AUSTRALIAN AND NEW ZEALAND COLLEGE OF ANAESTHETISTS

A.C.N. 055 042 852

'ULIMAROA' 630 ST KILDA ROAD, MELBOURNE, VICTORIA 3004

BULLETIN

VOLUME 3 NUMBER 4 NOVEMBER 1994

REGISTERED BY AUSTRALIA POST – PP 381691 100040

CONTENTS

EDITORIAL

The Australian and New Zealand College of Anaesthetists *Bulletin* is published four times per year by the Australian and New Zealand College of Anaesthetists, A.C.N. 055 042 852, 630 St. Kilda Road, Melbourne, 3004, Victoria.
Tel: (03) 510 6299. Fax: (03) 510 6786.

Printed by Capitol Press Pty Ltd.

ISSN 1038-0981.

PRESIDENT'S MESSAGE

The College Council recently awarded a variety of Research Grants which exceeded $300,000 in value. This amount represents the largest single source of research funding for Anaesthesia and Intensive Care in Australia and New Zealand. The amount is the highest sum your College has awarded since the commencement of Research Grants.

The Faculty/College has been awarding Research Grants for over twenty years but these awards received a significant boost in 1981. In that year the Dean of the Faculty of Anaesthetists, Professor Douglas Joseph, announced the allocation of $20 per subscribing Fellow for research. Later the Board agreed to allocate 10% of the subscription to research. Since 1982, sixty-seven awards have been made totalling in excess of $1 million for research into Anaesthesia and Intensive Care. This investment has resulted in a significant boost to academic anaesthesia and intensive care in Australia and New Zealand. The standard of scientific presentations at our Scientific Meetings and the quality of our Scientific Publications has improved significantly in the past two decades, aided by the support from your Faculty and College.

Dr David Crankshaw from the Royal Melbourne Hospital has been appointed the Lennard Travers Professor for 1995. This appointment is the eighth since Professor Don Harrison was awarded the first Professorship in 1972. The funds for this Award originated from an appeal to Fellows to establish a Professorial appointment within the Faculty of Anaesthetists. Insufficient funds were donated for a full Chair but the Board of the Faculty established the Professorship for a specific tenure of twelve months to be awarded every three or four years.

The Academic Establishment Grant for 1994 has been awarded to the Department of Anaesthesia and Intensive Care, University of Newcastle at the John Hunter Hospital. This is the fifth grant made by the Faculty/College. The concept of these grants was as a result of an idea by Professor Barry Baker during his Deanship in 1989. The five grants have now totalled $375,000 and have led to significant support of these Departments in Australia and New Zealand.

The College, and the Faculty before it, has an unparalleled record in supporting research into Anaesthesia and Intensive Care. This research benefits our specialty, increasing its status, improving our understanding and increasing the safety and quality of our patient care.

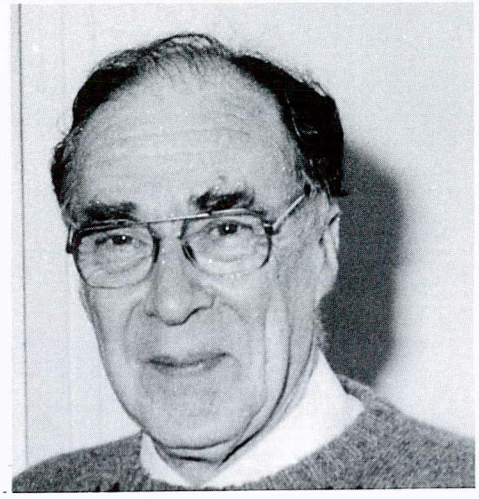
Finally, I wish all Fellows and their families a very Happy Christmas and that 1995 is a great year for us all.

MICHAEL DAVIES
President

OBITUARY

PROFESSOR DOUGLAS GEOFFREY LAMPARD

HONORARY FELLOW



Emeritus Professor D.G. Lampard died on September 1, 1994, aged 67 years, from cancer.

He became involved in biophysics and anaesthesia in 1963, shortly after his appointment as Foundation Professor of Electrical Engineering at Monash University. Educated in Sydney, he obtained the degrees of B.Sc. and M.Sc. in Physics and proceeded to his Ph.D. at Cambridge in 1954. He also spent some time at Columbia and Purdue Universities in the U.S.A. In Sydney he became a Principal Research Officer in the CSIRO Division of Electrotechnology and later held a Chair in Electrical Engineering at the University of New South Wales. His areas of expertise were circuit theory, electromagnetic theory and communications, and his mathematical contribution to a theory of capacitance led to his being awarded the Sperry Prize for Outstanding Achievement in 1965. This placed him in the same rank as those who are remembered in the names of other electrical units.

While working unlimited hours to build the academic and practical structure of his new department he found time in 1963 to take the Chair of the fledgling Society of Medical and Biological Engineering founded by David Dewhurst, where I had the good fortune to meet him and become aware of his wide interests, not only in biophysics but also music. From this early meeting and during the subsequent thirty-year friendship, I was struck by his ability to evoke and stimulate interest in his associates, and by the extent of his knowledge and remarkable memory. At this early stage he had organised a Biophysics Laboratory in his Department, and his first postgraduate medical fellow, Donald Stenhouse, subsequently became a Fellow of the Faculty of Anaesthetists. From the outset studies were turned towards the analysis of nervous processes in the spinal cord, involving the disciplines of mechanical engineering (the apparatus), electrical engineering (the recordings), physiology (the technique), pharmacology (the stimulating and depressing drugs) and mathematics (the analysis).

Professor Steve Redman, his first postgraduate engineering student, referred to this internationally acknowledged work in his Tribute at the Memorial Service at Monash on September 16, 1994, and equally-acclaimed work in muscle physiology by David Morgan continues in the same laboratory.

Douglas was elected to Fellowship of the Australian Academy of Science in 1977 and was active in the affairs of the Academy up to his death.

He had inherited, particularly from his mother, an acute and exact sense of musical harmonies: when confined to bed with a minor illness in his early years he devised an unconventional tuning of the four-string banjo which simplified the fingering for chords, and he developed this and exploited it when playing jazz music throughout his life. He also played the piano, the melody with his left hand, chords with the right and a vocal accompaniment. Many Fellows will remember him playing his banjo with rapt attention for social occasions of the ASA and the Faculty, but perhaps the climax of his musical performances occurred when he was at Purdue University. On the same day he gave an outstanding address to the University, and later played in a jazz band on the same stage to the same audience – with an equal ovation!

He pursued a rigorous academic approach in the functions of his Department, and four of his PhD students now occupy Chairs in various parts of the world. The breadth of his knowledge is illustrated by the fact that in addition to his achievements in many parts of electrical engineering and physiology he made contributions in physics, mathematics, statistics and chemistry. The latter led to him setting up an analytical laboratory in his home in later years, and performing the major part of wine analysis for the vignerons of the Yarra Valley and Mornington Peninsula.

His contributions to anaesthesia were made through his encouragement of research by clinicians in the biophysics laboratory. Under his guidance postgraduate students devised a superb anaesthetic monitoring system involving computer control.

The computer was designed and made in the Department by John Coles, an engineering graduate student. With Douglas Lampard's support he developed an automated anaesthesia machine coupled to the computer and the monitors: a remarkable forerunner of equipment we are now seeing introduced 25 years later. His apparatus enabled a series of controlled studies to be done on hypothermia, respiratory circuits, electro-encephalographic analysis and automated administration of volatile agents.

An integrated EMG monitor later became part of the equipment bank, enabling controlled infusions of neuromuscular blocking agents to be given. This monitor later became available as a clinical module. One of the few problems he and his colleagues were unable to solve was the unstable baseline in EMG monitoring which has prevented it from becoming a standard monitor during clinical paralysis.

He attended meetings of the Faculty of Anaesthetists and the Society of Anaesthesia both in Australia and Asia, contributing papers and leading discussions, and these contributions were recognised by his being elected an Honorary Fellow at the Adelaide GSM in 1976, and an Honorary member of the Society also. In keeping with these honours, he was acknowledged as a skilful veterinary anaesthetist, and was involved in laboratory studies up to his fatal illness.

As a pioneer in promoting original studies in anaesthesia, and as an active supporter of the move to establish an academic Chair of Anaesthesia in Victoria, Douglas Lampard played an important role in the evolution of our specialty, and he will be sadly missed.

He leaves his wife, Roslyn, two married daughters Deborah and Amanda, and two grandchildren, to whom we extend our deepest condolences.

Noel Cass

OBITUARY

JOHN J. BONICA MD, DSc, FRCA (1917-1994)

Barely one month after the death of his beloved wife Emma, John J. Bonica came to the end of a life that contributed much to the world and, arguably, an unparalleled contribution to the specialty of anaesthesia and to medicine in general.

Anaesthetists of my vintage knew John Bonica as the Chairman of one of the foremost academic departments of anesthesiology, The University of Washington in Seattle with its superb faculty and its strong emphasis on the physiology and pharmacology of regional anaesthesia, together with its very powerful focus on all aspects of pain research and treatment.

John Bonica was also well known for his pioneering work on the neural pathways of labour pain, coupled with his strong initiatives to improve the management of labour pain, particularly with the use of regional anaesthesia.

He was a major force in the American Society of Anesthesiologists and the World Federation of Societies of Anesthesiologists. Indeed, one could say he was a major force whenever and wherever he appeared.

Time magazine (June 11, 1984) referred to him as "pain relief's founding father". It is evident in the first edition of his text *The Management of Pain* in 1953 that his interest and influence extended from acute post-operative pain to chronic non-cancer pain, cancer pain, obstetric pain and to the application of regional anaesthesia to pain management. The massive two-volume second edition of this text was published in 1990.

One of John's most important qualities was his enormous personal commitment and his perseverance in the face of almost insurmountable odds. This is a very powerful reason for the success of the important concepts in pain management for which he worked tirelessly for half a century. It is not surprising then that many were inspired to follow John into this field and I count myself in that number. Equally impressive was his tenacity in pursuing and stimulating others to pursue critical initiatives in this field. The following are examples, some of which took many years to bring to fruition, as a result of his encouragement of other individuals:

- The Journal "Pain"
- The Taxonomy of Pain
- An undergraduate curriculum on pain
- A postgraduate core curriculum on pain
- A World Cancer Pain Programme.

John Bonica was born on the island of Filicudi, Messina, Italy, on February 16, 1917. In 1928 the family emigrated to New York City. Following his father's death in 1932, he assumed responsibility for the income of the household at age 15, shining shoes, selling newspapers, fruits and vegetables in pursuit of his dream to become a physician. In high school he took up amateur wrestling and won both city and state championships. He worked his way through college at Long Island University and then medical school in Milwaukee, Wisconsin, as a professional wrestler, travelling with the carnival during the summers. He continued to wrestle during his subsequent time in the US Army, however, because this activity would be unbecoming to an officer, he used the pseudonym, "the Masked Marvel". Ultimately, John Bonica won not only the title of light heavyweight wrestling champion of the world, but also after six years of determined courtship, the hand of Emma Louise Baldetti. They were married following his graduation from Marquette University School of Medicine in 1942.

Unfortunately his efforts on behalf of his family finances took a heavy toll. He used to run across town with heavy cement bags on his shoulders to save the cost of a bus and to add to his strength. Such "training" methods and many injuries in wrestling matches inevitably led to problems with his back, hips and shoulders, resulting in more than 30 operations. Tragically he became himself a severe chronic pain sufferer at a relatively early age and had to overcome

this obstacle during all of his professional life. A wonderfully appropriate lecture by him at a special meeting in his honour in Venice in 1987 to commemorate his 70th birthday was entitled "Wrestling with Pain".

At the age of 27 John Bonica was inducted into the US Army and sent to Fort Lewis, Washington, where he was appointed Chief of Anesthesiology at Madigan Hospital. Over the next three years, he taught himself the techniques of regional blocks, developing this form of anaesthesia for surgery and pioneering pain-relieving techniques that helped more than 10,000 soldiers under his care who had been wounded in action. Their suffering was the initial stimulus for his lifelong dedication to relieving pain in others. Many of these patients had neuropathic pain problems such as causalgia and phantom limb pain.

In 1946, based upon this experience he dediced to form a multidisciplinary team to treat and investigate chronic pain problems. During the early 1950s there were only two other multidisciplinary pain facilities in the USA, one directed by the pre-eminent surgeon William K. Livingston and one directed by Dr F.A. Duncan Alexander.

After his wife Emma nearly died from primitive open drop ether anaesthesia during the birth of their first child, John committed himself to his second pioneering effort, regional anaesthesia for obstetric pain. His manual for the WFSA "Obstetric Analgesia and Anesthesia" was first published in 1972. His text "Principles and Practice of Obstetric Analgesia and Anesthesia" was first published in 1967, with the second edition completed only shortly prior to his death.

In 1960 John Bonica was appointed Foundation Professor and Chair of the Department of Anesthesiology at the University of Washington School of Medicine in Seattle. During his 18 years as its leader, the department became one of the most prominent in the world with strong, balanced programmes in training, research and patient care. Under his leadership, the department advanced regional anaesthesia techniques for surgery and obstetrics. At the same time, Dr Bonica directed the world's pre-eminent Multidisciplinary Pain Clinic, a model now emulated worldwide.

In 1973 the first international interdisciplinary symposium on pain and its management, organised by John Bonica, took place in Seattle and led directly to the creation of the International Association for the Study of Pain. The IASP has grown to over 12,000 members representing 80 countries and with 45 chapters worldwide.

Through his tireless efforts, John Bonica ignited public and political interest in the immense societal costs of acute and chronic pain. The results include increased US government support of pain research and pain management, including a recent cancer pain initiative by the National Institutes of Health in the USA.

John had an extremely persuasive manner which engendered a feeling that one would rather be moving in the same direction with him than "hammering out a solution to the problem" as he would say.

He also had a terrifyingly strong arm and many of his fellows remember the crushing handshake and the "guiding" arm on the shoulder. A conversation that began, "listen, friend . . ." was not to be taken lightly.

I well remember my first IASP Council Meeting with John as President, exerting total control over the events of the meeting with most, including me, in awe of him. However, I saw a different side of John when he and Emma stayed in my house and developed an immediate warmth and empathy with my children; I saw this also when I was privileged to attend John's 75th birthday in his home in Seattle, surrounded by his family. He sometimes seemed to have a tough exterior, but he had a very warm and close family and he extended this same warmth to those, such as I, who were privileged to call him a friend.

Among John Bonica's many worldwide honours are the Distinguished Service Award of the American Society of Anesthesiologists, of which he served as President in 1966; Honorary Fellow of the Royal College of Anaesthetists; Honorary Doctorate of Science Degrees from the Medical Colleges of Wisconsin and Northwestern University; Honorary Doctorate from Siena University, Italy; Commander and Highest Officer of the Knights of the Order of Merit of the Republic of Italy; and Hereditary Knight, Noble Order of Cingolo Militaire with rank of Baronet. Eight lectureships and fellowships around the world

bear his name, including the "John J. and Emma Bonica Endowed Chair for Anesthesiology and Pain Research" at the University of Washington School of Medicine, the John J. Bonica Trainee Fellowship of the International Association for the Study of Pain and the Bonica Lecture of the Australian Pain Society.

In contemporary medicine, it is rare to be able to name one individual who has been the driving force in a major field for half a century. Few will argue that John Bonica holds that place in the field of pain management; millions of patients throughout the world benefited from the major improvements in this field that have resulted from John's enormous personal contribution.

We will all look up in the years to come and realise that the mountain is no longer there.

Michael J. Cousins
October 1994

Professor Mather with Dr Denise Wedel of the Mayo Clinic who made the citation and presentation to Professor Mather.

On April 9, the 1994 John J Bonica Distinguished Award was presented to Professor Laurence Mather of the University of Sydney Department of Anaesthesia and Pain Management at Royal North Shore Hospital at the Annual Meeting of the Society in Chicago.

The international award is made annually to a distinguished scientist actively involved in pain research to honour the pioneering work of John J Bonica.

Professor Mather presented the Bonica Lecture with the title *"The Clinical Effects of Morphine Pharmacology"*.

"A CUTTING EDGE: AUSTRALIA'S SURGICAL WORKFORCE 1994"

Following the release of the above Report by Professor Peter Baume, Head of the School of Community Medicine, University of New South Wales, a News Release was issued on October 26, 1994:

KEEPING ANAESTHESIA SAFE

Professor Peter Baume requests a report on the adequacy of anaesthetic services in public hospitals and suggests that consideration be given to the possibilities of using staff other than specialist anaesthetists for some routine and simple anaesthetics in public hospitals. This has been interpreted to mean the introduction of Nurse Anaesthetists.

Professor Baume presents no evidence for a claimed shortage of anaesthetists in public hospitals apart from two personal submissions.

Anaesthesia is a highly technical and complex medical process, requiring significant specialised training, expertise and experience.

This is why anaesthetists undergo thirteen years of training to qualify in their profession.

Every anaesthetist is firstly a fully qualified medical practitioner, then a specialist in the discipline of anaesthesia.

Unfortunately there are no "routine or simple anaesthetics". All anaesthesia is major because of the potential for sudden, serious and life-threatening complications.

Every qualified anaesthetist has a deep and thorough knowledge of medicine, physiology, pharmacology, and a comprehensive understanding of a wide range of complex drugs and their behaviour used to keep patients safe and sure for surgery. Apart from providing anaesthesia, anaesthetists are also specialists in resuscitation, acute medicine and post-operative pain relief.

Anaesthesia in Australia has a remarkably high level of safety. This high quality of practice is a result of the training and standards of practice provided by the Australian and New Zealand College of Anaesthetists. Science and technology continually improve the surety and safety of anaesthesia, but with parallel on-going requirements for the specialist to maintain and update knowledge and skills.

Against this background, the need for specialist anaesthetists grows, rather than diminishes – life protecting services require a very specialised professional personnel.

The substitution of Nurse Anaesthetists for specialist anaesthetists as contemplated by Professor Baume could only threaten the safety and quality of anaesthetic services in Australia.

October 26, 1994

In addition, the following letter to the Editor of *The Australian, The Sydney Morning Herald,* and *The Age* was despatched:

Sir,

Proposals to allow non-specialist medical personnel to carry out some anaesthetic services on patients in Australia pose a threat to the current high quality of anaesthetic services in Australia.

The Australian and New Zealand College of Anaesthetists has no hesitation in asserting that delivery of anaesthetic services is the role of fully trained, specialist medical practitioners. This is not a matter of preserving one's professional patch, but represents the best interests of all patients.

All anaesthesia is major, because there is potential for sudden, serious and life threatening complications. Routine and simple are not words which apply to anaesthetics.

Thus, it takes thirteen years' training to qualify as an anaesthetist. Every anaesthetist is both a fully qualified medical practitioner, and a specialist in the discipline of anaesthesia.

The anaesthetist must have a complete knowledge of medicine, physiology, pharmacology and a comprehensive understanding of a wide range of complex drugs. As well, anaesthetists are specialists in resuscitation, acute medicine and post-operative pain relief.

Each year approximately 1.7 million anaesthetics are administered in Australia, with a remarkably high level of safety. This reflects the training and standards of practice provided by this College.

Advances in science and technology continue to refine and improve the surety and safety of anaesthesia, and the anaesthetist must continually update both knowledge and skills.

Anaesthesia is a highly technical and complex medical discipline. Any reduction in the level of knowledge and skill of those who deliver this service can only undermine the maintenance of the high standards of safety which now apply.

MICHAEL DAVIES
President
Australian and New Zealand College of Anaesthetists

REPORT ON 1993 CONFIDENTIAL CME SURVEY

Compiled by Sharon Evans — 14/7/94

1. ACTIVE PRACTICE

1337 (96.7%) actively in practice; 45 (3.3%) not in active practice. 2228 Fellows were surveyed. The analysis is reported on those in active practice only.

2. PERSONAL CME

	Frequent	%	Sometimes	%	Never	%	No Answer	%
Anaesthetic journals	1084	81.1	243	18.2	3	0.2	7	0.5
Anaesthetic texts	338	25.3	924	69.1	32	2.4	43	3.2
Medical journals	372	27.8	836	62.5	86	6.4	43	3.2
Medical texts	94	7.0	942	70.5	192	14.4	109	8.2
CECANZ	323	24.2	744	55.6	212	15.9	58	4.3

85.0% identify at least one area of CME as Frequent.

3. REGULAR QUALITY ASSURANCE PARTICIPATION DURING 1993

	Yes	%
Morbidity/Mortality	968	72.4
AIMS/NZ	786	58.8
Other	681	50.9

85.6% participated in some QA; 31.4% participated in all three aspects.

4. TEACHING ANAESTHESIA/INTENSIVE CARE DURING 1993

	Yes	%
Clinical	1098	82.1
Tutorials	749	56.0
ANZCA Courses	340	25.4
Other	1057	79.1

94.3% indicated they were involved in some form of teaching; 18.0% were involved in all four aspects.

5. SCIENTIFIC MEETINGS ATTENDED DURING 1993

			Of those who attended			Of all respondents		
Meetings < 1 Day	**Number**	**%**	**Median**	**25th%**	**75th%**	**Median**	**25th%**	**75th%**
Hospital	898	67.2	4	2	10	2	0	6
State	656	49.1	2	1	3	0	0	2
Other	190	14.2	1	1	2	0	0	0
At least 1 of these	1102	82.4						
Major Meetings > 1 Day								
Hospital	265	19.8	1	1	2	0	0	0
State	672	50.3	1	1	2	1	0	1
National	657	49.1	1	1	2	0	0	1
Overseas	428	32.0	1	1	2	0	0	1
At least 1 of these	1113	83.2						
Any scientific meeting	1265	94.6						

6. NATIONAL MEETINGS ATTENDED IN THE LAST TWO YEARS (1992-1993)

			Of those who attended			Of all respondents		
	Number	**%**	**Median**	**25th%**	**75th%**	**Median**	**25th%**	**75th%**
Faculty/ANZCA GSM	469	35.1	1	1	1	0	0	1
ASA AGM	488	36.5	1	1	1	0	0	1
NZ CM	116	8.7	1	1	1	0	0	0
ANZICS	185	13.8	1	1	2	0	0	0
At least 1 meeting	849	63.5						
GSM or ASA	720	53.9						
GSM or NZCM	529	39.6						
ASA or NZCM	565	42.3						
GSM or ASA or NZCM	766	57.3						

As all of these numbers are heavily skewed to the lower end of the scale, reporting a mean is not appropriate. The median represents the middle of 50th% value, and is the best estimate of what the average participant is doing. Similarly, the 25th% is the value below which 1/4 of the participants' answers fall, and the 75th% is the value that the upper 1/4 are higher than. This range 25th%–75th% represents the middle half of all respondents.

Thus for Hospital meetings of less than 1 day duration, of all respondents, 1/4 attend no meetings, half attend up to 2 meetings, and 1/4 attend 6 or more meetings. Half of all respondents attend between 0 and 6 meetings. Similarly, including only those who attend any of these meetings, 1/4 attend up to 2 meetings, half attend up to 4 meetings, and 1/4 attend more than 10 meetings. Half the respondents attend between 2 and 10 meetings.

TAXATION DEDUCTIBILITY FOR GIFTS TO THE COLLEGE

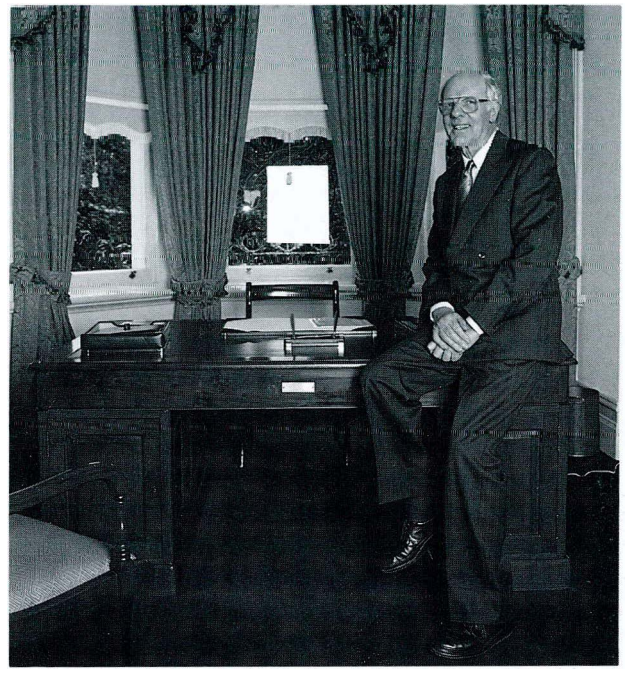
The Federal Treasurer has advised that the Government has approved the separate listing of the College in the Income Tax gift provisions.

In a Press Release on 27 October 1994, the Federal Treasurer announced that the Government has decided to amend the Income Tax Law to allow tax deductions for gifts of the value of $2 or more made on or after 27 October 1994 to the Australian and New Zealand College of Anaesthetists.

This means that any funds or artefacts valued in excess of $2 donated to the College will be tax deductible to the individual. Any artefacts purchased within twelve months of the gift will be eligible for a taxation deduction to the value of the receipt for such gift.

Council has resolved that substantial gifts (in excess of $1,000) will be recognised by the donor's name being recorded on the item or on a piece of furniture already purchased where the donation is similar to the cost of such piece.

Dr Ralph Clark, a former Dean of the Faculty of Anaesthetists, RACS, from Victoria, donated $5,000



which has been identified with the President's desk. This desk is a Partner's Desk in American Walnut circa 1900. The College is grateful to Dr Clark for this generous gift.

RESEARCH AWARDS

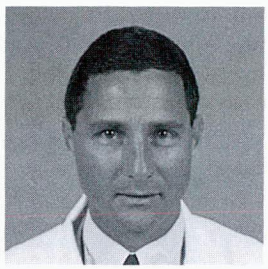
THE LENNARD TRAVERS PROFESSOR — **Dr David P Crankshaw** of Victoria was appointed the Lennard Travers Professor for 1995 for his project *"Variability of Anaesthetic Agents".*

JOHN BOYD CRAIG AWARD — The 1995 Dr John Boyd Craig Annual Award of $10,879 was awarded to **Dr Stephanie Delfos** for a project entitled *"The assessment of outcome in the treatment of posterior element back pain: A randomized controlled comparison of percutaneous radiofrequency lesions and percutaneous cryoprobe lesions."*

Academic Establishment Grant was awarded to University of Queensland, John Hunter Hospital $75,000.

Applications totalling $484,815 were received with $189,948 available for grants.

Dr Robin A Youngson
NZ —
Vocal Cord Force Transducer
$8,350.



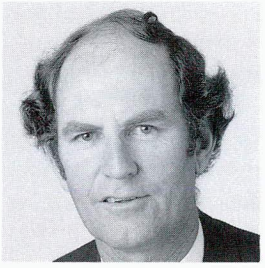
Dr Brendan S Silbert, VIC
*The Recovery Characteristics of Combined Regional and General Anaesthesia **vs** General Anaesthesia in Major Surgery*
$8,977

Dr John A Loadsman, NSW
Post-operative Respiratory Function and the Effects of Anaesthesia/Analgesia for Major Surgery on Breathing, especially during Sleep
$7,325

Dr Kate Leslie, VIC
(1) Spinal Block Height and Core Temperature Triggering Shivering
(2) Thermoregulatory Thresholds in Normal Pregnant Women
$11,625

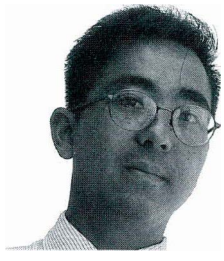
Dr Neil A Pollock, NZ
To Develop a Genetic Test for the Diagnosis of Malignant Hyperthermia
$23,280

Dr Peter T Morley, VIC
Pathophysiology of Ventilator Dependence in the Critically Ill
$10,387



Dr John R A Rigg, WA
A Randomised Controlled Trial of Epidural Anaesthesia and Analgesia in High-Risk Patients Undergoing Major Surgery
$34,219

Dr Paul S Myles, VIC
Haemodynamic Effects, Myocardiac Ischaemia and Timing of Extubation with Propofol based Anaesthesia for Cardiac Surgery
$17,476



Dr Martin E Lum, NSW
Anaesthetic Outcome Study
$30,340

Emeritus Professor Tess Cramond, QLD, AO, OBE
The Clinical Efficacy and Pharmacokinetics of Oxycodone Administered as Subcutaneous Infusion or as Oral Syrup
$23,046

Dr Peter J Dawson
VIC —
The Cardiovascular Actions of Propofol in Cardiac Surgery
$13,830

RESULTS OF ANZCA WORKFORCE QUESTIONNAIRE

1. INTRODUCTION

This questionnaire was sent to all Fellows of the Australian and New Zealand College of Anaesthetists with the 1994 February subscription notice. 1,315 replies were analysed by Dr. Sharon Evans, Biostatistician.

The response rate was 63.2% of Australian Fellows and 58.4% of New Zealand Fellows. This response rate is usual for this type of questionnaire where no special incentives or follow up was utilised. The response rate appeared to be lowest from Western Australia (29%) but was difficult to interpret as 17.6% and 18.6% of Australian and New Zealand Fellows respectively failed to nominate their practice location.

2. DEMOGRAPHIC DATA

2.1 SEX

83.1% of respondents were males, with a median age of 45 yrs (range 30–81). The inter quartile range (IQR – representing the middle 50% of ages) was from 38 to 52 yrs. 16.9% were females, median age 41 yrs (range 31–67) and IQR 37–47 yrs.

This reasonably represents the gender split of Fellows of whom 83.8% are male and 16.2% female.

2.2 COUNTRY OF PRACTICE

82.8% Australia, 11% New Zealand, 6.2% Other (incl Hong Kong, Malaysia, Singapore, UK, USA, Canada and Brazil). Median age was similar (45 yrs) in all locations with a greater IQR in New Zealand.

3. PRACTICE PROFILE

3.1 PUBLIC/PRIVATE PRACTICE DISTRIBUTION

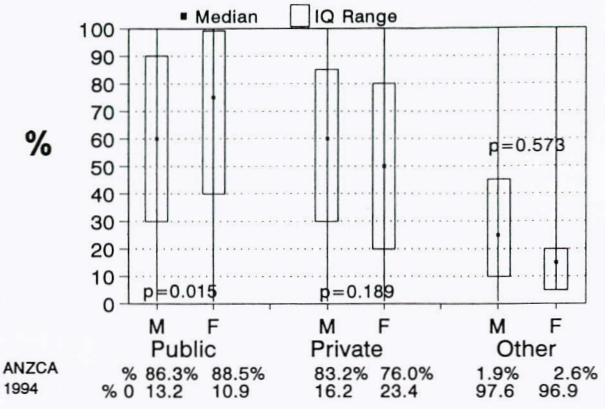
11.5% of females and 13.7% of males do no work in **Public** practice.
16.8% of males and 24% of females do no work in **Private** practice.

Differences across the Tasman were revealed in practice distribution with significantly more work in public practice in New Zealand (80% vs 50% in Australia), and less time in private practice (60% Australia versus 40% in New Zealand). Again the IQ range was large.

3.2 SEX

A greater proportion of Fellows practising in cities (18%) are female compared to large regional centres (10%) and rural areas (14%).

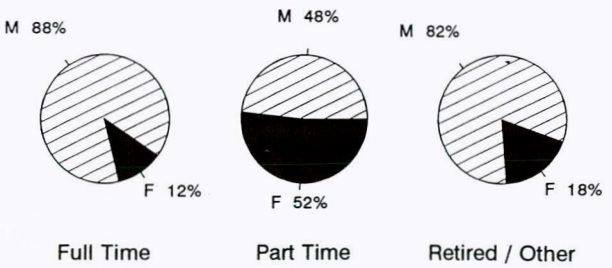
Practice distribution by SEX



Interestingly, about equal numbers of male and female anaesthetists work part time. However this represents a greater proportion of female Fellows (82 out of 221 respondents – 37%) compared with male respondents (79/1087 or 7%). Although not specifically surveyed, this probably represents time spent in family or other activities.

Of female Fellows, 60% work full time, 37% work part time and 3% are retired/other. Of male Fellows, 91% work full time, 7% part time, and 2% are retired/other.

Sex Distribution by Work Mode



3.3 CLINICAL ACTIVITIES

The average percentage of time spent in anaesthesia was 85% and in Intensive care 10%. However more males were involved in ICU (34%) than females (18%).

60% of female and 53% of male Fellows were involved in teaching for an average of 5% of their working time. 45% of males and 40% of females were involved in administration for 10%, and in obstetrics for 5% of their working time.

Other activities covered a broad spectrum from academia, acute and chronic pain, perfusion and hyperbaric medicine to insurance, QA, naval/police medical work and hypnosis.

3.4 FULL/PART TIME WORK

The percentages of full and part time work varied between countries as follows:

	Full time	Part time
Australia	87%	11%
New Zealand	73%	25%
Other	95%	5%

3.5 HOURS WORKED

3.5.1 Sex

3.5.1.1 Normal work:

85% of males and 54% of females worked greater than 41hrs per week.

26% of males and 10% of females worked greater than 60hrs per week.

3.5.1.2 On call work:

85% of all Fellows spent up to 40 hrs per week on call.

The majority (62%) of female Fellows spent less than 20 hrs per week on call compared to 40% of males.

Approximately 7.8% of all Fellows worked greater than 60 hrs per week on call.

3.5.2 Country

23% of Australian Fellows worked greater than 60 hrs per week compared to 12% of New Zealand Fellows and 36 % of Fellows from other countries. Similar differences occurred with on call work.

3.5.3 Public/private practice

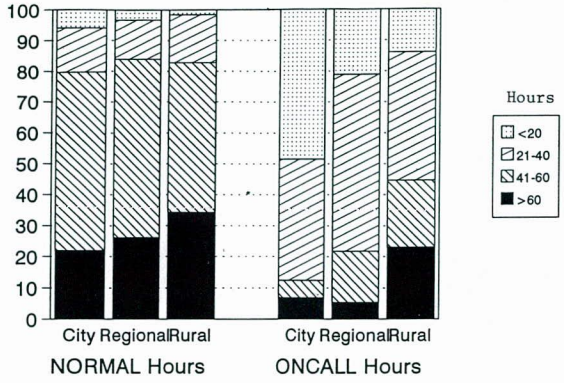
There were no appreciable differences between hours spent in normal or on call work between public and private practice.

3.5.4 Locality

The Fellows working in rural areas worked longer hours of normal work (31% worked greater than 60 hrs per week compared to 27% regional and 22% city) and much more on call work. 26% of 'rural' Fellows did greater than 60 hrs per week of on call work compared to 7% of city and regional Fellows.

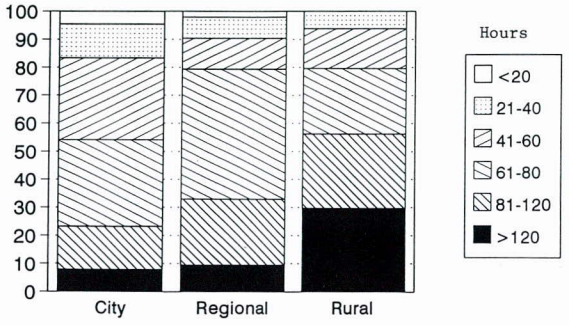
30 % of rural Fellows worked greater than 120 hrs per week in total work – normal and on call.

Hours per Week spent in Normal / Oncall Work



Hours per Week spent in Total Work

by Locality



4. WORK SATISFACTION

The vast majority of all Fellows would like to work a bit less or were satisfied with their current workload. (82 % males, 85% females, 81% Australians, 86% New Zealanders, and 90% from other countries)

Only 1.5% of male Fellows (all Australian) would like much more work.

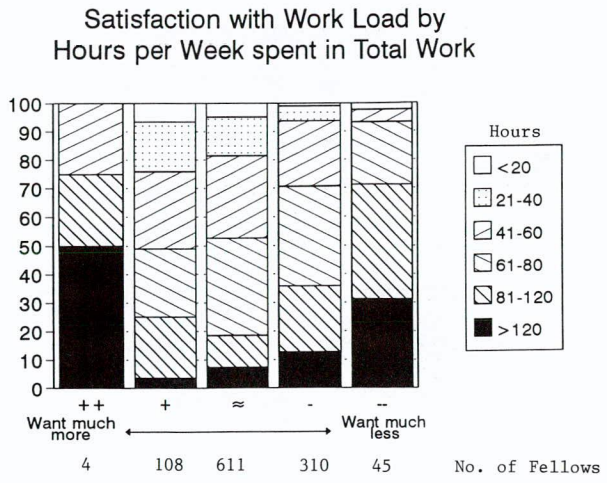
In general, satisfaction with current workload decreased with increase in hours worked except for 4 Fellows who, despite two of them working more than 120 hrs per week wanted much more work!!

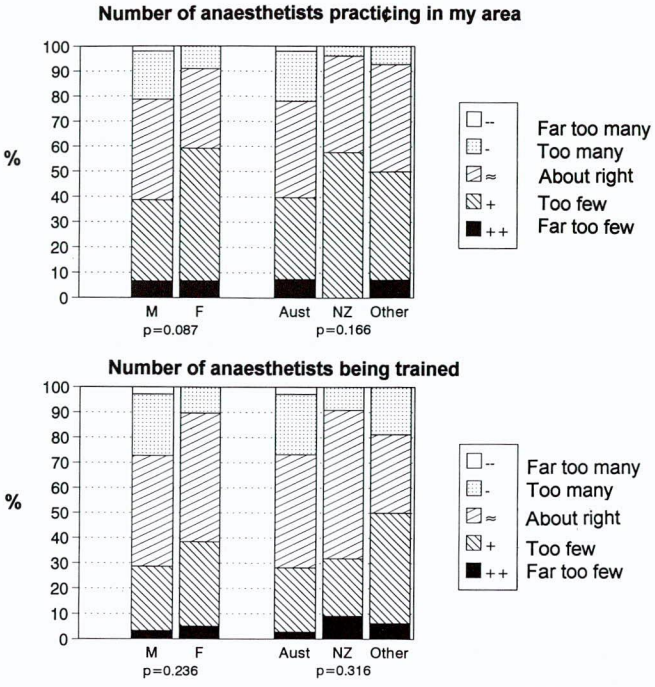
Interstate differences existed with more Fellows from Northern Territory and Tasmania wanting much more work.

5. TRAINING NEEDS

5.1 NUMBER OF ANAESTHETISTS PRACTISING IN AREA.

Of male Fellows, 40% thought the number of anaesthetists in practice in their area was about right, 32% too few and 19% too many. More female Fellows (52%) thought there were too few.





The overall result from Australia and New Zealand was that 38% of Fellows in each country thought the number of Fellows in practice in their area was about right with more (58%) New Zealand Fellows feeling there were too few.

In general, as total hours worked increased, so did the opinion that there were inadequate numbers of anaesthetists in the area except for 19 Fellows (60% of whom work greater than 61 hrs per week) who felt there were far too many.

5.2 NUMBER OF ANAESTHETISTS BEING TRAINED.

The majority of anaesthetists are of the opinion that the number of anaesthetists being trained is about right – males 44%, females 51%, Australians 45%, New Zealanders 59% . The exceptional group was 'other' overseas anaesthetists whose majority opinion (44%) is that too few are being trained.

There is equivalent opinion amongst males and Australians that the number being trained is either too few or too many (approximately 25% each way).

More female and New Zealand Fellows feel that the number being trained is too few (33% and 23% respectively) as opposed to too many (10% and 9% respectively).

Except for 17 Fellows, the trend is for a need to increase training numbers as total hours worked increased.

6. CONCLUSIONS

These results have been discussed at the June Council meeting and by a Teleconference of the Workforce Committee. The deficiencies of the questionnaire are acknowledged.

The response rate could be improved but it is likely that non responders did not feel as strongly as those who replied. Fellows are reminded of the value of their input to workforce questions.

The survey aimed at canvassing opinion from anaesthetists who know best about their own work load and demands. As such the results do not provide the 'hard' data required by Government but do provide valuable quantitive and qualitative information.

Currently the estimated required number of anaesthetists is based on 1970's data that 10% of the population underwent surgery and anaesthetists averaged 1,000 cases per year. It is likely that a follow up survey will be required to establish more accurately workforce requirements.

Your cooperation in further surveys is encouraged so that accurate planning of workforce requirements may occur.

Thanks to all Fellows who responded to this survey. Further enquiries may be directed to Dr. Westmore c/o ANZCA, 630 St Kilda Road, Melbourne 3004.

D.H. McConnel, Chairman Workforce Committee
Moira Westmore, Survey Officer
Sharon Evans, Biostatistician

COUNCIL - 1995

Back Row, left to right: *Dr J.W. Hains, President ASA, Dr M. Martyn, Prof. G.D. Phillips, Drs R.J. Willis, Moira Westmore, R.S. Henderson, Mrs Joan Sheales (Registrar), Dr B.F. Horan, Prof. J.M. Gibbs, Dr D.R. Kerr.* ***Front row:*** *Assoc. Prof. D.H. McConnel, Drs M.J. Davies (President), G.M. Clarke (Dean, Faculty of Intensive Care), Assoc. Prof. N.J. Davis (Vice President).*
Absent: *Drs R.G. Walsh, I. Rechtman.*

DEATHS

Council noted with regret the death of the following Fellows:

Dr J.C.D. Callander, WA, Fellow FFARACS 1969, FANZCA 1992

Dr S.G. Seruvatu, Fiji, FFARACS 1972

Professor D.G. Lampard, Vic, Honorary Fellow.

Examination Prize Winners

The Renton Prize for the August 1994 Examination was awarded to Dr A.Y. Cheng of Hong Kong.

The Cecil Gray Prize for the September 1994 Examination was awarded to Dr Daniel V. Mullany of Queensland.

Honours and Appointments

Dr A.V. Dreosti, SA – Member of the Order of Australia.

Dr David Jones, NZ – President, New Zealand Society of Anaesthetists.

Dr M.J. Davies, Vic – Fellow, Academy of Medicine, Singapore.

Dr B.J. Barry, NSW – Honorary President 1996 World Congress of Anaesthesiologists.

Professor Lucien Morris, USA, President Anesthesia History Association.

Dr D.H. McConnel, Qld – Clinical Associate Professor in the Department of Surgery, University of Queensland.

HIGHLIGHTS OF THE OCTOBER 1994 ANZCA COUNCIL MEETING

CONTINUING EDUCATION AND QUALITY ASSURANCE

The Anaesthetic Research Special Interest Group has been renamed ***The Research Specialist Interest Group.***

1995 Younger Fellows' Conference

This Conference be held in association with the Annual Scientific Meeting in Townsville.

Maintenance of Standards Manual

Council resolved that a Manual on the Maintenance of Standards will be distributed to all Fellows by the end of 1994.

Formal Project Session

Council resolved to establish a Formal Project Prize Session to be awarded at the Annual Scientific Meeting.

Gilbert Brown Prize

Following the establishment of the Formal Project Prize, the Regulation governing the Gilbert Brown Prize was amended to restrict applicants to Fellows of less than eight years standing.

INTERNAL AFFAIRS

Changes in Regulations

15.4.5.3 For Candidates who commence Approved Vocational Training on or after the beginning of the 1994 Hospital Year, no further Approved Vocational Training will be recognised after the completion of the second year of training until the trainee has passed the Primary Examination of this College.

The third year of Approved Vocational Training cannot commence until the Primary Examination has been passed.

15.3.4.6 All Candidates for the Final Examination who commence Approved Vocational Training after the commencement of the 1995 Hospital Training Year will be required to be assessed by their Training Departments. These assessments will use the criteria and form laid down in College Policy Document E14 ***"Guidelines for In-training Assessment of Vocational Trainees in Anaesthesia".***

At the time of application to present for the Final Examination, the Assessor will certify that ***"On the basis of information contained in the assessment of this trainee, it is considered that he/she is a suitable candidate for presentation for the College's Final Examination".***

15.3.4.3 The commencement date of Approved Vocational Training for trainees pursuing the Diploma of Fellowship of the College will be deemed to be the date of commencement of an approved training post in anaesthesia or intensive care or a post which is part of a formal rotational training programme.

Retrospective recognition may be given for other training which complies with the College Regulations, e.g. Clinical Medicine, Surgery, Research, etc., but this retrospective recognition will not alter the official date of commencement of Approved Vocational Training.

EDUCATION

Training in Rural Hospitals

Council resolved that:

1. The College strongly supports the concept of training rotations which include "rural" hospitals.
2. That potential rural training hospitals be identified and encouraged to become associated with specific training rotations.
3. That the College will assist where possible and advise Hospitals considering such accreditation as to processes that they should follow. This would require that such Hospitals comply with College Policy Document E1 "Guidelines for Hospitals Seeking Faculty Approval of Training Posts in Anaesthesia".

Neonatal Experience

Council reaffirmed its previous policy that no more than three months experience in a Neonatal Unit will be recognised within the first four years of Approved Vocational Training.

EXAMINATIONS

Primary Examination — Change in Format

That as from the first Examination of 1996, the Primary Examination Vivas be altered so that the Vivas consist of two tables of two Examiners for each of Pharmacology and Physiology.

Observers to College Examinations

Unless in exceptional circumstances Fellows eligible to observe the Final Examination must be three years post-Fellowship.

PROFESSIONAL

Policy Documents

In line with College Policy to review Policy Documents, the following documents have been reviewed and approved:

T1 Recommended Minimum Facilities for Safe Anaesthetic Practice in Operating Suites

T3 Recommended Minimum Facilities for Safe Anaesthetic Practice in Organ Imaging Units

T4 ***Recommended Minimum Facilities for Safe Anaesthetic Practice for Electro Convulsive Therapy (ECT)***

T5 ***Recommended Minimum Facilities for Safe Anaesthetic Practice in Dental Surgeries***

T6 ***Recommended Minimum Facilities for Safe Anaesthetic Practice in Delivery Suites***

E3 ***The Supervision of Trainees in Anaesthesia***

E7 ***Secretarial Services to Departments of Anaesthesia and/or Intensive Care.***

Council promulgated the following new Policy Documents:

P10 ***Handover of Responsibility During an Anaesthetic***

P16 ***The Standards of Practice of a Specialist Anaesthetist***

P27 ***Standards of Practice for Major Extracorporeal Perfusion.***

These documents are published elsewhere in this *Bulletin.*

COLLEGE AWARDS

Honorary Fellowship

Mr David Theile, President, Royal Australasian College of Surgeons was awarded Honorary Fellowship.

Orton Medal

Dr B.J. Barry, NSW, and Associate Professor P.D. Livingstone, QLD, were awarded the Orton Medal.

FINANCE

Subscription for 1996 due and payable on 1st February 1995 .... A$840

Examination Fee ..... A$1500

The Register of Training Fee ..... A$500

Annual Training Fee for 1995

Australia and Hong Kong –
A$700 payable to the College Headquarters in Melbourne.

New Zealand –
NZ$700 plus GST payable to the Wellington Office.

Singapore and Malaysia $700 local currency converted into Australian dollars, payable to the College Headquarters in Melbourne.

Credit Card Facilities

Following requests from several Fellows for the College to provide credit card facilities for payment of subscriptions and registration fees, Council considered the commission of 2.5% of each transaction charged by Mastercard, Visa or Bankcard an excessive amount to be passed on to Fellows.

Council will continue to investigate the availability of such facility.

TECHNICAL

Council resolved that an anaesthetic and agent monitor must be exclusively available for every patient undergoing general anaesthetic as soon as possible.

This recommendation should be implemented as soon as possible, but no later than 1 January, 1998.

ADMISSION TO FELLOWSHIP BY ELECTION UNDER REGULATION 6.3.1(b)

J M WELLER, SA

ADMISSION TO FELLOWSHIP BY ELECTION UNDER REGULATION 6.3.1(c)

R K DEAM, VIC

T G WATSON, NZ

ADMISSION TO FELLOWSHIP BY EXAMINATION

Cameron Craig Rutherford BUCHANAN, NZ
Hung Kai CHENG, HK
Woon-ming CHENG, HK
Colin Ruadh COLLUM, Vic
David Andrew COOK, Qld
Alexander David DONALD, SA
Daniela Imelda EUGSTER, Vic
Joo Lin GOH, WA
Hiong Yee Tian @ Peter HIONG, Malaysia
David Arthur Sinclair JACKSON, Qld
Seng Wee Jeffrey KUA, Malaysia
Leo Patrick LACY, NSW
Kwok-Key LAM, HK
Albert Kuo Peng LEW, Qld
Kin Kheong MAH, Malaysia
Phillip Neil MAYNE, NSW
Robyn Marianne PRICE, Qld
Murray William PARKINSON, NZ
Lyndall Katherine PATTERSON, Qld
Matthew John ROBINSON, NZ
William Carnduff RUSSELL, UK
James Charles SCROOPE, NSW
Ruth Stephanie WALL, NZ
Chi Leung WATT, HK
Duncan Wright WATTS, NZ
Andrew Luke WILD, WA
Siu Man WONG, HK

LAW REPORT

Michael Gorton, LL.B., BComm.
Partner, Russell Kennedy

RECENT CASES

1 Defamation for Doctors

Medical practitioners have received some support in a recent case in which a former nursing superintendent sued for defamation following an adverse newspaper report. Many doctors, of course, find themselves attracting notoriety, whether justified or not, in various media reports. Many doctors will be familiar with the ability of some newspapers to "never let the facts get in the way of a good story".

In a recent case, **Kendell v North Queensland Newspapers Co. Limited**[1], the nursing superintendent of a Northern Queensland Hospital sued a local paper in relation to a report that appeared with the headline *"There's a Spy Here"*, in which it was alleged that the matron of the hospital had manhandled a psychiatric patient. The nursing superintendent sued and was ultimately awarded $60,000 compensation. Although it was argued that the nursing superintendent was not named, she was the nursing superintendent at the hospital at the relevant time and was commonly known to the medical profession, staff of the hospital and the public generally. It was successfully argued that many people would understand the report as referring to the nursing superintendent and that the report implied that she had behaved in an unprofessional and uncaring manner. In fact, the nursing superintendent was not the person to whom the report was intended to refer. The Court nonetheless held that reasonable people would assume that the report applied to the nursing superintendent and that substantial damages were therefore necessary to compensate.

2 Negligent Diagnosis for Cervical Cancer

A recent case has attracted quite a deal of publicity in relation to a doctor and a pathology practice found to have been negligent in failing to diagnose a case of cervical cancer.[2]

The patient first attended the doctor complaining of post-coital bleeding, and a diagnosis was made of break-through bleeding due to an insufficient dose of oral contraceptives.

A pathology practice reviewed a pap smear result. The result was, in fact, incorrect. It should have disclosed that cancer cells were present.

The patient subsequently had a correct diagnosis made and necessary surgery followed. The trial was expedited due to the terminal illness of the patient.

The Court held that the pathology practice had failed to exercise reasonable care in examining and reporting the pap smear. The Court believed that the wrong assessment could not be explained as an acceptable difference in interpretation and that a negligent error had been made.

The Court also held that the doctor's initial investigation was less than reasonably thorough, and that the doctor paid insufficient attention to the reported symptoms and the possible consequences.

Although the case does not significantly alter the usual application by the courts of the laws of negligence, the decision has been of concern to some commentators (Australian Medicine, 1 August, 1994, page 21) –

> *"One disturbing aspect of the judgment is that the Court prefers the evidence of one doctor and not another. Witnesses fall into two categories — those the Judge believes and those he does not.*
>
> *The Judge made a number of surprising findings. He is able to determine, on the balance of probabilities when the cancer metastasised and to predict that (the patient) would have been cured had she presented for operation four months earlier. According to (the doctor's) notes, this would have been when (the patient's) periods were overdue and there had been no bleeding. How many gynaecologists would have investigated under these circumstances?*

All scientists will be concerned that a Court can find that double-lined controls can be dispensed with when abnormalities are "so plain that this departure from the best practice does not matter" ... The Judge also found that since the bleeding stopped "the change of pill had some short term effects" on the cancer. I would like to see this judgment appealed; the consequences of it, as it now stands, are frightening for the community and the profession. The community, media and judiciary must also understand that medical tests are not perfect."[3]

3 Failure to Advise of Risks

Most medical practitioners will now have heard of the implications of the High Court of Australia's decision in **Rogers v Whitaker,** and the need to properly inform patients of material risks.

A recent decision of the Supreme Court of New South Wales[4] has permitted a case to proceed before a jury, which involved allegations that a vascular surgeon was negligent in failing to properly advise a patient of the risks involved with the patient's transient ischaemic attacks. It was also argued that the surgeon was negligent in failing to adequately assess the patient's cerebro-vascular system.

The surgeon argued that the plaintiff had the onus to prove that the patient would have consented to a cerebral angiogram had cerebro vascular assessment occurred. The patient argued that, had he been advised to have had an angiogram, which may have revealed right carotid artery stenosis, the patient could have had a carotid endarterectomy following the patient's femoral popliteal bypass graft.

The Supreme Court determined that it would be open for a jury to find that there was a failure to warn the patient of the risk of stroke and that such a warning should have been given. Although there was little evidence as to what the patient would, or would not have done had the warning been given, this did not preclude the jury from making a finding of what the patient may have decided.

It is suggested that the decision in this case represents a further extension of the surgeon's obligation to advise and the type of evidence that will be permitted to go to a jury in determining what a patient may or may not do if proper advice had been given.

4 Reports Provided to Medical Board are subjec to FOI

A recent decision by the Administrative Appeals Tribunal in Victoria has indicated that, in many cases, reports provided by medical practitioners to the Medical Board of Victoria (either directly in relation to an inquiry regarding a specific matter, or generally where the Board has requested a medical practitioner to provide a commentary on certain matters) can be available to other parties under the Freedom of Information Act. In the case of **Barling v Medical Board of Victoria**[5], certain reports supplied to the Medical Board in response to a complaint, including a response made by the doctor in respect of whom the complaint was made, were released to the complainant under an FOI application.

The Medical Board of Victoria argued before the Tribunal that the release of reports supplied by other medical practitioners, including the particular medical practitioner against whom the complaint was made, would inhibit the free-flow of information and affect the frankness and candour of the views which the Medical Board may be able to obtain. If a medical practitioner was aware that the reports could be released to the complainant, then the nature of the report and its contents may alter.

The Tribunal sought to decide whether the release of the reports would impair the ability of the Medical Board to obtain similar information in the future. The Tribunal considered that the documents in this particular case did not contain particularly sensitive information and that disclosure would not involve a communication of any new information or information which was not otherwise generally already known.

The Tribunal determined that, in this case, release of the reports was unlikely to inhibit the functioning of the Board, or its ability to investigate complaints.

The case serves, however, as a warning to medical practitioners who may be requested to provide reports or comments to Medical Boards in all States, where those Boards may be subject to Freedom of Information legislation.

Note:

1. (1994) Aust Torts Reports 81-272
2. O'Shea & Sullivan & Macquarie Pathology Services P/L (1994) Aust Torts Reports 81-273
3. Black, 'Why the Law is Not Fit to Judge', Australian Medicine, August 1994.
4. Domeradski v Royal Prince Alfred Hospital, NSW Sup. Crt. 11 May 1994.
5. AAT, 15 September 1992, No. 92/10536.

FELLOWS' BROOCH

The brooch for female Fellows was designed by Garry Holloway and his team at Precious Metals. Mr Holloway left his vocation as a geologist and founded Precious Metals 17 years ago. An award winning designer, specialising in chains and fine diamond jewellery, Mr Holloway has designed many corporate gifts and recognition awards.

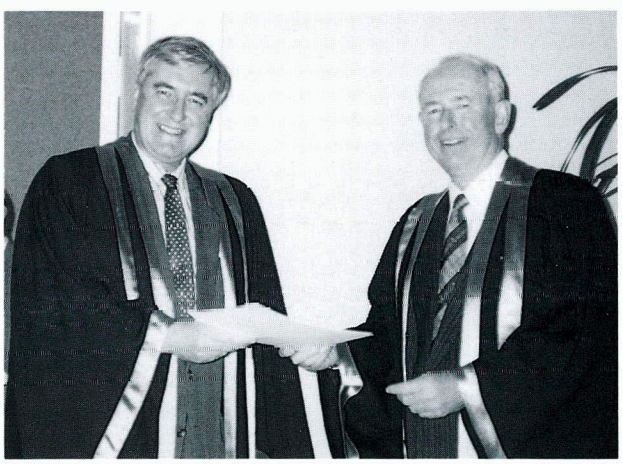
The brooch has been designed by extracting elements of the College's Armorial Bearings, thus utilising the coiled serpent, recognisable as the medical symbol and stem of cocaine leaves with three branches. To emphasise these three elements to greatest effect the snake has a deep texture, the leaves are highly polished and the berries (red when ripe) have been executed in pink gold on the solid gold versions.

These metals and treatments have been chosen not so much for their immediate appeal as the effect after the brooch has been worn and developed a patina.

September 1994 Court of Examiners

Left: Drs Ashleigh Bishop, Craig Morgan, Peter Brownridge, David Scott, Rob Beavis, Leona Wilson, John Madden, Lea Coaldrake, Ken Sleeman, Karl Alexander, Brian Trainer, Glenda Rudkin, Anthony Weeks, Nick Radford, Karsi Taraporewalla, Eric Hewett, Barrie McCann (Chairman), Doug Rigg, Andrew Pybus, Richard Willis, Sandra Taylor, Carl Scheinkestel, Ed Loughman, Geoff Mullins, Keith Cronin, Iven Young, Peter Moran.

Dr Barrie McCann, Chairman of Final Examination Committee recognising Dr Peter Brownridge's term on the Panel of Examiners.



Dr Keith Cronin presenting Dr Barrie McCann with a Certificate of Appreciation following the completion of his tenure on the Panel of Examiners.

FACULTY OF INTENSIVE CARE

DEAN'S MESSAGE

It is now approximately 18 years since the Faculty of Anaesthetists RACS and the RACP established training programmes in intensive care. The vision was clear enough – to produce specialists in their own right capable of managing the whole spectrum of critically ill patients from single to multiple organ failures. Like any specialist they would be trained to know their limitations and when it was necessary to consult.

Both training programmes have been successful in achieving their aims, but is this enough? Have we satisfied community and professional needs? Is there more to be done?

Firstly, there is a wide based perception that training and certification in intensive care should be more focussed and united. There seems little doubt that the Faculty of Intensive Care, the Specialist Advisory Committee for Intensive Care of the RACP and ANZICS have the will to see more commonality in training and possibly in certification. To this end a Conjoint Committee has been set up and is making progress on these issues.

Secondly, a liaison committee of ANZICS, FICANZCA and the SAC-IC RACP is dealing with all matters of common concern to intensivists, the government and the community. The positive attitude of this Committee indicates that it will work and get the jobs done. If standards of practice in intensive care are to be maintained, it is important that the current liaison remains strong. It is important that a clear path is seen between the professional, governmental and personal aspirations of those providing intensive care services to the Australian and New Zealand communities.

Ideally intensive care units would be graded and regionalised. Level III and Level II units would be totally serviced by trained intensivists. It is clear that at present this is not possible, but should be a vision for the future. It must be accepted that intensive care is very much still in an evolutionary phase though we are "18 years down the track". No one should deny the indispensable contributions being made to patient care by specialists not specifically trained in intensive care who are working in intensive care units. With respect to standards in intensive care units, there are many dangers of widespread development of multiple small units of four or so beds. Because it is often not economically feasible to have specialist intensive care staff responsible solely for so few patients, there is a danger of specialists being on-call for many small units and therefore not exclusively available to a particular unit. This situation can only be seen as a fall in standards. Hence the need to regionalise major intensive care services. The attitudes I have expressed here may not be universally popular or accepted. Nonetheless they need to be said as this issue must be addressed.

It is becoming clear that the government is concerned about levels of intensive care and has established a working party on Definitions of Critical Care. The Faculty is represented on this Committee by Dr Jamie Cooper. It is a difficult and arduous task. The Board is supportive of Dr Cooper's efforts. Because of the high cost of intensive care, the government's intervention is unavoidable. The issues raised are controversial.

Another issue which intermittently comes the Faculty's way is the request from "specialist recognition advisory bodies" to give an opinion on whether or not a person is regarded as a specialist in intensive care. To this end the Board has set out some criteria upon which this issue might be judged. These criteria have been sent out to Regional Committees for comment and will be discussed at the Liaison Committee. It is important that we are fair and that we have the resolve to establish criteria that will leave no doubt, that in the very near future, the Faculty recognises as specialists only those people who have been properly trained and certified in intensive care. The situation where people trained in another specialty (e.g. anaesthesia, general or specialist medicine) and then go overseas and spend time in an intensive care or critical care training programme, poses difficult problems from the point of view of recognising them as specialists in intensive care. This is especially so if their training has been single organ based (e.g. neurology, nephrology or pulmonology) as this may be quite distinct from the general intensive care training obtained in Australia and New Zealand.

The quality of the training experience is difficult for an assessor in Australia or New Zealand to judge unless the unit is extremely well known. Should such a person only spend time working in such units or should they have some form of formal certification?

Because these are difficult issues, people planning on undertaking intensive care training overseas would be well advised to discuss the matter with relevant local training bodies (FICANZCA or RACP SAC-IC) prior to embarking on such programmes.

It is very apparent that Australia and New Zealand are not training enough intensivists to meet community needs. The extent of the problem will be delineated by an ANZICS workforce survey which is endorsed by the Faculty. Partly with this in mind, but also for educational reasons, the Board is to consider the issue of whether we should continue to accredit posts in individual units or intensive care training or whether we should simply be recognising units. It is difficult to deny that trainees benefit from working in groups and the establishment of formal teaching programmes is more likely in this situation.

In conclusion, the Board wishes to invite constructive debate and recommendations on any of the issues raised in this message or indeed any issues affecting training, certification and standards in intensive care. Please raise these issues through your Regional Committees. The Fellows are the Faculty of Intensive Care and the Board wants to hear what you think.

G.M. CLARKE
Dean

THE G.A. (DON) HARRISON MEDAL

Following a decision of the Board of Faculty to establish the Intensivist's Prize, and its subsequent resolution to commemorate Professor Don Harrison's contribution to education and examinations, Mr Michael Meszaros of Victoria was commissioned to design and sculpt the Medal. This medal depicts a portrait of Professor Harrison and is mounted on a wooden plaque.

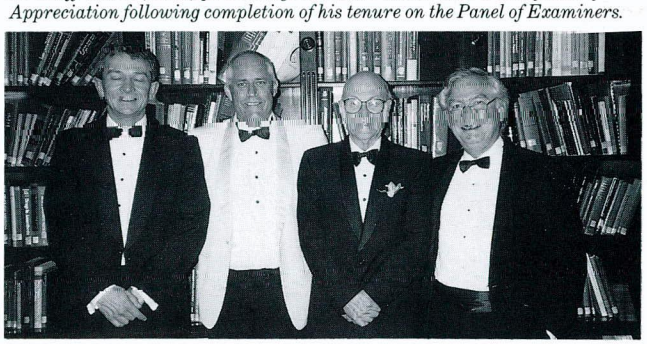
The Medal is awarded annually to the candidate who achieves the highest mark in the Faculty's Fellowship Examination.

The Board will announce the winner of the G.A. (Don) Harrison Medal for 1994 at its next meeting in February 1995.

Dr John Weekes at the Examiners' Dinner following recognition of his tenure on the Panel of Examiners.

Dr Geoff Clarke (Dean) presenting Dr Alan Duncan with a Certificate of Appreciation following completion of his tenure on the Panel of Examiners.

The Dean with Professor and Mrs Don Harrison.



The Four Chairmen of the Final Examination Committee: Professor Don Harrison 1977-1986, Dr Geoff Clarke 1987-1991, Dr Alan Duncan 1992-1994, Dr Richard Lee, 1995.

REPORT OF THE SEPTEMBER 1994 BOARD MEETING

EDUCATION

The G.A. (Don) Harrison Medal

As advised in the previous *Bulletin,* the Board agreed to name the Intensivist's Prize in honour of Professor Don Harrison. This medal has been struck and a presentation of one was made to Professor Harrison following the Examiner's Workshop in Melbourne on September 22, 1994. A G.A. (Don) Harrison Medal will be awarded for 1994.

FELLOWSHIP

The following were admitted by the Board as Fellows of the Faculty, by Examination:

Dr Stephen F Woodford, FANZCA, QLD
Dr Geoffrey M Shaw, FANZCA, SA
Dr Kee Seng Tan, Hong Kong
Dr Robert J Young, FANZCA, SA

INTERNAL AFFAIRS

Regional Committees

Regional Committees in Intensive Care have been, or are soon to be established in: Western Australia, South Australia, Victoria, Queensland, New Zealand and New South Wales. It is hoped that these committees will assist in strengthening the channels of communications with Fellows of the Faculty.

Amendment to Administrative Instruction 1.5.1.1 – Requirement for trainees to spend 12 months in Australasia

The Board amended Administrative Instruction 1.5.1.1 to remove the requirement for trainees undertaking vocational intensive care training to spend 12 months in Australasia. It was agreed that Administrative Instruction 1.5.1.1 be amended to read:

> "For the two Compulsory years of intensive care training (Administrative Instructions 1.4.1 and 1.4.2):
>
> **The Compulsory years of intensive care training must be spent in posts approved by the Board for Compulsory training.**
>
> One of the compulsory years must be continuous. The second compulsory year of intensive care training may be discontinuous in periods of six months each."

The Faculty's Administrative Instructions have now been printed along with the College's Regulations regarding Training and Examinations, and are currently being circulated.

PROFESSIONAL

Criteria for Recognition of a Medical Practitioner as a Specialist in Intensive Care

A set of criteria for recognition of a medical practitioner as a specialist in intensive care has been agreed to by the Board. These criteria will be further discussed at the Liaison Committee Meeting with ANZICS and the RACP (SAC).

Conjoint Training and Certification Committee (FICANZCA/RACP/ANZICS) and Liaison Committee (ANZICS/RACP/FICANZCA)

The Inaugural meetings of these two Committees were held in July and the reports were presented to the September Board meeting of the Faculty. Both of these committees were extremely positive in their approach to tackling the issues before them.

Conjoint Training and Certification Committee

This Committee considered two proposals put forward for joint training and certification in intensive care. One option was preferred and the matter is currently being considered by the training bodies involved. It will be brought back to the Conjoint Committee when the model has been further developed.

Liaison Committee

Two major issues were discussed; the first being the workforce issue and the need to gather data on this matter. The second issue identified the need to develop a set of criteria for recognition of a medical practitioner as a specialist in intensive care. Such a set of guidelines have since been developed by the Board of Faculty. These criteria may still be modified. They will be considered at the next Liaison Committee meeting.

"Definitions of Critical Care" Working Party

The Faculty is represented by Dr Jamie Cooper on a working party formed by the Department of Health to consider the definition of critical care. Currently Level II and III ICUs are being defined.

Annual Scientific Meetings

Townsville — 1995

The Faculty has invited Dr C.J. Hinds to address the ASM in Townsville as the Faculty Foundation Visitor. The focus of intensive care interest will be in the first few days of the Meeting. There will be a mix of workshops, formal presentations, including dealing with contentious issues, and free papers. Topics under consideration for workshops inclde *Acute lung injury* and *Renal replacement therapy.* Formal presentations may include *Oxygenation in sepsis, The gut, Neuropathy and myopathy in intensive care patients* and *Metabolic acidosis.*

Perth — 1996

Intensive Care involvement in the 1996 ASM is currently being planned by the Western Australian Regional Committee of the Faculty, under the guidance of Dr Stephen Edlin (Education Officer, Intensive Care).

It is proposed to have one full day of intensive care topics at this meeting.

THE JOHN RITCHIE* MEMORIAL LECTURE DELIVERED BY C.McK. (Mack) HOLMES, FRCA, FANZCA 29 NOVEMBER 1993

Evolution or Innovation?
The Rise and Fall of Nitrous Oxide as an Anaesthetic

*(John Russell Ritchie (1909-1976) Lecturer (later Associate Professor) in Anaesthesia at the Otago Medical School, Dunedin, New Zealand, for a 35 year period from 1949-1974. He was one of New Zealand's foremost teachers of anaesthesia. He was a member of the Board of the Faculty of Anaesthetists, RACS, was a recipient of the Orton Medal in 1974, and the OBE in 1975).

How did anaesthesia develop? Was it by evolution or by some blinding flash of innovation by some brilliant scientist? In truth, I believe, and will hope to show, it was mostly the former, but a bit of the latter.

The diarist Samuel Pepys, as a lad of 16, witnessed the execution of Charles I in 1649. Later, in 1660, he was to record in his diary, "I went out to Charing Cross to see Major-General Harrison hanged, drawn and quartered . . . Thus it was my chance to see the King beheaded at White Hall, and to see the first blood shed in revenge for the King at Charing Cross." And later in that week he wrote ". . . and a bloody week it has been, there being ten hanged, drawn and quartered".

This may seem to have very little to do with the development of anaesthesia, but it has often been wondered why anaesthesia, without which surgery could not progress, was so late in developing. But how could it develop in such barbarous times? Even if we leap ahead one hundred years, public executions were still practised, albeit without the drawing and quartering, and we had yet to reach the French Revolution with its Reign of Terror (1793-94). There was little by way of a compassionate spirit abroad in those tumultuous days, when a person could be hanged for the theft of a loaf of bread.

Furthermore, surgery was the treatment of last resort, and often resulted in death anyway. The poor lived in grinding poverty, but the affluent no doubt believed themselves to be civilised. They dined well, if not wisely, drank tea, and men like Dryden wrote fine literature and poetry. Medicine however, was positively dangerous, and the masses were probably better off without the attentions of the "doctors". The famous did not fare so well: Charles II died of a cerebral haemorrhage, but not before he had been cut and bled and drugged and purged; a plaster of pitch and pigeons' dung applied to his feet, and pearl julep and ammonia forced down his throat.

Surgery was rare, but performed when necessary. In 1827, when an American named William Thomas Green Morton, and Queen Victoria were both eight years old, a total of 213 operations were reported in *The Lancet*[1]. (Quoted by Cosnett.) These ranged from lithotomy (22), amputations of various kinds (40), to mastectomy (14), extirpation of the jaw (4), and even ligature of both carotid arteries, a short-lived treatment for insanity! Syme had already performed the first hip disarticulation in 1823. It makes remarkable, if not pleasant, reading to learn of the fortitude with which some managed to bear this surgery . . .

> (A child of 13 having amputation of half the lower jaw for a tumour) . . . "the poor child was supplied with wine during the procedure, which she bore remarkably well."
> (Sir Astley Cooper, speaking of amputation through the hip) . . . "the man may become so faint under the operation, that . . . I have been obliged to suspend it, and give him wine and chat with him in order to rouse the vigour of both his body and mind."
> (Concerning reduction of a long-standing dislocation of the hip) ". . . he was bled very largely until a state of syncope was induced . . . during the period in which the forces were applied, he continued so exceedingly faint that he was with difficulty kept in the sitting position."
> (In an operation for tumour of the parotid) . . . "the tying of the common carotid lasted 55 minutes, and would have been concluded in half the time, but for the embarrassment caused by the superabundant flow of blood."
> (A 14 year old boy having part of the lower jaw removed) . . . "the boy screamed and struggled so much that it required more than the strength of many broad-shouldered gentlemen to keep him on his seat . . . Finally the operation was completed. We saw the boy walk stoutly out of the operating room, notwithstanding his sufferings and the loss of blood, without deigning to avail himself of the assistance which was offered on all sides."
> (A 24-year old, jaw tumour) . . . "The poor fellow had now been nearly an hour under the knife and endured the protracted torture . . . with a fortitude truly astonishing . . . (he) sat up on the table and shook

hands with the operator, and even expressed the desire to walk to his bed."

Nevertheless, in some areas of science a certain progress was being made. Priestley had discovered both nitrous oxide (1772) and oxygen (1774), and the brilliant French scientist Lavoisier (1742-94), was conducting many experiments on respiration, oxidisation and carbon dioxide, and would have made even more momentous discoveries had it not been for the guillotine.

Directly or indirectly, the work of these pioneers paved the way for anaesthesia via the medium of "Pneumatic Medicine". In 1799, Thomas Beddoes opened an institution in Bristol for the treatment of diseases by the inhalation of various "airs". By a strange coincidence, the greatest engineer of the 19th century, James Watt, had a son with consumption, and took him to Beddoes for treatment. In the Pneumatic Institute at that time was a young scientist, Humphry Davy (1778-1829), and so began the association of those two famous men, along with others such as Josiah Wedgwood and Richard Pearson (the first to advocate the inhalation of ether for phthisis). Watt went on to manufacture, for the Pneumatic Institute, the apparatus necessary for the production of various gases.

Davy was probably one of the greatest scientists Britain has ever produced. He isolated sodium, potassium, barium, boron and calcium; he showed chlorine to be an element, and with Thomas Wedgwood created the first photograph. He also made extensive studies of nitrous oxide, and published his major work *Researches, chemical and philosophical, chiefly concerning Nitrous Oxide,* in 1800. As many an anaesthetist knows, he therein propounded . . . "it (nitrous oxide) may probably be used in surgical operations . . .", a prophetic statement 46 years before the official "discovery" of anaesthesia. Davy probably became addicted to inhaling nitrous oxide. He described it as . . . "an extraordinary degree of pleasure, different from that produced by wine . . ." Three months later he fell ill, suffered concentration difficulties and paraesthesiae, and correctly attributed these effects to the chronic inhalation of the gas. Indeed, when he cured himself of the addiction, the symptoms abated. It took 180 years for the underlying cause of these effects to be discovered. (See later).

We must now turn briefly to America. In 1801, the Professor of Chemistry at the University of Pennsylvania in Philadelphia was one Benjamin Rush, who was aware of nitrous oxide, and wondered, in 1801: "Might we not induce coma to a low degree of apoplexy in order to bear long operations . . .?" Rush died of yellow fever, and his post was offered to Priestley, but he declined. Eventually, Rush was succeeded by James Woodhouse, a brilliant chemist, who did more than anyone to disprove the "phlogiston" theory which had so thwarted Priestley. Woodhouse prepared nitrous oxide, and had his students inhale it. One of these, W.P.C. Barton, continued to study the gas, and published in 1808 *"A Dissertation on the Chymical and Exhilarating Effects of Nitrous Oxide Gas".*

Enter one "Professor" Gardner Quincy Colton. Colton was a travelling showman, who gave demonstrations of nitrous oxide around the fairgrounds. Attending one of these in 1844 was a young dentist Horace Wells. Observing people apparently unaware of having hurt themselves while under the influence of the gas, he immediately asked Colton to come to his rooms, bringing some of his gas, and to administer it to him (Wells), while he had a colleague extract one of his teeth. Upon awakening Wells exclaimed "I did not feel so much as the prick of a pin. A new era in tooth-pulling has arrived!" (Despite his lack of proper training, Colton went on to establish the Colton Dental Association in New York in 1862, and claimed over the next five years to have given more than 24,000 successful nitrous oxide administrations. He never failed to acknowledge Wells' original contribution). Wells, at the urging of his colleague, W.T.G. Morton (mentioned earlier), decided to demonstrate his new "invention" to the doctors of the day at the Massachusetts General Hospital, in January 1845, but the demonstration proved a fiasco, probably because he was not able to bring enough of the gas with him to the theatre. Surgeons returned to the dictum of Velpeau, who in 1839 had influenced surgery with the words *"Eviter la douleur dans les operations est une chimère* qu'il n'est pas permis de poursuivre aujourd'hui (loosely, "surgery causes pain, and there's nothing to be done about it").

We must backtrack briefly to England. In 1845, the greatest surgeon of the day was Robert Liston (1794-1847). He was described as "the fastest man with a knife in England. He was a giant of a man, with great physical strength; his arms and hands often likened to Hercules, who loved the job and operated with great relish, often cutting notches in his knives for each operation". He was said to be . . . "a fearsome sight as he held the knife between his teeth while he tied the ligature". On Monday, December 21, 1846, he strode into the theatre with the words "We are going to try a Yankee dodge today gentleman, for making men insensible". The patient was pale and terrified, but submitted to the inhaler. Liston gave the sign that he was to begin, so that he might be timed as usual, and 25 seconds later, as he tossed the leg into the sawdust with the patient still sleeping gently, he remarked in a humbled voice "This Yankee dodge, gentlemen, beats Mesmerism hollow!" Witnesses at that historic event included two young medical students destined for even greater fame than Liston. The first was Joseph Lister, and the second Joseph Clover. (We shall hear more of the latter later).

What had occurred in the interim was the "discovery" of ether anaesthesia by Morton, a story too well-known to elaborate further upon here, except perhaps to mention the contribution of Oliver Wendell Holmes, who said to Morton on November 21, 1846: "The state I think should be called *'Anaesthesia'* . . . I would have a name pretty soon . . . which will be repeated by the tongue of every civilized race of mankind". (Little did he know how much difficulty they would have in pronouncing the word!)

The use of ether, and later chloroform (1847), spread like wildfire throughout the world; the first anaesthetic was given in New Zealand in 1847, and the first book on anaesthesia was written by John Snow in the same year. The acceptance, relative safety, and ease of use with nothing more than a "rag and bottle", led to the virtual demise of nitrous oxide for a number of years. This was in no small measure due to the difficulty of handling a gas as opposed to a liquid. The technology for compressing it into cylinders had not yet arrived, and even rubber was not known, so the "breathing bags", which had to be gas-tight, were often fashioned from animal bladders. (One hopes the patients were not made aware of this fact!). However, one faithful adherent was Colton, who continued to make a living with his fairground "lectures", until he found that painless dentistry was more lucrative. He spoke on his work at the first International Congress of Medicine in Paris in 1867, and interested a fellow American, T.W. Evans, who went to London in 1868 with the sole purpose of instructing English dentists in the making and using of the gas.

Also, fortunately, in that year the London firms of Coxeter and Barth succeeded in compressing the gas into metal cylinders, and within a few years an efficient commercial service was available for supplying and refilling them. Joseph Clover (1825-1882), the pre-eminent London anaesthetist after Snow, soon improved upon Evans' apparatus, and although better known for his ether and chloroform inhalers, also devised various pieces of equipment for the administration of nitrous oxide. The best known is his "sequential" apparatus, designed to permit induction of anaesthesia with nitrous oxide followed by maintenance with ether.

The next important figure after Clover was Sir Frederick Hewitt, the first anaesthetist to be knighted, who pioneered the use of nitrous oxide *combined with* oxygen, and stressed the avoidance of hypoxia.

From that time on, the use of nitrous oxide became a virtual *sine qua non* of anaesthesia in the developed world. There were many "machines" for the delivery of the two gases, mixed with the vapour of ether and/or chloroform, but the best-known in Britain was the Boyle. Henry Edmund Gaskin Boyle (1875-1941) devised his first machine in 1917, and a very slightly later version has pride of place in the anaesthesia museum in Dunedin Hospital. The principle of almost all the modern anaesthesia machines differs little from the original Boyle. Anaesthetists in Britain, Australia, New Zealand and maybe some other countries, reach instinctively, indeed even impulsively, for the blue and the white knobs as soon as the anaesthesia commences. (In the USA, the knobs are blue and green, and in Germany, Switzerland and maybe elsewhere they are green and blue, just to be confusing!). But the principles are the same: induction with an intravenous agent, followed by maintenance with the nitrous oxide/mixture together with the vapour of the latest fluorocarbon volatile agent, and with or without a curare-like muscle relaxant. Until quite recently, anaesthetists were taught that nitrous oxide was a harmless, odourless, mild analgesic agent, which could be used safely and with advantage in all situations. It entered into no reactions in the body, and was excreted unchanged. The only likely harm that could result, would be if it were given alone. Unfortunately, all too often it was, due to failure of the oxygen supply, or crossed pipelines, or empty cylinders, and so on, with tragic consequences. (One of the late Dr John Ritchie's important contributions to the safety of anaesthesia was the "Ritchie Whistle"[2], to warn of oxygen supply failure; one of these, or a similar device, is now mandatory on all machines.)

Once again, we must backtrack a little. In 1921, a paper which attracted little attention at the time, was published by McKenzie and Colt of Aberdeen, in the British Medical Journal[3]. Entitled "General Anaesthesia and the Atmosphere in the Operation Theatre", it stated ". . . it is not unusual for those engaged in operative work to be surrounded by unpleasant and deleterious vapours . . .", and went on to propose that ". . . it ought to be possible to generate the vapours outside the theatre entirely, to deliver them to the face-piece through a wide tube, and to remove them by a similar channel, so that the atmosphere of the theatre need never be materially contaminated". And then in 1966, in a paper from Russia[4], this matter arose again, when Vaisman, in a study of the health of anaesthetists, stated that "All mentioned that the work conditions had led to adverse effects on their health". More significantly, ". . . it must be stated that the conditions of work are most unfavourable for pregnant females. We gathered information about pregnancy and its outcome from 31 female anaesthetists aged 24-38. Eighteen of them had spontaneous abortions . . . two had premature labour and one had congenital abnormalities". It took some time for the significance of this paper to be appreciated in the West, but from 1970 on there was a spate of papers mostly confirming the Russian findings, and spreading a certain alarm among female personnel in the operating environment. Control of the "pollution" by "scavenging" became mandatory in most countries, though the true underlying cause(s) were uncertain. Some papers, for instance, said that stress was mostly to blame, but halothane was the favoured villain of the piece,

probably because it was relatively new, and everyone knew that nitrous oxide was "bland, odourless, inert and perfectly safe as long as given with adequate oxygen".

But remember Humphry Davy and his addiction to the gas? Why did chronic inhalation of an inert gas cause symptoms such as paraesthesia? The answer was now close at hand, but some 180 years too late. Nitrous oxide is a difficult gas to study – it does not form stable isotopes, and this hampered studies of its possible metabolism. Indeed Nunn[5] stated, "It was abundantly clear that there was a major gap in knowledge of the . . . metabolic consequences of N_2O administration".

However, as early as 1956 it was recognised that prolonged administration of nitrous oxide, as part of the management of tetanus by controlled ventilation, could cause megaloblastic bone-marrow changes, and even agranulocytosis. Amess *et al*,[6-7] found exposure to N_2O caused interference with DNA synthesis, and correctly inferred that it had produced an abnormality of vitamin B_{12} metabolism, and that this was as severe as in untreated Addisonian pernicious anaemia. In the same year Layzer[8] reported a condition resembling sub-acute combined degeneration of the cord in 15 patients who had been chronically exposed to N_2O, some as a result of self-administration, exactly like Humphry Davy. The chemistry is now quite clearcut: N_2O uniquely inactivates methionine synthetase[9]. No other agent is known to do this. The ultimate effect is the interference with DNA synthesis, hence abortions, fetal abnormalities and so on. (N_2O has been proven to cause birth defects in laboratory animals.)

But that is not all. N_2O profoundly depresses the ventilatory response to hypoxia and carbon dioxide, may depress or stimulate the circulation, increases cerebral blood-flow and intracranial pressure, inreases the incidence of post-operative nausea and vomiting, can cause hypoxia in the immediate post-operative period, and atelectasis later, and may have a role in the so-called "halothane hepatitis". (Certainly it appears so in rats). It enters gas-filled spaces in the body, increasing their pressure, volume or both. This could be dangerous with a pneumothorax, or with air inside the cranial cavity, but it is also a problem with the gas in the bowel, where the use of N_2O has been shown to delay bowel function after colon surgery[10]. It also expands the air in an air embolus and in the cuffs of endotracheal tubes[11].

There is no doubt that if this agent were offered to anaesthetists as a new drug today, it would not get past the animal experimentation stage! A retrospective study (1981-86) from Seattle[12] showed a clear decrease in the percent of general anaesthetics being given with N_2O. The graph, if it were projected in a straight line, would suggest that no-one at all should be using N_2O there this year!

Nitrous oxide affects the ozone layer[13], but the medical use of this gas (estimated at 0.1 megatonnes per year) is insignificant in comparison to the annual flux of 210 Mt from anaerobic denitrification in the soil.

In 1980[14], T.H.S. Burns put forward "Ten Reasons" for abandoning nitrous oxide, and moving to closed-circuit oxygen/volatile agent, as follows:

1. Reduced capital cost (no pipelines).
2. Reduced running costs.
3. No risk of wrong gas.
4. Risk of oxygen failure minimised.
5. No risk of impurities (such as nitric oxide, which has occurred)[15].
6. Less risk of flammability (all agents more flammable in N_2O).
7. Less danger of distension of air-filled cavities.
8. Pollution eliminated. (As are risks of scavenging equipment).
9. Water vapour retained.
10. Heat loss reduced.

Even since that time, I believe I could add ten more!

It has taken a long time, 222 years from its discovery in 1772, until now, but I believe that it will not take much longer before N_2O is relegated to fruit ripening and cream whipping!

I will leave the final word with Eger[16]: "I believe the disadvantages of nitrous oxide outweigh the advantages, and I no longer use it".

References

1. Cosnett, JE (1988). Surgery without Anaesthesia: A Historical Perspective. *Seminars in Anesthesia* **7**(4), 315.
2. Ritchie, JR (1974). A simple and reliable warning device for failing oxygen pressure. *Brit. J. Anaesth.* **46,** 323.
3. Mackenzie, JR and Colt GH (1921). General anaesthesia and the atmosphere in the operation theatre. *Brit. Med. J.*, 938.
4. Vaisman, AI (1966) "Conditions of work in operating theatres and their effects on the health of anaesthetists" (in Russian) *Eksper. Chir.* **3,** 44.
5. Nunn, JF (1988). Clinical relevance of the B_{12}/N_2O interaction. *Anaesthesia* **43,** 587.
6. Amess, JAL *et al* (1978). Megaloblastic Haemopoiesis in patients receiving nitrous oxide. *Lancet,* 339.
7. Amos, RJ, Amess, JAL, Hinds, CJ and Mollin, DL (1982). Incidence and pathogenesis of acute megaloblastic bone-marrow change in patients receiving intensive care. *Lancet,* 835.
8. Layzer, RB (1978). Myeloneuropathy after prolonged exposure to nitrous oxide. *Lancet* **2,** 1227.
9. Nunn, JF (1987). Clinical aspects of the interaction between Nitrous oxide and vitamin B_{12}. *Brit. J. Anaesth.* **59,** 3.
10. Scheinin, B, Lindgren, L and Scheinin, TM (1990). Preoperative nitrous oxide delays bowel function after colonic surgery. *Brit. J. Anaesth.* **64,** 154.
11. Eger, EI (1986). Is the continued use of nitrous oxide warranted? ASA Refresher Course Lectures, 531.
12. Tyson, GL and Cullen, BF (1988) The use of nitrous oxide is decreasing in Seattle. (Letter) *Anesth. Analg.* **67,** 91.
13. Westhorpe, R and Blutstein, H (1990). Anaesthetic agents and the ozone layer. *Anaes. Intens. Care* **18,** 102.
14. Burns, THS (1980). Closed circuit anaesthesia (Correspondence) *Anaesthesia* **35,** 1114.
15. Contaminated cylinders of nitrous oxide. Leading Article, *Brit. Med. J.*, **2,** 658 (1966).
16. Eger, EI "Should we not use nitrous oxide?" (in *Nitrous Oxide* Ed. Eger, EI), Elsevier, New York (1985).

During a recent visit to Ulimaroa Dr Richard Howell (Coventry, West Midlands), Dr Griselda Cooper (Queen Elizabeth Hospital, Birmingham) and Dr David Greaves (Ashington Hospital, Northumberland) presented the College with a Royal Brierley etched vase. This gift was accepted on behalf of the College by the Registrar, Mrs Joan Sheales.

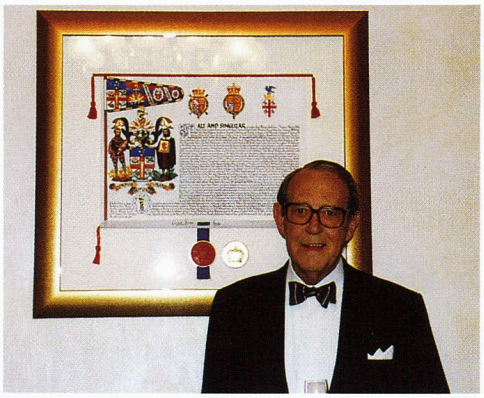
RACS Council Dinner at Ulimaroa, 27 October 1994

Members of the CIREBA Meeting held in Edmonton, June 1994
Left: Dr David McKnight, Chair, Specialty Committee in Anaesthesia and RCPSC, Prof Richard Clarke, Dean and Prof Anthony Cunningham, Hon Sec FARCSI, Prof David Morrell, Chairman CASA, Dr Chris Eagle, Chief Examiner RCPSC, Dr Carlos McDowell, Chairman Education Committee FARCSI; Sir Geoffrey de Deney CEO, RCA; Assoc Prof Neville Davis, Vice President ANZCA, Prof Cedric Prys-Roberts, President RCA; Dr David Longnecker, Vice President ABA, Dr Michael Davies, President, ANZCA; Dr Frank James III, Director ABA.

Pictured (below, right):
The President at the launch of Australasian Anaesthesia with Mr Mark Branighan, Director of Hospital and Nutritional Products, Abbotts Australasia and Editor, Dr John Keneally and Sub-Editor Dr Michael Jones.

(Below, left):
Mrs Joan Sheales, Registrar, and the President, Dr Michael Davies with Dr and Mrs Robert Stoelting during a recent visit to the College.

Dr Ronald Lo, President of Hong Kong College of Anaesthesiologists presented Dr Peter Roessler on behalf of ANZCA with a plaque commemorating the Inaugural ASM.



Mr Peter Jones with the Letters Patent of the College issued by the College of Arms. Mr Jones was an adviser to the Committee seeking the College Amorial Bearings.

POLICY DOCUMENTS

Review E3 (1994)

THE SUPERVISION OF TRAINEES IN ANAESTHESIA

Supervision is defined as being performed by an anaesthetist who possesses the Diploma of FANZCA or a qualification acceptable to the Council.

1. CATEGORIES OF SUPERVISION

There are four such categories, viz.:

1. Supervisor rostered for one trainee and available solely to that trainee.
2. Supervisor rostered to supervise two trainees who are in operating theatres in close proximity. The supervisor must be fully conversant with the nature of the patients on both lists and able to provide one-to-one supervision of each as appropriate.
3. The supervisor is available either in the operating suite or the Hospital but is not exclusively available for a specific trainee.
4. The supervisor is not in the Hospital but is on call within reasonable travelling time and is exclusively rostered for the period in question. This category of supervision applies mainly to out of hours cases. Consultation must be available at all times.

Note: In the above, the term "theatre" includes any anaesthetising location in the Hospital.

2. MINIMUM SUPERVISION LEVELS

2.1 ***General***

2.1.1 In order to ensure adequate supervision of trainees, Departments must employ at least one full-time equivalent (FTE) specialist anaesthetist for each trainee. There should be no more than two non-specialist anaesthetists (including trainees) for each FTE specialist anaesthetist employed.

2.1.2 Supervision at category 1 or 2 level may be appropriate at any stage of training and should be encouraged since it gives the best opportunities for teaching and training techniques.

2.1.3 Supervision at category 1 and 2 levels should average at least 25% of all work done by trainees.

2.1.4 Supervision at category 4 level should not average more than 30% of all work done by trainees.

2.1.5 Out of hours work should comprise between 25% and 50% of any trainee's workload during the first four years of training.

2.1.6 At all stages of training, a supervisor must attend an anaesthetic whenever a trainee requests assistance. Conversely, a supervisor should attend an anaesthetic whenever this is deemed desirable.

2.1.7 All trainees must be supervised at category 1 level during a familiarisation period in any working area with which they are unfamiliar.

2.2 ***First Year Trainee***

2.2.1 Supervision at category 1 level should be provided for all cases during an initial period varying in length according to the trainee's previous experience and their development of skills and judgement. For trainees without previous anaesthetic experience, this will need to be for at least four months.

2.2.2 Supervision at category 1 and 2 levels should be provided for most of the in-hours cases for the rest of the year.

2.2.3 After the initial period, the supervisor should be notified of all out of hours cases. At least 25% of out of hours cases should be supervised at category 1 or 2 level. The supervisor should attend for all patients with conditions such as the following:

2.2.3.1 Patients requiring major resuscitation.

2.2.3.2 Patients with serious medical illness.

2.2.3.3 Debilitated patients.

2.2.3.4 Children under the age of ten years.

2.2.3.5 Surgery which poses special anaesthetic problems.

2.2.3.6 Any other high risk patients.

2.2.3.7 Any patients who the trainee does not feel competent to anaesthetise.

2.3 ***Second Year Trainee***

2.3.1 Supervision at category 1 and 2 levels should be provided for about half the in-hours case load.

2.3.2 Supervision at category 1 and 2 levels should be provided for at least 20% of the out of hours case load.

2.3.3 The supervisor should be advised of all young children, all seriously ill patients and any patients posing special problems for the anaesthetist.

2.4 ***Third Year Trainee***

2.4.1 Supervision at category 3 level may be appropriate for many of the in hours cases except where new areas of practice are encountered. In areas such as cardio-thoracic, obstetric and major paediatric anaesthesia, category 1 supervision is normally appropriate.

2.4.2 For out of hours work, the supervisor should be advised of all young children, all seriously ill patients or those providing special problems for the anaesthetist.

2.4.3 It should be the supervisor's decision whether to attend the anaesthetic or not. Attendance on trainee request remains obligatory.

2.5 ***Fourth Year Trainee***

2.5.1 Supervision at category 3 level is appropriate for all work previously encountered but it may still be necessary for supervision to be at category 1 level for new work experiences.

2.5.2 For out of hours work, consultation can be at the discretion of the trainee although consultation (and where necessary supervision) remains essential for unfamiliar clinical situations.

2.6 ***Provisional Fellow***

2.6.1 Consultation and appropriate supervision must be available at all times.

This policy document has been prepared having regard to general circumstances, and it is the responsibility of the practitioner to have express regard to the particular circumstances of each case, and the application of this policy document in each case.

Policy documents are reviewed from time to time, and it is the responsibility of the practitioner to ensure that the practitioner has obtained the current version. Policy documents have been prepared having regard to the information available at the time of their preparation, and the practitioner should therefore have regard to any information, research or material which may have been published or become available subsequently.

Whilst the College endeavours to ensure that policy documents are as current as possible at the time of their preparation, it takes no responsibility for matters arising from changed circumstances or information or material which may have become available subsequently.

Promulgated: 1989
Reviewed: 1994
Date of current document: Oct 1994

Review E7 (1994)

SECRETARIAL SERVICES TO DEPARTMENTS OF ANAESTHESIA

INTRODUCTION

All Departments of Anaesthesia require administrative support by secretarial services to allow the medical and technical officers within the Department to perform their specific duties effectively. For those Departments which are approved for College trainees, the secretarial, administrative and educational support needed will require the appointment of appropriate staff within the Department.

DUTIES OF SECRETARIAL STAFF

The duties of secretarial staff will fall into three main areas: individual secretarial support, departmental administrative support and departmental educational support.

1. INDIVIDUAL SECRETARIAL SUPPORT DUTIES INCLUDE:

   Provision of general secretarial services to individual specialists, trainees and other members of the Department, including the handling of correspondence, filing, appointments, telephone answering and mail.

2. ADMINISTRATIVE SUPPORT DUTIES INCLUDE:

   Preparation, circulation and updating of departmental duty rosters, maintenance of departmental and medical records and general administration. Duties may also include the preparation and distribution of operating lists and facilitation of the deployment of medical officers for their service and other requirements.

3. EDUCATIONAL SUPPORT DUTIES INCLUDE:

   Co-ordination of the administrative aspects of the continuing medical education, clinical review and quality assurance activities for medical and technical staff of the Department.

   3.1 Preparation and distribution of material for departmental meetings, including tutorials, peer review, clinical audit and quality assurance meetings.

   3.2 Facilitation of the exchange of correspondence between the College, trainees and Supervisors of Training. See College Policy Document "Supervisors of Training in Anaesthesia and Intensive Care" (E5).

   3.3 Maintenance of the departmental library of books, journals, slides and other audio-visual material and preparation of visual display material.

   3.4 Other Responsibilities

   Depending on other facilities and support at the hospital, secretarial assistance may be required for performance of literature searches, photocopying and circulation of documents from within the department, other departments of the hospital and other libraries.

This policy document has been prepared having regard to general circumstances, and it is the responsibility of the practitioner to have express regard to the particular circumstances of each case, and the application of this policy document in each case.

Policy documents are reviewed from time to time, and it is the responsibility of the practitioner to ensure that the practitioner has obtained the current version. Policy documents have been prepared having regard to the information available at the time of their preparation, and the practitioner should therefore have regard to any information, research or material which may have been published or become available subsequently.

Whilst the College endeavours to ensure that policy documents are as current as possible at the time of their preparation, it takes no responsibility for matters arising from changed circumstances or information or material which may have become available subsequently.

Promulgated: 1989
Reviewed: 1994
Date of current document: Oct 1994

P10 (1994)

THE HANDOVER OF RESPONSIBILITY DURING AN ANAESTHETIC

During an anaesthetic, the major responsibility of the anaesthetist is to provide care for the patient. This requires the continuous presence of the anaesthetist. In certain circumstances, it is necessary for the anaesthetist to hand over that responsibility to a colleague. Specific procedures must be followed. Handovers will not compromise patient safety provided that these procedures are followed. In prolonged anaesthetics, handover may be advantageous to the patient by preventing undue fatigue of the anaesthetist.

1. Temporary relief of the anaesthetist

This is necessary when the primary anaesthetist must leave the patient but will return to resume management of the anaesthetic.

1.1 The primary anaesthetist will leave only while the patient is in a stable state and no potentially adverse events are likely to occur.

1.2 The primary anaesthetist must be satisfied as to the competence of the relieving anaesthetist to provide care and must have explained all facts relevant to safe management.

1.3 The primary anaesthetist must be available to return at short notice.

2. Permanent handover of responsibility for care

This is necessary when the primary anaesthetist must leave the patient under the care of another anaesthetist for the remainder of the anaesthetic.

2.1 The primary anaesthetist will only hand over responsibility at a time when the clinical status of the patient is appropriate.

2.2 The primary anaesthetist must be satisfied as to the competency of the relieving anaesthetist to assume management of the case. The handover procedure must include a briefing as to the patient's pre-operative status, events during the anaesthetic and discussion of any foreseeable problems.

2.3 The relieving anaesthetist has responsibility to be fully conversant with the patient's present and ongoing anaesthetic management and must indicate a willingness to accept that responsibility.

3. Protocol for transfer of responsibility

The following items must also be considered by the primary and the relieving anaesthetists:

3.1 The patient's health status having regard to past history and the present condition.

3.2 Observations of the patient according to College Policy Document P18 — *Monitoring During Anaesthesia* as shown by the anaesthetic record.

3.3 A check to ensure correct functioning of the anaesthesia machine and any other equipment which is interfaced to the patient as well as of all monitoring devices in use.

3.4 The provision of information about the handover to the surgeon and (in the case of a trainee) the consultant anaesthetist.

This policy document has been prepared having regard to general circumstances, and it is the responsibility of the practitioner to have express regard to the particular circumstances of each case, and the application of this policy document in each case.

Policy documents are reviewed from time to time, and it is the responsibility of the practitioner to ensure that the practitioner has obtained the current version. Policy documents have been prepared having regard to the information available at the time of their preparation, and the practitioner should therefore have regard to any information, research or material which may have been published or become available subsequently.

Whilst the College endeavours to ensure that policy documents are as current as possible at the time of their preparation, it takes no responsibility for matters arising from changed circumstances or information or material which may have become available subsequently."

Promulgated: 1994
Date of current document: Oct 1994

P16 (1994)

THE STANDARDS OF PRACTICE OF A SPECIALIST ANAESTHETIST

When defining the attributes and qualities necessary for the high standards of practice in anaesthesia which are to be expected of a specialist anaesthetist, it is necessary to consider both the anaesthetist and the environment in which he/she works.

1. THE SPECIALIST ANAESTHETIST

1.1 Specialist Anaesthetists are registered medical practitioners who have completed a period of graduate training in Anaesthesia and hold the Diploma of Fellowship of the Australian and New Zealand College of Anaesthetists, or a qualification in which training and examinations are acceptable to this College.

1.2 Specialist Anaesthetists are required to cultivate and maintain high standards of practice and ethical behaviour in relation to anaesthesia, its related disciplines and to other branches of medicine. They recognise that the knowledge, skills and attitudes as stated in the College's *Objectives of Training in Anaesthesia* and its Policy Documents form an appropriate model for the practice of their profession.

1.3 Specialist Anaesthetists recognise that:

1.3.1 Regular work in anaesthesia of appropriate volume and complexity is necessary to maintain clinical skills.

1.3.2 Participation in an ongoing programme directed at maintaining proper clinical standards of practice is required.

1.3.3 Re-training will be necessary after a period away from normal duties or on taking up a different pattern of practice.

1.3.4 Physical and mental health status will impact on ability to maintain high standards of practice. Advice and treatment may be necessary to maintain proper health.

1.3.5 Chemical dependence is a health problem of particular relevance to anaesthetists and is incompatible with proper practice. Future practice requires that this dependency be resolved.

1.3.6 Ageing may lead to a decline in standards of practice. Review by appropriately skilled colleagues may be necessary as part of a decision to continue the practice of anaesthesia.

2. THE WORK ENVIRONMENT

2.1 Clinical anaesthesia is an exacting task. Specialist anaesthetists and where appropriate, their employers, must recognise that high standards of practice require a balance between duties related directly to patient care and those related to maintenance of competence. This will require a balance of time allocation between patient care, education and quality assurance activities. The allocation will vary according to individual circumstances.

2.2 To enhance high standards of practice, the job description for a specialist anaesthetist must allow time for interaction with colleagues. Professional isolation must be minimised. One of the functions of non-patient care time is to allow for maintenance of professional contacts.

2.3 Performance of anaesthesia at a high standard requires appropriate rest periods from day to day as well as leave from normal duties for vacation purposes. It is the responsibility of specialist anaesthetists — and where appropriate their employers — to ensure that fatigue is not allowed to impair standards of clinical performance.

This Document should be read in conjunction with College Policy Documents E6 "The Duties of an Anaesthetist" and E9 "Quality Assurance".

This policy document has been prepared having regard to general circumstances, and it is the responsibility of the practitioner to have express regard to the particular circumstances of each case, and the application of this policy document in each case.

Policy documents are reviewed from time to time, and it is the responsibility of the practitioner to ensure that the practitioner has obtained the current version. Policy documents have been prepared having regard to the information available at the time of their preparation, and the practitioner should therefore have regard to any information, research or material which may have been published or become available subsequently.

Whilst the College endeavours to ensure that policy documents are as current as possible at the time of their preparation, it takes no responsibility for matters arising from changed circumstances or information or material which may have become available subsequently.

Promulgated: 1994
Date of current document: Oct 1994

P27 (1994)

AUSTRALIAN AND NEW ZEALAND COLLEGE OF ANAESTHETISTS
A.C.N. 055 042 852
AND
NATIONAL ASSOCIATION OF MEDICAL PERFUSIONISTS OF AUSTRALIA

STANDARDS OF PRACTICE FOR MAJOR EXTRACORPOREAL PERFUSION

1. INTRODUCTION

The practice of extracorporeal perfusion involves the diversion of patient blood through an artificial circuit incorporating a pumping device for the purpose of assisting the circulatory, respiratory and/or other body systems. The practice includes management and monitoring of procedures such as whole body perfusion, isolated limb perfusion, temperature control, specific organ protection or perfusion, blood coagulation control, and blood conservation.

These Standards of Practice in Major Extracorporeal Perfusion relate mainly to the conduct of cardiopulmonary bypass (CPB) as applied to such clinical situations as cardiac and major vascular surgery, acute respiratory and cardiac failure, and other similar indications. To a variable extent, these standards also apply to other clinical situations which involve extracorporeal perfusion.

These are regarded as the minimum recommended standards for best practice.

2. APPLICATIONS OF MAJOR EXTRACORPOREAL PERFUSION

Major extracorporeal perfusion has many clinical applications, including but not limited to the following:

2.1 Cardiopulmonary bypass (CPB), including myocardial preservation, for Cardiac, Major Vascular and other Surgery

2.2 CPB support in Acute Cardiovascular Failure, including Cardiac Ventricular Assistance

2.3 CPB support in Acute Respiratory Failure

2.4 Perfusion during Liver Transplantation Surgery

2.5 Isolated Limb or Organ Perfusion for management of malignant disease & other indications.

3. DEFINITIONS

A ***Medical Perfusionist*** is a qualified medical practitioner who is appropriately trained and experienced in the pathophysiology, pharmacology and technology of extracorporeal perfusion, and its clinical applications and who takes responsibility for extracorporeal perfusion before, during and after its implementation in a patient.

A ***Clinical Perfusionist*** is a qualified person who is appropriately trained and experienced in the science and technology of extracorporeal perfusion, and who may operate extracorporeal perfusion equipment under the supervision of an appropriately qualified medical practitioner.

A ***Perfusion Technician*** is a person appointed to assist a Medical Perfusionist and/or Clinical Perfusionist in conducting the respective duties of these persons.

4. ORGANISATION OF THE EXTRACORPOREAL PERFUSION SERVICE

Major extracorporeal perfusion should be a hospital service headed by a Medical Practitioner and further staffed by an appropriate number of trained and qualified medical and technical staff.

4.1 STAFFING

4.1.1 the Head of the Service should be a Medical Perfusionist who is responsible for all aspects of the administration and appropriate functioning of the Service as detailed in these Standards.

4.1.2 the Head of the Service should ensure that the extracorporeal perfusion service is staffed at all times with adequate numbers of medical and non-medical staff dependent on the caseload of the Hospital. This will include an appropriate system to cover out-of-hours emergencies.

4.2 FACILITIES AND EQUIPMENT

4.2.1 the Head of the Service should ensure that the extracorporeal perfusion service is appropriately supplied with necessary facilities and equipment, and that one or more members of the extracorporeal perfusion service is designated to:

4.2.1.1 maintain and regularly review an inventory of all hardware, equipment, including records of maintenance and repairs.

4.2.1.2 maintain an inventory of orders, receipts and supplies of all disposable equipment.

4.2.2 one or more members of the extracorporeal perfusion service should be designated to provide on-going assessment of the efficacy and cost-benefit of currently used and potentially available equipment.

4.3 EDUCATION AND QUALITY ASSURANCE

The Head of the Service should ensure that:

4.3.1 a Continuing Education Programme is available to all members of the Service

4.3.2 educational and training facilities are available for the training of both medical and non-medical staff in extracorporeal perfusion techniques

4.3.3 a research programme in extracorporeal perfusion is encouraged

4.3.4 a quality assurance programme is developed and implemented appropriately.

5. MATERIAL REQUIREMENTS FOR EXTRACORPOREAL PERFUSION

5.1 PHYSICAL FACILITIES

The Extracorporeal Perfusion Service must be provided with:

5.1.1 dedicated adequate space in close proximity and with easy access to the Operating Theatre and post-operative Recovery / Intensive Care Unit for:

5.1.1.1 storage of hardware items

5.1.1.2 storage of adequate supplies of disposable equipment in appropriate areas with respect to lighting, and protection from humidity, moisture and temperature extremes

5.1.1.3 a clean area in accordance with standards applicable and relevant to assembly of circuits for use during extracorporeal perfusion

5.1.1.4 storage of patient perfusion records and other data used for quality assurance, research and other activities, including the performance of all devices used during the conduct of extracorporal perfusion

5.1.2 adequate office space and secretarial assistance available to the Medical Director and other members of the Extracorporeal Perfusion Service.

5.2 THE HEART-LUNG MACHINE

5.2.1 GENERAL DESCRIPTION

The heart-lung machine consists of a mobile console which incorporates the hardware necessary for CPB and enables the application of accessories and disposable equipment.

5.2.2 STANDARDS COMPLIANCE AND MAINTENANCE

All electrically powered components of the heart-lung machine should meet current Australian and/or New Zealand Electromedical Specifications for Electrical Safety for Cardiac Protected procedures and other relevant applicable Standards. The heart-lung machine should also comply with requirements listed further in this section.

All components of the heart-lung machine should undergo routine Biomedical Engineering (BME) inspection and maintenance at regular intervals, and full documentation of these events should be recorded. A BME repair service should be readily available whenever faults are detected in the components, and full documentation of these events should also be recorded.

5.2.3 COMPONENTS OF THE HEART-LUNG MACHINE: GENERAL

The mobile heart-lung machine console should generally include the following items, although in certain clinical circumstances not all items will necesssarily be appropriate:

5.2.3.1 three (3) or more pump heads capable of providing appropriate fluid flow for CPB

5.2.3.2 an electrical power source, including emergency supplies, consistent with standards applicable to all electrical supplies in Operating Suites

5.2.3.3 filtered oxygen and other required gases, including a gas blender and reserve oxygen supply

5.2.3.4 devices for appropriate incorporation of disposable equipment, particularly a blood reservoir, oxygenator and plastic tubing and filters

5.2.3.5 a monitor of blood reservoir level with pump head feedback mechanisms.

5.2.3.6 a monitor of arterial line pressure with pump head feedback mechanisms

5.2.3.7 an integrated light source assisting monitoring of blood reservoir levels

5.2.3.8 a source for generation of heat exchange to enable control of blood, body core and specific organ temperature, with appropriate temperature monitoring devices

5.2.3.9 a monitor of gas emboli in outgoing blood being perfused to the patient, with pump head feedback mechanisms

5.2.3.10 a monitor of venous haemoglobin oxygen saturation of blood returning from the patient to the extracorporeal perfusion circuit.

5.2.4 COMPONENTS OF THE HEART-LUNG MACHINE: SPECIFIC

5.2.4.1 PUMP HEADS

5.2.4.1.1 Arterial pump heads must have alarms and servo-control mechanisms where appropriate, with manual override capability, for:

— blood reservoir low level detection
— arterial line over-pressure detection
— bubble detection.

5.2.4.1.2 All pump heads must have electronic circuitry incorporating "runaway" control protection

5.2.4.1.3 All pump heads must provide an option for displaying pump flow in either litres per minute or revolutions per minute, and must be capable of easy calibration

5.2.4.1.4 All pump heads which provide controls for flow operation in either direction should be controlled by a lockable device, such that initiation of reversal of flow requires two actions

5.2.4.1.5 All roller-pump heads must incorporate a transparent removable cover and an adjustable occlusion mechanism.

5.2.4.1.6 All pump heads must be capable of manual operation for emergency use. A cranking system must be immediately accessible.

5.2.4.2 GAS SUPPLY SYSTEM

5.2.4.2.1 the heart-lung machine must be connectable to an indexed piped medical oxygen and air supply consistent with applicable standards, including alarm systems

5.2.4.2.2 the heart-lung machine must be connectable to a readily available emergency supply of oxygen in the event of piped gas failure

5.2.4.2.3 the heart-lung machine must be equipped with gas flow meters and gas blenders consistent with applicable standards

5.2.4.2.4 the gas supply line to the oxygenating device must be filtered and include an oxygen analyser consistent with applicable standards

5.2.4.2.5 the heart-lung machine must be connectable to a device for scavenging waste gases from the oxygenator.

5.2.4.3 HEAT EXCHANGE SOURCES

Heat Exchange Sources provide reticulated water at controllable temperatures through a heat exchange circuit within the oxygenator and/or blood reservoir.

5.2.4.3.1 Heat Exchangers utilise hot and cold water supplies from an external piped system OR a self-contained electronic heater/cooler and pump. Sources must supply water at temperatures controllable between 4°C and 42°C

5.2.4.3.2 Heat Exchangers should supply water flow between 10 and 25 litres per minute at a pressure not exceeding 600 mm Hg

5.2.4.3.3 Heat Exchangers must incorporate monitors, alarms and override

facilities for water temperature, and indicate water pump failure and low water level

5.2.4.3.4 Heat Exchangers must meet applicable standards

5.2.4.3.5 There should be a second Heat Exchanger available in case of failure of the primary device.

5.2.4.4 LOW LEVEL DETECTION MONITORS

Low level detection monitors are safety devices secured to the oxygenator and/or reservoir in the extracorporeal circuit which monitor for a predetermined minimum blood level in these devices

5.2.4.4.1 A low level detection device should be used during the conduct of every extracorporeal perfusion procedure

5.2.4.4.2 The low level detection device must incorporate both audible and visual alarms, and servo-control systems to the primary blood flow pump with an over-ride facility

5.2.4.4.3 The low level detection device must meet applicable standards.

5.2.4.5 ARTERIAL LINE PRESSURE MONITORING DEVICES

Arterial Line Pressure Monitoring Devices continuously measure and display outgoing blood perfusion pressure to the patient from the extracorporeal circuit

5.2.4.5.1 Arterial line pressure monitoring devices must be inserted at an appropriate point in the line providing perfusion to the patient. The arterial line pressure limit must be adjustable

5.2.4.5.2 Arterial line pressure monitoring devices must incorporate both audible and visual alarms that are activated when preset pressures are exceeded, and must incorporate servo-control systems to the primary blood flow pump with an over-ride facility.

5.2.4.6 GAS-EMBOLI DETECTORS

Gas-Emboli Detectors monitor the passage of gas bubbles in the arterial line and should be inserted in the line providing perfusion to the patient

5.2.4.6.1 Gas-Emboli Detectors to detect macro-gas emboli must be used during the conduct of every extracorporeal perfusion

5.2.4.6.2 The sensor of Gas-Emboli Detectors must be able to servo-control the arterial pump head, incorporating an over-ride facility

5.2.4.6.3 Gas-Emboli Detectors must incorporate both audible and visual alarm.

5.2.4.7 VENOUS HAEMOGLOBIN OXYGEN SATURATION MONITORS

Venous blood haemoglobin oxygen saturation monitors are used to detect the oxygen saturation of blood returning from the patient to the extracorporeal perfusion circuit

5.2.4.7.1 Venous blood haemoglobin oxygen saturation monitors must be used during the conduct of every procedure requiring cardiopulmonary bypass

5.2.4.7.2 The sensor must be placed in the venous line at a point most distal from the patient, in order to minimise inaccuracies due to streaming of blood

5.2.4.7.3 The monitor must be calibrated when applicable.

5.3 THE PERFUSION MACHINE FOR OTHER APPLICATIONS OF EXTRACORPOREAL PERFUSION

5.3.1 The Perfusion Machine for applications other than CPB for cardiac and related surgery (e.g. CPB support in acute cardiovascular and/or respiratory failure; perfusion for transplantation surgery; isolated limb or organ perfusion) must be tailored to the particular perfusion needs of the application

5.3.2 The relevant components of the Perfusion Machine in these other applications should generally comply with the standards listed for the Heart-Lung Machine in Section 5.2

5.4 DISPOSABLE EQUIPMENT FOR EXTRACORPOREAL PERFUSION

5.4.1 All disposable equipment must be manufactured and assembled in accordance with established quality assurance specifications, processes and procedures, as required by relevant standards

5.4.2 All disposable equipment must be inspected for records of quality control, defects and breaches in packaging and sterility

5.4.3 All disposable equipment must be used only after familiarisation with the manufacturers' specifications and instructions for use

5.4.4 All disposable equipment should be stored in areas with appropriate environmental conditions as required by relevant standards.

6. PRE-OPERATIVE PATIENT ASSESSMENT

6.1 The medical practitioner responsible for each case of extracorporeal perfusion should assess the patient pre-operatively, including the patient's overall physical condition and results of relevant investigations. The medical practitioner should arrange further investigations if appropriate, and must liaise with all relevant staff involved with management of the patient

6.2 The medical practitioner responsible for each case of extracorporeal perfusion should inform the patient of the planned procedure and its implications, in a manner similar to that information provided to patients about anaesthesia (see ANZCA Policy Document P26 — Guidelines on Providing Information about Anaesthesia)

6.3 If a Clinical Perfusionist is to be directly involved in management of the extracorporeal perfusion for a patient, he or she should be aware of the patient's overall physical condition, the results of relevant investigations, the proposed surgery and its implications to the conduct of perfusion

6.4 The pre-operative patient assessment should be performed at a suitable time prior to the procedure.

7. CLINICAL MANAGEMENT OF EXTRACORPOREAL PERFUSION

7.1 INTRODUCTION

Extracorporeal perfusion must be conducted utilising the components of the heart-lung machine (or machine for other applications of extracorporeal perfusion) in accordance with standards detailed in 5.2 and 5.3. Clinical management of the machine and monitored physiological parameters (including pharmacological interventions and fluid status management) during the initiation, maintenance and cessation of extracorporeal perfusion are to be determined by the person responsible for the conduct of perfusion in each particular patient.

7.2 EXTRACORPOREAL PERFUSION CIRCUIT ASSEMBLY AND PRIMING

7.2.1 The extracorporeal perfusion circuit must be assembled, checked and primed according to written protocols developed by each institution. These protocols must encompass:

7.2.1.1 standards for handling of sterile equipment, including assembly and priming in an operating room or similar environment

7.2.1.2 consistency with manufacturers' recommendations for relevant components of the circuit, which must be available for consultation

7.2.1.3 appropriate selection and arrangement of priming solutions components of the circuit according to published clinical and scientific data

7.2.1.4 the particular requirements of extracorporeal perfusion for each individual patient

7.2.1.5 replacement components being available

7.2.1.6 a procedure for checking the assembled and primed extracorporeal perfusion circuit including all its components.

7.2.2 The procedure for checking the assembled and primed extracorporeal perfusion circuit must include verification of:

7.2.2.1 the integrity of the complete fluid path and flow direction of the extracorporeal perfusion circuit, and the integrity of the gas supply from source to the oxygenator including adequacy of gas exchange

7.2.2.2 all heat exchanger connections and its circuit integrity prior to priming of the circuit

7.2.2.3 all electrical supplies to the extracorporeal perfusion equipment

7.2.2.4 appropriate placement and integrity of all monitoring equipment in the extracorporeal perfusion circuit.

7.2.2.5 appropriate placement, operation and calibration of all other components of all extracorporeal perfusion equipment, particularly pump heads

7.2.2.6 volume and composition of priming fluids of the extracorporeal perfusion circuit, and doses of drugs added to the priming fluids

7.2.2.7 the availability of appropriate emergency equipment for operation of the extracorporeal perfusion circuit

7.2.2.8 availability of additive drugs and fluids.

7.2.3 As the extracorporeal perfusion circuit is assembled, checked and primed, a written check-list for each item verified as listed in 7.2.2 above must be signed on the patient's record of extracorporeal perfusion by:

7.2.3.1 the person assembling the extracorporeal perfusion circuit, and

7.2.3.2 any person adding drugs to the extracorporeal perfusion circuit (including drug name, dosage and time)

7.2.3.3 the person taking responsibility for the conduct of the extracorporeal perfusion. The latter check must occur shortly before the onset of extracorporeal perfusion.

7.3 INITIATION OF EXTRACORPOREAL PERFUSION

7.3.1 Prior to the initiation of extracorporeal perfusion, the person conducting the perfusion must ensure that he or she will have no conflicting responsibilities and that:

7.3.1.1 the extracorporeal perfusion circuit has been assembled, primed and checked according to standard 7 above, and

7.3.1.2 the anticoagulation status of the patient is confirmed as appropriate for the procedure.

7.3.2 Initiation and early stabilisation of extracorporeal perfusion requires particular care and skill with respect to management of monitored physiological parameters, monitored machine parameters and the special clinical circumstances which may occur at this time.

7.4 MAINTENANCE OF EXTRACORPOREAL PERFUSION

7.4.1 During maintenance of extracorporeal perfusion, continuous and vigilant assessment and management is required of all monitored physiological parameters and monitored machine parameters, as relevant to the status and progress of the surgery

7.4.2 monitored physiological parameters during maintenance of extracorporeal perfusion must include:

7.4.2.1 systemic arterial pressure

7.4.2.2 central venous pressure (or equivalent)

7.4.2.3 appropriate anticoagulant status of blood

7.4.2.4 core body temperature (or an appropriate estimate)

7.4.2.5 arterial blood gas and acid/base status

7.4.2.6 blood haemoglobin or haematocrit

7.4.2.7 blood electrolyte status

7.4.2.8 venous haemoglobin oxygen saturation.

7.4.3 monitored machine parameters during maintenance of extracorporeal perfusion must include:

7.4.3.1 arterial pump head flow rate

7.4.3.2 arterial line pressure

7.4.3.3 blood reservoir level

7.4.3.4 gas flow rate and oxygen concentration

7.4.3.5 water and blood temperatures

7.4.3.6 integrity and function of the whole extracorporeal perfusion circuit

7.4.3.7 components of the cardioplegia delivery system (if relevant).

7.5 CESSATION OF EXTRACORPOREAL PERFUSION

Weaning from extracorporeal perfusion and resumption of cardiac and pulmonary function requires particular care and skill with respect to

management of monitored physiological parameters, monitored machine parameters and the special clinical circumstances and difficulties which may occur at this time. As in all stages of extracorporeal perfusion, close cooperation and communication between the perfusionist, anaesthetist and surgeon is essential.

7.6 PROTOCOLS FOR MANAGEMENT OF EXTRACORPOREAL PERFUSION

Basic clinical management protocols for extracorporeal perfusion should be determined and written in consultation with perfusion, surgical and anaesthetic staff, incorporating sufficient flexibility for variation and regular review.

Written protocols should also be devised, written and regularly practiced for extraordinary potential emergency events occurring during extracorporeal perfusion such as:

7.6.1 major gas leak into the arterial line

7.6.2 massive gas embolism into the patient

7.6.3 blood circuit tubing rupture or disassembly

7.6.4 major dysfunction of the arterial pump head

7.6.5 electrical power failure to the extracorporeal perfusion machine

7.6.6 functional failure of the oxygenator device requiring replacement of that device

7.6.7 disruption of the normal supply of oxygen

7.6.8 failure of the heat exchange source to the extracorporeal perfusion machine

7.6.9 failure of the arterial line filter requiring replacement of that device

7.6.10 detection of clotted blood in the extracorporeal perfusion circuit.

8. PATIENT RECORDS OF EXTRACORPOREAL PERFUSION

A contemporaneous record of the conduct of extracorporeal perfusion must be made on a form which is appropriate for retention in the medical records of the patient. The record of extracorporeal perfusion should include:

8.1 patient details, operative procedure and relevant preoperative clinical information

8.2 names of perfusion and other medical staff

8.3 equipment and circuit details, including prime constituents, administered drugs and fluids

8.4 monitored physiological parameters

8.5 monitored machine parameters

8.6 notation of relevant events during extracorporeal perfusion

8.7 notation of administration of cardioplegia.

This policy document has been prepared having regard to general circumstances, and it is the responsibility of the practitioner to have express regard to the particular circumstances of each case, and the application of this policy document in each case.

Policy documents are reviewed from time to time, and it is the responsibility of the practitioner to ensure that the practitioner has obtained the current version. Policy documents have been prepared having regard to the information available at the time of their preparation, and the practitioner should therefore have regard to any information, research or material which may have been published or become available subsequently.

Whilst the College endeavours to ensure that policy documents are as current as possible at the time of their preparation, it takes no responsibility for matters arising from changed circumstances or information or material which may have become available subsequently.

Promulgated: 1994
Date of current document: October 1994

Review T1 (1994)

RECOMMENDED MINIMUM FACILITIES FOR SAFE ANAESTHETIC PRACTICE IN OPERATING SUITES

The safe provision of anaesthesia requires appropriate staff, facilities and equipment for proper patient safety. These are specified in this Document.

1. PRINCIPLES OF ANAESTHETIC CARE

1.1 Anaesthesia should be administered only by medical practitioners with appropriate training in anaesthesia or by trainees supervised according to College Policy Documents "The Supervision of Trainees in Anaesthesia" (E3) and "Privileges in Anaesthesia" (P2).

1.2 Every patient presenting for anaesthesia should have a pre-anaesthetic consultation by a medical practitioner who has appropriate training in anaesthesia. See College Policy Document "Pre-anaesthetic Consultation" (P7).

1.3 Appropriate monitoring of physiological variables must occur during anaesthesia. See College Policy Document "Monitoring During Anaesthesia" (P18).

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 to the anaesthetist. See College Policy Document "Minimum Assistance for the Safe Conduct of Anaesthesia" (P8).

2.1.2 Adequate assistance in positioning the patient.

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

3. OPERATING SUITES

3.1 ***Anaesthetic 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 to 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 anaesthetic 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 anaesthetic equipment.

3.1.3 There must be an anaesthetic machine for each anaesthetising location which is capable of delivering oxygen and nitrous oxide as well as other anaesthetic agents which are in common use. Essential equipment includes:

3.1.3.1 Suitable calibrated vaporisers for the delivery of inhalational anaesthetic agents.

3.1.3.2 A range of suitable breathing systems.

3.1.3.3 Breathing systems suitable for paediatric use if children are to be anaesthetised.

3.1.3.4 Medical air where this is clinically necessary.

3.1.4 Safety devices which must be present on every machine 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 Policy Document "Monitoring During Anaesthesia" P18).

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 Policy Document "Monitoring During Anaesthesia" P18).

3.1.4.6 Every anaesthetic machine purchased after 1 January 1996 shall have a device to prevent the supply of a hypoxic gas mixture whenever nitrous oxide is administered.

3.1.4.7 Every anaesthetic machine purchased after 1 January 1996 shall have an approved screw connection for the common gas outlet whenever a circle system is in use.

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 requirements of the relevant national Standards. Its oxygen supply should be independent of the anaesthetic machine.

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 requirements of the 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 shall include disposable gloves and eye shields.

3.1.7.2 A stethoscope

3.1.7.3 A sphygmomanometer

3.1.7.4 Monitoring equipment complying with College Policy Document "Monitoring During Anaesthesia" (P18).

Special problems are encountered in magnetic resonance imaging facilities (see College Policy Document "Recommended Minimum Facilities for Safe Anaesthetic Practice in Organ Imaging Units" T3).

3.1.7.5 An appropriate range of face masks.

3.1.7.6 An appropriate range of oropharyngeal, nasopharyngeal and laryngeal mask 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.

3.1.7.10 Inflating syringe and clamps.

3.1.7.11 Magill's forceps.

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 Vascular tourniquets.

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 as well as of "sharps" and waste glass.

3.1.7.18 Equipment suitable for the establishment of sub-arachnoid, epidural or regional nerve blocks.

3.1.8 In each anaesthetising location there should be available:

3.1.8.1 Equipment for managing difficult intubations.

3.1.8.2 Equipment for automatic ventilation of the lungs incorporating alarms as specified in College Policy Document "Monitoring During Anaesthesia" P18.

3.1.8.3 Equipment for the direct measurement of arterial and venous pressures.

3.1.8.4 Equipment for the rapid infusion of fluids.

3.1.8.5 Equipment to minimise patient heat loss by warming of infused fluids and the body surface.

3.1.8.6 Equipment to warm and humidify gases administered during anaesthesia.

3.1.8.7 Provision for scavenging of anaesthetic gases and vapours with interface equipment which precludes over-pressurisation of the anaesthesia breathing circuit.

3.1.8.8 Interpleural drainage sets.

3.1.8.9 A cardiac defibrillator with capacity for synchronised cardioversion.

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 requirements of the relevant national Standards.

3.1.9.2 Emergency lighting.

3.1.9.3 Telephone/Intercom to communicate with persons outside the anaesthetising location.

3.1.9.4 Refrigeration facilities for the storage of 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 Policy Document "Guidelines for the Care of Patients Recovering from Anaesthesia" (P4).

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:

Anaphylaxis
Cardiac arrhythmias
Cardiac arrest
Pulmonary oedema
Hypotension
Hypertension
Bronchospasm
Respiratory depression
Hypoglycaemia
Hyperglycaemia
Adrenal dysfunction
Raised intracranial pressure
Uterine atony
Blood coagulopathy
Malignant hyperpyrexia

3.2.2 In making an appropriate selection of drugs 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 these drugs after use and/or their expiry date has been reached.

3.2.4 A basic supply of dantrolene should be rapidly available to all anaesthetising locations with further doses being 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 anaesthetic machine 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 Policy Document "Protocol for Checking an Anaesthetic Machine Before Use" (T2) or a similar document should be available on each anaesthetic machine.

3.4 ***Recovery Area***

3.4.1 Recovery from anaesthesia should take place under appropriate supervision in a designated area which conforms with College Policy Document "Guidelines for the Care of Patients Recovering from Anaesthesia" (P4).

3.4.2 Contingency plans should exist which would allow rapid patient transfer in an emergency from the operating suite or recovery areas under adequate medical supervision.

This policy document has been prepared having regard to general circumstances, and it is the responsibility of the practitioner to have express regard to the particular circumstances of each case, and the application of this policy document in each case.

Policy documents are reviewed from time to time, and it is the responsibility of the practitioner to ensure that the practitioner has obtained the current version. Policy documents have been prepared having regard to the information available at the time of their preparation, and the practitioner should therefore have regard to any information, research or material which may have been published or become available subsequently.

Whilst the College endeavours to ensure that policy documents are as current as possible at the time of their preparation, it takes no responsibility for matters arising from changed circumstances or information or material which may have become available subsequently.

Promulgated: 1989
Reviewed: 1994
Date of current document: Oct 1994

Review T3 (1994)

RECOMMENDED MINIMUM FACILITIES FOR SAFE ANAESTHETIC PRACTICE IN ORGAN IMAGING FACILITIES

The safe provision of anaesthesia requires appropriate staff, facilities and equipment for proper patient safety. These are specified in this Document.

1. PRINCIPLES OF ANAESTHETIC CARE

1.1 Anaesthesia should be administered only by medical practitioners with appropriate training in anaesthesia or by trainees supervised according to College Policy Documents "The Supervision of Trainees in Anaesthesia" (E3) and "Privileges in Anaesthesia" (P2).

1.2 Every patient presenting for anaesthesia should have a pre-anaesthetic consultation by a medical practitioner who has appropriate training in anaesthesia. See College Policy Document "Pre-anaesthetic Consultation" (P7).

1.3 Appropriate monitoring of physiological variables must occur during anaesthesia. See College Policy Document "Monitoring During Anaesthesia" (P18).

2. STAFFING

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

2.1.1 An assistant to the anaesthetist. See College Policy Document "Minimum Assistance for the Safe Conduct of Anaesthesia" (P8).

2.1.2 Adequate assistance in positioning the patient.

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

3. ORGAN IMAGING UNITS

3.1 ***Anaesthetic 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 to 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 anaesthetic 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 anaesthetic equipment.

3.1.3 There must be an anaesthetic machine for each anaesthetising location which is capable of delivering oxygen and nitrous oxide as well as other anaesthetic agents which are in common use. Essential equipment includes:

3.1.3.1 Suitable calibrated vaporisers for the delivery of inhalational anaesthetic agents.

3.1.3.2 A range of suitable breathing systems. Those for use in magnetic resonance imaging units may require modification to make them suitable for use.

3.1.3.3 Breathing systems suitable for paediatric use if children are to be anaesthetised.

3.1.3.4 Medical air where this is clinically necessary.

3.1.4 Safety devices which must be present on every machine 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 Policy Document "Monitoring During Anaesthesia" P18).

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 Policy Document "Monitoring During Anaesthesia" P18).

3.1.4.6 Every anaesthetic machine purchased after 1 January 1996 shall have a device to prevent the supply of a hypoxic gas mixture whenever nitrous oxide is administered.

3.1.4.7 Every anaesthetic machine purchased after 1 January 1996

shall have an approved screw connection for the common gas outlet whenever a circle system is in use.

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 requirements of the relevant national Standards. Its oxygen supply should be independent of the anaesthetic machine.

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 requirements of the 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 should be:

3.1.7.1 Appropriate protection for the anaesthesia team against biological contaminants. This shall include disposable gloves and eye shields. Protection against ionizing radiation and appropriate monitoring of that radiation is also mandatory.

3.1.7.2 A stethoscope

3.1.7.3 A sphygmomanometer

3.1.7.4 Monitoring equipment complying with College Policy Document "Monitoring During Anaesthesia" (P18).

Although special problems are encountered in magnetic resonance imaging facilities, equipment which allows compliance with College Policy Document P18 "Monitoring During Anaesthesia" is available.

3.1.7.5 An appropriate range of face masks.

3.1.7.6 An appropriate range of oropharyngeal, nasopharyngeal and laryngeal mask 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.

3.1.7.10 Inflating syringe and clamps.

3.1.7.11 Magill's forceps.

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 Vascular tourniquets.

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 as well as of "sharps" and waste glass.

3.1.8 In each anaesthetising location there should be available:

3.1.8.1 Equipment for managing difficult intubations.

3.1.8.2 Equipment for automatic ventilation of the lungs incorporating alarms as specified in College Policy Document "Monitoring During Anaesthesia" (P18).

3.1.8.3 Equipment for the direct measurement of arterial and venous pressures.

3.1.8.4 Equipment for the rapid infusion of fluids.

3.1.8.5 Equipment to minimise patient heat loss by warming of infused fluids and the body surface.

3.1.8.6 Equipment to warm and humidify gases administered during anaesthesia.

3.1.8.7 Provision for scavenging of anaesthetic gases and vapours with interface equipment which precludes over-pressurisation of the anaesthesia breathing circuit.

3.1.8.8 Interpleural drainage sets.

3.1.8.9 Equipment suitable for the establishment of sub-arachnoid, epidural or regional nerve blocks.

3.1.8.10 A cardiac defibrillator with capacity for synchronised cardioversion.

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 requirements of the relevant national Standards.

3.1.9.2 Emergency lighting.

3.1.9.3 Telephone/Intercom to communicate with persons outside the anaesthetising location.

3.1.9.4 Refrigeration facilities for the storage of 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 Policy Document "Guidelines for the Care of Patients Recovering from Anaesthesia" (P4).

3.2 ***Drugs***

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

Anaphylaxis
Cardiac arrhythmias
Cardiac arrest
Pulmonary oedema
Hypotension
Hypertension
Bronchospasm
Respiratory depression
Hypoglycaemia
Hyperglycaemia
Adrenal dysfunction
Raised intracranial pressure
Uterine atony
Blood coagulopathy
Malignant hyperpyrexia

3.2.2 In making an appropriate selection of drugs 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 these drugs after use and/or their expiry date has been reached.

3.2.4 A basic supply of dantrolene should be rapidly available to all anaesthetising locations with further doses being 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 anaesthetic machine 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 Policy Document "Protocol for Checking an Anaesthetic Machine Before Use" (T2) or a similar document should be available on each anaesthetic machine.

3.4 ***Recovery Area***

3.4.1 Recovery from anaesthesia should take place under appropriate supervision in a designated area which conforms with College Policy Document "Guidelines for the Care of Patients Recovering from Anaesthesia" (P4).

3.4.2 Contingency plans should exist which would allow rapid patient transfer in an emergency from the organ imaging or recovery areas under adequate medical supervision.

This policy document has been prepared having regard to general circumstances, and it is the responsibility of the practitioner to have express regard to the particular circumstances of each case, and the application of this policy document in each case.

Policy documents are reviewed from time to time, and it is the responsibility of the practitioner to ensure that the practitioner has obtained the current version. Policy documents have been prepared having regard to the information available at the time of their preparation, and the practitioner should therefore have regard to any information, research or material which may have been published or become available subsequently.

Whilst the College endeavours to ensure that policy documents are as current as possible at the time of their preparation, it takes no responsibility for matters arising from changed circumstances or information or material which may have become available subsequently.

Promulgated: 1989
Reviewed: 1994
Date of current document: Oct 1994

Review T4 (1994)

RECOMMENDED MINIMUM FACILITIES FOR SAFE ANAESTHETIC PRACTICE FOR ELECTRO-CONVULSIVE THERAPY (ECT)

The safe provision of anaesthesia requires appropriate staff, facilities and equipment for proper patient safety. These are specified in this Document.

1. PRINCIPLES OF ANAESTHETIC CARE

1.1 Anaesthesia should be administered only by medical practitioners with appropriate training in anaesthesia or by trainees supervised according to College Policy Documents "The Supervision of Trainees in Anaesthesia" (E3) and "Privileges in Anaesthesia" (P2).

1.2 Every patient presenting for anaesthesia should have a pre-anaesthetic consultation by a medical practitioner who has appropriate training in anaesthesia. See College Policy Document "Pre-anaesthetic Consultation" (P7).

1.3 Appropriate monitoring of physiological variables must occur during anaesthesia. See College Policy Document "Monitoring During Anaesthesia" (P18).

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 to the anaesthetist. See College Policy Document "Minimum Assistance for the Safe Conduct of Anaesthesia" (P8).

2.1.2 Adequate assistance in positioning the patient.

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

3. AREAS IN WHICH ELECTRO-CONVULSIVE THERAPY IS ADMINISTERED

3.1 *Anaesthetic 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 to 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 anaesthetic 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 anaesthetic equipment.

3.1.3 There must be a breathing system capable of delivering up to 100% oxygen for both controlled and spontaneous respiration. Where more than one patient is to be treated, this equipment must be duplicated.

3.1.4 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.

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 requirements of the relevant national Standards. Its oxygen supply should be independent of other devices in use.

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 requirements of the 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 should be:

3.1.7.1 Appropriate protection for the anaesthesia team against biological contaminants. This shall include disposable gloves and eye shields.

3.1.7.2 A stethoscope

3.1.7.3 A sphygmomanometer

3.1.7.4 Monitoring equipment complying with College Policy Document "Monitoring During Anaesthesia" (P18).

3.1.7.5 An appropriate range of face masks.

3.1.7.6 An appropriate range of 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.

3.1.7.10 Inflating syringe and clamps.

3.1.7.11 Magill's forceps.

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 Vascular tourniquets.

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 as well as of "sharps" and waste glass.

3.1.7.18 Provision for scavenging of anaesthetic gases and vapours with interface equipment which precludes over-pressurisation of the anaesthesia breathing circuit.

3.1.7.19 A cardiac defibrillator.

3.1.8 Other requirements for safe anaesthesia include:

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

3.1.8.2 Emergency lighting.

3.1.8.3 Telelphone/Intercom to communicate with persons outside the anaesthetising location.

3.1.8.4 Refrigeration facilities for the storage of drugs and biological products.

3.1.8.5 Patient trolleys or beds as specified in College Policy Document "Guidelines for the Care of Patients Recovering from Anaesthesia" (P4).

3.2 ***Drugs***

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

Anaphylaxis

Cardiac arrhythmias

Cardiac arrest

Pulmonary oedema

Hypotension

Hypertension

Bronchospasm

Hypoglycaemia

Adrenal dysfunction

Malignant hyperpyrexia

3.2.2 In making an appropriate selection of drugs 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 these drugs after use and/or their expiry date has been reached.

3.2.4 A basic supply of dantrolene should be rapidly available to all anaesthetising locations with further doses being 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 anaesthetic equipment 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 Policy Document "Protocol for Checking an Anaesthetic Machine Before Use" (T2) or a similar document should be available on each anaesthetic machine.

3.4 ***Recovery Area***

3.4.1 Recovery from anaesthesia should take place under appropriate supervision in a designated area which conforms with College Policy Document "Guidelines for the Care of Patients Recovering from Anaesthesia" (P4).

3.4.2 Contingency plans should exist which would allow rapid patient transfer in an emergency from the treatment suite or recovery areas under adequate medical supervision.

This policy document has been prepared having regard to general circumstances, and it is the responsibility of the practitioner to have express regard to the particular circumstances of each case, and the application of this policy document in each case.

Policy documents are reviewed from time to time, and it is the responsibility of the practitioner to ensure that the practitioner has obtained the current version. Policy documents have been prepared having regard to the information available at the time of their preparation, and the practitioner should therefore have regard to any information, research or material which may have been published or become available subsequently.

Whilst the College endeavours to ensure that policy documents are as current as possible at the time of their preparation, it takes no responsibility for matters arising from changed circumstances or information or material which may have become available subsequently.

Promulgated: 1989
Reviewed: 1994
Date of current document: Oct 1994

Review T5 (1994)

RECOMMENDED MINIMUM FACILITIES FOR SAFE ANAESTHETIC PRACTICE IN DENTAL SURGERIES

The safe provision of anaesthesia in Dental Surgeries requires appropriate staff, facilities and equipment for proper patient safety. These are specified in this Document.

1. PRINCIPLES OF ANAESTHETIC CARE

1.1 Anaesthesia in Dental Surgeries should be administered only by medical practitioners with appropriate training in anaesthesia or by trainees supervised according to College Policy Documents "The Supervision of Trainees in Anaesthesia" (E3) and "Privileges in Anaesthesia" (P2).

1.2 Every patient presenting for anaesthesia in Dental Surgeries should have a pre-anaesthetic consultation by a medical practitioner who has appropriate training in anaesthesia. College Policy Document "Pre-anaesthetic Consultation" (P7).

1.3 Appropriate monitoring of physiological variables must occur during anaesthesia. College Policy Document "Monitoring During Anaesthesia" (P18).

1.4 On occasion the anaesthetist may decide that the condition of the patient (having regard to the facilities available and/or the patient's health status) does not permit of safe care in the dental surgery.

2. STAFFING

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

2.1.1 An assistant to the anaesthetist. See College Policy Document "Minimum Assistance for the Safe Conduct of Anaesthesia" (P8).

2.1.2 Adequate assistance in positioning the patient.

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

3. DENTAL SURGERIES

3.1 ***Anaesthetic Equipment***

3.1.1 Essential requirements are listed below. Where a range of equipment is available, the dental surgery is expected to provide the type most suitable to its needs.

3.1.2 Anaesthetic equipment, agents and drugs in dental surgeries may be provided by the dentist or brought by the anaesthetist to the dental surgery. In the former case, it is essential that the dentist seek advice from an anaesthetist who is experienced in anaesthesia in the dental environment.

3.1.3 There must be an anaesthetic machine for each anaesthetising location which is capable of delivering oxygen and nitrous oxide as well as other anaesthetic agents which are in common use. Essential equipment includes:

3.1.3.1 Suitable calibrated vaporisers for the delivery of inhalational anaesthetic agents.

3.1.3.2 A range of suitable breathing systems.

3.1.3.3 Breathing systems suitable for paediatric use if children are to be anaesthetised.

3.1.4 Safety devices which must be present on every machine 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 Policy Document "Monitoring During Anaesthesia" (P18).

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 Policy Document "Monitoring During Anaesthesia" (P18).

3.1.4.6 Every anaesthetic machine purchased after 1 January 1996 shall have a device to prevent the supply of a hypoxic gas mixture whenever nitrous oxide is administered.

3.1.4.7 Every anaesthetic machine purchased after 1 January 1996 shall have an approved screw connection for the common gas outlet whenever a circle system is in use.

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 requirements of the relevant national Standards. Its oxygen supply should be independent of the anaesthetic machine.

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 requirements of the 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 should be:

3.1.7.1 Appropriate protection for the anaesthesia team against biological contaminants which shall include disposable gloves and eye shields.

3.1.7.2 A stethoscope

3.1.7.3 A sphygmomanometer

3.1.7.4 Monitoring equipment complying with College Policy Document "Monitoring During Anaesthesia" (P18).

3.1.7.5 An appropriate range of face masks.

3.1.7.6 An appropriate range of 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.

3.1.7.10 Inflating syringe and clamps.

3.1.7.11 Magill's forceps.

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 Vascular tourniquets.

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 as well as of "sharps" and waste glass.

3.1.7.18 Equipment suitable for the establishment of regional anaesthetic nerve blocks.

3.1.7.19 Throat packs.

3.1.7.20 Provision for scavenging of anaesthetic gases and vapours with interface equipment which precludes over-pressurisation of the anaesthesia breathing circuit.

3.1.7.21 A cardiac defibrillator.

3.1.8 Other requirements for safe anaesthesia include:

3.1.8.1 Appropriate lighting for the clinical observation of patients which comply with the current requirements of the relevant national Standards.

3.1.8.2 Emergency lighting.

3.1.8.3 Telephone/Intercom to communicate with persons outside the anaesthetising location.

3.1.8.4 Refrigeration facilities for the storage of drugs and biological products.

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

3.1.8.6 A dental operating chair which will allow the patient to be rapidly placed in the horizontal or head-down position.

3.2 ***Drugs***

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

Anaphylaxis
Cardiac arrhythmias
Cardiac arrest
Pulmonary oedema
Hypotension
Hypertension
Bronchospasm
Respiratory depression
Hypoglycaemia
Hyperglycaemia
Adrenal dysfunction
Malignant hyperpyrexia
Blood coagulopathy

3.2.2 In ensuring the availability of drugs for the treatment of these conditions, the processes outlined in 3.1.2 should be followed.

3.2.3 Appropriate mechanisms must exist for the regular replacement of these drugs after use and/or their expiry date has been reached.

3.2.4 Dantrolene (used in the management of malignant hyperpyrexia) should be rapidly available from a nearby hospital which holds adequate supplies of this drug.

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 anaesthetic machine 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 Policy Document "Protocol for Checking an Anaesthetic Machine Before Use" (T2) or a similar document should be available on each anaesthetic machine.

3.4 ***Recovery Area***

3.4.1 Recovery from anaesthesia should take place under appropriate supervision in a designated area which conforms with College Policy Document "Guidelines for the Care of Patients Recovering from Anaesthesia" (P4).

3.4.2 Contingency plans should exist which would allow rapid patient transfer in an emergency from the dental surgery to hospital care under adequate medical supervision.

This policy document has been prepared having regard to general circumstances, and it is the responsibility of the practitioner to have express regard to the particular circumstances of each case, and the application of this policy document in each case.

Policy documents are reviewed from time to time, and it is the responsibility of the practitioner to ensure that the practitioner has obtained the current version. Policy documents have been prepared having regard to the information available at the time of their preparation, and the practitioner should therefore have regard to any information, research or material which may have been published or become available subsequently.

Whilst the College endeavours to ensure that policy documents are as current as possible at the time of their preparation, it takes no responsibility for matters arising from changed circumstances or information or material which may have become available subsequently.

Promulgated: 1989
Reviewed: 1994
Date of current document: Oct 1994

Review T6 (1994)

RECOMMENDED MINIMUM FACILITIES FOR SAFE ANAESTHETIC PRACTICE IN DELIVERY SUITES

The safe provision of anaesthesia requires appropriate staff, facilities and equipment for proper patient safety. These are specified in this Document.

1. PRINCIPLES OF ANAESTHETIC CARE

1.1 Anaesthesia should be administered only by medical practitioners with appropriate training in anaesthesia or by trainees supervised according to College Policy Documents "The Supervision of Trainees in Anaesthesia" (E3) and "Privileges in Anaesthesia" (P2).

1.2 Every patient presenting for anaesthesia should have a pre-anaesthetic consultation by a medical practitioner who has appropriate training in anaesthesia. See College Policy Document "Pre-anaesthetic Consultation" (P7).

1.3 Appropriate monitoring of physiological variables must occur during anaesthesia. See College Policy Document "Monitoring During Anaesthesia" (P18).

2. STAFFING

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

2.1.1 An assistant to the anaesthetist. See College Policy Document "Minimum Assistance for the Safe Conduct of Anaesthesia" (P8).

For the establishment and management of epidural blockade for analgesia in labour, the presence of a midwife trained and competent in obstetric epidural management is required.

2.1.2 Adequate assistance in positioning the patient.

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

2.1.4 At the time of delivery, there must be a medical practitioner with appropriate training in the resuscitation and care of the neonate with sole responsibility for that task.

3. DELIVERY SUITES

3.1 ***Anaesthetic Equipment***

3.1.1 Where general anaesthesia, sedation or major regional blockade are utilised, equipment must comply with the requirements set out below as well as with College Policy Document "Sedation for Diagnostic and Minor Surgical Procedures" (P9).

Where a range of equipment is recommended, the hospital is expected to provide the type most suitable to its needs. Where patients are transferred to another facility for operative delivery, anaesthetic and resuscitative equipment is still essential for the management of complications of epidural and other major regional blockade.

3.1.2 Each hospital must designate:

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

3.1.3 There must be an anaesthetic machine for each anaesthetising location which is capable of delivering oxygen and nitrous oxide as well as other anaesthetic agents which are in common use. Essential equipment includes:

3.1.3.1 Suitable calibrated vaporisers for the delivery of inhalational anaesthetic agents.

3.1.3.2 A range of suitable breathing systems.

3.1.3.3 Medical air where this is clinically necessary.

3.1.4 Safety devices which must be present on every machine 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 Policy Document "Monitoring During Anaesthesia" (P18).

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 Policy Document "Monitoring During Anaesthesia" (P18).

3.1.4.6 Every anaesthetic machine purchased after 1 January 1996 shall have a device to prevent the supply of a hypoxic gas mixture whenever nitrous oxide is administered.

3.1.4.7 Every anaesthetic machine purchased after 1 January 1996 shall have an approved screw connection for the common gas outlet whenever a circle system is in use.

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 requirements of the relevant national Standards. Its oxygen supply should be independent of the anaesthetic machine.

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 requirements of the 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 should be:

3.1.7.1 Appropriate protection for the anaesthesia team against biological contaminants. This shall include disposable gloves and eye shields.

3.1.7.2 A stethoscope

3.1.7.3 A sphygmomanometer

3.1.7.4 Monitoring equipment complying with College Policy Document "Monitoring During Anaesthesia" (P18).

3.1.7.5 An appropriate range of face masks.

3.1.7.6 An appropriate range of oropharyngeal, nasopharyngeal and laryngeal mask 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.

3.1.7.10 Inflating syringe and clamps.

3.1.7.11 Magill's forceps.

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 Vascular tourniquets.

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 as well as of "sharps" and waste glass.

3.1.7.18 Equipment suitable for the establishment of sub-arachnoid, epidural or regional nerve blocks.

3.1.7.19 Provision for scavenging of anaesthetic gases and vapours with interface equipment which precludes over-pressurisation of the anaesthesia breathing circuit.

3.1.7.20 A cardiac defibrillator with capacity for synchronised cardioversion.

3.1.8 In every anaesthetising location there should be available:

3.1.8.1 Equipment for managing difficult intubations.

3.1.8.2 Equipment for automatic ventilation of the lungs incorporating alarms as specified in College Policy Document "Monitoring During Anaesthesia" (P18).

3.1.8.3 Equipment for the direct measurement of arterial and venous pressures.

3.1.8.4 Equipment for the rapid infusion of fluids.

3.1.8.5 Equipment to minimise patient heat loss by warming of infused fluids and the body surface.

3.1.8.6 Equipment to warm and humidify gases administered during anaesthesia.

3.1.8.7 Interpleural drainage sets.

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 requirements of the relevant national Standards.

3.1.9.2 Emergency lighting.

3.1.9.3 Telephone/Intercom to communicate with persons outside the anaesthetising location.

3.1.9.4 Refrigeration facilities for the storage of 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 Policy Document "Guidelines for the Care of Patients Recovering from Anaesthesia" (P4).

3.1.10 In each delivery room there must be:

3.1.10.1 Apparatus for the administration of inhalational analgesia with a minimum of 30% oxygen.

3.1.10.2 Suction apparatus for the exclusive use of the anaesthetist which is separate from that required for the resuscitation of the neonate.

3.1.10.3 Separate oxygen outlets and suitable attachments for administering oxygen to the mother and to the neonate.

3.2 ***Drugs***

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

Anaphylaxis
Cardiac arrhythmias
Cardiac arrest
Pulmonary oedema
Hypotension
Hypertension
Bronchospasm
Respiratory depression
Hypoglycaemia
Hyperglycaemia
Adrenal dysfunction
Raised intracranial pressure
Uterine atony
Blood coagulopathy
Malignant hyperpyrexia

3.2.2 In making an appropriate selection of drugs 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 these drugs after use and/or their expiry date has been reached.

3.2.4 A basic supply of dantrolene should be rapidly available to all anaesthetising locations with further doses being 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 anaesthetic machine 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 Policy Document "Protocol for Checking an Anaesthetic Machine Before Use" (T2) or a similar document should be available on each anaesthetic machine.

3.4 ***Recovery Area***

3.4.1 Recovery from anaesthesia should take place under appropriate supervision in a designated area which conforms with College Policy Document "Guidelines for the Care of Patients Recovering from Anaesthesia" (P4).

3.4.2 Contingency plans should exist which would allow rapid patient transfer in an emergency from the delivery suite or recovery areas to another appropriate area under adequate medical supervision.

3.5 ***Neonatal Resuscitation Equipment***

3.5.1 A suitable range of equipment must be available for:

3.5.1.1 Administration of oxygen to the neonate.

3.5.1.2 Intubation and ventilation of the neonate.

3.5.1.3 Clearing of the airway of the neonate.

3.5.1.4 Administration of intravenous fluids and drugs.

3.5.1.5 Maintenance of the neonate's temperature.

3.5.2 An appropriate range of drugs must be available.

3.5.3 It is recommended that each hospital designate:

3.5.3.1 One (or more) medical practitioners with appropriate training and qualifications to advise on the choice and maintenance of equipment and drugs required for the resuscitation and care of the neonate.

3.5.3.2 One or more of its nursing or technical staff to be responsible for the organisation of cleaning, servicing and maintenance of this equipment.

This policy document has been prepared having regard to general circumstances, and it is the responsibility of the practitioner to have express regard to the particular circumstances of each case, and the application of this policy document in each case.

Policy documents are reviewed from time to time, and it is the responsibility of the practitioner to ensure that the practitioner has obtained the current version. Policy documents have been prepared having regard to the information available at the time of their preparation, and the practitioner should therefore have regard to any information, research or material which may have been published or become available subsequently.

Whilst the College endeavours to ensure that policy documents are as current as possible at the time of their preparation, it takes no responsibility for matters arising from changed circumstances or information or material which may have become available subsequently.

Promulgated: 1989
Reviewed: 1994
Date of current document: Oct 1994

POLICY DOCUMENTS

E = educational. P = professional. T = technical. EX = examinations. IC = Intensive Care.

E1 (1991) Guidelines for Hospitals Seeking Faculty Approval of Training Posts in Anaesthesia
E3 (1994) The Supervision of Trainees in Anaesthesia
E4 (1992) Duties of Regional Education Officers
E5 (1992) Supervisors of Training in Anaesthesia and Intensive Care
E6 (1990) The Duties of an Anaesthetist
E7 (1994) Secretarial Services to Departments of Anaesthesia
E9 (1993) Quality Assurance
E11 (1992) Formal Project
E13 (1991) Guidelines for the Provisional Fellowship Year
E14 (1994) Guidelines for the In-Training Assessment of Trainees in Anaesthesia
EX1 (1991) Guidelines for Examiners with Respect to Candidates Suffering Illness (or Accident) at the Time of Examination
T1 (1994) Recommended Minimum Facilities for Safe Anaesthetic Practice in Operating Suites
T2 (1990) Protocol for Checking an Anaesthetic Machine Before Use
T3 (1994) Recommended Minimum Facilities for Safe Anaesthetic Practice in Organ Imaging Units
T4 (1994) Recommended Minimum Facilities for Safe Anaesthetic Practice for Electro-Convulsive Therapy (ECT)
T5 (1994) Recommended Minimum Facilities for Safe Anaesthetic Practice in Dental Surgeries
T6 (1994) Recommended Minimum Facilities for Safe Anaesthetic Practice in Delivery Suites
P1 (1991) Essential Training for General Practitioners Proposing to Administer Anaesthetics
P2 (1991) Privileges in Anaesthesia Faculty Policy
P3 (1993) Major Regional Anaesthesia
P4 (1989) Guidelines for the Care of Patients Recovering from Anaesthesia
P5 (1991) Statement on Principles for the Care of Patients who are given Drugs Specifically to produce Coma
P6 (1990) Minimum Requirements for the Anaesthetic Record
P7 (1992) The Pre-Anaesthetic Consultation
P8 (1993) Minimum Assistance Required for the Safe Conduct of Anaesthesia
P9 (1991) Sedation for Diagnostic and Minor Surgical Procedures
P10 (1994) The Handover of Responsibility During an Anaesthetic
P11 (1991) Management of Cardiopulmonary Bypass
P12 (1991) Statement on Smoking
P13 (1992) Protocol for The Use of Autologous Blood
P14 (1993) Guidelines for the Conduct of Epidural Analgesia in Obstetrics
P15 (1992) Guidelines for the Care of Patients Recovering from Anaesthesia Related to Day Surgery
P16 (1994) The Standards of Practice of a Specialist Anaesthetist
P17 (1992) Endoscopy of the Airways
P18 (1990) Monitoring During Anaesthesia
P19 (1990) Monitored Care by an Anaesthetist
P20 (1990) Responsibilities of Anaesthetists in the Post-Operative Period
P21 (1992) Sedation for Dental Procedures
P22 (1990) Statement on Patients' Rights and Responsibilities
P23 (1992) Minimum Standards for Transport of the Critically Ill
P24 (1992) Sedation for Endoscopy
P25 (1993) Minimum Standards for Pain Management Units
P26 (1994) Guidelines on Providing Information About Anaesthesia
P27 (1994) Standards of Practice for Major Extracorporeal Perfusion
IC-1 (1994) Minimum Standards for Intensive Care Units
IC-2 (1994) The Duties of an Intensive Care Specialist in Hospitals with Approved Training Posts
IC-3 (1994) Guidelines for Hospitals Seeking Faculty Approval of Training Posts in Intensive Care
IC-4 (1994) The Supervision of Vocational Trainees in Intensive Care
IC-5 (1994) Duties of Regional Education Officers in Intensive Care
IC-6 (1994) Supervisors of Training in Intensive Care
IC-7 (1994) Secretarial Services to Intensive Care Units

November 1994