

Physically restraining children for induction of general anaesthesia: survey of consultant paediatric anaesthetists.

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Physically restraining children for induction of general anaesthesia: survey of consultant paediatric anaesthetists.

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Physically restraining children for induction of general anaesthesia: survey of consultant paediatric anaesthetists.

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(A) Abstract

Objectives: To discover whether any consensus exists among Association of Paediatric Anaesthetists of Great Britain and Ireland (APA) members regarding use and acceptability (or otherwise) of physical restraint.

Background: Despite growing recognition of children's right to be consulted regarding their healthcare, the issue of how to proceed when faced with a child unwilling to undergo induction of general anaesthesia remains relatively unaddressed. Methods: APA members were surveyed regarding their use or avoidance of physical restraint and alternate techniques to facilitate induction; factors affecting choice of technique; and extent of preoperative discussion. The anonymous online survey used both structured and free-text responses.

Results: Of 596 surveys, 310 were returned, a 52% response rate. Use of physical restraint and extent of restraint employed declines with increasing child age. Distraction techniques are frequently employed for children under 6 years old, with use of sedative premedication increasing as child age increases. Urgency of procedure, developmental delay, and preoperative discussion all have an affect. Comments demonstrated a wide range of views and lack of consensus on what constitutes physical restraint, and what degree of restraint, if any, is acceptable. Conclusion: Our results are similar to US Society of Pediatric Anesthesia members, suggesting this remains an issue internationally. Consideration of practices in other specialties give some guidance. Our survey shows a range of views as to what physical restraint is or involves, and what constitutes acceptable practice regarding use or avoidance of physical restraint. We were unable to demonstrate consensus.

(A) Keywords: physical restraint; general anaesthesia; child

Pediatric Anesthesia

(A) Introduction

The UK General Medical Council publication "0-18 years: guidance for all doctors" ¹ formalised expectations of all doctors who treat children. This publication prompted us to reconsider a common situation which has received relatively little attention in the anaesthetic literature: the child who refuses or resists induction of general anaesthesia. 'At what point does restraint become abuse?'² Although the General Medical Council had not received any formal complaints along these lines to December 2008 (personal communication), parents may complain in the press³. We wondered whether any consensus exists among paediatric anaesthetists on what constitutes acceptable and unacceptable practice.

(A) Materials and Methods

With permission from the Association of Paediatric Anaesthetists of Great Britain and Ireland (APA)'s Scientific Committee, we emailed a survey invitation to all full and affiliate members of the APA. Emails were sent in early December 2008, with reminders in January and February 2009. The emails included a link to the anonymous online survey (hosted by Bristol Online Surveys [BOS], University of Bristol, UK, http://www.survey.bris.ac.uk/; Appendix 1). A combination of structured and free-text responses addressed details of anaesthetic practice; use of, and attitudes towards, physical restraint and alternatives including factors affecting choice of technique; and extent of preoperative discussion. Data from structured responses were analysed using BOS' integral software, yielding simple descriptive frequencies. Free text comments underwent thematic analysis⁴.

Our local Regional Ethics Committee chairman was approached, in line with normal UK practice, and felt that formal ethics committee approval was not necessary.

(A) Results

There were 586 initial invitation emails sent, with APA membership growing by 10 during the reminder period. The 78 APA members without email addresses on file did not receive a survey invitation. We received 310 completed surveys, a response rate of 52%.

(B) Personal details

Respondents' paediatric anaesthetic commitment ranged from less than one to 10 sessions per week (median 4 sessions, mean 4.4 sessions per average week). There were 91 (21.4%) respondents with 2 or fewer paediatric anaesthetic sessions per week, while 47 (15.2%) had 8 or more.

Time in paediatric anaesthetic practice at consultant level ranged from 1 to 40 years, with median 10 years and mean 12.2 years.

(B) Techniques used to enable induction of anaesthesia

Table1 and figures 1 and 2 show how respondents' preferred techniques, and those avoided, vary with the child's age. A majority rarely or never allow a child to be restrained by staff members, the size of this majority growing with increasing age of child from 214 (74%) under 1 year to 261 (88%) over 6 years. However, restraint by parents was more commonly used for younger children (28% under 1 year, 31% aged 1 to 3 years, falling to 11% at 3 to 6 years and less than 3% over 6 years). Similarly, fewer respondents avoided restraint by parents than by staff (parental restraint rarely or never used by 19% under 1 year, 13% aged 1 to 3 years, 28% aged 3 to 6 years and 65% over 6 years).

Page 5 of 24

Pediatric Anesthesia

Partial restraint, as described in the questionnaire wording (holding still to enable iv access or inhalation induction), was always or mostly used by a sizeable minority of respondents in younger age groups (28% under 1 year and 29% 1 to 3 years, falling to 16% aged 3 to 6 years and only 8% over 6 years). In children 6 years and older, 47% rarely or never used partial restraint.

Respondents displayed an increasing tendency to use sedative premedication with increasing age of child. Sedative premedication was always or mostly used *initially* in 5% under 1 year, 11% aged 1 to 3 and 3 to 6 years, and 8% over 6 years and *secondarily* in 8%, 21%, 28% and 34% respectively. Distraction was always or mostly used by 42% for babies, 69% for 1 to 3 year olds, 72% for 3 to 6 year olds and 58% over 6 years.

Figure 3 demonstrates that while a majority would alter their induction technique in response to objections from either a child (84%) or a parent (77%), opinion was almost evenly divided on objections raised by other staff members (147 versus 124, 54% would alter technique). Free text comments similarly divided between statements that concerns of experienced perioperative staff were both worth heeding and practically speaking difficult to ignore, and those pointing out that anaesthetic technique is agreed between anaesthetist, child and parents, not third parties. Figure 3 also shows a majority view (80% - 82%) that urgent procedures and special needs children require greater flexibility.

(B) Preoperative discussion

The majority of respondents routinely or sometimes discuss the full range of nonrestraint and restraint techniques with parents preoperatively (72% – 85% across the different techniques). The exception was whole-child restraint by staff members which would not be mentioned preoperatively by 67% (Figure 4). Many of the 'maybe's used free text to describe circumstances in which they would discuss physical restraint by staff, mostly relating to special needs children, and in some cases to say "we will not do this" to parental suggestions. Figure 5 illustrates the majority views that prior parental agreement is important (85%), and that pre-discussed physical restraint may be more acceptable when surgery is urgent rather than elective (88%), and in the special needs child who could not otherwise be managed (78%). A substantial minority (40%) felt that staff disagreement with the use of physical restraint was not a contraindication, provided the parents agreed with the plan.

(B) Themes emerging from free text comments

- If the suggestions formed the largest set of comments. Some were brief (eg 23 'i.m. ketamine', 53 'premed'). Many gave detailed descriptions of distraction/visual imagery techniques, or of example conversations with children and parents. Giving children choices and changing technique depending on their expressed preferences came up repeatedly, while hypnotherapy and using play therapists or psychologists were mentioned by only a handful. Some avoid any hint of physical restraint, while others described just how they would restrain a child (for example, holding hands still but allowing them to kick with their legs, have the parent hold them).
- © *Attitudes toward restraint* was another common theme, ranging from "I wouldn't ever do it" through "Restraint except by parents is not usually desirable" to the pragmatic

Pediatric Anesthesia

"Restraint is not so much "acceptable", but rather a necessity in some situations" "There can be no hard and fast rules". Car seats and seat belts were mentioned as examples of everyday use of physical restraint in children's lives, with others pointing out that "For children with special needs, restraint may be a necessary part of their daily routine". Conversely, other respondents referred to "gorilla induction" alluding to a rather different image of what physical restraint is. About equal numbers of those who commented felt that a secure parental cuddle is or is not an example of using physical restraint, similarly holding limbs for intravenous cannulation.

Some respondents commented that sedative premedication might be less desirable as "The patient will not remember that the experience was not as bad as they thought it would be". Several mentioned that increasing observer comfort (staff or parents) is not necessarily better for the child⁵. "Would your answers …be different for sedative premedication?" yielded 133 no, 77 yes and 69 maybe responses. Although this question could have been worded better, most respondents used free text to clarify, divided similarly between "Restraint is restraint, whether physical or chemical" and "I don't buy that it's the same as physical restraint".

© *Flexibility* and organisational considerations were mentioned frequently as ways to potentially avoid using physical restraint. Comments subdivided into willingness (or not) to reorder a list and send a child back to the ward for premedication or to return another day; changing induction (or not) in response to a child or parent's preference; statements that "all situations are different as are all children" and that there is no one best method, especially where special needs children are concerned; and surgical urgency removing flexibility and perhaps making physical restraint more common.

- © *Communication* was mentioned repeatedly. The children themselves may have rational fears that can be addressed, or may be unsure why they have come to hospital. Games, stories or visual imagery may be used. "It is all about discussion with the parents", beforehand (what to expect, what we will or will not consider, their child's safety remaining paramount), during (ongoing agreement to continue) and after (particularly following a difficult induction). Staff members may not understand our rationale without explanation, and may be unwilling to restrain children, while sometimes too willing to talk when "a single voice" is optimal.
- © Consent issues, and competence to refuse treatment were discussed by many.
 "Informed consent is mandatory but the details need to be guided by the parents'/guardians' desire to know the details" was expressed repeatedly, while several pointed out that "Often a parent or guardian may not appreciate our difficulties especially in the older child" who may in fact be competent to refuse treatment. Finally, several comments agreed that this is a difficult area.

(A) Discussion

This survey of APA members uncovers a wide range of opinions on the acceptability or otherwise of physically restraining unwilling children to facilitate induction of anaesthesia in a variety of circumstances and ages, from "I despise restraint" and "I wouldn't do it" to "I don't see a problem with physical restraint provided that it is administered in an appropriate manner", "I would not hesitate to use physical restraint by staff members if patient's safety required it", and "Never say never". Many respondents generously shared their personal tactics for circumventing objections.

Our response rate was similar to Lewis et al's survey of US Society of Pediatric Anesthesia members⁶. They also showed decreasing use of physical restraint with increasing child age, and considerable variation in attitudes towards restraint. They found peak use of sedative premedication in 1-4 year olds, while our respondents' use of premedication was greatest in over 6 year olds.

UK Royal College of Nursing guidelines on procedural restraint⁷, specifically referenced by some respondents, make a distinction between "restraining" a child (unacceptable), and "holding still" (permissible), the differences being the force applied (presumably subjective), and consent, the child having given permission to be held still (or perhaps, consenting to the procedure thus facilitated?) Our survey respondents disagreed on whether such actions as restraining an arm in order to site a cannula, or a secure parental cuddle, are physical restraint. Opinion divided fairly evenly on whether sedative premedication should be considered chemical restraint, and whether this is actually different from physically holding a child. The UK Royal College of Anaesthetists states⁸ that "Parents (or carers) should, wherever possible, be involved in all aspects of care and decisions regarding management of their children" and that "There should be discussions with the child and/or parent about methods of induction". Communication and consent/competence comprised two recurrent themes in our free text responses.

The law on consent in children varies between countries. In England and Wales, a child who is not competent to refuse can legally be anaesthetised against their will, provided a person with parental responsibility consents⁹. Almost two thirds (60%) of our respondents would apply physical restraint despite a child's objections where a parent consented during preoperative discussion (figure 5). Consent may be withdrawn at any point even after a procedure has started, in which case it is only legal to continue if to stop at that point would be unsafe. Regarding induction of general anaesthesia, a parent could withdraw consent to continue if they became unhappy with physical restraint being used. However, stopping mid-way through an inhalation induction may well be unsafe. This was mentioned by survey respondents as a topic for preoperative discussion.

Colleagues in paediatric nursing, dentistry, oncology and intensive care also manage noncompliant children and may have lessons for us¹⁰. Jeffery comments¹¹ that physical restraint might be interpreted as child abuse, particularly if parents are not kept informed. Current acceptable practice may later be redefined as abusive. Alternatively, physical restraint might be justified retrospectively by its effects of enabling a beneficial procedure to occur. Apparently¹² physical restraint is a frequent intervention in paediatric nursing, yet rarely discussed or addressed in research.

Pediatric Anesthesia

A review of restraint use (defined as both physical and 'physiological' meaning premedication) in paediatric dentistry¹³ described a range of parental attitudes towards physical restraint from generally unacceptable to approved by 90% of parents in different studies. The majority view within British paediatric dentistry is that "physical restraint crosses the boundaries of what is considered acceptable"¹⁴. UK General Dental Council guidance states that "only in the most exceptional circumstances could the use of physical restraint be justified"^{15, 16}. Nevertheless Kupietzky argues that physical restraint coupled with conscious sedation be used in preference to general anaesthesia¹⁷.

Paediatric oncology is another area in which sedation plus physical restraint may be used to avoid general anaesthesia. An Australian study¹⁸ discovered that although staff perceived sedation with physical restraint (required in 94% of procedures under sedation) as well tolerated, many parents expressed disquiet, with 90% of parents requesting general anaesthesia for future procedures.

Several survey respondents mentioned paediatric intensive care unit (PICU) use of restraint as an example of pragmatism or necessity, potentially justifying similar anaesthetic practice. A postal questionnaire¹⁹ revealed that 68% of UK PICUs practised one or more techniques of physical restraint to avoid treatment interference by patients. Many (47%) did not obtain parental consent prior to restraining children, and no units required written consent. An earlier telephone survey²⁰ of UK PICUs found that 38% 'routinely' used physical restraint, suggesting that this may be becoming more prevalent or more acceptable practice.

Limitations of this survey include a response rate of 52% of the survey population of APA members, thus views expressed may not be more widely applicable, although similar to US SPA members⁶. Survey questions were not validated, although they were reviewed by APA's Scientific Committee. Question wording could have been clearer as commented by 21 respondents (6.8%). Thematic analysis and reporting descriptive data from free text comments may be affected by author preconceptions. Free text comments illustrated a lack of agreement on what constitutes physical restraint; absence of a common definition may confuse interpretation.

This online survey of APA members has discovered wide variations in practice, and a range of views as to what physical restraint is or involves, and what constitutes acceptable practice regarding use or avoidance of physical restraint. We were unable to demonstrate consensus.

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Page 14 of 24

(A) Acknowledgements

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Presented in part at the APA annual scientific meeting, Glasgow, May 2010.

(A) Appendix – the questionnaire (B) Physical restraint for induction of gene	eral an	aesthes:	ia in ch	ildren
The child refusing induction of general encountered yet seldom addressed dilemma national guidelines or standards to whice that our own practice is acceptable in against us, and little published literat primarily to specialties other than analy via this survey of APA members, to clar. paediatric anaesthetists in the UK, whice guidelines that will protect all of us.	anaest a. Ther ch we c the eve ture (m esthesi ify cur ch coul	hesia is e are cu ould po: nt of a uch of w a). We t rent pra d be ind	s a comm urrently int to c complai: which re therefor actice a corporat	only no onfirm nt fers e wish, mong ed into
The online survey is anonymous and will to complete. `Parent' is used throughout to denote p authority.	take a ersons	pproxima with par	ately 10 cental	minutes
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Age-group:	0-1 	1-3	3-6 Voard	Over 6
a) sedative premedication (initially)b) sedative premedication (following poor cooperation)	ycar	ycars	years	ycars
 c) distraction (eg toy, story) d) partial physical restraint (eg facemask against face, limb for iv access; hands to prevent interference with facemask or iv) e) whole child restraint by parent) Q.			
<pre>(secure cuddle) f) whole child restraint by staff member(s)</pre>				
g) other technique				
4) If you use another technique than the describe it. [text box]	ose lis	ted abov	ve, plea	se
<pre>Which of the following affect your decis with an individual child? Are you any more or less likely to use a under the circumstances below? 5) If the patient states "I don't want a) How would your management change b) What age range of patients? [te 6) If parent(s) unhappy? [yes/no] How would your management change? 7) If staff member unhappy (eg nurse)? How would your management change? 8) Urgent/emergency procedure (vs elect How would your management change? 9) If child has special needs? [yes/no How would your management change?</pre>	sion to any of it "? ge? [te ext box [text [yes/no [text ive)? [[text [text	use any the tech [yes/no] xt box]] box] yes/no] box] box]]	γ of a−g nniques	above listed
(B)Preoperative information: Which of the following possible technique general anaesthesia do you routinely disparents preoperatively?	ues to scuss w	facilita ith chi	ate indu ldren an	ction of d

10) Initial sedative premedication? [yes/no/maybe] 11) Sedative premedication following poor cooperation? [yes/no/maybe] 12) Distraction (eg toy, story, play therapist)? [yes/no/maybe] 13) Partial physical restraint such as holding facemask against child's face, holding limb to obtain iv access, or holding hands to prevent interference with facemask or iv? [yes/no/maybe] 14) Whole child restraint by parent (secure cuddle)? [yes/no/maybe] 15) Whole child restraint by staff member(s) eg ODP or nurse? [yes/no/maybe] 16) Another technique: please describe: [text box] Does preoperative discussion render physical restraint techniques more acceptable in your opinion? (Regardless of whether you use any of these techniques yourself) 17) If parent(s) agree? [yes/no] 18) If parents are divided in opinion? [yes/no] 19) If parent(s) agree but child objects? [yes/no] What age of child? [text box] 20) If staff member (eg nurse) is unhappy? [yes/no] 21) In the urgent or emergency (versus elective) setting? [yes/no] 22) In the child with special needs? [yes/no] 23) Would your answers in this section be different for chemical restraint (sedative premedication)? [yes/no/maybe] Why, or why not? [text box] (B)Your comments 24) Is there anything else you would like to add, clarify or qualify? [text box] And finally: Thank you very much indeed for taking the time to complete this survey. We intend to email results in due course, for your interest. Rachel Homer FRCA, Sam Bass FRCA, LLB Addenbrooke's Hospital, Cambridge (01223 217434 or 01223 217897)

Pediatric Anesthesia

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Conclusion: Our results are similar to US Society of Pediatric Anesthesia members, suggesting this remains an issue internationally. Consideration of practices in other specialties give some guidance. Our survey shows a range of views as to what physical restraint is or involves, and what constitutes acceptable practice regarding use or avoidance of physical restraint. We were unable to demonstrate consensus.

Technique	Age group	Always	Most of the	Rarely	Never
	(years)		time		
Sedative premedication initially	0-1	4(1.3)	10(3.4)	97(32.7)	168(56.6)
	1-3	9(3.1)	23(7.9)	138(47.4)	48(16.5)
	3-6	11(3.6)	23(7.6)	110(36.3)	25(8.3)
	>6	8(2.7)	15(5.0)	114(37.9)	22(7.3)
Sedative premedication following	0-1	11(3.7)	13(4.4)	91(31.0)	148(50.3)
poor cooperation	1-3	24(8.0)	38(12.7)	80(26.8)	43(14.4)
	3-6	31(10.3)	54(18.0)	61(20.3)	10(3.3)
	>6	39(13.1)	63(21.1)	54(18.1)	5(1.7)
Distraction (toy, story)	0-1	63(21.4)	62(21.0)	34(11.5)	33(11.2)
	1-3	103(34.7)	102(34.3)	8(2.7)	4(1.3)
	3-6	101(34.1)	113(38.2)	8(2.7)	4(1.4)
	>6	72(24.4)	100(33.9)	18(6.1)	6(2.0)
Partial physical restraint	0-1	30(10.1)	82(27.7)	13(4.4)	8(2.7)
	1-3	21(7.0)	66(21.9)	14(4.7)	3(1.0)
	3-6	11(3.7)	38(12.7)	46(15.3)	6(2.0)
	>6	10(3.3)	15(5.0)	109(36.2)	31(10.3)
Whole child restraint (parent)	0-1	25(8.4)	59(19.9)	31(10.4)	26(8.8)
	1-3	19(6.3)	74(24.4)	28(9.2)	11(3.6)
	3-6	5(1.7)	28(9.3)	60(19.9)	23(7.6)
·	>6	4(1.3)	4(1.3)	139(46.3)	57(19.0)
Whole child restraint (staff)	0-1	1(0.3)	9(3.1)	109(37.1)	105(35.7)
	1-3	1(0.3)	4(1.3)	119(39.7)	107(35.7)
	3-6	1(0.3)	0	109(36.4)	129(43.1)
	>6	1(0.3)	0	101(34.0)	160(53.9)
Other	0-1	1(0.6)	2(1.3)	37(23.6)	102(65.0)
	1-3	1(0.6)	7(4.5)	39(25.0)	89(57.1)
	3-6	1(0.6)	8(5.0)	53(33.3)	77(48.4)
	>6	2(1.2)	7(4.2)	52(31.5)	81(49.1)

Table 1

 1(0.6)
 2(1.3)
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 1(0.6)
 7(4.5)
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 1(0.6)
 8(5.0)
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 2(1.2)
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Figure 1



Figure 2





Figure 4



Table 1: Frequency of using different techniques by age group (Appendix question 3). Responses for each technique and age group are presented as number of respondents (%). The survey software prevented a respondent giving more than one response in each technique/age group category, but not every respondent answered every category.

Figure 1: Numbers of respondents who said they always or mostly used the variety of techniques described in the survey (Appendix question 3) for the different age groups of children. Less than 6% (3 to 9 respondents) always or mostly used another technique than those listed, using free text to describe input by play therapists and psychologists, hypnotherapy, and intramuscular administration of ketamine.

Figure 2: Numbers of respondents who said they rarely or never used the variety of techniques described in the survey (Appendix question 3) for the different age groups of children. 81% to 89% rarely or never used a technique other than those described.

Figure 3 illustrates responses to questions 5 through 9 (Appendix), "Which of the following affect your decision to use [the techniques listed] with an individual child?" 84% would change technique if the child objected, 77% if a parent objected, but only 54% for a staff member's objection. 80% would alter technique in an urgent or emergency situation, and 82% when faced with a special needs child.

Figure 4: Options for facilitating induction of anaesthesia which respondents routinely discuss with children and parents preoperatively (Appendix questions 10 to 15). 72% generally discuss initial premedication with 83% routinely or possibly mentioning the option of secondary premedication if cooperation proves to be poor. 81% discuss distraction techniques, and 83% discuss holding limbs or facemask firmly although only 38% always or mostly do this (Table 1). 85% discuss restraint by parents such as a secure cuddle (always or mostly used in 30% of toddlers). 67% do not routinely discuss staff restraining or holding down the child, compared with 74% to 88% (depending on the child's age) rarely or never allowing this.

Figure 5: Answers to questions 17 to 23 (Appendix), "Does preoperative discussion render physical restraint techniques more acceptable in your opinion? (Regardless of whether you use any of these techniques yourself)". 85% felt that physical restraint was rendered acceptable by parental agreement with its use, although only 60% felt this was still the case if the child objected, falling to 30% when parents were divided in their opinions, that is one agreeing but the other not. 40% considered physical restraint discussed preoperatively with parents to be acceptable even if staff members were unhappy with its use. 88% considered urgency of procedure plus discussion rendered physical restraint acceptable, with 78% feeling the same for special needs children.