to the medical profession in 1988. LMA is an effective method of airway management, easy to insert without the use of a laryngoscope or muscle relaxant and is reusable. It provides an airtight seal around the laryngeal inlet resulting in decreased contamination of the environment with anaesthetic gases (Brimacombe and Berry 1995, Hitchcock 1997). In addition, LMA reduces the incidence of sore throat (Alexander and Leach 1989, Splinter et al 1994) and usually induces good spontaneous respiratory efforts (Haynes and Morton 1993). The disadvantage of LMA is that it does not protect the airway from regurgitated stomach contents and has lower leak pressures than endotracheal intubation, resulting in lost ventilatory volume. Therefore LMA is contraindicated in patients who are not adequately fasted, have a history of decreased gastric motility, gastro-oesophageal reflux or hiatus hernia, decreased lung compliance or require increased airway pressures (Hitchcock 1997). A modified LMA is used for head and neck surgery: the silicone rubber tubing is shortened and a non-kinkable corrugated tube 8cm in length, and 15mm internal diameter is securely connected to the remaining LMA (Figure 3.2) (Haynes and Morton 1993).
Figure 3.1. The four sizes of laryngeal mask airway used in paediatric anaesthetic practice: sizes 1, 2, 2.5, 3 (top to bottom).

Source: Haynes and Morton 1993

Figure 3.2. Modification of laryngeal mask airway allowing greater flexibility for use during head and neck surgery.

Source: Haynes and Morton 1993
APPENDIX 4

Australian and New Zealand College of Anaesthetists Guidelines


2. Recommendations on minimum facilities for safe anaesthesia practice in operating suites. T1 (2000)


1. INTRODUCTION
Consultation by an anaesthetist is essential for the medical assessment of a patient prior to anaesthesia in order to ensure that the patient is in an optimal state of health, the anaesthesia management can be planned, and the patient can be appropriately informed of the anaesthesia and related procedures.

Fellows of the Australian and New Zealand College of Anaesthetists are trained in the skills required for the pre-anaesthesia consultation.

2. GENERAL PRINCIPLES
2.1 The processes involved in delivering safe and effective pre-anaesthesia consultations will vary with the type of practice and environment in which the anaesthetist works.

2.2 A pre-anaesthesia consultation must be performed by the anaesthetist who is to administer the anaesthetic even if an assessment has already been performed previously by some other person.

2.3 The use of written or computer-generated questionnaires, screening assessments by appropriately trained nurses and pre-admission clinics may be used so long as the requirement of 2.2 is followed.

2.4 The consultation must take place at an appropriate time prior to anaesthesia and surgery in order to allow for adequate consideration of all factors. Appropriate physical facilities for private consultation must be available.

2.5 The difficulties inherent in adequately assessing patients admitted on the day of surgery must be recognised by hospital staff. Admission times, list planning and session times must accommodate the extra time required for pre-anaesthesia consultations.

2.6 In some circumstances, early consultation will not be possible (e.g. emergency surgery) but the consultation must not be modified except when the overall welfare of the patient is at risk.

3. GUIDELINES
The pre-anaesthesia consultation should include:

3.1 Identification of and introduction of the anaesthetist to the patient.

3.2 A concise medical history (possibly assisted by a questionnaire) and clinical examination of the patient. This assessment should include a review of any current medications, the results of any relevant investigations and arrangement for any further investigatory or therapeutic measures which are considered necessary.

3.3 Consultation with colleagues in other disciplines if required.

3.4 A general discussion with the patient (or guardian) of those details of the anaesthetic management which are of significance to the patient. This would usually include such matters as discussion of the anaesthetic procedure, potential complications and risks, an opportunity for questions and provision of educational material. This may be in the form of written pamphlets, video recordings or audiotapes.

3.5 Obtaining of informed consent for anaesthesia and related procedures.

3.6 The ordering of medications if considered necessary.

3.7 A written summary of the assessment, including those risks and potential complications discussed with the patient, which becomes part of the medical record of the patient.
RECOMMENDATIONS ON MINIMUM FACILITIES FOR SAFE
ANAESTHESIA PRACTICE IN OPERATING SUITES

The provision of safe anaesthesia in hospitals requires appropriate staff, facilities and equipment. These are specified in this Document.

1. **PRINCIPLES OF ANAESTHESIA CARE**

   1.1 Anaesthesia should be administered only by medical practitioners with appropriate training in anaesthesia or by trainees supervised according to College Professional Documents TE3 Policy on Supervision of Clinical Experience for Trainees in Anaesthesia, PS2 Recommendations on Privileges in Anaesthesia and PS1 – Recommendations on Essential Training for Rural General Practitioners in Australia Proposing to Administer Anaesthesia.

   1.2 Every patient presenting for anaesthesia should have a pre-anaesthesia consultation by a medical practitioner who has appropriate training in anaesthesia. See College Professional Document PST Recommendations on the Pre-Anaesthesia Consultation.

   1.3 Appropriate monitoring of physiological and other variables must occur during anaesthesia. See College Professional Document PS18 Recommendations on Monitoring During Anaesthesia.

2. **STAFFING**

   2.1 In addition to the nursing staff required by those carrying out the operative procedure, there must be:

      2.1.1 An assistant for the anaesthetist. See College Professional Document PS8 Recommendations on the Assistant for the Anaesthetist.

      2.1.2 Adequate assistance in positioning the patient.

      2.1.3 Adequate technical assistance to ensure proper functioning and servicing of all equipment used.

3. **OPERATING SUITES**

   3.1 **Anaesthesia Equipment**

      3.1.1 Essential requirements are listed below. Where a range of equipment is recommended, the hospital is expected to provide the type most suitable for its needs.

      3.1.2 Each hospital must designate:

         3.1.2.1 One (or more) specialists to advise on the choice and maintenance of anaesthesia equipment.

         3.1.2.2 One (or more) of its nursing or technical staff to be responsible for the organisation of cleaning, maintenance and servicing of anaesthesia equipment.

      3.1.3 There must be an anaesthesia delivery system for each anaesthetising location which is capable of delivering oxygen and medical air (where this is clinically indicated) as well as other anaesthetic agents which are in common use. Essential equipment includes:

         3.1.3.1 Calibrated vapourisers or other systems designed for the accurate delivery of inhalational anaesthetic agents.

         3.1.3.2 A range of suitable breathing systems with appropriate measures to ensure the sterility of breathing gases supplied to each patient. See College Professional Document PS28 Guidelines on Infection Control in Anaesthesia.

         3.1.3.3 Breathing systems suitable for paediatric use when necessary.

      3.1.4 Safety devices which must be present in every anaesthesia delivery system include:
3.1.4.1 An indexed gas connection system.
3.1.4.2 A reserve supply of oxygen.
3.1.4.3 An oxygen supply failure warning device. See College Professional Document PS18 Recommendations on Monitoring During Anaesthesia. Where medical gas pipeline systems are in use, there must be supply failure alarms which function according to the current relevant national Standards.
3.1.4.4 A high pressure relief valve.
3.1.4.5 An oxygen concentration analyser with appropriate alarm limits. See College Professional Document PS18 Recommendations on Monitoring During Anaesthesia.
3.1.4.6 An anti-hypoxic device for use whenever nitrous oxide is administered must be fitted to all anaesthesia delivery systems by January 2002.
3.1.4.7 An approved non-slip connection for the common gas outlet.

3.1.5 A separate means of inflating the lungs with oxygen must be provided in each anaesthetising location. This apparatus should comply with the current relevant national Standards. The size of the device and its attachments must be appropriate for patients being anaesthetised at that location. Its oxygen supply must be independent of the anaesthesia delivery system.

3.1.6 Suction apparatus must be available for the exclusive use of the anaesthetist at all times together with appropriate hand pieces and endotracheal suction catheters. This apparatus should comply with the current relevant national Standards. Provision must be made for an alternative suction system in the event of primary suction failure.

3.1.7 In every anaesthetising location there must be:
3.1.7.1 Appropriate protection for the anaesthesia team against biological contaminants. This must include gowns, disposable gloves, masks and eye shields.
3.1.7.2 A stethoscope.
3.1.7.3 A sphygmomanometer.
3.1.7.4 Monitoring equipment complying with College Professional Document PS18 Recommendations on Monitoring During Anaesthesia. The particular requirements of magnetic resonance imaging facilities can be met with appropriate equipment. See College Professional Document T3 Recommendations on Minimum Facilities for Safe Anaesthesia Practice Outside Operating Suites.
3.1.7.5 An appropriate range of face masks.
3.1.7.6 An appropriate range of oropharyngeal, nasopharyngeal, laryngeal mask and other artificial airways.
3.1.7.7 Two laryngoscopes with a range of suitable blades.
3.1.7.8 An appropriate range of endotracheal tubes and connectors.
3.1.7.9 A range of endotracheal tube introducers and bougies.
3.1.7.10 Endotracheal cuff inflating syringe and clamps.
3.1.7.11 Magill's forceps and throat packs.
3.1.7.12 A suitable range of adhesive and other tapes.
3.1.7.13 Scissors.
3.1.7.14 Sterile endotracheal lubricant.
3.1.7.15 Tourniquets for use during IV insertion.
3.1.7.16 Intravenous infusion equipment with an appropriate range of cannulae and solutions.
3.1.7.17 Means for the safe disposal of items contaminated with biological fluids, "sharps" and waste glass.
3.1.7.18 Equipment for scavenging of anaesthetic gases and vapours with interface equipment which prevents over-pressureisation of the anaesthesia breathing circuit.

3.1.8 In every anaesthetising location there must be readily available:
3.1.8.1 Equipment for managing difficult intubations in all locations where endotracheal intubation is electively performed.
3.1.8.2 Equipment for automatic ventilation of the lungs incorporating alarms as specified in College Professional Document PS18 Recommendations on Monitoring During Anaesthesia.
3.1.8.3 Equipment as required for the direct measurement of arterial and venous pressures when appropriate, having regard to the procedures being undertaken.

3.1.8.4 Equipment for the rapid infusion of fluids.

3.1.8.5 Interpleural drainage sets including appropriate underwater seal drainage equipment or one way valves.

3.1.8.6 A cardiac defibrillator with capacity for synchronised cardioversion.

3.1.8.7 Equipment as required to warm and/or humidify respiratory gases during anaesthesia. In paediatric operating theatres, this equipment must be available in each anaesthetising location. A decision as to the use of active or passive devices will require consideration of the procedures being undertaken.

3.1.8.8 Equipment to cool patients in the event of inappropriate increases in body temperature.

3.1.8.9 Equipment as required for sub-arachnoid, epidural or regional nerve blocks.

3.1.8.10 Equipment as required to minimise patient heat loss including insulating sheets, forced air warming devices, mattress warmers and intravenous fluid warmers. The availability of active warming devices will require consideration of the procedures being undertaken.

3.1.9 Other requirements for safe anaesthesia include:

3.1.9.1 Appropriate lighting for the clinical observation of patients which complies with the current relevant national Standards.

3.1.9.2 Emergency lighting and electric power complying with the current relevant national Standards.

3.1.9.3 Telephone/Intercom to communicate with persons outside the anaesthetising location and including an “anaesthesia emergency” call system.

3.1.9.4 Refrigeration facilities for the storage of fluids, drugs and biological products.

3.1.9.5 The means to maintain room temperature in the anaesthetising location within the range of 18 - 28°C.

3.1.9.6 Patient transfer trolleys/beds as specified in College Professional Document PS4 Recommendations for the Post-Anaesthesia Recovery Room.

3.1.9.7 Devices such as rollers or patient slides to assist with the transfer of patients to and from the operating table.

3.1.9.8 A minimum of three people to assist with transfer of the patient from the operating table to the trolley/bed, with the anaesthetist having prime responsibility for the patient’s airway, head and neck.

3.2 Drugs

3.2.1 In addition to the drugs and agents commonly used in anaesthesia, drugs necessary for the management of conditions which may complicate or co-exist with anaesthesia must also be available. Such conditions include:

- Anaphylaxis
- Cardiac arrhythmias
- Cardiac arrest
- Pulmonary oedema
- Hypotension
- Hypertension
- Bronchospasm
- Respiratory depression
- Hypoglycaemia
- Hyperglycaemia
- Adrenal dysfunction
- Raised intracranial pressure
- Uterine atony
- Coagulopathies

3.2.2 In making an appropriate selection of drugs and administration equipment for the management of these conditions, advice should be sought as in 3.1.2.1.

3.2.3 Appropriate mechanisms must exist for the regular replacement of all drugs and drug administration equipment after use or when their expiry date has been reached.
3.2.4 A supply of dantrolene for the initial treatment of malignant hyperpyrexia should be immediately accessible to all anaesthetising locations with further doses being readily available on request.

3.3 Routines for Checking, Cleaning and Servicing Equipment
3.3.1 Regular sterilising, cleaning and housekeeping routines for the care of equipment should be established.
3.3.2 Documented servicing of the anaesthesia delivery system and medical gas equipment by an appropriate organisation must be carried out at least twice a year. After any modification to the gas distribution system, gas analysis and flow measurement must be carried out and documented before use.
3.3.3 A copy of the College Professional Document PS31 Recommendations on Protocol for Checking the Anaesthetic Machine, or a similar document should be available on each anaesthesia delivery system.

3.4 Recovery Area
3.4.1 Recovery from anaesthesia must take place under appropriate supervision in a designated area which conforms with College Professional Document PS4 Recommendations for the Post-Aneasthesia Recovery Room.
3.4.2 Contingency plans must exist for the safe emergency evacuation of patients from the operating suite and/or recovery areas under adequate medical supervision.

RELEVANT PROFESSIONAL DOCUMENTS
T3 Policy on Supervision of Clinical Experience for Trainees in Anaesthesia
PS1 Recommendations on Essential Training for Rural General Practitioners in Australia proposing to Administer Anaesthesia
PS2 Recommendations on Privileges in Anaesthesia
PS4 Recommendations for the Post-Aneasthesia Recovery Room
PS7 Recommendations on the Pre-Aneasthesia Consultation
PS8 Recommendations on the Assistant for the Anaesthetist
PS18 Recommendations on Monitoring During Anaesthesia
PS28 Guidelines on Infection Control in Anaesthesia
PS31 Recommendations on Protocol for Checking the Anaesthetic Machine
T2 Recommendations on Minimum Facilities for Safe Anaesthesia Practice Outside Operating Suites

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College Website: http://www.anzaa.edu.au/
RECOMMENDATIONS ON MINIMUM FACILITIES FOR SAFE ANAESTHESIA PRACTICE OUTSIDE OPERATING SUITES

The provision of safe anaesthesia requires appropriate staff, facilities and equipment. These are specified in this Document which amalgamates previously published documents T3, T5, T6 and PS33.

1. PRINCIPLES OF ANAESTHESIA CARE

1.1 Anaesthesia should be administered only by medical practitioners with appropriate training in anaesthesia or by trainees supervised according to College Professional Documents T8S Policy on Supervision of Clinical Experience for Trainees in Anaesthesia, PS1 Recommendations on Essential Training for Rural General Practitioners in Australia Proposing to Administer Anaesthesia, and PS2 Recommendations on Privileges in Anaesthesia.

1.2 Every patient presenting for anaesthesia should have a pre-anaesthesia consultation by a medical practitioner who has appropriate training in anaesthesia. See College Professional Document PS7 Recommendations on the Pre-anaesthesia Consultation.

1.3 Appropriate monitoring of physiological and other variables must occur during anaesthesia. See College Professional Document PS18 Recommendations on Monitoring During Anaesthesia.

2. STAFFING

2.1 In addition to the nursing staff required by those carrying out the procedure, there must be:

2.1.1 An assistant for the anaesthetist. See College Professional Document PS8 Recommendations on the Assistant for the Anaesthetist.

2.1.2 Adequate assistance in positioning the patient.

2.1.3 Adequate technical assistance to ensure proper functioning and servicing of all equipment used.

3. AREAS IN WHICH ANAESTHESIA IS ADMINISTERED

3.1 Anaesthesia Equipment

3.1.1 Essential requirements are listed below. Where a range of equipment is recommended, the facility is expected to provide the type most suitable for its needs.

3.1.2 Each facility must designate:

3.1.2.1 One (or more) specialist anaesthetists to advise on the choice and maintenance of anaesthesia equipment.

3.1.2.2 One (or more) of its nursing or technical staff to be responsible for the organisation of cleaning, maintenance and servicing of anaesthesia equipment.

3.1.3 There must be an anaesthesia delivery system for each anaesthetising location which is capable of delivering oxygen and medical air (where this is clinically indicated) as well as other anaesthetic agents which are in common use. Essential equipment includes:

3.1.3.1 Calibrated vaporisers or other systems designed for the accurate delivery of inhalational anaesthetic agents when required.

3.1.3.2 A range of suitable breathing systems with appropriate measures to ensure the sterility of breathing gases supplied to each patient. See College Professional Document PS28 Guidelines on Infection Control in Anaesthesia.

3.1.3.3 Breathing systems suitable for paediatric use when necessary.
3.1.4 Safety devices which must be present in every anaesthesia delivery system include:

3.1.4.1 An indexed gas connection system.
3.1.4.2 A reserve supply of oxygen.
3.1.4.3 An oxygen supply failure warning device. See College Professional Document PS18 Recommendations on Monitoring During Anaesthesia. Where medical gas pipeline systems are in use, there must be supply failure alarms which function according to the current relevant national Standards.
3.1.4.4 A breathing system high pressure relief valve.
3.1.4.5 An oxygen concentration analyser with appropriate alarm limits. See College Professional Document PS18 Recommendations on Monitoring During Anaesthesia.
3.1.4.6 An anti-hypoxic device for use whenever nitrous oxide is administered must be fitted to all anaesthesia delivery systems by January 2002.
3.1.4.7 An approved non-slip connection for the common gas outlet.

3.1.5 A separate means of inflating the lungs with oxygen must be provided in each anaesthetising location. This apparatus should comply with the current relevant national Standards. The size of the device and its attachments must be appropriate for patients being anaesthetised at that location. Its oxygen supply must be independent of the anaesthesia delivery system.

3.1.6 Suction apparatus must be available for the exclusive use of the anaesthetist at all times together with appropriate hand pieces and endotracheal suction catheters. This apparatus should comply with the current relevant national Standards. Provision must be made for an alternative suction system in the event of primary suction failure.

3.1.7 In every anaesthetising location there must be:

3.1.7.1 Appropriate protection for the anaesthesia team against biological contaminants. This must include gowns, disposable gloves, masks and eye Shields.
3.1.7.2 A stethoscope
3.1.7.3 A sphygmomanometer
3.1.7.4 Monitoring equipment complying with College Professional Document PS18 Recommendations on Monitoring During Anaesthesia. Where volatile agents are not available, agent monitoring is not required.

The particular requirements of magnetic resonance imaging facilities can be met with appropriate equipment designed for the environment.

3.1.7.5 An appropriate range of face masks.
3.1.7.6 An appropriate range of oropharyngeal, nasopharyngeal, laryngeal mask and other artificial airways.
3.1.7.7 Two laryngoscopes with a range of suitable blades.
3.1.7.8 An appropriate range of endotracheal tubes and connectors.
3.1.7.9 A range of endotracheal tube introducers and bougies.
3.1.7.10 Endotracheal cuff inflating syringe and clamps.
3.1.7.11 Magill’s forceps and throat packs.
3.1.7.12 A suitable range of adhesive and other tapes.
3.1.7.13 Scissors.
3.1.7.14 Sterile endotracheal lubricant.
3.1.7.15 Tourniquets for use during IV insertion.
3.1.7.16 Intravenous infusion equipment with an appropriate range of cannulae and solutions.
3.1.7.17 Means for the safe disposal of items contaminated with biological fluids, “sharps” and waste glass.
3.1.7.18 Equipment for scavenging of anaesthetic gases and vapours where these are in use with interface equipment which prevents over-pressurisation of the anaesthesia breathing circuit.

3.1.8 In every anaesthetising location there must be readily available:

3.1.8.1 Equipment for managing difficult intubations in all locations where endotracheal intubation is electively performed.
3.1.8.2 Equipment for automatic ventilation of the lungs incorporating alarms as specified in College Professional Document PS18 Recommendations on Monitoring During Anaesthesia, when appropriate.

3.1.8.3 Equipment for the rapid infusion of fluids.

3.1.8.4 A cardiac defibrillator with capacity for synchronised cardioversion.

3.1.8.5 Interpleural drainage sets including appropriate underwater seal drainage equipment or one-way valves.

3.1.8.6 When appropriate, equipment to warm and/or humidify respiratory gases during anaesthesia. A decision as to the use of active or passive devices will require consideration of the procedures being undertaken.

3.1.8.7 Equipment to cool patients in the event of inappropriate increases in body temperature.

3.1.8.8 Equipment required for sub-arachnoid, epidural or regional nerve blocks, when appropriate.

3.1.8.9 When appropriate, having regard to the procedures being undertaken, equipment to minimise patient heat loss including insulating sheets, forced air warming devices, mattress warmers and intravenous fluid warmers.

3.1.9 Other requirements for safe anaesthesia include:

3.1.9.1 Appropriate lighting for the clinical observation of patients which complies with the current relevant national Standards.

3.1.9.2 Emergency lighting and electric power complying with the current relevant national Standards.

3.1.9.3 Telephone/Intercom to communicate with persons outside the anaesthetising location and including an “anaesthesia emergency” call system.

3.1.9.4 Refrigeration facilities for the storage of fluids, drugs and biological products.

3.1.9.5 The means to maintain room temperature in the anaesthetising location within the range of 18 - 28°C.

3.1.9.6 Patient transfer trolleys/beds as specified in College Professional Document PS4 Recommendations for the Post-Anaesthesia Recovery Room.

3.1.9.7 Devices such as rollers or patient slides to assist with transfer of patients when appropriate.

3.1.9.8 A minimum of three people to assist with transfer of the patient when required, with the anaesthetist having prime responsibility for the patient's airway, head and neck.

3.2 Drugs

3.2.1 In addition to the drugs and agents commonly used in anaesthesia, drugs necessary for the management of the following conditions, which may complicate or co-exist with anaesthesia must also be available. Such conditions include:

Anaphylaxis
Cardiac arrhythmias
Cardiac arrest
Pulmonary oedema
Hypotension
Hypertension
Bronchospasm
Respiratory depression
Hypoglycaemia
Hyperglycaemia
Adrenal dysfunction
Raised intracranial pressure
Uterine atony (Delivery suites only)
Coagulopathies (Delivery suites only)

3.2.2 In making an appropriate selection of drugs and administration equipment for the management of these conditions, advice should be sought as in 3.1.2.1.

3.2.3 Appropriate mechanisms must exist for the regular replacement of all drugs and drug administration equipment after use or when their expiry date has been reached.

3.2.4 An initial supply of dantrolene for the treatment of malignant hyperpyrexia should be immediately accessible to all anaesthetising locations with further doses being readily available on request.
3.3 **Routines for Checking, Cleaning and Servicing Equipment**

3.3.1 Regular sterilising, cleaning and housekeeping routines for the care of equipment should be established.

3.3.2 Documented servicing of the anaesthesia delivery system and medical gas equipment by an appropriate organisation must be carried out at least twice a year. After any modification to the gas distribution system, gas analysis and flow measurement must be carried out and documented before use.

3.3.3 A copy of the College Professional Document PS31 *Recommendations on Protocol for Checking the Anaesthesia Machine* or a similar document should be available on each anaesthesia delivery system.

3.4 **Recovery Area**

3.4.1 Recovery from anaesthesia should take place under appropriate supervision in a designated area which conforms with College Professional Document PS4 *Recommendations for the Post-Anaesthesia Recovery Room*.

3.4.2 Contingency plans should exist for the safe emergency evacuation of patients from the operating suite and/or recovery areas under adequate medical supervision.

This is a generic document which is intended to be interpreted in the context of the particular service for which anaesthesia is administered. Specific issues may include:

4.1 **Delivery suites**

4.1.1 Staffing – for the establishment and management of epidural blockade in labour, the presence of a midwife trained and competent in obstetric epidural management is required. See College Professional Document PS14 – *Guidelines for the Conduct of Major Regional Anaesthesia in Obstetrics*.

4.1.2 Staffing – at the time of delivery there must be an appropriately trained and qualified practitioner solely available to resuscitate the neonate.

4.1.3 Analgesia equipment – any apparatus used for administration of inhalation analgesia must deliver at least 30% oxygen.

4.1.4 There must be suction apparatus for the exclusive use of the anaesthetist which is separate from that required for resuscitation of the neonate.

4.1.5 There must be separate oxygen outlets and suitable attachments for administering oxygen to the mother and to the neonate.

4.1.6 Neonatal resuscitation equipment must include a suitable range of items for:

- 4.1.6.1 Administration of oxygen to the neonate.
- 4.1.6.2 Clearing of the airway.
- 4.1.6.3 Intubation and ventilation of the lungs.
- 4.1.6.4 Administration of intravenous fluids and drugs.
- 4.1.6.5 Maintenance of the neonate's temperature.
- 4.1.6.6 An appropriate range of drugs must be available.

4.2 **Electrical Locations**

Where provision of an anaesthesia delivery system is not essential, as in an ECT area, there must be:

4.2.1 A breathing system capable of delivering 100% oxygen for both spontaneous and controlled ventilation. An alternative breathing system should be immediately available. Where more than one patient is to be treated, this equipment must be duplicated or there must be an inline viral filter. See College Professional Document PS28 *Guidelines on Infection Control in Anaesthesia*.

4.2.2 Adequate reserves of oxygen must be available. If a reticulated or indexed gas connection system is in use, an oxygen failure warning device is necessary. An emergency cylinder supply of oxygen is necessary in the event of a central supply failure.

4.3 **Dental surgeries**

4.3.1 There must be a dental operating chair which will allow the patient to be placed rapidly in the horizontal or head-down position.

4.4 **Organ Imaging Locations**

4.4.1 Monitoring equipment complying with College Professional Document PS18 *Recommendations on Monitoring During Anaesthesia*. Although special problems are encountered in MRI facilities, appropriate equipment to meet the recommendations is available.
4.4.2 The specific problems associated with the location of the anaesthesia delivery system, monitoring equipment and other necessary equipment (e.g., drug trolley and suction apparatus) in an environment where space is often limited due to the presence of imaging equipment must be prospectively considered.

RELATED DOCUMENTS
T1 Recommendations on Minimum Facilities for Safe Anaesthesia Practice in Operating Suites
TE3 Policy on Supervision of Clinical Experience for Trainees in Anaesthesia
PS1 Recommendations on Essential Training for Rural General Practitioners in Australia Proposing to Administer Anaesthesia
PS2 Recommendations on Privileges in Anaesthesia
PS4 Recommendations for the Post-Anaesthesia Recovery Room
PS7 Recommendations on the Pre-Anaesthesia Consultation
PS8 Recommendations on the Assistant for the Anaesthetist
PS9 Guidelines on Sedation for Diagnostic and Surgical Procedures
PS14 Guidelines for the Conduct of Major Regional Analgesia in Obstetrics
PS18 Recommendations on Monitoring During Anaesthesia
PS28 Guidelines on Infection Control in Anaesthesia
PS31 Recommendations on Protocol for Checking the Anaesthetic Machine

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College Website: http://www.anzca.edu.au/
RECOMMENDATIONS FOR THE PERIOPERATIVE CARE OF PATIENTS SELECTED FOR DAY CARE SURGERY

Day Care Surgery means that the patient will ordinarily be discharged from the hospital or unit later on the day of the procedure. Anaesthesia for the procedure may require general, regional or local anaesthesia, sedative techniques or a combination of techniques.

SELECTION GUIDELINES

In all cases, the ultimate decision as to the suitability of a patient for day care surgery is that of the procedural anaesthetist. The decision as to the type of anaesthesia must remain in the province of the anaesthetist and will be based on surgical requirements, patient considerations, the experience of the anaesthetist and the facilities of the day care surgical unit.

1. Procedures suitable for day care surgery must entail:
   1.1 A minimal risk of post-operative haemorrhage.
   1.2 A minimal risk of post-operative airway compromise.
   1.3 Post operative pain controllable by outpatient management techniques.
   1.4 No special post-operative nursing requirements that cannot be met by hospital in the home or district nurse facilities.
   1.5 A rapid return to normal fluid and food intake.
   1.6 Early commencement of procedures for which a long recovery period is likely.

2. Patient requirements for day care surgery include:
   2.1 A willingness to have the procedure performed, together with an understanding of the process and an ability to follow discharge instructions.
   2.2 The patient's place of residence for post-surgery care being within one hour's travelling time from appropriate post-operative medical attention.
   2.3 Physical status of ASA I or II. Medically stable ASA III or IV patients may be accepted for day care surgery following consultation with the anaesthetist concerned.
   2.4 Normal term infants of over six weeks of age or ex-premature infants (less than 37 weeks gestation) of more than 52 weeks post-conceptual age. Younger children may be accepted in units with particular paediatric experience after prior consultation with the involved anaesthetist. Longer post-operative observation may be necessary.

3. Social requirements for day care surgery include:
   3.1 A responsible person able to transport the patient home in a suitable vehicle. A train or bus is usually not suitable.
   3.2 A responsible person staying at least overnight following discharge from the unit. This person must be physically and mentally able to make decisions for the patient's welfare when necessary.
   3.3 Ensuring that the patient and/or responsible person understands the requirements for post-anaesthetic care and intends to comply with these requirements particularly with regard to public safety.
   3.4 The patient remaining within one hour of appropriate medical attention until the morning following discharge.
3.5 The patient having ready access to a telephone in the post-operative dwelling.
3.6 The patient having advice as to when to resume activities such as driving and decision making.

4. PATIENT PREPARATION

4.1 College Professional Document PS7 Recommendations on The Pre-Anaesthesia Consultation describes the essential nature of this consultation for all patients who are to receive anaesthesia.

4.2 College Professional Documents PS22 Statement on Patients’ Rights and Responsibilities and PS26 Guidelines on Providing Information about the Services of an Anaesthetist are both relevant to preparation for day stay surgery.

4.3 Patient assessment can be assisted by:
   4.3.1 A standardised patient health/anaesthesia questionnaire.
   4.3.2 Prior referral of the patient by the surgeon to the anaesthetist in cases of doubt as to the suitability for day case surgery.
   4.3.3 Preliminary nurse assessment according to guidelines approved by an anaesthetist.
   4.3.4 Anaesthesia consultation and preparation prior to the day of surgery, preferably by the involved anaesthetist.

4.4 The patient should be provided with information in an understandable written format which must include:
   4.4.1 General information about the procedures to be followed in the day care unit.
   4.4.2 Instructions for fasting according to the following guidelines unless otherwise specifically prescribed by the anaesthetist or where other institution guidelines apply:
       4.4.2.1 Limited solid food may be taken up to six hours prior to anaesthesia.
       4.4.2.2 Unsweetened clear fluids totalling not more than 200 ml per hour in adults may be taken up to two hours prior to anaesthesia. Body fluid depletion due to excessive fasting should be avoided.
       4.4.2.3 For infants, breast milk may be given up to four hours prior to anaesthesia.
   4.4.2.4 Only medications or water ordered by the anaesthetist should be taken less than three hours prior to anaesthesia.
       4.4.2.5 An H2-receptor antagonist should be considered for patients with an increased risk of gastric regurgitation.
   4.4.3 A discharge planning questionnaire.

5. RECOVERY FROM ANAESTHESIA

5.1 College Professional Document PS4 Recommendations for the Post-Anaesthesia Recovery Room establishes requirements for the facilities and staffing of recovery areas. This document is fully applicable to day care units.

5.2 An area must be provided with comfortable reclining seating for patients during the second stage of recovery prior to discharge home. This area must be adequately supervised by nursing staff and should also have ready access to resuscitation equipment, including oxygen and suction. Patients must not leave this area unaccompanied.

6. DISCHARGE OF THE PATIENT FROM THE DAY CARE UNIT

The discharge area should have ready access to wheel chairs, a parking area and ambulance facilities so as to minimise walking for the post-operative patient and to aid transfer of the patient to inpatient hospital care when this is necessary.

The following criteria apply to patients being discharged home:

6.1 Stable vital signs for at least one hour.
6.2 Correct orientation as to time, place and relevant people.
6.3 Adequate pain control.
6.4 Minimal nausea, vomiting or dizziness.
6.5 Adequate hydration and likelihood of maintenance with oral fluids.
6.6 Minimal bleeding or wound drainage.
6.7 Patients at significant risk of urinary retention (central neural blockade, pelvic and other surgery) must have passed urine.
6.8 A responsible adult to take the patient home. For some patients it may be important to have an adult escort as well as the vehicle driver.
6.9 Discharge should be authorised by an appropriate staff member after discharge criteria have been satisfied.
6.10 Written and verbal instructions for all relevant aspects of post-anaesthetic and surgical care must be given to the patient and the accompanying adult. A contact place and telephone number for emergency medical care must be included.
6.11 Suitable analgesia should be provided for at least the first day after discharge with clear written instructions on how and when it should be used. Advice on any other regular medication is also necessary.
6.12 A telephone enquiry as to the patient's well-being on the following day should be made whenever possible.

If the patient is to be transferred to an inpatient facility, the anaesthetist and/or the surgeon will be responsible for the patient until care has been transferred to another appropriate medical officer.

7. **QUALITY ASSURANCE**

Each day care unit must have an established system for audit of the outcomes related to anaesthesia care, and include these outcomes in quality assurance and peer review processes.

**RELATED DOCUMENTS**

- PS4 Recommendations for the Post-Anaesthesia Recovery Room
- PS7 Recommendations on the Pre-Anaesthesia Consultation
- PS22 Statement on Patients' Rights and Responsibilities
- PS26 Guidelines on Providing Information about the Services of an Anaesthetist

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INTRODUCTION

Monitoring of fundamental physiological variables during anaesthesia is essential. Clinical judgement will determine how long this monitoring should be continued following completion of anaesthesia.

The Health Care Facility in which the procedure is being performed is responsible for provision of equipment for anaesthesia and monitoring on the advice of one or more designated specialist anaesthetists, and for effective maintenance of this equipment (see College Professional Document Recommendations on Minimum Facilities for Safe Anaesthetic Practice in Operating Suites (T1)).

Some or all of the recommendations in this document may need to be exceeded depending on the physical status of the patient, the type and complexity of the surgery to be performed as well as the requirements of anaesthesia.

The described monitoring must always be used in conjunction with careful clinical observation by the anaesthetist as there are circumstances in which equipment may not detect unfavourable clinical developments.

The following recommendations refer to patients undergoing general anaesthesia or major regional anaesthesia for diagnostic or therapeutic procedures and should be interpreted in conjunction with other Professional Documents published by the Australian and New Zealand College of Anaesthetists.

1. PERSONNEL

Clinical monitoring by a vigilant anaesthetist is the basis of safe patient care during anaesthesia. This should be supplemented by appropriate devices to assist the anaesthetist.

A medical practitioner whose sole responsibility is the provision of anaesthetic care for that patient must be constantly present from induction of anaesthesia until safe transfer to Recovery Room staff or Intensive Care Unit has been accomplished. This medical practitioner must be appropriately trained in Anaesthesia, or be a Trainee Anaesthetist supervised in accordance with College Professional Document Policy on Supervision of Clinical Experience for Trainees in Anaesthesia (TE3).

In exceptional circumstances brief absences of the person primarily responsible for the anaesthetic may be unavoidable. In such circumstances that person may temporarily delegate observation of the patient to an appropriately qualified person who is judged to be competent for the task. Permanent handover of responsibility must be to an anaesthetist who is able to accept continued responsibility for the care of the patient (see College Professional Document Guidelines on the Handover of Responsibility during an Anaesthetic (PS10)).

The individual anaesthetist is responsible for monitoring the patient and should ensure that appropriate monitoring equipment is available. Some procedures necessitate special monitoring (e.g. MRI scanning) or remote monitoring to reduce hazard to staff (e.g. radiological procedures) (see College Professional Document Recommendations on Minimum Facilities for Safe Anaesthetic Practice Outside Operating Suites (T2)).

2. PATIENT MONITORING

2.1 Circulation

The circulation must be monitored at frequent and clinically appropriate intervals by detection of the arterial pulse and measurement of arterial blood pressure by indirect or direct means.

2.2 Ventilation

Ventilation must be monitored continuously by both direct and indirect means.
2.3 Oxygenation
Oximetric values must be interpreted in conjunction with clinical observation of the patient. Adequate lighting must be available to aid with assessment of patient colour.

3. EQUIPMENT

3.1 Oxygen Supply Failure Alarm
An automatically activated device to monitor oxygen supply pressure and to warn of low pressure must be fitted to the anaesthesia delivery system. This device should shut off the nitrous oxide supply and be capable of maintaining oxygen flow for a limited period (see College Professional Document Recommendations on Minimum Facilities for Safe Anaesthetic Practice in Operating Suites (T1)).

3.2 Oxygen Analyser
A device incorporating an audible signal to warn of low oxygen concentrations, correctly fitted in the breathing system, must be in continuous operation for every patient when an anaesthesia delivery system is in use.

3.3 Pulse Oximeter
Pulse oximetry provides evidence of the level of oxygen saturation of the haemoglobin of arterial blood and identifies arterial pulsation at the site of application. A pulse oximeter must be in use for every anaesthetised patient.

3.4 Breathing System Disconnection or Ventilator Failure Alarm
When an automatic ventilator is in use, a monitor capable of warning promptly of a breathing system disconnection or ventilator failure must be in continuous operation. This must be automatically activated.

3.5 Electrocardiograph
Equipment to monitor and continually display the electrocardiograph must be available for every anaesthetised patient.

3.6 Temperature Monitor
Equipment to monitor temperature continuously must be available for every anaesthetised patient.

3.7 Carbon Dioxide Monitor
A monitor of carbon dioxide level in inhaled and exhaled gases must be in use for every patient under general anaesthesia.

3.8 Neuromuscular Function Monitor
Equipment to monitor neuromuscular function must be available for every patient in whom neuromuscular blockade has been induced.

3.9 Volatile Anaesthetic Agent Monitor
Equipment to monitor the concentration of inhaled anaesthetics must be in use for every patient undergoing general anaesthesia from an anaesthesia delivery system where volatile anaesthetic agents are available. Automatic agent identification should be available on new monitors.

3.10 Other Equipment
When clinically indicated, equipment to monitor other physiological variables such as cardiac output or spirometry should be available.

RELATED DOCUMENTS

T1 Recommendations on Minimum Facilities for Safe Anaesthetic Practice in Operating Suites
T2 Recommendations on Minimum Facilities for Safe Anaesthetic Practice Outside Operating Suites
TE3 Policy on Supervision of Clinical Experience for Trainees in Anaesthesia
PS10 Guidelines on the Handover of Responsibility During an Anaesthetic

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College Website: http://www.anzca.edu.au/
RECOMMENDATIONS FOR
THE POST-ANAESTHESIA RECOVERY ROOM

1. INTRODUCTION
A well-planned, well-equipped, well-staffed and well-managed post-anaesthesia recovery area is essential for the safe early management of patients who have recently undergone a surgical or other procedure, irrespective of the type of anaesthesia or sedation used.

2. GENERAL PRINCIPLES
2.1 Recovery from anaesthesia should take place under supervision in an area designated for the purpose.
2.2 This area should be close to where the anaesthesia or sedation has been administered.
2.3 The staff working in this area must be trained for their role and able to contact supervising medical staff promptly when the need arises.
2.4 In some situations (for example, paediatric hospitals) minor variations in these recommendations may be appropriate.

3. DESIGN FEATURES FOR THE RECOVERY AREA
3.1 The area should be part of the operating or procedural suite with easy access for management of emergencies by both theatre medical staff and staff in street clothes from outside the theatre suite. Provision should be made for rapid evacuation of patients from the area in an emergency.
3.2 Ventilation of the area should be of operating theatre standard.
3.3 Space allocated per bed/trolley should be at least 3 square metres. There must be easy access to the patient's head.
3.4 The number of bed/trolley spaces must be sufficient for expected peak loads and there should be at least 1.5 spaces available per operating room.
3.5 The layout of bed spaces should allow staff to have an uninterrupted view of several patients at once.
3.6 Each bed space must be provided with:
   3.6.1 an oxygen outlet
   3.6.2 medical suction complying with relevant national standards
   3.6.3 two general power outlets
   3.6.4 appropriate lighting and wall colour to allow accurate assessment of skin colour
   3.6.5 emergency lighting
   3.6.6 appropriate facilities for mounting and operating any necessary equipment and for the patient's chart.
3.7 Space must be provided for a nursing station, utility room and storage for drugs, equipment and linen.
3.8 There must be appropriate facilities for scrubbing up for procedures.
3.9 There should be a wall clock with a sweep second hand or analogue display clearly visible from each bed space.
3.10 Communication facilities should include:
   3.10.1 an emergency call system to areas where specialist staff are available
   3.10.2 a telephone with access to the hospital paging system.
3.11 There must be access for portable X-Ray equipment. Appropriate power outlets and viewing box must be available.

3.12 An emergency power supply must be available in the area.

4. **EQUIPMENT AND DRUGS**

4.1 Each bed space should be provided with:
   4.1.1 oxygen flowmeter and patient oxygen delivery systems
   4.1.2 suction equipment including a receiver, appropriate hand pieces and a range of suction catheters
   4.1.3 pulse oximeter
   4.1.4 facilities for blood pressure measurement including cuffs suitable for all patients
   4.1.5 stethoscope
   4.1.6 means of measuring body temperature

4.2 Within the recovery area there must be:
   4.2.1 means for manual ventilation with oxygen in a ratio of one unit per two bed spaces, but with a minimum of two such devices
   4.2.2 equipment and drugs for airway management and endotracheal intubation
   4.2.3 emergency and other drugs
   4.2.4 a range of intravenous equipment and fluids and a means of warming those fluids
   4.2.5 drugs for acute pain management
   4.2.6 a range of syringes and needles
   4.2.7 patient warming devices
   4.2.8 devices for measuring expired carbon dioxide

4.3 There should be easy access to:
   4.3.1 12 lead electrocardiograph
   4.3.2 defibrillator
   4.3.3 neuromuscular function monitor
   4.3.4 rigid bronchoscope with sucker and grasping forceps
   4.3.5 warming cupboard
   4.3.6 refrigerator for drugs and blood
   4.3.7 procedure light
   4.3.8 basic surgical tray
   4.3.9 blood gas and electrolyte measurement
   4.3.10 diagnostic imaging services
   4.3.11 apparatus for mechanical ventilation of the lungs
   4.3.12 monitors for direct arterial and venous pressure monitoring
   4.3.13 chest drains

4.4 The recovery trolley/bed must:
   4.4.1 have a firm base and mattress
   4.4.2 tilt from one or both ends both head up and head down at least 15 degrees
   4.4.3 be easy to manoeuvre
   4.4.4 have efficient and accessible brakes
   4.4.5 provide for sitting the patient up
   4.4.6 have secure side rails which must be able to be dropped below the base or be easily removed
   4.4.7 have an I.V. pole
   4.4.8 have provision for mounting monitoring equipment, apparatus for delivering oxygen, patient ventilation equipment, underwater seal drains and suction apparatus during transport of patients.
5. **STAFFING**

5.1 Staff trained in the care of patients recovering from anaesthesia must be present at all times.
5.2 A registered nurse trained in recovery area care should be in charge.
5.3 Trainee nurses and registered nurses who are not experienced in the care of patients recovering from anaesthesia must be supervised.
5.4 The ratio of registered nurses to patients needs to be flexible so as to provide no less than one nurse to three patients; and one nurse to each patient who has not recovered protective reflexes or consciousness.

6. **MANAGEMENT AND SUPERVISION**

6.1 Written protocols for management should be established. The Director of Anaesthesia should be responsible for the medical aspects of these policies.
6.2 A written routine for checking the equipment and drugs must be established.
6.3 When an anaesthetised patient is being transferred from one trolley/bed to another, a minimum of three people must assist with lifting. An anaesthetist must be present to have prime responsibility for the patient's head, neck and airway.
6.4 A designated anaesthetist should be contactable in the event that the responsible anaesthetist is unavailable. In larger hospitals, recovery duties should be the designated anaesthetist's primary duty.
6.5 Observations should be recorded at appropriate intervals and should include state of consciousness, oxygen saturation, respiratory rate, pulse rate, blood pressure and temperature.
6.6 All patients should remain until they are considered safe to be discharged from the recovery area according to established criteria.

6.7 The anaesthetist responsible for the patient should:

   6.7.1 accompany the patient until transfer to recovery area staff is completed
   6.7.2 provide written and verbal instructions to the recovery area staff
   6.7.3 specify the type of apparatus and the flow rate to be used for oxygen therapy
   6.7.4 remain in the vicinity until the patient is safe to be left in the care of recovery area staff
   6.7.5 supervise the recovery period and authorise the patient's discharge from the recovery area. It is recognised that in some circumstances it may be necessary for the anaesthetist previously responsible for the patient to delegate these duties to a trained recovery area nurse or to another anaesthetist who should be fully informed of the clinical state of the patient.

6.8 The practitioner responsible for the patient's overall care should be available to consult with the anaesthetist in the recovery period if necessary and, in appropriate circumstances, authorise the discharge of the patient.
College Professional Documents are progressively being coded as follows:

TE Training and Educational
EX Examinations
PS Professional Standards
T Technical

POLICY – defined as 'a course of action adopted and pursued by the College'. These are matters coming within the authority and control of the College.

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APPENDIX 5

Covering Letter for Questionnaire Survey

THE UNITED DENTAL HOSPITAL OF SYDNEY

PARENTAL/GUARDIAN INFORMATION SHEET.

STUDY: A prospective evaluation of a new day case general anaesthetic service in paediatric dentistry.

You are invited to participate in this questionnaire study which aims to find out whether the treatment we are providing you with meets you and your child’s needs/expectations. You have been selected for this survey because your child is undergoing a general anaesthetic in order to complete his/her dental treatment.

If you agree to participate in this study Dr Ngu will ask you to complete 3 questionnaires that she will discuss with you. The first questionnaire you will complete prior to your child’s operation. The intention of this questionnaire is find out why you are here, how long you have been waiting for treatment and what your child has experienced to date. Dr Ngu will carry out the second questionnaire just before you leave hospital after your child’s operation and the third one she will complete by telephone in one week’s time. We are interested in what you and your child felt after the operation.

Most of the questions included in this study are ones that you would have been asked as part of our routine clinical service. At all times the information you give us will remain confidential and will be not be released to anyone outside of the 2 investigators, Dr Ngu and Dr Kilpatrick. The results of the survey will be collated and analysed in general terms and no individual will be identifiable.

The outcomes of this study will be used to develop our general anaesthetic service in the future to better meet the needs of our community.

Your decision whether or not to participate in this study will not prejudice you or your child’s future relations with the United Dental Hospital. If you decide to take part in the survey you may withdraw at any time without any prejudice.

If you have any complaints at any time throughout the survey time please contact the Ethics Secretarial, United Dental Hospital, 2 Chalmers Street, Surry Hills NSW 2010.

If you have any queries regarding the study please contact the Chairman of the Human Ethics Review Committee, Dr Susan Buchanan, on Ph: 92933240 or Fax: 92933488. Dr Katherine Ngu on 92933273 will also be happy to discuss them with you.
THE UNITED DENTAL HOSPITAL OF SYDNEY

PARENTAL/ GUARDIAN CONSENT FORM.

STUDY: A prospective evaluation of the new day case general anaesthetic service for paediatric dentistry.

You are making a decision whether or not you and your child participate in the above survey. Your signature indicates that having read the information sheet above you have agreed to participate.

Signature of parent/guardian  Signature of Witness

PRINT NAME  PRINT NAME

Date

Signature of investigator

PRINT NAME

REVOCATION OF CONSENT

I hereby wish to withdraw from the above study and understand that this will not affect my or my child’s ongoing care at the United Dental Hospital.

Signature  Date

PRINT NAME

This revocation should be forwarded to Dr K Ngu, Paediatric Dentistry, United Dental Hospital, Chalmers Street, Surrey Hills NSW 2010.
APPENDIX 6

Questionnaire Survey

QUESTIONNAIRE 1

PRE-GA QUESTIONNAIRE

*To be completed at time of admission for treatment*

**Patient Characteristics**

1. Name:

2. Hospital record number:

3. Contact number:

4. Date of birth:

5. Sex:

6. Post code:

7. Ethnicity: Country of birth:

   Do you speak a language other than English at home?  
   No (English only)  
   Yes (Language spoken at home)

   Are you of aboriginal origin?  
   No  
   Yes  
   If yes, please circle: Aboriginal/ Torres Strait Isl/ South Sea Isl

8. Medical history:  
   Medical Type:  
   Mental  
   Physical  
   Nil relevant (Circle more than one if required)

9. Dental history:  
   Have you had previous dental treatment?  
   Yes  
   No

   When was the last dental treatment?

   What dental treatment was carried?
   Exam only  
   Fillings  
   Extractions  
   RA  
   Sedation

   Where was it carried out?
10. Referral source: General dental practitioner
United Dental Hospital dentist
School Dental Service
Medical practitioner
Specialist
Self referral - Routine
Self referral - Emergency
Other

11. Referral reason: Caries
Trauma
Dental anomalies
Medical
Physically/mentally handicapped
(circle more than one if required)

12. Waiting time: Date of GA assessment
GA date

Anaesthetic and Treatment

1. Anaesthetic: Premedication No Yes Paracetamol
Midazolam
Other

Intravenous induction No
Yes

Inhalational induction No
Yes

2. Analgesic during the procedure: No Yes Paracetamol
Fentanyl
Other

3. Intraoral anaesthetic: Yes No Type:

4. Treatment carried out:

Bite wing x-rays: Yes
No

Primary dentition number of restoration:
number of extractions:
number of fissure sealants:

Permanent dentition number of restorations:
number of extractions:
number of fissure sealants:

Surgical: Yes No Type:
5. Duration of appointment:
   Time of arrival in the hospital
   Time starting anaesthetic
   Time starting surgery
   Time completing surgery
   Time of recovery
   Time of discharge
QUESTIONNAIRE 2

PERSONAL INTERVIEW

To be completed just prior to discharge.

Disruption Caused

1. How many adults have come with the child?
   - 1 adult
   - 2 adults
   - 3+ adults

2. Have you had to take time off work?
   - No
   - Yes
     - ≤ 8 hours
     - > 8 hours

3. How long did it take you to get to hospital today?
   - ≤ 45 minutes
   - 46 – 90 minutes
   - > 90 minutes

4. Have you made arrangements for other siblings?
   - No
   - Yes
     - had to bring them with patient
     - asked family
     - asked friends
     - pay for help

Post-Operative Morbidity at Intermediate* Recovery

1. Did your child experience any problems after the operation?
   - No
   - Yes
     - Oral pain
     - Sore throat
     - Headache
     - Vomiting
     - Prolong bleeding
     - Muscle pain
     - Hysteria/Prolong crying
     - Other

2. Did your child experience any significant oral pain requiring additional analgesia?
   - Yes
   - No

*intermediate recovery refers to home readiness and discharge from the hospital
QUESTIONNAIRE 3

TELEPHONE QUESTIONNAIRE

*To be taken home from hospital and completed by telephone interview 1 week later.*

Your child has recently had some dental treatment done under a general anaesthetic. As you are sent home on the same day as the operation we are interested in finding out how you and your child felt once you went home. We would be grateful if you could take some time to read this questionnaire as we will contact you in one week’s time by telephone regarding it. Your participation will help us to continuously improve the services and patient care. Thank you.

Name of your child:

Date of the operation:

1. Before you came into the hospital were you worried about the anaesthetic?  Y/N

2. Did you receive enough information about the anaesthetic before you came into the hospital?  Y/N

3. Before you had your operation did an anaesthetist visit you?  Y/N
   
   Were you able to ask questions of the anaesthetist?  Y/N
   
   Did the anaesthetist examined your child?  Y/N
   
   Did you feel reassured after the visit from the anaesthetist?  Y/N

4. Were you unhappy about the length of time waited in theatre prior to induction?  Y/N

5. After the operation was anaesthetic problems explained?  Y/N

6. Did the dentist explain how the procedure went after the operation?  Y/N

7. Did your child have any problems after the operation?  Y/N

<table>
<thead>
<tr>
<th>When?</th>
<th>on the way home</th>
<th>that night</th>
<th>next day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral pain</td>
<td>Y/N</td>
<td>Y/N</td>
<td>Y/N</td>
</tr>
<tr>
<td>Sore throat</td>
<td>Y/N</td>
<td>Y/N</td>
<td>Y/N</td>
</tr>
<tr>
<td>Sleepiness</td>
<td>Y/N</td>
<td>Y/N</td>
<td>Y/N</td>
</tr>
<tr>
<td>Headache</td>
<td>Y/N</td>
<td>Y/N</td>
<td>Y/N</td>
</tr>
<tr>
<td>Nausea</td>
<td>Y/N</td>
<td>Y/N</td>
<td>Y/N</td>
</tr>
<tr>
<td>Vomiting</td>
<td>Y/N</td>
<td>Y/N</td>
<td>Y/N</td>
</tr>
<tr>
<td>Bleeding</td>
<td>Y/N</td>
<td>Y/N</td>
<td>Y/N</td>
</tr>
<tr>
<td>Muscle pain</td>
<td>Y/N</td>
<td>Y/N</td>
<td>Y/N</td>
</tr>
<tr>
<td>Other</td>
<td>Y/N</td>
<td>Y/N</td>
<td>Y/N</td>
</tr>
</tbody>
</table>

8. Did your child require additional analgesia for oral pain at home?  Y/N
   
   If yes, when did your child stop taking the analgesic medication?
   
   later the same day?  
   
   next morning?  
   
   next night?
9. Did you telephone for help after leaving the hospital?
   | No | United Dental Hospital  
   |    | doctor                  
   | Yes| private dentist        
   |    | Prince of Wales Children’s Hospital 
   |    | other                   

10. Did you take your child to see anyone after leaving the hospital?
    | No | United Dental Hospital  
    |    | doctor                  
    | Yes| dentist                
    |    | Prince of Wales Children’s Hospital 
    |    | other                   

11. How soon was your child able to eat a normal diet?
    | as soon as we got home  
    | within 24 hours         
    | within 2 days           
    | took longer than 2 days  

12. How long was your child away from school after the operation?
    | it was the weekend       
    | had 1 day off school    
    | had 2 days off school   
    | too young for school    
    | it was school holiday   

13. How satisfied were you overall with the anaesthetic care?
    | very satisfied  
    | quite satisfied  
    | some what satisfied  
    | not satisfied at all  
    | don’t know  

14. How happy would you be with having the same anaesthetist again for a future treatment?
    | very happy  
    | quite happy  
    | not bothered  
    | unhappy  
    | very unhappy  
    | don’t know  

15. How happy would you be with having the same anaesthetic again for future treatment?
    | very happy  
    | quite happy  
    | not bothered  
    | unhappy  
    | very unhappy  
    | don’t know  

16. Any other comments?
REFERENCE LIST


135. Miller JM: Selection and investigation of adult day cases; in Miller JM R GaHM (ed): Practical anaesthesia and analgesia for day surgery. UK, BIOS scientific publishers limited pp 5-17, 1997.


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