

回顧與前瞻：香港麻醉一百二十五年

125

Years of Anaesthesia in Hong Kong

P A S T , P R E S E N T A N D F U T U R E



to Hong Kong Anaesthesiologists...
Dedicated





The mace of the Hong Kong College of Anaesthesiologists.
This mace was crafted in Sri Lanka according to instructions kindly provided by Dr Chandra Rodrigo.

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Hong Kong Academy of Medicine Press

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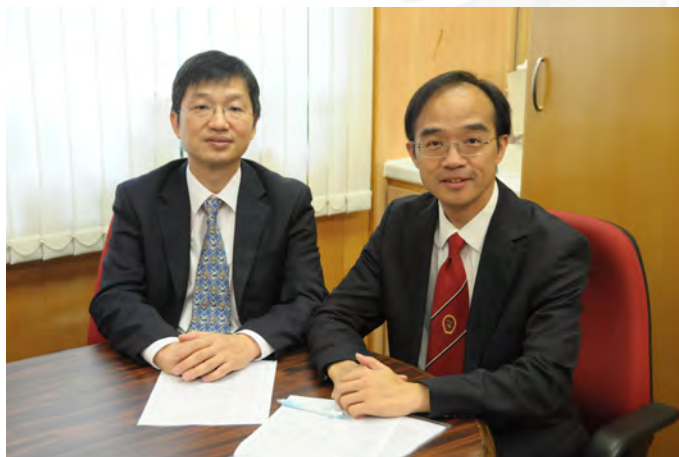
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P R E F A C E

One of the main differences between conventional and ‘alternative’ medicine is the use of surgery in conventional medicine. Anaesthesia is a prerequisite of this, making successful surgery possible. Since the first public demonstration of ether anaesthesia on 16 October 1846 at Massachusetts General Hospital, significant changes have taken place, not only in the nature of anaesthetic drugs, but also in the field of anaesthesiology.

The first anaesthetist, William Morton, was an American dentist, whilst his European counterpart, William Squires, who administered the first anaesthesia in London on 21 December 1846, was only a medical student. In contrast, today’s anaesthetists in most countries are now specialist medical doctors who have undergone rigorous training programmes. Anaesthesia colleges have been founded in most countries to supervise training and safeguard standards of practice in this vital specialty.

Anaesthesia practice in Hong Kong has a history of more than 125 years. The first documented surgical operation in Hong Kong with the use of chloroform was carried out by Dr W.A. Harland in 1848; whilst Dr J.M. Atkinson, the Superintendent of the Government Hospital, provided



the earliest official reference to surgery and anaesthesia in Hong Kong in 1889. Since then, the development of anaesthesiology in Hong Kong has followed a pathway similar to many other developed countries. The founding of the Society of Anaesthetists of Hong Kong in 1954 by Dr Z. Lett and Dr H.P.L. Ozorio paved the way for the formation of the Hong Kong College of Anaesthesiologists in 1989. The anaesthesiology training programme in Hong Kong has since been implemented successfully with an increasing number of specialist anaesthesiologists produced each year. Until the 1990s, anaesthetists in Hong Kong had to be recruited from overseas as there was only a handful of trainees willing to join the training programme. However, over the last decade anaesthesiology has become one of the most popular specialties among medical graduates. The role of the anaesthesiologist now extends beyond the operating theatre to provide expertise in Intensive Care Medicine, Pain Medicine, Peri-operative Medicine, and sedation for many procedures. These changes have been brought about by a number of important people and key events. We have, therefore, invited our contributors to highlight the history of its development, outline our current status, and to envision the future of anaesthesiology in Hong Kong.

This commemorative volume is dedicated to Dr Zoltan Lett in recognition of what he has done and achieved for anaesthesiology in Hong Kong. Dr Lett should undoubtedly be honoured as the *Father of Anaesthesia in Hong Kong*.

A handwritten signature in black ink, appearing to be 'Simon Chan'.

Simon Chan

A handwritten signature in black ink, appearing to be 'Steven Wong'.

Steven Wong

Co-Chief Editors

MESSAGE FROM THE PRESIDENTS

This year we celebrate the 60th and 25th Anniversaries of our Society and College respectively. Other than being milestones of development, anniversaries are occasions for us to reflect on the past. As the Spanish philosopher George Santayana said: “Those who do not remember the past are condemned to repeat it”, and so this is also an opportunity for us to try to envisage the future and see how we can improve on our work.

Surgical anaesthesia is often included as one of the top ten scientific discoveries of all time. Other examples quoted include DNA, electricity, penicillin, fire, and mathematics. Anaesthesia was a truly remarkable advance, allowing complete relief of human pain and suffering in addition to facilitating increasingly complex surgery for the restoration of health. Without anaesthesia, it is fair to say, surgery could not be performed as we now know it. And not only this; the expansion of anaesthesia into intensive care, pain management, and peri-operative medicine has made a tremendous difference to morbidity and mortality. The administration of such powerful drugs and techniques, unfortunately, is inherently very dangerous, which is why so much

effort is put into training specialist doctors in this field, an endeavour that has paid off as this is the only specialty in health care to have reached the critical target of a Six Sigma defect rate.

This book describes the history of our anaesthesiology community in Hong Kong, consisting firstly of the Society of Anaesthetists of Hong Kong and, subsequently, the Hong Kong College of Anaesthesiologists. Founded in 1954, the Society of Anaesthetists of Hong Kong was one of the earliest Hong Kong medical societies. At the time, the Society was a platform enabling anaesthesiologists in Hong Kong to collectively strive for the highest level of professionalism for the welfare of the public. In 1989, the Society facilitated the establishment of our College, the sole body governing the standard of training and assessment of specialist anaesthetists as well as continuing medical education and professional development. The number of specialists has increased more than three-fold to over 400 fellows since the foundation of the College.

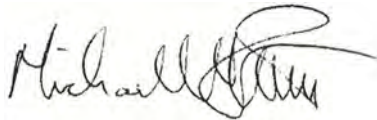
The robust system and framework of training, education, and assessment of anaesthesiologists by our College, on top of the advancement of technology and pharmacology, is imperative to safeguard the standard of anaesthesia delivery in Hong Kong. Our peri-operative mortality rate is among the lowest in the world.

The development of anaesthesia in Hong Kong over the last century is on par with most other economically developed countries, although we still have a significant shortage of specialists in comparison with them. Our contribution to medicine has extended into a range of areas beyond surgical anaesthesia, including intensive care, pain medicine, resuscitation, transfusion, trauma care, sedation, simulation and medical education, and patient safety, as well as operation-room, hospital, and health-care management.

As we celebrate our success, we should not be complacent in the face of future challenges and opportunities. Peri-operative care is often variable, fragmented, and underfunded. Awareness needs to be raised as to the importance of our work in reducing peri-operative morbidity and mortality and more effort put into a comprehensive and integrated approach to the management of surgical patients under the stewardship of anaesthesiologists. The creation of a 'Peri-operative Surgical Home' is an example of what

would be in our patient's best interests advocated by the American Society of Anesthesiologists.

Finally, we would like to acknowledge and thank our colleagues, friends, distinguished partners, and affiliates who kindly share their words of wisdom and memorable photographs with us in this volume. All credit should be attributed to the numerous authors and editors, while we take full responsibility for any omissions or errors.



Michael G. Irwin

President

*The Society of Anaesthetists
of Hong Kong*



Chow Yu-fat

President

*The Hong Kong College
of Anaesthesiologists*

August 2014

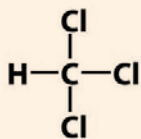


1887

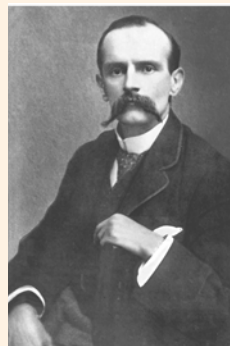
Medical Education begins with establishment of the College of Medicine for the Chinese

1892

First documented use of chloroform in anaesthesia



Chloroform



1908

Frederick Lugard (Governor of Hong Kong, 1907–12) proposed to set up a university, adding that the College of Medicine would become the medical department of the new university



1937

Queen Mary Hospital (QMH) becomes the teaching hospital of the University of Hong Kong (HKU)



1937

Japanese start war in China; influx of Mainland immigrants doubles Hong Kong's population to 1.6 million

AN ANAESTHESIA ODYSSEY IN HONG KONG

1880–1920 AT THE CROSSROADS

1921–1945 NEW FRONTIERS

1889

Earliest surgery and anaesthesia documented by Dr J.M. Atkinson in Government Civil Hospital in Hong Kong



1894

Tai Ping Shan area cleansed due to plague (Black Death). During the period 1894–1923, some 21,867 cases reported with 20,489 deaths (94% mortality)

1910-39

Chloroform and ether used with open-drop face mask for general anaesthesia; surgeons also involved in providing spinal anaesthesia

1920

Dr Li Shu-Fan develops a compound of Novocain and caffeine for spinal anaesthesia

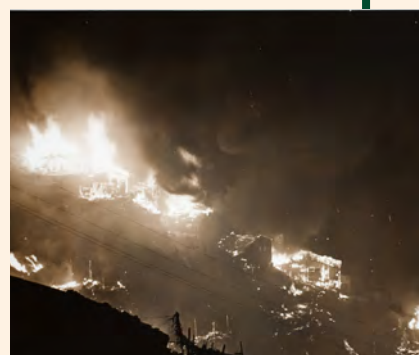
1939

Dr H.P.L. Ozorio initiates early training of anaesthesia at HKU



1953

Fire devastates the Shek Kip Mei squatter area, rendering thousands homeless



1901

Cocaine was commonly used as a local anaesthetic agent for ophthalmic surgery

1960s

- Some orthopaedic surgeons still performing spinal anaesthesia or using Bier's Block to cope with shortage of anaesthetists
- Ventilator introduced for controlled ventilation, replacing bag-squeezing by anaesthetists

1958

First full-time cardiac anaesthetist, Dr Nancy Butt, appointed to Grantham Hospital in 1958

1960s–1970s

Local senior trainees sent to UK during final training year to sit fellowship examination of the Faculty of Anaesthetists of Royal College of Surgeons of England (FARCS)



1967

Intensive Care Unit first developed at Kwong Wah Hospital and Alice Ho Miu Ling Nethersole Hospital

1970s

- ECG and NIBP monitors introduced in Hong Kong
- QMH initiates post-operative recovery room service

1975

Since the end of the Vietnam War in 1975, Hong Kong, along with other South-east Asian countries, agrees to act as port of first asylum for political refugees fleeing Vietnam

1972

SAHK organizes both Pre-Post World Congress Scientific and Social Meetings of Anaesthesiologists

ERS 1960 CHALLENGING THE STATUS QUO 1961–1980

1954

- Dr Zoltan Lett invited from the UK by Hong Kong Government as first Specialist Anaesthetist
- The Society of Anaesthetists of Hong Kong (SAHK) established as the first medical specialist society registered with the Hong Kong Registrar of Societies. The first chairman was Dr H.P.L. Ozorio
- Anaesthesia for cardiac surgery in Hong Kong commences. Early operations performed at QMH and old Kowloon Hospital



1963

Serious water shortages during 1963–4, when water was delivered only every four days for four hours each time

1969

First primary examination takes place in Hong Kong under the Faculty of Anaesthetists of Royal Australasian College of Surgeons (FARACS), now Australian and New Zealand College of Anaesthetists (ANZCA)

1976

SAHK and the Hong Kong Oxygen & Acetylene Co., Ltd establish an Education Foundation to sponsor tutorial courses

1978

Introduction of coaxial scavenging system and flexible fibre-optic bronchoscope for difficult airways





1991

First pain-management team formed at QMH

1992

- HKCA becomes one of the founding colleges of the Hong Kong Academy of Medicine (HKAM)
- Professor William Ben Runciman admitted as first Honorary Fellow of HKCA



1983

- Oxygen monitoring launched in operating theatres
- Department of Anaesthesia established at Prince of Wales Hospital and incorporated into the academic unit of the Faculty of Medicine of the Chinese University of Hong Kong
- The Australian College of Surgeons and its Faculty of Anaesthetists holds its Annual General Scientific Meeting in Hong Kong

1980s

Routine pre-anaesthetic assessment commences at QMH. High-frequency jet ventilation now used

1990s

Routine use of end-tidal carbon dioxide and gas monitoring. Basic science and clinical anaesthesia refresher course first organized by HKCA

1995

First Final Fellowship Examination in Anaesthesiology

1996

- Continuing medical education (CME) programme of the HKCA becomes mandatory
- Annual Scientific Meeting held jointly by HKCA and SAHK and every year since

EXPANDING THE BOUNDARIES 1981-2000

1986

SAHK organizes the 7th Asian-Australasian Congress of Anaesthesiologists

1989

SAHK sponsors the formation of the Hong Kong College of Anaesthesiologists (HKCA) and training programme is established. HKCA grants fellowships *ad eundem* from 1989 and by examination in 1995



1982

First epidural analgesia service for labour pain initiates at Tsan Yuk Hospital



1990

Inauguration of the Hospital Authority



1994

- SAHK initiates collaboration with Chinese Society of Anesthesiology (CSA) for attendances and exchanges with Mainland counterparts in Guangzhou, Shanghai and Beijing
- First Intermediate Fellowship Examination in Anaesthesiology
- Professor M.D. Vickers admitted as Honorary Fellow of HKCA

1997

- The Intensive Care Fellowships granted *ad eundem* in 1996 and by examination in 1997
- Diploma in Pain Management granted *ad eundem* in 1997 and by examination in 1999
- Professor G.D. Phillips admitted as Honorary Fellow of HKCA

HKSAR established on 1 July

2014

- Fellowship in Pain Medicine training commences
- International Scientific Meeting in Anaesthesiology co-organized by HKCA, SAHK, Royal College of Anaesthetists and the College of Anaesthetists of Ireland. The meeting also marks the 25th Anniversary of HKCA, the 60th Anniversary of SAHK and the incorporation of the 4th Cross Strait Four Region Anaesthesia Quality Meeting



2001

- Institute of Clinical Simulation set up in North District Hospital
- First Combined Scientific Meeting co-organized by HKCA and ANZCA held in Hong Kong
- Professor Peter Kam admitted as Honorary Fellow of HKCA

2005

Professor Teik Oh admitted as Honorary Fellow of HKCA

2006

Hong Kong Pain Society (HKPS) established



Hotel staff and guests wave from inside Hong Kong Metropark Hotel, under swine flu quarantine

2009

Flu epidemic

2001-2014 NEW MILLENNIUM

2003

SARS outbreak: 1,775 infected; 299 died of the disease



2009

HKPS achieves Chapter Status of the International Association for the Study of Pain

2002

Revision tutorial on basic science and clinical anaesthesia delivered by Professor Peter Kam every year



2011

- HKAM Council approves establishment of the Fellowship in Pain Medicine
- Second Combined Scientific Meeting co-organized by HKCA and ANZCA held in Hong Kong. A satellite meeting held in Shanghai by CSA and Shanghai Society of Anesthesiologists
- Dr Zoltan Lett admitted as Honorary Fellow of HKCA



2013

HKCA sets up ECHO Steering Committee with members subsidized to attend the ECHO Hong Kong meeting at the Ruttonjee & Tang Shiu Kin Hospitals

Black text denotes milestones in Hong Kong anaesthesiology; green text highlights major events/milestones in Hong Kong

125

Years of Anaesthesia in Hong Kong

SECTION I

1842 - 1954: The Beginning

Chapter 1: Early Days of Medicine and Anaesthesia in Hong Kong

Chapter 2: Anaesthesiology in Hong Kong: A Surgeon's Perspective



*One of the first operations in Hong Kong
carried out under anaesthesia—at the
Nethersole Hospital on Bonham Street,
late 1890s*



CHAPTER 1

Early Days of Medicine and Anaesthesia in Hong Kong

Ronald Lo and Zoltan Lett

Much of the local government documentation of the early history of medicine in Hong Kong was lost during the Second World War. A small amount of information, however, can still be retrieved from remaining government archives and from non-government sources.

Hong Kong was formally ceded to Britain in August 1842. The first medical facility was a military hospital ship, HMS *Minden*, deployed to Hong Kong in 1843, which in turn was replaced by HMS *Alligator* in that role in 1844.¹ On board the *Minden* were identified two surgeons and four assistant surgeons, but no record of any anaesthetist. It is most likely that the role of anaesthetist was taken on by a junior surgeon, and thus no separate note was made of any anaesthetist. The last hospital ship, HMS *Melville*, was sold in 1873.



The first private hospital, the Seamen's Hospital, for merchant-seamen in Wanchai (where the present Ruttonjee Hospital is), was founded in August 1843. One of the members of the founding committee was Alexander Anderson, Assistant Surgeon to the British Superintendent of Trade in China, who became the first Colonial Surgeon (1843–4) in the British Colonial Government. Other members of the committee included Herjeebhoy Ruttonjee, James Matheson, and Dr William Jardine (a former ship's surgeon) who were to found the

Sir Patrick Manson teaching at the Albert Dock Seamen's Hospital in 1901. The Seamen's Hospital was founded in 1843. It was located where the Ruttonjee Hospital is currently situated in Wanchai



famous firm of Jardine Matheson & Co. The hospital was eventually bought by the Royal Navy in 1874 and became the Royal Naval Hospital. After damage sustained during the Second World War, the hospital was rebuilt by Jehangir Hormujee Ruttonjee in 1949, renamed Ruttonjee Sanatorium, and dedicated to the care and treatment of tuberculosis. In 1991 it was expanded to become the present Ruttonjee Hospital.

The first recorded land-based medical facility for the public was the ‘Hospital of the Medical Missionary Society’ (傳道會醫院) established in June 1844 in Morrison Hill by the Medical Missionary Society of China founded in Canton.² This was their second public hospital following the establishment of their first in Macao. It was noted that emergencies were attended to and there were out-patients and in-patients.¹ This hospital was closed in 1854 when doctors were no longer prepared to work for it as volunteers.

The first recorded operation in Hong Kong was performed on 18 March 1848 by a house surgeon, Dr William Aurelius Harland,³ at the Seamen’s Hospital under chloroform anaesthesia. Other than that, no information on the operation or the anaesthetic is available.

The first Government hospital was the Government Civil Hospital (政府公立醫院 or 國家醫院), which was established by Alexander Anderson in 1849 in a two-storey building that was subsequently destroyed by a typhoon in 1874. The hospital then moved into a former hotel in Hollywood Road, re-entering service in November that year. Unfortunately the premises burnt down at Christmas in 1878. A new Civil Hospital was built on the site of the old Lock Hospital (the first venereal-disease hospital) on Hospital Road and opened in 1879. This remained in use as a general hospital until Queen Mary Hospital opened in 1937. The site is now occupied by the Prince Philip Dental Hospital.

One of the early records of surgery and anaesthesia was found in the 1889 report of the Medical Superintendent of the Government Civil Hospital and Principal Civil Medical Officer, Dr John M. Atkinson,⁴ recording three cases of gunshot wounds having been treated, with examination under anaesthesia for two and excision of an eyeball under anaesthesia in the third. A subsequent hospital report in 1892 mentioned the surgical treatment under chloroform anaesthesia of wounds inflicted by animals, with accompanying haemorrhage and shock, on a nine-year-old girl who eventually recovered.⁵

Other reports of anaesthesia could be found in the archives of the Hong Kong Branch of the British Medical Association which was founded in 1890.⁶ The minutes of meetings in February 1898 and 1903 recorded presentations and discussions of chloroform anaesthesia and use of adrenaline in resuscitation from chloroform collapse.⁷

Records from the archives of the Alice Ho Miu Ling Nethersole and Memorial Hospital between 1898 and 1901 indicated an increasing number of surgical operations being performed under anaesthesia, mostly chloroform for general anaesthesia and local use of cocaine for eye surgery.⁸ Use of chloroform for general anaesthesia seemed to be the most common at this time. This is corroborated by two incidents reported at the Government Civil Hospital by the Principal Medical Officer in 1900.

Dr George Harold Thomas, MD, OBE, LLD, was a local graduate, of the Hong Kong College of Medicine (1912) and the University of Hong Kong (1914), who began working in anaesthetics at the Alice Ho Miu Ling Nethersole Hospital while still a medical student. Medical students and junior doctors in those days were encouraged to acquire the necessary skills to provide anaesthesia for surgery as this role was not highly regarded. Dr Thomas reported that the anaesthetic agents used in Hong Kong at the time were chloroform and ether, used singly or in combination with an open mask and dropped from a bottle.⁹ The vapour may be warmed before delivery to the patient. Morphine and atropine were often used for premedication. Dr Thomas was subsequently made a Fellow of the Royal College of Surgeons *ad eundem*¹⁰ with the certificate presented to him at a ceremony in Hong Kong (a first for the RCS) by the then President of the RCS, and Queen's Surgeon, Sir Arthur Porritt. He was also awarded an honorary Doctor of Laws degree by the University of Hong Kong in 1961 in recognition of his contributions to medicine in Hong Kong and to the University.¹¹

Records from the Tsan Yuk Maternity Hospital (established 1922) indicated that chloroform was commonly used for analgesia in labour by the drip method.¹² Obstetric analgesia was not regularly practised as the then Professor of Obstetrics & Gynaecology, Professor Gordon King, thought that Chinese women tolerated labour better than Caucasians and that the babies would be better off without the side effects of the drugs used. Other drugs used included potassium bromide, chloral hydrate, and tincture of morphine.



Severe pain warranted parenteral morphine. Analgesia with sedation was also provided by a mixture of morphine and scopolamine given parenterally. Low spinal anaesthesia, initially with Stovaine and later Nupercaine, was used for forceps deliveries and Caesarean deliveries, as well as for other operative interventions. Inhaled trichloroethylene was introduced in 1948. Pethidine was introduced later.

Dr Horacio Perci Loui Ozorio deserves special mention. He was a local graduate who was registered to practise in Hong Kong in 1937. The University of Hong Kong appointed him to teach anaesthesiology in 1939. He subsequently trained in the Nuffield Department of Anaesthetics in Oxford, UK, under Professor (later Sir) Robert MacIntosh, and got to know many famous characters in British anaesthesia, for example, Sir Cecil Gray and Dr (later Professor) William Mushin. He returned to Hong Kong to Queen Mary

*Government Civil Hospital seen
from the Peak, c. 1900*



Hospital and the University after spending time at both Oxford and London.¹³ Dr Ozorio was the founding Chairman of the Society of Anaesthetists of Hong Kong with Dr George Thomas and Dr Zoltan Lett, in 1954. Dr Ozorio not only left to us the legacies of the infrastructure for early anaesthetic training and the Society of Anaesthetists of Hong Kong, but also the eponymous endotracheal tube connector to the entire anaesthetic world. He left Hong Kong to take up anaesthetic practice in the UK in 1960.

After the Second World War, anaesthesiology in Hong Kong developed further when the Hong Kong Government Medical and Health Department and the University of Hong Kong recognized that properly structured training and service provision in anaesthesia was needed to improve the delivery of health care. Dr Lett was recruited from the UK in 1954 as the Hong Kong Government's first Specialist Anaesthetist, with a remit to establish anaesthetic training and a credible service for all public hospitals. His terms and conditions of service also included an appointment as part-time lecturer at the University of Hong Kong, where he joined Dr Ozorio in teaching.¹⁴

Thus began a new era in the history of anaesthesia in Hong Kong.



Dr G.H. Thomas became a lifelong supporter of anaesthesia, in addition to practising in most fields of medicine and surgery of the day and teaching medical students those subjects. He was one of the group of doctors who helped Dr H.P.L. Ozorio and Dr Z. Lett to co-found the Society of Anaesthetists of Hong Kong. The portrait of Dr G.H. Thomas was kindly provided by his son, Dr Osler L. Thomas, himself a student of Professor Digby's at the University of Hong Kong

The first visit of Professor Sir Robert MacIntosh to Hong Kong in 1959: (from left) Dr Z. Lett, Dr H.P.L. Ozorio, Sir Robert, and Dr Li Shu-fan, who was Sir Robert's host at his beautiful house 'The White Jade'



Notes

1. Hospitals in the Nineteenth Century. Available from: <http://hongkongsfirst.blogspot.co.uk/2009/10/hospitals-in-nineteenth-century.html>. Accessed 5 Mar 2014.
2. Medical Missionary Society of China. Available from: http://en.wikipedia.org/wiki/Medical_Missionary_Society_of_China. Accessed 5 Mar 2014.
3. Harland Family Archives at Wellcome Library Collection, London: MSS 7681 et seq. – ‘Dr William Aurelius Harland (1822-1858) trained at Edinburgh. As a consequence of an unwise marriage to a servant girl, he left England for Hong Kong in 1846. Here he became resident surgeon of the Victoria Seamen’s Hospital and studied natural history, mineralogy and Chinese medical jurisprudence, publishing extensively in the Journal of the Royal Asiatic Society. He died of a fever in 1858, shortly before he was due to publish a study of the natural history of Hong Kong.’
4. In addition to his government role, Dr J.M. Atkinson was involved with the committee founding the University of Hong Kong. See Mellor B. The University of Hong Kong – an informal history. Hong Kong: Hong Kong University Press; 1980.
5. Lett Z, Lo RJ. Anaesthesia & Intensive Care in Hong Kong. Hong Kong: Centre of Asian Studies, Hong Kong University; 1997: 3.
6. <http://hkbma.homestead.com/history.html>. Accessed 5 Mar 2014. The Hong Kong Branch was formally recognized by the parent Association in 1891.
7. Ibid. p.3.
8. Ibid. p.4.
9. Ibid. p.5.
10. Ibid. p.5 and Plate 14 on p.116.
11. 55th Congregation (1961) – George Harold THOMAS. Doctor of Laws *honoris causa*. Available from: http://www4.hku.hk/hongrads/index.php/archive/graduate_detail/135. Accessed 5 Mar 2014.
12. Ibid. p.10.
13. Ibid p.6-7; an extract of Dr Ozorio’s own account of the circumstances at the time.
14. His association with the University in various capacities lasted until his departure from Hong Kong in 1997. He visited Hong Kong regularly until after 2009 by which time his health prevented him from doing so.



CHAPTER 2

Anaesthesiology in Hong Kong: A Surgeon's Perspective

C.H. Leong

It is an honour and a privilege to be invited to contribute to this publication by the College of Anaesthesiologists on its 25th birthday. Let me state from the outset that, as a surgeon, I do not profess to know nor understand the science, the art, and the practice of anaesthesia, nor anything about the anaesthetist's life. I thought I would take you through a few areas as a surgeon, hopefully to give our anaesthetist colleagues an outsider's view of them. I would also like to cover a few nostalgic milestones, the trials and tribulations of anaesthesia, and something of the famous anaesthetists I personally encountered in the 'good old days'.

The Anaesthetist and the Surgeon

I started my surgical career in 1962, since when anaesthetists have been my inseparable partners. No honest surgeon could dispute that he or she could do without an anaesthetist.

However, for a surgeon, the role of the anaesthetist goes further than just ‘gassing’ a patient for surgery; it is much more, as the following personal experience unfolds:

- The anaesthetist who taught me surgery
- The anaesthetist who gave me confidence to proceed with surgery and to have a good night’s rest afterwards
- The anaesthetist who acts as the perfect ‘defence’ during major surgery, so that I have peace of mind to proceed with the necessary procedures
- The anaesthetist who argued with me and won
- The anaesthetist as my partner in ‘non-patient’ care

Let me elaborate.

The Anaesthetist Who Taught Me Surgery

As a young surgeon, all ‘scrubbed up’ in front of an anaesthetized patient and with your senior surgical colleagues nowhere to be found, the seasoned anaesthetist could well be your ‘fairy godmother’. No, he or she would not be holding your hand, but his or her guidance as a ‘back-seat’ surgeon was vital. ‘Make a midline incision,’ he or she would tell you when you encountered a perforated duodenal ulcer. ‘Skirt around the umbilicus for a better exposure’; ‘Your incision is too small for proper access’; ‘No, that is not the appendix, it is a tortuous iliac artery’. It was such remarks that often saved my day and for which I will be eternally grateful.

The ‘Confidence-inspiring’ Anaesthetist

As I advanced in my surgical career and embarked on major procedures on patients with multiple comorbidities, I faced further problems. You need a cardiologist’s view and a respiratory care. Consulting them took time and, in the private sector, to do so would mean an extra financial burden for the patient. The anaesthetist became my saving grace. Through proper pre-operative assessments and preparations he or she would ensure that the patient was safe and could withstand the surgical procedure.

It was the competent anaesthetist too who would provide support for the patient’s airway and monitor vital signs after surgery until the perimeter became steady. The surgeon therefore got a good night’s rest, and reaped the praises of the patient and the relatives, oblivious to the fact that there was an unsung hero—the anaesthetist.

The Anaesthetist Who Provided the Perfect ‘Defence’

In a football team, the ‘strikers (前鋒) can only do their best to score if they are confident there is a competent ‘defence’ (後防). In the same way, surgeons cannot do a proper job when confronted with the stress of a surgical procedure if at the same time they have to worry about oxygen saturation, blood pressure, blood loss, and so on. A proper ‘defence’ by the anaesthetist, therefore, goes a long way.

Not too long ago, I operated on a 12-year-old child who had an enormous retroperitoneal sarcoma—the adrenal gland was displaced to the level of the second rib and the kidney was pushed down to the pelvis. There were extensive arterial supplies from major feeding arteries. These were partially embolized. But it was the veins that we knew would be causing the morbidity—large lumbar veins and enormous intra-spinal veins. The removal of the tumour was straightforward but, ‘lo and behold’, massive venous bleeding was encountered. I battled on, knowing very well that my anaesthetist would do a ‘total defence.’ Some 20 units of blood were transfused during surgery. The operation was successful and the patient walked out of hospital on post-operative day 7.

The Anaesthetist Who Argued with Me and Won

Surgeons are by nature ‘megalomaniacs’, full of self-confidence and the belief that they are always right. Surgeons too are also ‘quick tempered’ in personality and looking for ‘instant action’. When it came to anaesthetizing a patient for pelvic surgery, arguments invariably occurred. While I, as the quick-tempered surgeon, wanted to have the patient anaesthetized as quickly as possible and therefore demanded general anaesthesia, the mild-mannered, very professional anaesthetist might, having balanced all risks, opt for a spinal anaesthesia. Professional know-how and experience got the upper hand. The anaesthetist won and the patient left the operating room in the best post-operative state. Arguments are always healthy but professional experience must prevail.

The Anaesthetist as My Partner in ‘Non-patient’ Care

In the days before ‘virtual laboratories’, many surgeons had to operate on animals (dogs and pigs) for research purposes or to try out or improve their surgical techniques. To comply with the code of practice to ensure there was no cruelty to animals, these ‘patients’ had to be properly anaesthetized and



had to wake up in good shape so that we could gauge the surgical results. Subsequently, these animals might even have to undergo further procedures or X-rays, frequently requiring anaesthesia. Many surgeons have therefore been blessed with having anaesthetist partners who were willing to go beyond the call of duty.

Anaesthetic Nostalgia

As surgeons cannot do without anaesthetists, so too the development of surgery is only possible when there is a parallel advancement in anaesthesiology.

With the development of surgery and its subspecialties, led by the Department of Surgery of the Hong Kong University at Queen Mary Hospital and the government surgical service at the Kowloon Hospital, anaesthesia services and training also started to move forward. These developments were spearheaded by Dr H.P.L. Ozorio, a local medical graduate who received training in anaesthesia at Oxford University, and Dr Zoltan Lett, the first government-appointed anaesthesia specialist. Together they not only provided services and training, but also founded the Society of Anaesthetists of Hong Kong in 1954. It should be noted that this Society was the first specialist medical society to be registered under the Hong Kong Societies Ordinance. It should therefore come as no surprise that this Society subsequently sponsored the formation of the Hong Kong College of Anaesthesiologists.

Surgical sub-specialization called for a sub-specialization in anaesthesia. With the development of thoracic and cardiac surgery, full-time specialized anaesthetists were required. At the Ruttonjee Sanatorium, where many thoracic surgeries were done for pulmonary tuberculosis and transthoracic anterior spinal fusion for tuberculosis of the spine, Dr Yeung Ming-hon was the anaesthetist in charge. Towering almost seven feet tall, he would indicate to me where to put the chest drains after the surgeon, Dr Kenneth Hui, had ‘unscrubbed’.

Academic anaesthesiology was slow to develop. It was only with the recommendation of the Vickers Report in 1982 that the two medical schools started to form academic departments, firstly at the Chinese University, with Professor A.J. Thornton as the first chair professor, and then in 1988, at the University of Hong Kong, under Professor R.B. Holland.

Afterthoughts

Have I done anything for anaesthesiology? Unashamed, I have to claim that I have. The history of anaesthesia would be incomplete if we did not include the tragic incident of a death due to a mix-up between oxygen and nitrous oxide. It was a simple orthopaedic operation on an otherwise healthy adult. Some twenty minutes into the procedure, the patient went into cardiac arrest and, despite vigorous resuscitation, could not be revived. The final verdict was that the central pipeline for oxygen was connected to a central cylinder of nitrous oxide. The patient died of anoxia from a medical gas mix-up. Little wonder that the heart could not be restarted even in, apparently, the best possible environment, for the more the anaesthetist attempted to inflate the lungs with the 'oxygen', the greater the anoxia it produced.

At the time I was the Legislative Council Member representing the Medical Functional Constituency and I initiated a debate calling on government to implement measures to prevent similar incidents. The result was that, according to the new regulations, different central tanks containing medical gases must have specifically different connecting valves, such that the central oxygen line may only fit the oxygen-tank valve. The use of oximeters also became compulsory during surgical procedures under general anaesthesia.

A loss of life is always a tragedy, but the death was not in vain, for further safety procedures were implemented to make already very safe anaesthesia procedures even safer.

This has to be the underlying dictum when we, as medical professionals, prescribe treatment of any form to our patients!



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Years of Anaesthesia in Hong Kong

SECTION II

1954 – 1989 : Growth and Development

Chapter 3: The Founding of the Society of Anaesthetists of Hong Kong

Chapter 4: The First 35 Years of the Society of Anaesthetists of Hong Kong

Chapter 5: The Formation of the Hong Kong College of Anaesthesiologists

Chapter 6: Intensive Care Medicine Before the Hong Kong College of Anaesthesiologists

Chapter 7: Anaesthesia and Surgery: A Personal Perspective



*Anaesthesiologists at work in 1972 at the
Grantham Hospital*

The Founding of the Society of Anaesthetists of Hong Kong

Ronald Lo and Zoltan Lett

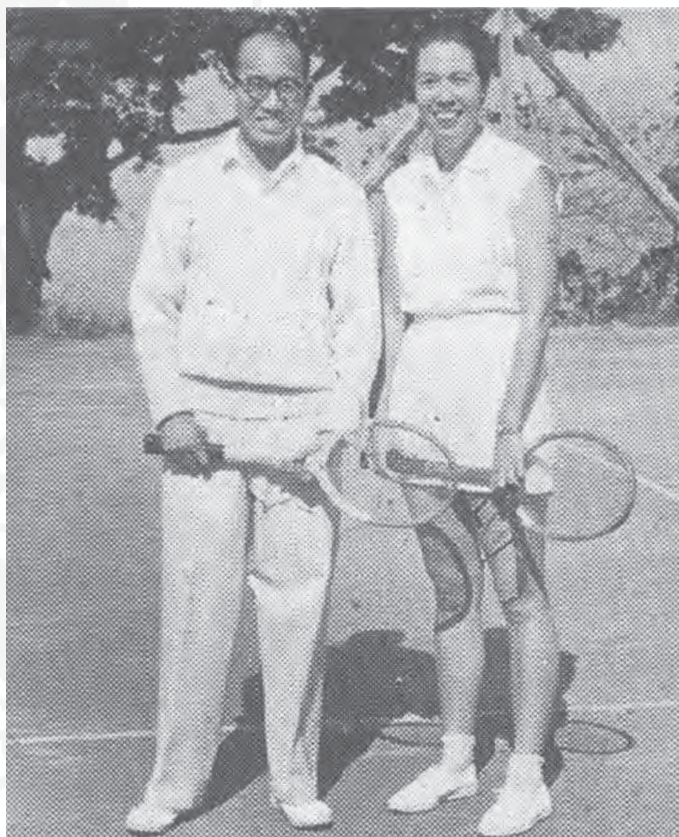
Dr Horacio Ozorio was the only anaesthetist tasked to teach undergraduates and to train anaesthetists at the post-war University of Hong Kong when he returned to Hong Kong from the United Kingdom in 1951. He was, in addition, an honorary anaesthetist for the Hong Kong Government. In the summer of 1954, he was joined by Dr Zoltan Lett, who was recruited by Dr K.C. Yeo, Director of the Medical and Health Department, from the United Kingdom. Dr Lett was also appointed part-time lecturer at the University of Hong Kong by Professor Gordon King, Dean of the Faculty of Medicine.¹ Drs Ozorio and Lett were able to form a small department at the University to provide anaesthetic teaching and training. At that time there were very few anaesthetists in practice, whether in the public or private sector.

Together with a small number of the anaesthetists in public and private practice and military doctors, Ozorio and Lett were able to form a core group interested in the formation of a professional specialist body, leading to the formation of the Society of Anaesthetists of Hong Kong (SAHK), which held its inaugural meeting on 17 June 1954. Enthusiastic support from non-anaesthetists for the formation of the SAHK came from some eminent surgeons² such as Dr John Chen,³ Dr George Choa,⁴ Dr John Gray,⁵ Dr Philip Mao,⁶ Professor Frank Stock,⁷ Dr G.B. Ong,⁸ and Dr C.T. Tan. The SAHK was formally registered with the Government's Registrar of Societies on 5 August 1954.

The SAHK was one of the first medical specialist organizations to be founded in Hong Kong. Its formation was only preceded by the Chinese Medical Association (later renamed Hong Kong Medical Association), founded in 1920; the British Medical Association (Hong Kong Branch), founded in 1949; and the Pharmaceutical Society, also founded in 1949. The first SAHK Council was elected soon afterwards, at its first General Meeting, with the Council as shown below.⁹

Chairman:	Dr Horacio P.L. Ozorio
Vice-chairman:	Dr Z. Lett
Secretary & Treasurer:	Dr Y.K. Poon
Members of Council:	Dr Y.O. Chan (Kowloon)
	Surg. Capt. O'Connor (Royal Navy)
	Dr Alan J.F. Eberle (Private)
	Dr Loretta Lo (Hong Kong)
	Capt. Donald H. Turner (RAMC)

The SAHK was admitted to full membership of the World Federation of Societies of Anaesthesiologists (WFSA) in 1957. The position of President of the SAHK was created in 1959 with the roles of chairman and vice-chairman of the Council remaining unchanged.



K.C. Yeo became the first Chinese appointed to a medical post in the government, as Director of Medical and Health Services in 1952

The development of anaesthesiology as a specialty was now enabled and enhanced by the formation of the SAHK with a dedicated group of anaesthetists, both local and overseas graduates, contributing.

Dr Lett, wearing the hats of the Consultant in-charge of the Government Anaesthetic Service covering all government hospitals and clinics throughout Hong Kong¹⁰ as well as that of the Chairman of the SAHK, was in a good position to get to know and keep in touch with many eminent overseas anaesthesiologists, whether from the UK, North America, Australia and New Zealand, or further afield. In the early years of the Society, scientific meetings were often organized to allow these well-known (and sometimes not so well-known) overseas clinicians to give talks and lectures to the Society whenever they passed through or visited Hong Kong. Although the speakers were giving their services free of charge, they were often entertained at the expense of the chairman or vice-chairman or other officers of the Society. When the SAHK was admitted to full membership of the WFSA in 1957, the international links were enhanced and meetings with visiting speakers became a regular occurrence. So from the 1960s, such meetings were organized by the SAHK but sponsored by friendly equipment or drug firms, usually at hotels or restaurants. In those days it was unusual for Hong Kong anaesthesiologists to attend overseas international scientific meetings with any frequency, so these local scientific meetings with overseas speakers became very popular. At the

Ceremony marking the Foundation of the SAHK. The Dean of the Medical Faculty, Professor Gordon King (on left), is seen toasting the co-founders, Drs Ozorio and Lett (centre facing)





*Sir Robert MacIntosh being
entertained by the Council of
the SAHK*

meetings one could also meet up with fellow anaesthesiologists from both sides of Hong Kong harbour, both in hospital and private practice, for professional exchange as well as to get to know each other, thus generating friendships and a sense of camaraderie amongst colleagues.

With the increasing number of hospital beds in the public sector, especially with the opening of Queen Elizabeth Hospital in 1962, the expansion of the anaesthetic services resulted in an increased number of anaesthesiologists. The SAHK saw the need to provide more educational opportunities and training for those practising in the specialty. In due course, as the number and expertise of local anaesthesiologists developed, local specialists were able to take up a teaching role in hospitals and at SAHK scientific meetings, and there was no longer a dependence on visits from overseas speakers, although overseas speakers were still very welcome to contribute, in no insignificant measure, to the continuing professional education of the local anaesthetic community through the SAHK.

The increasing complexity of patients presenting for more adventurous surgery meant an increasing demand for more formal anaesthetic training. In the early days, the Government Anaesthetic Service conducted individual hospital departmental meetings (sometimes with speakers from another hospital) to provide an academic environment for training. However, this was rather primitive and anaesthesiology trainees usually had to 'go it alone' in order to



advance their knowledge and skills. The Hong Kong Government policy in the 1960s was to first send senior trainees on study leave to England to train and then to sit the examinations to obtain the Fellowship diploma of the Faculty of Anaesthetists of the Royal College of Surgeons of England (FFARCS) in order to qualify for senior positions in the public anaesthetic service. This was a slow and arduous route to obtaining training and a postgraduate specialist qualification. FARCS did not fully recognize anaesthetic experience in Hong Kong and applied a mandatory period of training in the UK prior to sitting the FFARCS. In view of this, negotiations with the Faculty of Anaesthetists of the Royal Australasian College of Surgeons (FARACS) were undertaken by Dr Lett to seek recognition of Hong Kong anaesthetic experience that enabled trainees to sit the Australasian Faculty Fellowship Examination without a period of training in Australasia. Eventually, the Fellowship Diplomas of FARACS were first granted to Hong Kong anaesthesiologists in 1970-1, without training time spent in Australasia. This opened an alternative route to a specialist qualification and facilitated the expansion of anaesthetic services. This in turn supported the development of major new hospitals over the following 30 years.¹¹

The SAHK initiated refresher courses for the Primary Fellowship Examination, starting with tutors from the Faculty of Medicine of the

The five 'first' FFARACS
in Hong Kong with the cup
presented by the Dean,
Faculty of Anaesthesiology,
Professor T. Brophy.
Back row: (from left) Y.C. Sit*,
J. Lam*, S. Kwong, Z. Lett,
C. Chen*, F. Shin*
Front row: (from left) A. Lam*,
N. Butt, J. Allison*



University of Hong Kong, with the professors and readers in physiology and pharmacology taking part. Though good, these tutors were not practising clinicians, and definitely not anaesthesiologists. It was felt that they were not in an ideal position to provide clinical guidance on applying the science of physiology and pharmacology in clinical anaesthetic practice. Having obtained guaranteed sponsorship from the Hong Kong Oxygen & Acetylene Co. Ltd., SAHK was able to seek and arrange for tutors from Australasia to come to Hong Kong to conduct such courses from the mid-1970s. These were short-term refresher courses ('crash courses') conducted a short time before the Primary Fellowship Examination in both subjects of the examination: physiology and pharmacology. The first such tutor from 'down under' was Dr Bill Crosby. A succession of tutors followed him, some coming for more than one year, including Dr Dave Fenwick, Dr John Russell, Dr John Harriot, and Dr Peter Kam. Courses for the Final Fellowship Examination with practicals were not conducted as their organization is far more involved. Individual hospital consultants conducted their own departmental mock practicals for their trainees. In a number of cases, overseas courses were provided by government or hospital scholarships.

With FARACS recognition of clinical experience came the formal training requirements. Pre-vocational training was introduced in 1972, followed eventually by formal Rotational Training in 1984, when Dr Ronald Lo was appointed the first Hong Kong Regional Education Officer of the FARACS.

Intensive Care Medicine (ICM) evolved from the early days in the 1950s of supporting ventilation of ill patients, and its development escalated in the 1970s when intensive care units (ICUs) were provided more widely in hospitals all over the world. Given that ICM was not yet considered a separate specialty at that time, the organization of these units was rather haphazard, run by anaesthetists, physicians, or surgeons depending on who started off the project, and these could have been specialty High Dependency Units or specialty ICUs (only looking after patients from a particular specialty area). Early ICUs in Hong Kong were at the Nethersole and Kwong Wah hospitals. Princess Margaret Hospital (1975) developed plans for an ICU which was not fully commissioned until 1982, and was headed by a physician. At the Prince of Wales Hospital (1984), which was to be the teaching hospital for the Chinese



University of Hong Kong, the first Professor of Anaesthetics in Hong Kong, Professor Andrew Thornton, established an ICU there (see Chapter 29), and he made sure that anaesthesiologists took responsibility for the ICU that catered to patients of all specialties. Subsequent large government hospitals had input from a consultant anaesthesiologist with an ICM qualification in the planning and commissioning process. This set a growing trend in anaesthesiologists providing input into hospital ICUs and responsibility in ICM. ICM from other perspectives are dealt with elsewhere in this publication.

Pain Medicine (PM) was practised by individual hospital consultants with a special interest in this area. As with anaesthetics and ICM, initial training for PM specialists was done overseas and subsequently developing local training of interested practitioners. PM services began to take off in hospitals in the late 1980s, starting with the Acute Pain Service for post-operative pain management and some other painful condition. Subsequently, this extended to conditions with chronic pain when manpower and expertise permitted. This subject is addressed elsewhere in this publication.

It was with the dedication of Hong Kong anaesthesiologists that the specialty of anaesthesiology was able to flourish and grow. Over the past 60 years, a large number of anaesthesiologists and friends have contributed in various ways to improve the standard of practice and safety for patients, and to make the anaesthesiology fraternity a coherent body. The recognition of the need for proper training led to the development of formal training programmes complying with international guidelines. The SAHK saw that it would be advantageous for the development of the specialty to centrally oversee specialist training, and for this reason set up the Board of Education. The Board took the view that it should establish a separate body to look after specialist professional training and standards of practice in anaesthesiology in Hong Kong. This led to the formation of the Hong Kong College of Anaesthesiologists, thus beginning another chapter in the development of anaesthesiology and its subspecialties in Hong Kong.

Notes

1. See article on 'The Beginning – 1842-1954' in this publication.
2. Lett Z, Lo RJ. Anaesthesia & Intensive Care in Hong Kong. Hong Kong: Centre of Asian Studies, Hong Kong University; 1997: 18-9.
3. Consultant Surgeon, Kowloon Hospital.
4. Consultant ENT Surgeon.
5. Dr Gray, orthopaedic surgeon, is commemorated by a prize in surgery at HKU; see <http://www.med.hku.hk/v1/scholarships-and-prizes/nesta-and-john-gray-medal-in-surgery/>.
6. See summary of Dr Mao's career at http://hongkongsfirst.blogspot.co.uk/2013_01_01_archive.html under Dr Philip Moore. Dr Mao is also commemorated by an endowed Professorship in Chinese History, Science and Civilization at HKU; see https://www.hku.hk/press/news_detail_6741.html.
7. Professor of Surgery, The University of Hong Kong.
8. Consultant Surgeon, Kowloon Hospital. He succeeded Prof. Stock as Professor of Surgery at the University of Hong Kong in 1964.
9. Ibid, p.19.
10. Dr Lett was the first consultant in-charge of the Service, succeeded by Dr Justin Chan, Dr C.S. Chan and Dr Ronald Lo. This arrangement lasted until 1992 when the position was deleted and the position of a consultant in-charge for each individual government hospital was established.
11. Including Yan Chai Hospital (1973), United Christian Hospital (1973), Princess Margaret Hospital (1975), Prince of Wales Hospital (1984), Tuen Mun Hospital (1990), Ruttonjee Hospital (1991), Hong Kong Eye Hospital (1992), Pamela Youde Nethersole Eastern Hospital (1993), Nethersole Hospital (Tai Po) (1997), Northern District Hospital (1997), Tseung Kwan O Hospital (1999). These of course do not include hospitals in the former subvented sector, e.g., Tung Wah Group of Hospitals, etc., and the expansion and reorganization of other established hospitals.



The First 35 Years of the Society of Anaesthetists of Hong Kong

Lee Tsun-woon

The Society of Anaesthetists of Hong Kong (SAHK) was established in 1954 by Dr Zoltan Lett and Dr H.P.L. Ozorio (a graduate of the University of Hong Kong). This was shortly after the arrival of Dr Lett in Hong Kong, when he was appointed the first Specialist Anaesthetist to serve in the Hong Kong Government. The first meeting was held on 17 June 1954, when the first Council was voted in, with Dr Ozorio becoming the first chairman, while Dr Lett was vice-chairman. The SAHK was the first of the specialist medical societies to be registered in Hong Kong. This was a time when the number of anaesthetists practising here was small. Dr Ozorio has described his anaesthesia practice as ‘a lone voice crying in the wilderness’. Membership was open to doctors of other specialties, especially surgeons, although the Council was composed of anaesthetists. Dr Ozorio subsequently relocated to the United Kingdom in the 1960s. Dr Lett stayed on to serve the

people of Hong Kong until 1996 and made a remarkable contribution to the development of the specialty of anaesthesiology in the territory.

One of the aims and objectives of the SAHK was 'To create and maintain favourable conditions for training of anaesthesia in this area.' Given the small number of anaesthetists in Hong Kong at the time, this was not an easy task. In addition to the work of providing clinical training in local hospitals, making arrangements for local anaesthetists in training to gain overseas experience and inviting authoritative overseas speakers to visit Hong Kong were also important means of providing training and bringing the practice of anaesthesia in Hong Kong up to date. The SAHK was an indispensable platform for these activities. While only a very limited number of anaesthetists had the opportunity to receive training overseas and to sit for higher professional examinations, mainly in the UK in those days, visitors to Hong Kong would be able to address a much larger audience. Overseas experts were thus invited or persuaded to transit via Hong Kong during their Asian trips, usually through the personal connections of the senior members. The SAHK provided the platform for issuing formal invitations to overseas experts and organizing such events.

In addition to maintaining a friendly relationship with individuals and sister societies overseas, the SAHK nurtured a close relationship with the faculties of anaesthetists of the royal colleges of surgeons of England, Ireland and Australasia. It was the Faculty of Anaesthetists of the Royal Australasian College of Surgeons that first initiated its training programme and examinations in Hong Kong, thereby enabling Hong Kong anaesthetists to obtain a higher professional qualification without having to spend an extensive training period overseas. The first Primary Examination was held in 1969 and the first Final Examination in 1974. The opportunity of visits by examiners to Hong Kong was also taken in order to arrange lectures for the broader anaesthesiology community in Hong Kong. These activities were supported by a generous donation from the Lui Family Foundation to the SAHK. And to help local candidates prepare for the examinations, a tutor recommended by the Faculty would also come to Hong Kong to give lectures and tutorials and share examination practices. Dr David Fenwick from Adelaide was the first such visitor and came for a number of years. This was supported by a generous donation to the SAHK by the Hong Kong Oxygen & Acetylene Co. Ltd.

Many prominent visitors followed Dr Fenwick, including Professor Peter Kam who had a long-standing relationship with Hong Kong. These educational activities supported and organized by the Society formed a vital part of postgraduate training in anaesthesia until they were gradually superseded by more structured local training when the College was established.

The SAHK became a member of the World Federation of Societies of Anaesthesiologists (WFSA) shortly after the formal establishment of the Federation in 1955. When the World Health Organization (WHO) set up the WHO Anaesthesiology Training Centres in Copenhagen and Manila, a number of doctors from Hong Kong attended these centres. It is also through this membership that Hong Kong anaesthetists strengthen and maintain links with colleagues world-wide. This has resulted in the SAHK holding a number of international meetings in Hong Kong and its successful bidding for the World Congress of Anaesthesiologists 2016.

At the time of the World Congress of Anaesthesiologists in Kyoto in 1972, the SAHK organized both pre- and post-congress scientific meetings. The president of the WFSA made a detour to Hong Kong to officially open the Meeting. In 1983, together with the Hong Kong Surgical Society, the SAHK co-organized the Annual Scientific Meeting of the Royal Australasian College of Surgeons and the Faculty of Anaesthetists. Prior to the 8th World Congress in Manila, a pre-world congress meeting was organized by the SAHK. These activities not only provided educational opportunities but also put Hong Kong firmly on the world map of anaesthesiology.

Of particular note was the 7th Asian and Australasian Congress of Anaesthesiology, held in Hong Kong from 20–25 September 1986, when the Governor of Hong Kong, Sir Edward Youde, officiated at the opening ceremony. It was attended by some 650 delegates from 35 countries, including 19 delegates from the Peoples' Republic of China. Amongst the speakers was Professor Teik E. Oh, who in 1988 became the Chairman and Professor of the Department of Anaesthesia and Intensive Care at the Chinese University of Hong Kong. Regional assemblies and board meetings of the Asian and Australasia Regional Section were also held and significant changes to their constitutions made. A post-congress meeting was held in Beijing from 29–30 September 1986. Officials of the WFSA attended the meeting, which paved the way for admission of the Chinese Society of Anesthesiology to WFSA in 1988.

In 1984, senior members of the SAHK Council had the foresight to consider it necessary to form a specialty medical college to conduct training and examinations and continue the development of our specialty. This was against the background of the 1983 visit by Mrs Margaret Thatcher to Beijing and the planned return of Hong Kong to China in 1997. A Board of Studies was formed in 1985, chaired by Professor J.A. Thornton, to work on the establishment of a college. The Board consisted of members of two consecutively elected councils of the SAHK. When Prof. Thornton retired and returned to England, he was succeeded by the late Dr T.M. Moles. Colonel (later Brigadier) I.T. Houghton, who also had a law degree, put his legal knowledge to good use in drafting the Memorandum and Articles of Association and designing the college academic gown. Funds from the SAHK, largely accumulated from the surplus derived from international meetings held several years before, were made available for the set-up of the College. Messrs Deacons, who had acted as legal advisers to the Society, were retained as legal advisers in the process of the formation of the College. When the College was incorporated in 1989 as a limited company with charitable status, Dr Moles became the first president and Colonel Houghton was the first honorary secretary. Dr John M. Low was the first honorary treasurer. The Board decided on the name of the Hong Kong College of Anaesthesiologists (HKCA) to reflect the provision of anaesthesia services by medically qualified anaesthesiologists, rather than non-medically qualified anaesthetists, as in some countries. The HKCA was the second medical specialty college established in Hong Kong. In anticipation of the formation of the Hong Kong Academy of Medicine (HKAM), the structure of the College ensured a smooth incorporation into the HKAM as one of the 15 constituent colleges. The formation of the HKCA marked the beginning of locally conducted structured postgraduate training in anaesthesiology. The way the College was structured also allowed the flexibility of incorporating intensive care and pain medicine under HKCA. These were developed on the solid foundation laid by decades of dedicated work by generations of members of the SAHK.



The Formation of the Hong Kong College of Anaesthesiologists

Ivan Houghton

In 1971, Professor T.C. Gray, for whom I was working as a registrar, asked me to help Children's Medical Relief International for a few months in Saigon, where I fell in love with the Orient. However, I needed a job to come back to, and that was when I first met Dr H.P.L. Ozorio¹ who was on the board that appointed me as a senior registrar to the St Helen's and District Hospital Group, as the first part of the Liverpool senior registrar rotation. During that period, he would mentor me and would often tell me how much he would have liked to be back in Hong Kong, although it never occurred to me that I might get to work there myself.

After that appointment, I joined the Royal Army Medical Corps in 1972 and, in 1982, I was posted as consultant anaesthetist at the British Military Hospital in Kowloon, situated on Wylie Road opposite the Queen Elizabeth Hospital. One of my first tasks was to pay a formal visit on Dr Zoltan Lett, as

the Honorary Civilian Consultant (Anaesthetics) to the Army in Hong Kong at Queen Mary Hospital. He informed me that I was, *ex officio*, co-opted as a member of the Council of the Society of Anaesthetists of Hong Kong. So began a long, happy, and fruitful relationship with the anaesthesiology community in Hong Kong.

Although the Medical Council (of Hong Kong) had first considered the introduction of specialist registration in 1968, it was not until 1979 that a working party was set up which recommended that specialist training should be improved as the first step towards setting up a specialist register. The Hong Kong Medical Association and the Hong Kong Branch of the British Medical Association set up a joint committee in 1983 to examine the findings of the working party. It concluded it would be necessary to have a governing body to implement and supervise specialist postgraduate training on a continuing basis for a specialist register to serve any real purpose.

In 1985, the Society of Anaesthetists of Hong Kong, when Dr Jean Allison was the president, set up a Board of Studies composed of all the then current council members under the chairmanship, first, of Professor A. Thornton and, later, Dr M. Moles, to consider the implications of a specialist register for the specialty of anaesthesia and the training of anaesthetists and to ensure that anaesthesia should not be at a disadvantage compared with other major medical specialties. At the time, the Board of Studies saw the founding of a college of anaesthetists, as an integral part of a future Hong Kong Academy of Medicine, as essential to the setting up of accredited training, standards and governance on a par with the then Faculty of Anaesthetists of the Royal College of Surgeons of England^{2,3} but without trying to compete with the educational and social programmes of the Society of Anaesthetists of Hong Kong, who were to encourage and support generously the incorporation of the College.

I was posted to the British Military Hospital, Munster (Westphalia, West Germany) in the autumn of 1985 for two years and, in the summer of 1987, I graduated LLB Hons (Lond.), for which I had been reading part-time for some years. However, I was determined to try to get back to Hong Kong to research and defend an MD thesis and, thanks to some senior military academic support, I was posted back in the autumn of 1987 and was allowed two research days per week at the Prince of Wales Hospital as an honorary

lecturer and MD student of the Chinese University of Hong Kong. I now found myself back on the Board of Studies, but as Secretary.

The Halnan Report, published in October 1988, recommended that there should be a Hong Kong Academy of Medicine composed of fellows accredited after completion of approved training. The report also considered the essential criteria for foundation college status of the Academy of Medicine.

Many prominent members of the medical profession had assumed that anaesthesiology would have neither an independent presence nor a voice in an Academy of Medicine. The Chairman and Board did their best to counteract successfully the various obstacles put in their way.

The Board had decided, early on, that the best way forward was to be incorporated as a company with limited liability. The company was to be called the Hong Kong College of Anaesthesiologists to avoid any misunderstanding in areas of the world where the term 'anaesthetist' was used to refer to non-medical anaesthetists. By 1988, the Board, which had co-opted more members, including Professor R. Holland and Professor T.E. Oh, tackled the difficult job of drafting the Articles and Memorandum of Association. The Commanding Officer of the British Military Hospital had allowed the Board to meet there, and many a long evening was spent ensuring that every last detail was correct.⁴ Finally a petition, proposed by Dr Lett and supported by the 18 members of the Board of Studies as the subscribers, was submitted for the incorporation of the Hong Kong College of Anaesthesiologists in May 1989 and, after some delay, the College was formed on 26 September 1989. Thus, although not the first, it was one of the earliest colleges to be incorporated and eventually became one of the foundation colleges of the Hong Kong Academy of Medicine.

The costs of setting up the College, that had been quite substantial, had been underwritten by the Society of Anaesthetists of Hong Kong which, itself, had benefited from the surplus funds from the very successful 7th Asian-Australasian Congress of Anaesthesiologists held in Hong Kong in 1986.

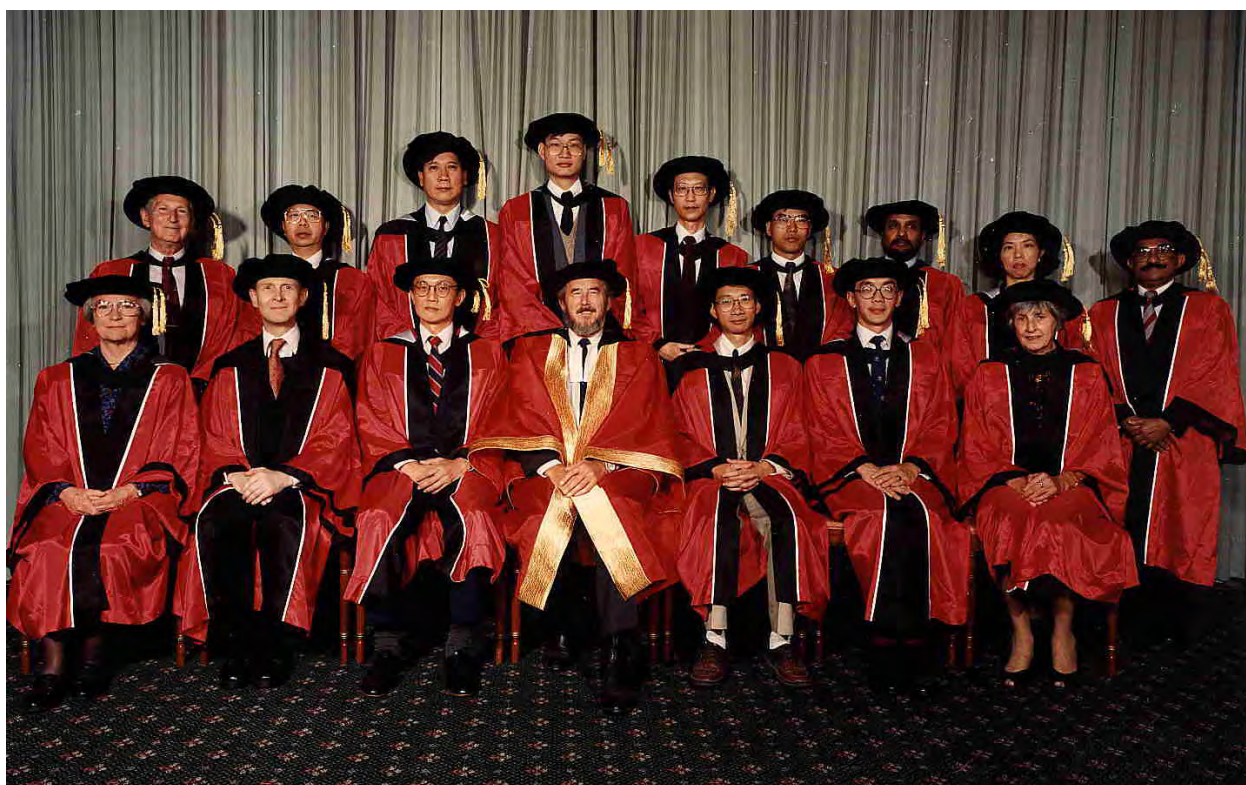
The first meeting of the College, attended by all the subscribers, was held at the Sheraton Hotel on 28 September 1989 when the officers and members of Council were elected by ballot. Dr Moles was elected President; Dr J. Low, Honorary Treasurer; Lieutenant Colonel I. Houghton, Honorary Secretary; and Prof. T.E. Oh as Vice President. Prof. Oh very kindly allowed the office that Dr Low and Colonel Houghton shared at the

Prince of Wales Hospital to become the first registered office of the College (suitably labelled).

However, the job was far from complete. The Inaugural Ceremony on 12 October 1989 at the Regent Hotel coincided with a visit from Professor M. Rosen, president of the newly formed College of Anaesthetists (of the United Kingdom), when there was an exchange of gifts, the new members of the College having subscribed to a silver junk and the UK College presenting the College with a silver salver. Then it was back to business, with the need to write the by-laws and to decide on all the administrative procedures necessary for running an academic college. Until these were prepared and approved at a general meeting, no fellows could be elected. To help foster an academic and corporate identity, academic dress, based on Cambridge University patterns, was suggested, with Dr Jean Allison proposing that the basic colour should be scarlet. Hence, gowns of the colour of oxygenated haemoglobin with the facings and lining of the hoods based on the British Standard colours for gas cylinders was readily agreed to and made by the College's gown maker in time for the second Congregation held at the Ladies' Recreation Club, when the

The First Council of the Hong Kong College of Anaesthesiologists in 1989

(from left): (back row) Z. Lett, C.K. Chan, C. Yuan, C.S. Chan, T.W. Lee, D.A. Sudhaman, C. Aun, S. Anandaciva; (front row): J. Horton, I.T. Houghton, T.E. Oh, T.M. Moles, R. Lo, J. Lowe, J. Allison



founding subscribers (fellows) were formally admitted as Fellows of the College on 3 January 1991.

At the third Congregation, there was an exchange of gifts, with Dr P. Livingstone, of the Faculty of Anaesthetists of the Royal Australasian College of Surgeons, presenting the College with the President's badge of office.

Meanwhile, the Society of Anaesthetists of Hong Kong, of which I was a council member, continued to run a number of successful regular meetings and courses for Hong Kong anaesthetists.

In February 1990, the Hong Kong Government established the Hong Kong Academy of Medicine Preparatory Committee under the chairmanship of Professor D. Todd, and its proposed draft legislation, after being submitted to the Executive and Legislative councils, was passed as an ordinance on 25 June 1992, taking effect on 1 August 1992. Prof. Oh, by then the President of the College, was appointed to the Interim Council and elected Treasurer.

In May 1992, members of the College Council helped provide medical support for the Hong Kong Academy of Medicine Foundation Fund's fund-raising 'Walk for the Academy – Walk for Health'.

The College had been busy with the election of fellows *ad eundem*, setting up committees, writing guidelines, inspecting hospitals, and setting up examinations whilst ensuring that standards were equal to or better than those of Australia and New Zealand, as well as the United Kingdom. As a Fellow of the Royal College of Anaesthetists, I have been gratified by the number of times that external examiners from the UK have commented upon the success of the Hong Kong College, and on the high standard of preparation and knowledge of Hong Kong candidates.

The College presented its first Honorary Fellowship to Professor W. Runciman at the seventh Congregation in 1993 in recognition of all the support that he had given to anaesthesiology in Hong Kong.

Did the College wish to absorb the functions of the Society of Anaesthetists? A few fellows saw an overlap in their respective functions and felt that amalgamation would provide a stronger body. However they were in the minority and that view did not prevail generally. I am pleased to see that there is now a healthy symbiosis between both organizations, with the Society of Anaesthetists celebrating its 60th Anniversary and the College its 25th Anniversary.

In view of my pending posting to Germany in 1994, I did not seek re-election to either the College or Society in 1993. However, 9 December 1993 was a very proud day for me when I graduated MD from the Chinese University of Hong Kong and became a Fellow of the Academy of Medicine.

The Hong Kong College of Anaesthesiologists has prospered and has gained a reputation second to none. I congratulate the College on its 25th Anniversary and I am proud to have served in Hong Kong at a significant time in the development of Hong Kong anaesthesiology.

Notes:

1. Horacio Percy Luis Ozorio (1915-74), MB, BS (HK) 1938. Honorary Anaesthetist to the Hong Kong Government and Lecturer, Hong Kong University, First Chairman of Council of the Society of Anaesthetists of Hong Kong.
2. The increasingly independent Faculty of Anaesthetics became a separate College of Anaesthetists in 1988 and the Royal College of Anaesthetists in 1993.
3. The Association of Anaesthetists of Great Britain and Ireland (founded 1932) was responsible for introduction of the Diploma in Anaesthesia (sponsored by the Royal Colleges of Physicians and Surgeons) (first examination 1935) and then played an important role in the founding of the Faculty of Anaesthetists of the Royal College of Surgeons of England (1948). It remains separate from the Royal College of Anaesthetists and as well as playing a major part in continuing education in anaesthesia undertakes necessary political and representational matters that the Royal College is not permitted to do by virtue of its royal charter.
4. Gratifyingly, the Memorandum and Articles of Association and Byelaws were used as a template for some other colleges and the Academy.



Intensive Care Medicine Before the Hong Kong College of Anaesthesiologists

Tom Buckley

Prior to the introduction of intensive care units (ICUs) in 1967, critically ill patients in Hong Kong were treated in the general wards with the emphasis being on crisis management. In terms of the development of intensive care facilities, Hong Kong was a slow starter and, once introduced, development proceeded in a sporadic and fragmentary fashion over the next 20 years.

General Development of Intensive Care in Hong Kong

The first ICUs were established at Nethersole Hospital on Hong Kong Island and Kwong Wah Hospital in Kowloon in 1967. These were officially opened in 1968 and an ICU was also opened at the Grantham Hospital. In 1970 an ICU was opened at Queen Mary Hospital and over the next decade many hospitals established their own ICUs.

Patients were managed in these ICUs with increased monitoring and nursing care but without dedicated medical care. Doctors attended to ICU patients as part of their regular patient rounds and junior doctors working in other wards were assigned to respond to calls from the ICU whenever medical attention was needed. Patients in these early ICUs remained in the care of their original admitting doctors and other specialties would be consulted as required on an *ad hoc* basis. Besides ICUs, hospitals in Hong Kong also provided 'High Dependency Care', with ventilatory support in satellite areas scattered among specialist wards. This practice, with the notable exception of the Prince of Wales Hospital, persists today in many hospitals. Before the opening of separate coronary care units (CCUs), the ICU in many hospitals provided care for patients suffering from coronary heart disease. Some general hospitals established separate CCUs even as late as 1992.

In 1983, the Hong Kong Society of Critical Care Medicine (HKSCCM) was established. After attending the Inaugural Meeting of the Western Pacific Society of Critical Care Medicine (WPSCCM) in Tokyo in 1979, Hong Kong delegates brought back ideas of creating their own critical care society focusing on a membership of doctors, nurses, and allied health professionals. In 1983 the HKSCCM was accepted as an associate member of the Federation of Medical Societies of Hong Kong and as a Full Member of the World Federation of Societies of Intensive and Critical Care Medicine. Amongst its earlier activities were the training of ambulance personnel and others in cardiopulmonary resuscitation and Basic Life Support. It also played host to a number of leaders and experts in the field of intensive care medicine who visited Hong Kong and addressed its scientific meetings. The Society has been active in providing an academic programme for its members and liaising with the Hospital Authority in establishing guidelines, for example on brain-death certification. It has also helped to bring together doctors, from varying medical backgrounds, who practise intensive care medicine.

The next major development in intensive care occurred in 1984 with the opening of the ICU at Prince of Wales Hospital, the teaching hospital of the newly established Faculty of Medicine of the Chinese University of Hong Kong (CUHK). This led to the development of intensive care as a definite entity. The Department of Anaesthesia was entrusted with managing the intensive care resources of the hospital—a historical first in Hong Kong as

anaesthetists were finally empowered to administer and manage critically ill patients in the ICU. The other notable feature was that there was to be no ventilation of patients on the general wards. Patients for whom mechanical ventilation was indicated had to be transferred to the ICU.

In 1987, Professor Teik E. Oh was appointed to the Chair of the Department of Anaesthesia of the CUHK. During the ten years, Prof. Oh was in Hong Kong, significant progress was made in the development of intensive care as a specialty. This included the administrative, clinical, and academic aspects of intensive-care medicine that had not been evident previously. One of his early significant accomplishments was to change, in 1989, the academic and clinical title of his department to the Department of Anaesthesia and Intensive Care.

In 1988 the establishment of the proposed academy of medicine was being looked into and deliberated by a committee under the chairmanship of Professor Keith Halnan, from the UK, at the invitation of the Hong Kong Government. The committee produced a report which stated that “... Intensive Care was a relatively new specialty...both specialist physicians and anaesthesiologists are involved and take part in training...anaesthesiology is a major well-defined specialty...” In Hong Kong, the situation in respect of training and general management of ICUs (by anaesthetists/intensivists) had not yet gained the widespread recognition that many experts here and elsewhere considered it deserved. There was a consensus in many countries that intensive-care medicine should assume a definite identity of its own.

In 1993, the 7th Congress of the WPSCCM was held in Hong Kong and demonstrated what remarkable progress intensive-care medicine in Hong Kong had made. The convenor of that Congress was Prof. Oh and the hosting organizations were the WPSCCM, the CUHK, and the HKSCCM.

In 1996, Princess Margaret Hospital established the first independent Department of Intensive Care with its own Chief of Service, followed by the United Christian Hospital. Physicians trained in critical-care medicine headed both of these departments.

Training of Medical Personnel in Intensive Care Medicine in Hong Kong

In the 1970s, doctors obtained experience in intensive care by simply being

posted to the ICU. Few doctors were specifically trained in intensive-care medicine because structured training was not available anywhere in the world at that time. In the USA, certificates in critical care were developed under various specialty boards. As the American qualifications were not recognized at that time under Hong Kong's purely British system, no local medical graduate undertook that pathway of training.

From the early 1980s onwards, the Central Training Committee of the Hong Kong Medical and Health Department (and later the Hospital Services Department) placed an emphasis on intensive-care training for vocational trainees in anaesthesia. This resulted in the mandatory exposure to intensive care by anaesthetists going on overseas study leave for the next few years, irrespective of their other training requirements. For non-anaesthetists, training in intensive care still remained the initiative of the individual doctor who needed to find an attachment in an ICU overseas in order to gain experience. In reality, any doctor who was not specifically trained for an intensive-care qualification could not expect to receive more than three to six months of concentrated intensive-care experience at one time.

Australia and New Zealand organized their own structured training programme in intensive-care medicine in the late 1970s. The Faculty of Anaesthetists of the Royal Australasian College of Surgeons (RACS) awarded the first Fellowship Diploma specifically in intensive care in 1980. The first local doctor specifically sent to Australia for training in intensive care was Dr Ronald Lo, who obtained the Fellowship in Intensive Care from the RACS in 1981.

With the arrival of Prof. Oh in the late 1980s, the Faculty of Anaesthetists of the RACS recognized the ICU at the Prince of Wales Hospital for the two-year core vocational-training period. The result was that Hong Kong could now offer a recognized intensive-care training programme without the need for 'budding' intensivists to travel overseas. The first trainee was Dr Tom Buckley, who obtained his Fellowship in 1990. He subsequently became Director of Intensive Care at the Prince of Wales Hospital. This programme added impetus to the local training of anaesthetists in intensive care such that anaesthetists in training could now undergo their three months of intensive-care training in Hong Kong, whilst doctors could now also train in the specialty of intensive care. The first local doctor to train within the Hong Kong intensive-care training programme was Dr So Hing-yu. Subsequent



developments have seen accreditation of the ICUs of Princess Margaret, Queen Mary, Tuen Mun, Queen Elizabeth, Yan Chai, and Pamela Youde Nethersole Eastern hospitals. They are now recognized by the College of Intensive Care of the Australian and New Zealand College to various degrees for core vocational training in intensive care. Many doctors have now passed through this training programme and most of these doctors have remained in Hong Kong, contributing to the provision of high-quality care to seriously ill patients and to the development of intensive care as a specialty.

With the creation of the Hong Kong Academy of Medicine (HKAM), the Hong Kong College of Anaesthesiologists (HKCA) created the Intensive Care Committee in 1994. This was initially chaired by Prof. Oh and subsequently by Dr Buckley. Fellows in Intensive Care were admitted *ad eundem* in mid-1996. The major initial achievement was the development of a structured programme in intensive-care training for local doctors within the HKCA. This has been based on the Australasian training programme, with its prime objective being the training of suitably qualified doctors in the specialty of intensive care and the awarding of the Fellowship of Intensive Care under the HKCA. The inaugural examination took place in 1997 and the first doctor admitted to the HKCA (IC) by examination was Dr Cheung Po-wa. The Hong Kong College of Physicians subsequently established an alternate training programme in critical-care medicine.

Training of Nurses in Intensive and Critical Care Nursing in Hong Kong

Starting in the 1960s, senior nurses were sent overseas, mainly to the United Kingdom, for training in Intensive Care Nursing. On the completion of their training and return to Hong Kong, they helped to set up the local ICUs. But it was evident that this nucleus of expertise was not sufficient to satisfy the rapidly expanding need for intensive-care nursing. To meet the demand, a local postgraduate certificate programme was developed and initially run by the Medical and Health Department in the late 1970s. Subsequently, the Hospital Services Department and the Hospital Authority became involved. In 1995, the first tertiary-level Diploma Course in Critical Care Nursing was run by the CUHK. The Hong Kong Association of Critical Care Nurses is

now well established and makes a significant contribution to the training of nurses who wish to practice in intensive care.

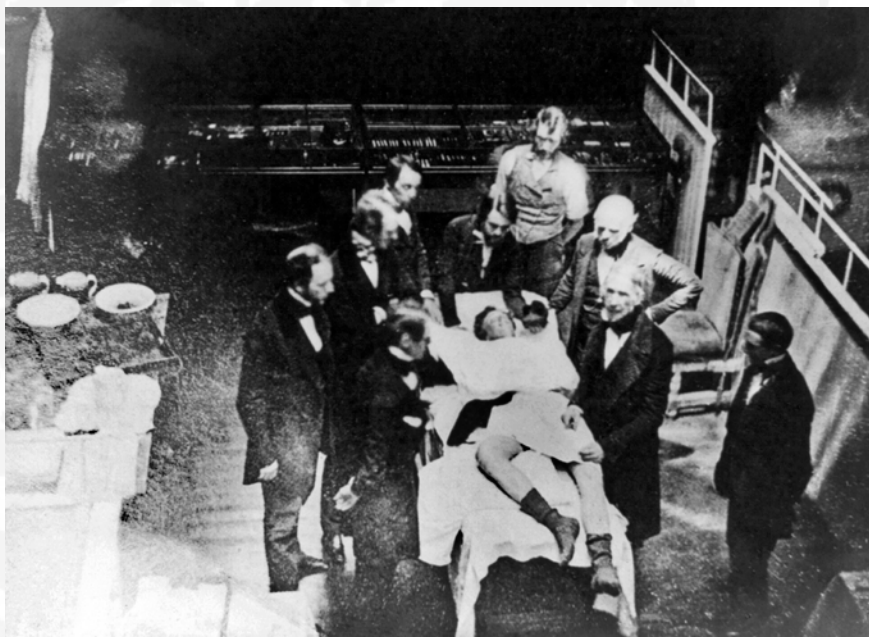
In conclusion, while the initial development of intensive care proceeded slowly, there was rapid progress coinciding with the development of the HKCA, the HKAM, and the HKSCCM. There have been many contributors to the development of the specialty in Hong Kong such that, in 2014, seriously ill patients receive a very high standard of intensive care often surpassing their overseas counterparts in terms of service quality and outcome.



Anaesthesia and Surgery: A Personal Perspective

Arthur K.C. Li

The specialties of surgery and anaesthesia are closely intertwined. Crawford Long, a surgeon in Georgia, was the first to administer ether as an anaesthetic but this was not widely known until 1849. In fact, the first public demonstration of ether anaesthesia took place on 16 October 1846 at the Massachusetts General Hospital in Boston, USA. On that day, Edward Abbott was anaesthetized by William Morton, a local dentist, while a tumour was painlessly removed from his neck by John Warren, the first Dean of the Harvard Medical School. This was a major breakthrough in the treatment of patients because surgery for the first time became painless. The use of ether anaesthesia in surgery spread rapidly owing to its obvious advantage, from Boston to the whole of USA and then to Europe. It also became standard practice, giving surgeons plenty of time to perform their operations. As there was no longer any need to rush through surgical procedures, the concept that



Re-enactment of the first anaesthesia, 1850. A group of surgeons and a patient re-enact the first operation carried out under general anaesthesia, which took place on 16 October 1846, in the operating room of the Massachusetts General Hospital, Boston, USA. This re-enactment took place in around 1850. The anaesthetic (ether) in 1846 was applied by US medical student William T.G. Morton. The surgeons identified in this 1850 scene include John Mason Warren, John Collins Warren, George Hayward, and James Johnson, and Solomon D. Townsend. This is a photograph of a daguerreotype by Southworth and Hawes

a fast surgeon was a good surgeon became obsolete, even though the myth persists to this day, perhaps perpetuated by anaesthetists who want to get off early!

Initially some surgeons would administer the ether and perform the operation all by themselves. However there were incidents where complications ensued with tragic consequences. Soon surgeons opted to concentrate on the operations, leaving the administration of ether anaesthesia to other people.

Surgeons are commonly held as being egocentric and domineering. In the early days, it was not surprising to find a master-servant relationship between the all-powerful and glamorous surgeon and the humble administrator of anaesthesia. At best it was a senior versus junior partnership. Here in Hong Kong, the tension was much more pronounced in the public sector than in private hospitals. To many in the profession, memories of such an unequal relationship are still vivid. It would manifest itself in many ways. For instance, if something went wrong in the operating theatre, the anaesthetist would become an easy scapegoat. The surgeon might blame him for failing to keep up with the blood transfusion, conveniently forgetting who caused the bleeding in the first place!

With the advent of muscle relaxants, surgeons were able to perform more complicated procedures. Worthy of note is the fact that advances in

surgery were on many occasions preceded by advances in anaesthesia. Up to the middle of the last century however, surgeons still dominated the medical landscape: anaesthetists were generally subject to their whims.

But changes were afoot, thanks to the continuing development and specialization of anaesthesia. These were most notable in cardiothoracic surgery. Without the cardiopulmonary bypass, what surgery could offer was limited. It soon became apparent that surgery was only as powerful as advances in anaesthesia would allow. The status of the anaesthetist thus saw gradual improvement, from that of a supporting actor on the surgical stage to an indispensable player and valued partner in patient care.

The pendulum continued to swing in favour of the anaesthetists in the second half of the last century. With better understanding of human physiology and the advent of intensive care, anaesthetists assumed a more vital role and their expertise was deemed no less important than surgical skills. They also managed to carve out a better working environment for themselves, enjoying a whole day off after on-call duties and protective time for research and training. With fewer clinics and ward rounds to tend to, they had more time on their hands and were able to gain control over the administration of theatre usage. The roles of master and servant finally reversed. Anaesthetists now have final say on the use of theatres in many local hospitals and beds in the intensive care units. They have the authority to curtail the operating list if operations run overtime. Corns begin to grow on the knees of surgeons, who have to beg anaesthetists for time slots to operate. Most ironic of all, surgeons have begun to be regarded as mere technicians in the overall management of patients. This phenomenon is more frequently detected in public hospitals than in the private sector. To be fair, these tensions stem not so much from any inherent animosity between surgeons and anaesthetists as from the lack of resources, that is, insufficient manpower and facilities. Sometimes they are the result of unfairness in the allocation of resources, which inevitably leads to friction between specialties both within and among hospitals.

Some years ago there was a shortage of anaesthetists in Hong Kong. The Government recruited overseas-trained anaesthetists to work locally. They have become an important and vital part of our health-care system and have contributed significantly to the well-being of Hong Kong citizens. Over the years, their working conditions have improved and training opportunities have

increased. Anaesthesia as a discipline has also rapidly built up its academic credentials after an autonomous Department of Anaesthesia was set up in the early 1980s at the medical school of The Chinese University of Hong Kong. The establishment of the Hong Kong College of Anaesthesiologists soon followed, setting the requisite standards for professional training. Many young doctors now aspire to become anaesthetists as their first choice. In short, members of the profession have done their part and should be proud of their achievements. It is time for the hospitals to match such remarkable efforts by implementing necessary changes to improve their overall set-up. Hong Kong has the financial muscle to inject resources into manpower training and facilities, whereby many of the existing tensions in the hospital system can be alleviated. The Government through the Hospital Authority has the duty to address current deficiencies and tackle problems head on. No one would be satisfied with band-aid solutions.

Within the medical profession, there is a need to emphasize mutual respect between surgery and anaesthesia, as the two are inter-dependent—the one cannot do without the other. Although minimally invasive surgery has now become the norm, there is no denying that it has taken up more theatre time. But what is also true is that recovery in hospital wards is now much faster. Anaesthesia on the other hand has resumed its old duty of pain control, in both the theatre and the wards. All these developments are for the benefit of patients, whose well-being must always come first. Before one cancels a patient on the operating list, perhaps one should reflect whether one would do the same if that patient were one's close relative. Be it surgeon or anaesthetist, frustrations should not be vented on patients but those who are in charge of hospital resources. After all, the primary duty of the medical profession is to look after the patients and fight against difficulties on their behalf.

Hong Kong is very fortunate to have an excellent team of dedicated medical professionals who for years have provided outstanding services to the local community. Members of the public expect no less from those responsible for managing the medical infrastructure. It is time for them to rise to the challenge and prove their mettle. No one should forget the lessons of the First World War, which are 100 years old: however brave the soldiers are at the front line, carnage cannot be avoided if the generals are incompetent.



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Years of Anaesthesia in Hong Kong

SECTION III

1989 – 2014: Evolution and Diversification

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The Early Period
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Core skills of a specialist anaesthesiologist

The Hong Kong College of Anaesthesiologists: The First 25 Years

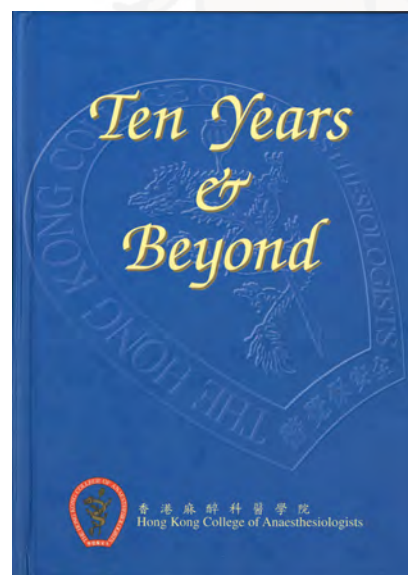
The Early Period

C.T. Hung



Introduction

It is always interesting to review how different systems have evolved and to look at the paths we traversed, especially when you are part of that history. Time flies: not too long ago, I edited the book *Ten Years and Beyond* to mark the tenth anniversary of the Hong Kong College of Anaesthesiologists (HKCA), and now the College is celebrating its silver jubilee. This article is dedicated to all our forerunners for, without their foresight and leadership, we would not have made these amazing achievements over our first twelve years. Anaesthesia has metamorphosed into anaesthesiology, which is now an attractive and respected specialty.



Inauguration of College

It all started at the Annual General Meeting of the Society of Anaesthetists of Hong Kong (SAHK) in 1984 when the formation of a college of anaesthetists was proposed and the Board of Studies of Anaesthesia and Intensive Care set up for the preparatory work. At that time, both our United Kingdom and Australian counterparts existed as a faculty under the Royal College of Surgeons, and they too were fighting to establish an independent college. With the appointment of Dr Keith E. Halnan in 1986 to chair the Hong Kong Government Working Party on Postgraduate Medical Education, which later led to the formation of the Hong Kong Academy of Medicine (HKAM), intense preparatory work ensued and the debate over an independent college of anaesthetists was initiated. After much hard work the Board of Studies presented a convincing case for an independent college.¹ Once they knew that independent-college status would be granted, the Board focused their work on the Memorandum and Articles of Association for submission to

The inaugural ceremony of the HKCA in 1989. (from left) B. Scott, I.T. Houghton, T.M. Moles, M. Rosen, Z. Lett, R. Lo, E. Chan



the Companies Registry seeking registration for the College as a limited company. Incorporated on 26 September 1989 as the Hong Kong College of Anaesthesiologists, the College was one of the first medical colleges in Hong Kong to become an HKAM constituent college. At the first meeting on 29 September that year, all subscribers of the Memorandum became the first Council, duly electing Dr T.M. Moles as Founding President.

Admission of Fellows and First Election

As a young college, the first few years were spent in setting up systems and establishing international linkages. After the approval of the by-laws at the first AGM on 18 October 1990, the College began inviting applications for Fellowship *ad eundem*, known in present day Academy terms as ‘First Fellow’. These Fellows were admitted at the fourth and fifth congregations held in 1991. When the College conducted the first council member election exercise in 1991, 106 Fellows were admitted. The first elected Council was formed in August 1991 and Professor Teik Oh became the new president.

Setting Up Training in Anaesthesia

The new training system had to be benchmarked against international standards and tally with the HKAM Ordinance. Until that point, the Faculty of Anaesthetists of the Royal Australasian College of Surgeons (RACS), later the Australian and New Zealand College of Anaesthetists (ANZCA), had already been running an excellent training programme in Hong Kong. Many of our First Fellows were ANZCA fellows. Having a dual-track system with the Hong Kong system modelled upon and running in parallel with the ANZCA programme was advantageous: trainees could register for both colleges with ANZCA as a fall-back training programme should the Hong Kong programme not turn out as expected. This helped in our building a new system appropriate to the local situation and with enough flexibility for rotations, and yet assuring a high standard that matched well with the ANZCA programme requirements. Trainees took some time to accept the Hong Kong fellowship, with early trainees still obtaining both fellowships. As the credibility of the HKCA fellowship grew, and with the more pressing need to train more anaesthesiologists to meet increasing demand, the flexibility of the HKCA system came into play and the HKCA was able

to absorb this additional trainee load. It is now customary for trainees to obtain the HKCA fellowship only. The training programme ran very well and underwent continuous refinement over the years, for example, in the case numbers required for subspecialty training, electronic logging, and in-training assessment, in line with local needs and international trends. No one could predict that the ANZCA would eventually withdraw their training programme from Hong Kong.

Establishing the Examination System

Following the inaugural Intermediate Examination in July 1994, the inaugural Final Examination was held in August 1995, when we produced our very first Fellow by examination. Examinations are a crucial part of the training programme, and setting up the examination system was no easy thing. From the outset there was no option to run conjoint examinations. To achieve some international recognition, we invited two external examiners for each examination, one from ANZCA and one from the Royal College of Anaesthetists (RCA), a move which made the examinations very costly. Professor Tony Gin contributed substantially to setting up our examination system. Apart from changing the essay questions to short-answer questions for the Intermediate Examination, much of the format has stayed the same since 1994. Both ANZCA and RCA external examiners were usually very impressed by the standard of the examinations and the candidates. The OSCE component of the Final Examination was particularly taxing for candidates.

Intensive Care Training

After establishing the anaesthesia training programme, attention was turned to intensive-care and pain-management training. The Intensive Care Committee was set up in June 1994. Learning from the Australian experience, we were hoping to run a local inter-collegiate training programme. Its non-viability soon became obvious, but our prototype programme still contained enough flexibility to allow doctors from other specialties to join in. At that time, the HKAM Education Committee was in the process of defining specialty and subspecialty training, and intensive care became the first subspecialty training programme submitted by colleges and approved by the Academy. During this process the original flexibility was lost in order to conform to the new HKAM



rules. Nevertheless, training commenced after hospitals were accredited, and the inaugural Fellowship Examination was held in November 1997. An external examiner from the Faculty of Intensive Care, ANZCA, was invited to each examination in Hong Kong. Although only small numbers went through the intensive-care training programme, its importance cannot be gauged on that parameter alone because the manpower requirements were different for anaesthesia and intensive care.

Pain Management Training

Both external and internal factors influenced the establishment of the Training Programme for Pain Management. In the early 1990s, Hong Kong was participating in the global pain-management movement, and major hospitals such as Queen Elizabeth Hospital, Queen Mary Hospital, and Prince of Wales Hospital were all setting up pain services in acute, chronic, and cancer pain management. Apart from the American Board Diploma in Pain, ANZCA was also developing a Diploma in Pain programme. Professor J.C.S. Yang was then asked in 1995 to set up the Pain Management Committee. Subsequently the one-year post-fellowship diploma training programme was set up, with the Inaugural Examination for Diploma in Pain Management being held in October 1998.

From CME to CPD

While continuing medical education (CME) used to be voluntary, HKAM made it a mandatory requirement, failing which Academy Fellowship could be lost. The much-debated CME was launched in July 1996 and met with substantial scepticism and reluctance. Anaesthetists working outside the training institutions expressed considerable anxiety about the infrastructure required for continuous education, the practicability of scoring CME points, and equity and fairness in accrediting CME points. With the engagement of our Fellows in the newly formed CME subcommittee, these issues were eventually ironed out. The compliance rate for the first CME cycle at the end of June 1999, and for subsequent cycles, was very good. This paved the way for the HKAM to introduce active elements into CME, referred to as continuous professional development (CPD), in due course.



National and International Relationships

International linkages are vital for any new college. In the early years our close relationship with ANZCA greatly helped the development of the College. Every year, ANZCA invited the HKCA president to attend the ANZCA College Ceremony held during the ANZCA annual scientific meeting, providing good opportunities for networking. The ANZCA Hospital Inspection exercise in March 1997 created a formal opportunity for the officers of the two colleges to meet and discuss items of common interest. Professor Phillips, then president of ANZCA, visited us again later to receive an HKCA Honorary Fellowship. Prof. Oh, being a past HKCA president and ANZCA council member, played a major role in bringing the two colleges closer.

After the July 1997 handover, national relationships came into play. Before then, our relationship was limited to unofficial contacts. The First Guangdong-Hong Kong Anaesthesiology Conference held in June 1996 was a breakthrough, and the 1997 ASM was another turning point. China sent a large delegation to our ASM with Professor Jin from Beijing talking about the development of anaesthesiology in China. These events led to the groundbreaking courtesy visit by a joint HKCA-SAHK delegation in June 1998 to Beijing and Shanghai. In April 1999, we were invited by the Chinese Society of Anesthesiology to attend their first revived national ASM in Hangzhou. Such visits are now frequent and greatly help foster collaboration and the specialty of anaesthesiology to prosper.

*The First Guangdong-Hong Kong
Anaesthesiology Conference,
June 1996*





C.K. Chan and C.T. Hung with the delegates from mainland China in 1997

Relationship with the SAHK

The relationship with the SAHK wavered during the HKCA's first decade of existence. Even though the SAHK helped with the birth of the HKCA, there was the initial debate on whether the SAHK should continue to conserve manpower in running the HKCA. Eventually, at an AGM of the SAHK, Dr Moles proposed a symbiotic relationship between the HKCA and SAHK. The role of the SAHK was subsequently redefined. When I took up the College presidency, many of our educational events were held in conjunction with the SAHK, notably the inaugural ASM in 1997, its success later turning it into an annual event. The shared vision between the SAHK and HKCA in promoting education led them to signing an informal agreement to co-organize ASMs until the year 2000. The HKCA and SAHK also worked closely together in dealing with the press and in orientating new doctors joining the specialty of anaesthesiology. This is a good example of turning conflicting interests into a positive outcome.

Office and Staff

As a statutory body, a college could not function without having a secretariat and employing its own staff. Initially, secretarial staff members from different hospitals acted as volunteer staff for the College, but this was inappropriate. The allocation of a College Office, while the HKAM was still housed in the

Pamela Youde Nethersole Eastern Hospital, opened a new chapter for the HKCA, but secretarial assistance still had to come from HKAM secretarial staff, which was much appreciated. In due course the recruitment of a full-time staff was approved by Council when the College moved into the present College Chamber at the Academy building. Then Mr Daniel Tso, our first full-time staff, arrived and transformed our College from a virtual one into a real one.

The Status of Anaesthesiology

During this period, anaesthesia has gradually transformed itself from an unpopular backwater into a much sought-after specialty. The contributions from our early leaders must be acknowledged. They selflessly invested their personal time and wisdom in building up the College. Their efforts in opening up the specialty, educating people about anaesthesiology, and getting them interested as a career were instrumental, coupled with the evolution of intensive-care and pain management which introduced wider career opportunities for new doctors.

Conclusion

Since its inception, the College's first twelve years have witnessed a phase of rapid growth and development from nothing to having all the functions and appendages of a modern college. Challenges are overcome with new paths traversed. Looking back, I am very proud of our achievements. Summarizing them in just few pages may give the impression it has been an easy path. No achievement can be made without blood and tears, but our numerous sleepless nights paid off in the end. I would like to wish the College all the very best as it moves from strength to strength and scales new heights.

Note

1. IT Houghton, TM Moles. The founding of the Hong Kong College of Anaesthesiologists. in 'Ten Years and Beyond: The Hong Kong College of Anaesthesiologists', November 1999, Hong Kong.





The Hong Kong College of Anaesthesiologists: The First 25 Years

The Last 12 Years and Looking Ahead

Tony Gin

Even after the HKCA had been formed for over ten years, many challenges still faced the small college. It had to ensure that its newly established training and examination system was credible and reliable, maintain and update professional standards, and provide a sense of community and fellowship for its trainees and specialists. Anaesthesiology also has to compete with the other medical specialties for recognition and respect from the public, from the medical profession, and from all the politicians and decision makers in Hong Kong.

We are fortunate that the HKAM provides a framework for many administrative policies and regulations. For example, the implementation and development of CME and CPD are facilitated by having a similar structure for all specialties. The College has also borrowed heavily from overseas organizations in building its training and examination systems, and preparing standards and guidelines for professional practice. Nevertheless, we did make major adaptations for our local needs, and the result has been a very successful and unique training and examination system that is not just popular, but continues to attract top medical graduates into our specialty.



Our Fellows have been very dedicated in giving up their own time to support the training and examination system. We have also been increasingly offering our services and expertise in training outside anaesthesiology, especially through courses at our Simulation Training Centre (formally Institute of Clinical Simulation). As one of the pioneers in simulation and patient safety, we are obliged to stay at the forefront of developments in this area. Thus it is essential that our Fellows take an active role in the new simulation centre at the Hong Kong Academy of Medicine–Hong Kong Jockey Club Innovative Learning Centre for Medicine (HKJC ILCM).

HKCA Council, 2005–2007

The scope of anaesthesiology has always been relatively restricted in Hong Kong, and one of the challenges is to develop our specialty, not just in traditional areas such as intensive care and pain medicine, but also new areas such as peri-operative medicine. An important event for the College was the formation of the Resuscitation Council of Hong Kong in 2012, with our College president as the first chairman.

A major problem for the future development of our specialty is that there is still a shortage of doctors in Hong Kong, especially in anaesthesiology.

The ratio of specialist anaesthesiologists to population in Hong Kong is a mere 1:20,000. This is less than half the ratio of 1:8,000 to 1:10,000 seen in most developed countries. However, most of the surgical specialties requiring anaesthesia services have similar manpower ratios in Hong Kong as those in developed countries. No wonder there is continued unmet demand for anaesthesiologists in the public and private sector. As more areas of the health-care system adopt modern overseas practices (e.g., sedation by anaesthesiologists for paediatric procedures, interventional radiology, and endoscopy), there will be an even greater demand for anaesthesiologists. Advances in technology and peri-operative medicine provide an opportunity for our profession to show that we have increasing skills and expertise. This will lead to the increasing involvement of anaesthesiologists in the whole-patient-care process and in health-care management.

Meanwhile, the College has to actively maintain its visibility, both locally and internationally. It is only by raising its profile in local affairs and politics that the College can keep abreast of important developments and participate in changes in health care that affect our specialty. In particular, the Hospital Authority (HA) is not only the employer of most of our trainees and Fellows, but also the primary organization through which many changes in anaesthesia practice are brought about in Hong Kong. Thus it is very important and encouraging that many college presidents and council members have taken up key management positions in the HA, from Chief of Service through to Cluster Chief Executive as well as directorship positions in the HA Head Office. Similarly, other Fellows have held important positions in the HKAM and the private health-care sector.

Developing the international relations of the College has been more challenging. The College had enjoyed many years of close relations with the ANZCA, partly because of personal connections and because most fellows of the College were also Fellows of ANZCA. The training and examination systems were originally adapted from ANZCA, our Fellows were Primary and Final Examiners for ANZCA, the ANZCA examinations were held in Hong Kong, and ANZCA examiners were also invited to act as external examiners for our College examinations. We were also involved in other ANZCA activities such as their Research Committee and Special Interest Groups. The presidents were invited to each other's ASMs, and two very successful joint scientific

meetings were held in 2001 and 2011. Unfortunately, ANZCA suddenly and unilaterally announced on 21 April 2012 the withdrawal of their training system from Hong Kong with immediate effect. This was an unheralded and surprising shock to the College (and most ANZCA Fellows worldwide), and no proper valid explanation has ever been given by ANZCA for this decision. ANZCA had never consulted or discussed this matter with our College or with the ANZCA Fellows in Hong Kong who had been responsible for supporting ANZCA training. The result of this unilateral decision is that local anaesthesiologists now have little reason to pursue or continue relationships with ANZCA. Instead, the College is likely to develop further ties with Asian partners and other overseas colleges and organizations that have an interest in regional and international collaboration. Our relationship with the College of Intensive Care Medicine (CICM) is still mutually supportive, and our Fellows are still council members and examiners for CICM.

The College has not yet been able to make a significant contribution to fostering much research and academic activity. Although the ASM is growing every year, the College faces the same problems encountered by the academic University departments of anaesthesia. With the shortage of medical manpower in Hong Kong, public hospital and private practice are much more attractive than academia. Busy practitioners have little time for research and Hong Kong will have to rely on the two University departments to produce significant research.

Through the efforts of the College and its Fellows, anaesthesiology is a well-established and respected specialty that continues to attract top trainees. We have always placed a priority on patient care, patient advocacy, and patient safety. These everyday values are strongly supported by the whole community. There are great opportunities for Fellows to contribute and make a significant impact on health care in Hong Kong, Asia, and internationally. The College certainly needs to make strategic plans, position itself to take advantage of future opportunities, and lead advances in health care. This requires considerable effort from all our Fellows, during their everyday professional practice as well as their service with many different groups and organizations. I hope more of our Fellows will be prepared to participate in this enjoyable challenge.



The Society of Anaesthetists of Hong Kong in the 21st Century

Cheung Chí-wai and Steven Wong

The Society of Anaesthetists of Hong Kong (SAHK) was founded in 1954. Over the past 60 years, the Society has put in a considerable effort in order to bring up the standard of anaesthesia in Hong Kong and to gain international recognition. Since 1996, the Society has been working closely with the Hong Kong College of Anaesthesiologists in organizing annual scientific meetings. Through these meetings, the Society has developed fruitful linkages nationally and internationally. The Society celebrated its Golden Jubilee in 2005, and the history and development of SAHK thus far can be referred to in the booklet *Golden Jubilee Commemorative Monograph*, edited by Dr Steven Wong.

Over the last decade, SAHK has continued to grow stronger. The presidents of SAHK from 2005 to 2008 and from 2009 to 2012 were Dr Steven Wong Ho-shan and Dr Cheung Chi-wai respectively. The currently president of SAHK is Professor Michael Irwin. The achievements of SAHK are summarized below.



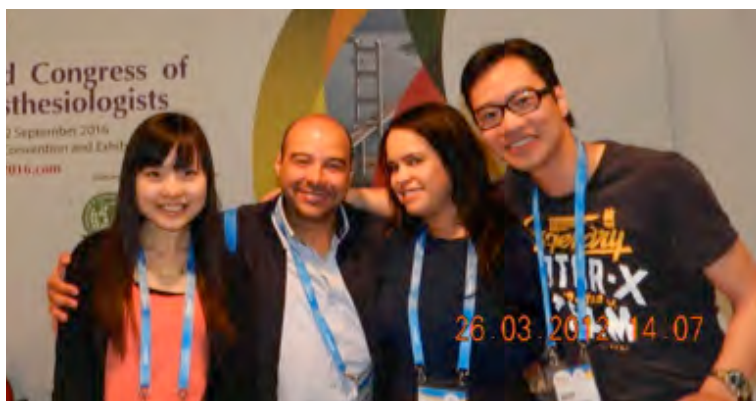
World Congress of Anesthesiologists (WCA) 2016

In 2006, in order to bring the status of the anaesthesia community in Hong Kong to a new and higher level, members of SAHK suggested that the Society should bid for WCA 2016 so that it could be held in Hong Kong. A bidding committee was then established to handle the preparatory work. The members included Dr Steven Wong, Prof. Michael Irwin, Dr Cheung Chi-wai, Dr Libby Lee, Dr S.T. Tan, Dr Joseph Lui, Dr Y.F. Chow, and Dr Yuen Man-kwok. Dr C.T. Hung and Dr T.W. Lee acted as advisors to the bidding committee. Prof. Irwin and Dr Libby Lee presented the proposal on behalf of the bidding committee at WCA 2008 in Cape Town, South Africa. With the support of other sister societies, including the Chinese Society of Anesthesiology (CSA), SAHK was selected as host of WCA 2016 by the World Federation of Societies of Anaesthesiologists (WFSA). The organizing committee of WCA 2016 has already been formed. Prof. Irwin and Dr Cheung Chi-wai are President and the Vice President of WCA 2016 respectively, while Professor Tony Gin is the Scientific Convenor. The organizing committee members attended WCA 2012 in Buenos Aires, Argentina, where they were active in promoting WCA 2016. The committee received a very good response and recorded useful suggestions from the meeting delegates.

*The WCA 2016 bidding team
after their proposal presentation in
Cape Town*

SAHK Fellowship Foundation

In order to offer more support to new fellows planning their overseas training, the establishment of an SAHK Foundation Fellowship was suggested by Dr C.K. Chan. Dr Chan very generously donated HK\$500,000 as the seed money



Promoting WCA 2016 in Buenos Aires, Argentina

for setting up the foundation. After two years of preparatory work by the council members and with guidance from the other specialist colleges, the inauguration of the SAHK Fellowship Foundation took place at the annual general meeting of SAHK in 2012. Dr C.K. Chan was guest of honour at the inauguration.

Communication with Other Sister Societies

By virtue of the fact that he is President of WCA 2016, Prof. Irwin has also been appointed as a committee member of the WFSA. More communication and connection with WFSA has therefore been established. SAHK also continues to maintain close relationships with sister societies of different regions around the world. The Society is honoured to be invited by the Australian Society of Anaesthetists to attend each year the Australian National Scientific Congress. Over the last ten years, the close links between the CSA and SAHK have been further enhanced. This will be elaborated on in Chapter 15: 'Relationships with other anaesthetist communities: China and Macau'. Through these connections, we have enjoyed effective communications with colleagues overseas as regards knowledge, skills, experience and fraternity.

Support in Educational and Research Activities

Although SAHK is not involved in training local specialists, it does provide help for local anaesthesia trainees preparing for their examinations. The ANZCA (Australian and New Zealand College of Anaesthetists) and HKCA Fellowship Examination Techniques & Preparation Course (previously known as the Fellowship Examination Technique Workshop) has been organized for more than five years and garnered excellent feedback from trainees. Now it is an annual event organized by local and overseas fellows who have experience of the fellowship examination. SAHK has also offered benefits and assistance to anaesthesia trainee members. We have established conference and research grants as well as sponsorships for trainee courses in anaesthesia. Dr P.P. Chen was granted SAHK research funding for his pain research in 2012.



At the SAHK AGM 2012, Dr C.K. Chan (right) presents a cheque for HK\$500,000 as the seed fund for the establishment of the SAHK Fellowship Foundation

The Society has made significant contributions to strengthening professional anaesthesia support in Hong Kong, and for many years ran the Certificate Course for Anaesthetic Nursing. Nearly one thousand nurses from Hong Kong and even from Macau have now been trained. Some have developed into nurse specialists in anaesthesia as well as eminent nursing leaders. Thanks to the current highly developed expertise of our nursing counterparts, we have now discontinued the regular nursing training course. However, we still help with organizing nursing courses in Hong Kong and Macau upon request.



The Inaugural Fellowship Examination Technique Workshop held in 2006 with Dr Greenland (third left) and fellow instructors (from left): Dr Steven Wong, Dr Libby Lee, Dr Janet Wu, Dr David Chong, Dr S.T. Tan, Dr Hussin and Dr Winnie Fung



Anaesthesiology and Intensive Care in Hong Kong 1988–1998: A Golden Decade

Teik E. Oh

Unknown to me, just as I started as the Professor of Anaesthesia at the Chinese University of Hong Kong (CUHK) in February 1988, three new Medical Officers (MOs) were posted to my new Department at Prince of Wales Hospital (PWH). ‘No, we did not request to do anaesthesia; surgery yes, anaesthesia never. No, we did not ask to be sent to PWH,’ they told me. ‘No one wants to do anaesthesia, let alone at PWH,’ a health Head Quarter official told me. In those days, my staff struggled to complete their lists in the operating theatre (OT). Surgeons submitted lists without discussion with anaesthetists or OT staff—every case had to be done, full stop. In the intensive care unit (ICU), MOs wheeled in patients unannounced, with comatose post-cardiac-arrest survivals brought in to die in the ICU. Ward MOs entered the ICU at will to ‘borrow’ ventilators for their ward patients. ‘No need for your help, we can handle airway and ventilatory care,’ they said. Ward MOs told my staff (myself included) how to treat critically ill patients. Anaesthetists stood on a low rung on the ladder of the medical pecking order in Hong Kong. Intensive care? No such thing.

‘We respiratory physicians and trauma surgeons and our MOs look after the critically ill. We’ll call you if we need you,’ they said.

When I left Hong Kong in 1998, the Department was internationally recognized. It had provided full clinical governance in OT (managed by John Low and Amy Cho) and to ICU (directed by Tom Buckley, and now Gavin Joynt), attracted MOs to join (some prize-winners like K.K. Lam, Matthew Chan, and Simon Chan), published over 50 refereed papers yearly, won every trainee prize of Australian and New Zealand College of Anaesthetists (ANZCA), and ran educational programmes in anaesthesia and intensive care directed by Cindy Aun and P.T. Chui (HKCA, HKCA FIC, ANZCA, and ANZCA FIC, now CICM). Hong Kong itself had firmly established anaesthesia and intensive care, with its own Hong Kong College of Anaesthesiologists (HKCA) and Faculty of Intensive Care (FIC) in the Hong Kong Academy of Medicine (HKAM). ICUs in Hospital Authority (HA) hospitals were increasingly staffed by intensive care-qualified consultant intensivists, mostly PWH graduates. Anaesthesia and intensive care had become well-respected specialties.

How did all this come about? In the local PWH setting, it was vital to secure respect for and the clinical rights of anaesthetists and intensivists. At PWH, over a three-to-six month period, I introduced policies relating to OT and ICU, for example, policies on ICU admission and discharge, banning the use of ventilators in wards, clinical decision-making, and OT policies on anaesthetists vetting and organizing lists based on patient safety. The surgeons and some physicians were outraged. This had never happened in Hong Kong! However, the professors of surgery and medicine offered no real opposition. Being highly intelligent and visionary men, they knew that a quality department of anaesthesia and intensive care could only bring credit to PWH, CUHK, and Hong Kong and, in return, enhance their departments. I shall always be grateful for that support, particularly from Professor Arthur Li, my good friend. I secured accreditation for intensive care training from ANZCA, with Tom Buckley as the first trainee. He was followed by Charles Gomersall, Hing So, K.M. Ho, and Florence Yap, all formidable candidates. It was then up to us to put our money where our mouths were, that is, deliver quality patient care. Labour-intensive teaching programmes for trainees and CUHK medical students were set up. Trainees were stringently supervised. Peer review, audit meetings, and critical-incident reviews (run superbly by Tim Short), were established and with the Department of Surgery. Concurrently, with the focus

on quality care, research initiatives were set up, including critical reviews of potential projects (driven by Tony Gin and Warwick Ngan-Kee). I was fortunate to be able to serve a term as Dean of Medicine and to be able to build on those principles of good care, especially that of quality assurance.

The second component was the consolidation of the specialties of anaesthesia and intensive care throughout Hong Kong. A group of us, senior anaesthetists in the major Hong Kong hospitals, formed a working party to found the HKCA. Many hungry evenings were spent at the British Military Hospital or Hong Kong Medical Association offices, debating the governance of our new College. Legal issues were handled by Mike Moles' legal contacts, and Col. Ivan Houghton, who had recently acquired a law degree, wrote most of the drafts of the constitution. The new College was inaugurated in December 1989, with Mike Moles as President. At around this time, the Government had formed preparatory committees to found a new HKAM and the HA. I was privileged to be a member of both committees. When the HKAM was inaugurated in December 1993, the HKCA was an *equal* member of its constituent sister colleges, and not as a faculty of the College of Surgeons, as were the scenarios in UK and Australia during the timeframe of the HKAM preparatory discussions.

Practising anaesthetists and intensivists and their trainees in Hong Kong owe much to many dedicated people for the founding of HKCA and its early years. To my mind, they include (in alphabetical order): Jean Allison, Anandaciva, Cindy Aun, C.K. Chan, C.S. Chan, Justin Chan, Ross Holland, Jean Horton, Ivan Houghton, T.W. Lee, Zoltan Lett, Ronald Lo, John Low, Mike Moles, Sudhaman, and Clement Yuen. Last, but certainly not least, tribute must be paid to the Society of Anaesthetists of Hong Kong (SAHK). They were the sole flag bearer for anaesthesiology before the HKCA. The SAHK generously donated funds to help found the HKCA, a significant amount coming from the proceeds of the 7th Asian Australasian Congress of Anaesthesiologists in 1986, convened superbly by Jean Allison. I apologize if I have inadvertently omitted any names who also deserve credit. Our thanks, of course, go to them too. Finally, I am privileged and honoured to have been in Hong Kong at the time. It was indeed a golden decade for anaesthesiology and intensive care.

Development of Pain Medicine in Hong Kong

S.L. Tsui and Joseph C.S. Yang

The original meaning of the Greek word ‘anaesthesia’ is ‘without sensation’, which implies to induce the absence of pain. Over time, the specialty has gained unique knowledge regarding the pathology and pharmacology of the feeling of acute anguish. The anaesthesiology leadership realized this and decided to depart from the standardized methods of treating patients. In Hong Kong, this has been done in various stages and over many years.

Individual Efforts

Until the late 1980s, patients in Hong Kong suffering from chronic or cancer pain were managed through consultations with individual medical practitioners. Although individual specialists from different disciplines have taken care of pain patients on a *sole proprietor* basis, no regular specialist pain service was available in either the public or the private sectors.

Organizational Endeavors

In the late 1980s, anaesthesiology departments in public hospitals began to send staff to the United Kingdom (UK) and Australia to obtain training in modern pain medicine. The early pioneers included Dr C.L. Kwok from Princess Margaret Hospital, Dr T.W. Lee from Prince of Wales Hospital (PWH), and Dr S.L. Tsui from Queen Mary Hospital (QMH). They subsequently initiated pain-management services in their hospitals. To start with, these pain physicians attended their pain referrals on an *ad hoc* personal consultation basis in their spare time as no regular sessions were assigned for pain management. In January 1990, the first pain-management service was officially organized at QMH, to provide acute-pain services (APS) and chronic pain and cancer services (CPS). Soon, similar services were established at Queen Elizabeth Hospital and PWH, as well as at other major public hospitals, to provide in-hospital and later out-patient pain services.

In 1994, pain physicians from major Hospital Authority hospitals met and discussed the further development of modern pain medicine in Hong Kong. They held extensive discussions and also lobbied the Hong Kong College of Anaesthesiologists (HKCA). The latter ultimately agreed to set up a Pain Management Committee to develop and train pain specialists. In 1995, the HKCA Council appointed¹ Professor Joseph C.S. Yang as chairman and Dr S.L. Tsui as the honorary secretary of the Committee. Other members included Drs T.W. Lee, C.T. Hung, K.K. Lam, C.L. Kwok, and W.N. Tong. The HKCA president, honorary secretary, and chairman of the College's Guidelines Committee also served as ex-officio members. This team drafted the guidelines, education/training curriculum, and examination system for the HKCA Diploma in Pain Management (DPM) Programme. This is a post-fellowship qualification granted to anaesthesiologists who hold the FHKCA and have completed all the requirements for DPM.

Development and Advancement

In the mid-1990s, few countries had pain-medicine training programmes which HKCA could take as a reference. The only examples were the American Board of Anesthesiology's 'Diploma in Pain Management' and the Australian and New Zealand College of Anaesthetists' (ANZCA) 'Certificate in Pain Management'. The drafting of the HKCA DPM course took their

lead mostly from these two countries. This diploma course is open to medical practitioners who hold the FHKCA (or who have already passed the FHKCA final examination). This course is a full-time 12-month vocational-training programme conducted in HKCA accredited centre(s). The trainees also need to complete a project related to pain medicine and pass the DPM examination. This has been held on an annual basis, involving both local and overseas examiners (from USA, Australia, and UK).

In 1997, HKCA granted the DPM to the first batch of HKCA Fellows, based on their training credentials, experience, and having practised pain medicine on a regular basis at the time of application. In the same year, the HKCA Accreditation Committee approved QMH and PWH as the first two DPM training centres. This was soon followed by other major public hospitals in the Hong Kong SAR. DPM training commenced in mid-1997. The first DPM examination was conducted on 3 October 1998. Prof. Joseph Yang, Dr T.W. Lee, and Professor Michael Stanton-Hicks (Cleveland Clinic, USA) served as examiners. All three candidates—Dr C.C. Leung, Dr Simon Chan, and Dr Cynthia Wong—passed this examination. In 1999, the Medical Council of Hong Kong granted the HKCA DPM quotable status.

With pain medicine evolving as a medical specialty in its own right, the HKCA Pain Management Committee began to study upgrading the Diploma into a fellowship programme. The HKCA thus established a working group chaired by Dr P.P. Chen (and later Dr Steven Wong) to set up a pain fellowship programme. The Pain Management Committee was also upgraded to the Board of Pain Medicine (BoPM) in 2004. The HKCA Council, as well as the Hong Kong Academy of Medicine, approved this fellowship programme in 2012. Accreditation of the Fellowship Training Centres was completed in 2013 and training commenced in January 2014. Since pain medicine is multidisciplinary, the BoPM has appointed a working group to study the feasibility of recruiting doctors from other medical specialties into the HKCA Pain Fellowship Programme. This would make the Pain Fellows genuinely ‘multidisciplinary’.

Overseas Connections

Pain medicine is a relatively young branch of medicine in Hong Kong, and so overseas assistance and advice is essential for its further development. In 2001,



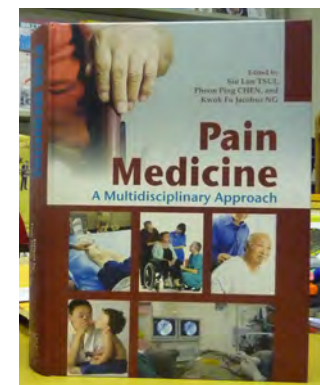
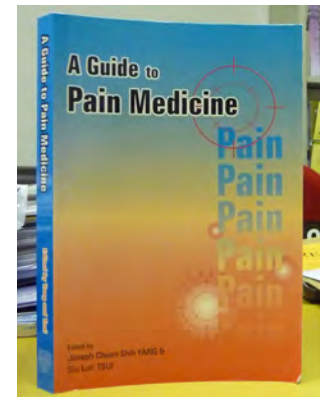
during the combined scientific meeting of HKCA and ANZCA, Prof. Michael Cousins, Dean of the Faculty of Pain Medicine (FPM) of ANZCA, generously agreed to provide assistance to HKCA to develop pain medicine. ANZCA then began to send examiners to Hong Kong for the DPM examination. Communication was also established with the Royal College of Anaesthetists of the UK. The latter also send examiners to the DPM examination. The FPMANZCA has also been electing Hong Kong pain physicians to their fellowship since 1999 (Dr S.L. Tsui).

Pain Medicine Services in the Public and Private Sectors

With the hard work of the pain fraternity in the Hong Kong SAR, pain medicine has grown and achieved relatively well-developed status in Hong Kong, although it still lags behind some advanced countries. Many public hospitals have organized their APS and CPS to manage acute, chronic, or cancer pain. Comprehensive services, including out-patient pain clinics, in-hospital consultation, follow-up care, and regular sessions for interventional procedures are now available at training centres. These service teams work in close collaboration with other medical specialties, pain nurses, and other allied health-professional teams. The latter include clinical psychology, physiotherapy, and occupational therapy. In order to advise the HA on developing and co-ordinating pain services, a Task Force in Multidisciplinary Pain Management was set up under the Coordinating Committee of Anaesthesiology in 2001, with Dr C.T. Hung as chairman. This Committee involved pain physicians from anaesthesiology as well as from other specialties, nursing and allied health-care professionals. Through their joint efforts, a communication network was established and the Task Force established guidelines-standardized pain forms and patient information pamphlets. Later the Task Force became an HA Central Committee charged with advising the HA on the development and delivery of pain medicine in the Hong Kong SAR. Dr P.P. Chen is the current chairman of the Committee. In the private sector, pain clinics have also been set up to treat patients suffering from chronic and cancer pain. Further development of pain services in private hospitals and clinics may now be anticipated, as more medical practitioners become aware of the role and function of this new specialty.

Research and Academic Activities

In parallel with the development of pain services in public hospitals and the training of pain physicians, both the University of Hong Kong (HKU) and the Chinese University of Hong Kong (CUHK) have conducted research and presented a substantial number of papers in peer-reviewed journals. In 1997, HKU approved the first doctoral thesis and granted an MD degree in pain medicine (to Dr S.L. Tsui). In 2012, in order to strengthen research in the basic science of pain, HKU established a 'Laboratory and Clinical Research Institute for Pain' and appointed A/Prof. C.W. Cheung as the first director. The CUHK/New Territories East Cluster now contributes tremendously to the development of pain medicine in Hong Kong. They established the first and the Hong Kong's best cognitive-behavioural therapy programme, the COPE Program, at the Alice Ho Miu Ling Nethersole Hospital in 2002. In addition, the team conducts workshops on interventional procedures using cadavers. In order to promote education in pain medicine, the pain community in Hong Kong published two major medical textbooks, in 2002² and 2010³ respectively.



Pain Society and IASP Chapter

The pain community also set up the Hong Kong Pain Society (HKPS) in 2006, to promote exchanges of knowledge and foster collaboration between different specialty groups related to pain medicine. HKPS organizes regular scientific meetings and contributes extensively to pain-medicine education in Hong Kong. In 2005, the Society organized the Hong Kong Satellite Meeting for the World Congress in Pain. In 2009, HKPS achieved Chapter Status of the International Association for the Study of Pain (IASP).

Notes

1. HKCA Council Minutes CCM 56.10.02 held on 26 October 1995 at PYNEH, Room 803, Multicentre Block A
2. Yang JC, Tsui SL, editors. A guide to pain medicine. Hong Kong: Hong Kong University Press; 2000.
3. Tsui SL, Chen PP, Ng JK, editors. Pain medicine, a multidisciplinary approach. Hong Kong: Hong Kong University Press; 2010.



Simulation-based Education in Hong Kong: Contributions of Anaesthesiologists

P.P. Chen

Fellows of the Hong Kong College of Anaesthesiologists (HKCA) have been at the forefront of simulation-based education for health-care professionals in Hong Kong for over 15 years. The first encounter with high-fidelity clinical simulation occurred at overseas anaesthesiology meetings in the early 1990s. It was common then to have simulation workshops whereby the participant was subjected to five minutes or so of *sheer terror* during an emergent clinical scenario followed by a few minutes of debrief and feedback. In 1996, we had the privilege of using the high-fidelity simulator at the School of Nursing of the Hong Kong Polytechnic University (HKPU). At that time, the Nursing School was using the simulator for teaching bedside nursing procedures, while we experimented with crisis-management scenarios. Soon we were running simulation workshops at HKPU in collaboration with the Nursing School as part of our Annual

Scientific Meeting programmes. Meanwhile at the Caritas Medical Centre, Dr Joseph Lui Cho-ze founded and became the first Director of the Hospital Authority's Caritas Medical Centre Resuscitation Training Centre in 1996. The Centre provides basic and advanced cardiac life support courses to both health-care professionals and the public.

The year 2001 was a milestone in the development of clinical simulation in Hong Kong. At North District Hospital (NDH), under the leadership of President Dr Lee Tsun-woon and Dr Sze Tak-suen from NDH, the HKCA in collaboration with NDH established the Institute of Clinical Simulation (ICS), with its own operating theatre (OT) and post-anaesthetic care area, and equipped with a high-fidelity human-patient simulator. We were able to simulate clinical events in the OT, post-anaesthetic care unit, intensive care unit, and emergency-room environments with a high degree of realism as we embarked on our journey of simulation-based education.

In the same year, the HKCA sent a team of anaesthesiologists, including Drs Hung Chi-tim, Lee Tsun-woon, Joseph Lui Cho-ze, Sze Tak-suen, Ho Kin-ming, Chen Phoon-ping, Cheung Po-wa, Steven Wong Ho-shan, Jacobus Ng Kwok-fu, and Chow Yu-fat, to Melbourne to be trained as Anaesthesia Crisis Resource Management (ACRM) instructors. On their return from Australia, the group started to run ACRM courses for local anaesthesiologists with the aim of introducing crew-resource management to enhance patient safety in the OT. This was really the beginning of the use of clinical simulation to improve patient safety in Hong Kong. All these developments provided the stimulus for the publication of 'The application of clinical simulation in crisis management training'¹ to promote simulation-based education in the *Hong Kong Medical Journal* by our Fellows—Drs S.H. Wong, K.F. Ng, and P.P. Chen.

This exciting development was interrupted but not stopped by severe acute respiratory syndrome (SARS). During the SARS epidemic, the ICS was used to research methods of enhancing the safety of tracheal intubation and training in the use of personal protective equipment and resuscitation



Early ACRM



Training during EMAC

in high-risk patients. After SARS, the HKCA continued with the ACRM programme and soon followed this up with the introduction of the Effective Management of Anaesthetic Crisis (EMAC) programme for our Fellows and trainees in anaesthesiology. In 2005, EMAC became mandatory for all HKCA trainees. A new programme called Crew Resource Management for Nurses (CRMN) was also developed at about the same time to facilitate the training of OT and critical-care nurses in clinical-crisis situations. In 2007, this course was renamed the Nursing Intervention of Clinical Emergencies (NICE) programme and expanded to include nurses from other disciplines, such as medical and surgical streams.

In the same year, the MICE (Medical Intervention of Clinical Emergencies) simulation course with a focus on crisis resource management (CRM) was developed for non-anaesthesia medical and nursing professionals. At that time it was the only simulation-based course on the management of clinical crises available for non-anaesthesiologists, and contributed to the promotion of clinical simulation to a wider group of health-care professionals



Airway workshop

Licensing agreement signing ceremony in 2008



in Hong Kong. The programme was a precursor to the current day multi-disciplinary simulation-based CRM programmes conducted at Hospital Authority (HA) hospitals. When the corporate-sponsored CRM programme was introduced to the HA in 2010, initially at Pamela Youde Nethersole Hospital (PYNEH) and subsequently in the Kowloon Central (KCC) and New Territories West (NTWC) clusters in 2013 and in the New Territories East Cluster (NTEC) in 2014, HKCA Fellows Drs Kenny Chan King-chung (PYNEH), Eric So Hang-kwong (KCC), Benny Cheng Chun-pong (NTWC), and Patricia Kan Kwok-yee (NTEC) were the programme coordinators and conveners.

Following the publication of the Hong Kong Academy of Medicine (HKAM) guidelines on procedural sedation, HKCA Fellows developed the simulation-based Enhancing Safety in Sedation programme in 2010 for doctors and nurses in HA and private practice, a programme designed to improve their knowledge and skills during procedural sedation. Up to the end of 2014, over 600 doctors and nurses will have completed this course in

Signing ceremony of MOU with the HA in 2014



HA. A train-the-trainer course was also organized for HA NTWC to help the cluster kick-start its own procedural-sedation training programme. A separate arrangement with Baptist Hospital provided training in sedation safety for nurses working in their endoscopy unit. In 2013, a new course to enhance the safety of procedural sedation for children undergoing diagnostic and therapeutic procedures was specially developed for paediatricians by HKCA in collaboration with HA Co-Ordinating Committees in Anaesthesiology and Paediatric and Adolescent Medicine.

In 2011, our Fellows also brought into Hong Kong the concept of TeamSTEPPS, developed by the Agency for Healthcare Research and Quality and the Department of Defense in the US, in a programme named Simulation-based Patient Safety (SPS) for multi-disciplinary clinical teams of medical and nursing professionals. This programme introduced a method of team training to enhance patient safety for multi-disciplinary teams in the HA. And in 2013, a group of HKCA Fellows developed a simulation-based pilot training course, the 'Air Crew Resuscitation Simulation' (ACRS) course, for the Government Flying Service rescue team. Recently the Service signed a two-year contract with HKCA to provide this programme to their aircrew.

Although there is no internship in anaesthesiology, our Fellows contributed significantly to the development of a half-day skills-based training course for all HA interns during their orientation week in 2010. The course, under the leadership of Dr Chen Phoon-ping and Dr Charlotte Lo Chor-kwan was so well received that it was developed into a 1.5-day simulation-based course with three modules: procedural safety,

Helicopter aircrew treat a patient



medication safety, and transfusion safety. In 2012, an additional half-day mid-year intern training programme called Intern Bootcamp, designed to expose interns to clinical crises and highlight the importance of communication skills and teamwork, was introduced. There are now plans to make these courses mandatory for HA interns as part of their training programme.

A number of anaesthesiologists have, over the years, promoted and led the application of simulation in undergraduate medical education and the training of health-care professionals to enhance patient safety. Professors Matthew Chan and David Chung (The Chinese University of Hong Kong) and, as early as the year 2000, Professors Ann Greer, Natalie Caves, Gordon Wong, and Carolyn Jenkins (The University of Hong Kong) had been involved in the application of simulation in the education of medical students at their respective universities. Several research publications in simulation-based education have also been produced by the respective teams. They have also established strong ties with universities and hospitals in China, exchanging experience in simulation-based education and training fellow health-care professionals from the Mainland.

Others have been involved in steering the direction and progress of simulation-based education at different levels and for a wide range of medical specialties and disciplines in Hong Kong. Dr Hung Chi-tim is the Co-Chair of the HA Simulation Steering Committee that is tasked with formulating the direction and governance of simulation-based education in the HA. The Founding President of the Hong Kong Society for Simulation in Healthcare is Dr Chow Yu-fat (2013), while Dr Timothy Brake is the Hon. Secretary. Members of our College also contributed to the establishment of the HKAM's HKJC Innovative Learning Centre for Medicine in 2013. Dr Chen Phoon-ping was appointed Deputy Chairman of the Centre's Management Committee while Dr So Hing-yu and Dr Patricia Kan have been appointed Honorary Deputy Director and Assistant Director of the Centre, respectively. Other members, including Dr Chow Yu-fat and Dr Emily Koo, are members of various functional committees at the Centre. Earlier, Dr Lee Tsun-woon was Co-Chair of the local Organizing Committee of the Asia Pacific Meeting on Simulation in Healthcare in Hong Kong in 2011. This was the first major simulation-based educational meeting in the region.

Current (2014) positions in the HA, HKAM, Universities, and Societies

Dr Hung Chi-tim	Co-Chair, HA Steering Committee in Simulation-based Education
Dr Chow Yu-fat	President, Hong Kong Society of Simulation for Healthcare
Dr Kenny Chan King-chung	Director, Nethersole Clinical Simulation Training Centre at PYNEH
Dr Chen Phoon-ping	Director, NTE Simulation & Training Centre
Dr Eric So Hang-kwong	Associate Director, KCC, Multidisciplinary Simulation & Skills Centre
Dr Kenny Chan King-chung	Co-Chair, HA Quality and Standards Working Group
Dr Chen Phoon-ping	Deputy Chair, Management Committee, HKJC Innovative Learning Centre, HKAM
Dr Timothy Brake	Hon. Secretary, Hong Kong Society of Simulation for Healthcare
Dr Chen Phoon-ping	Chair, HA Intern Simulation Programme Quality & Standards Group
Dr Chow Yu-fat	Director, Institute of Clinical Simulation HKCA
Dr So Hing-yu	Honorary Deputy Director, HKJC Innovative Learning Centre, HKAM
Dr Patricia Kan Kwok-yee	Honorary Assistant Director, HKJC Innovative Learning Centre, HKAM

Fellows acting as external faculty to overseas medical simulation instructor courses and IMS courses

Dr Timothy Brake	New Zealand
Dr Alpha So Mang-sze	New Zealand
Dr Wendy Wong Chui-wah	New Zealand
Dr Patricia Kan Kwok-yee	New Zealand; Harvard CMS Fellow

HKCA ICS Director

Dr Sze Tak-suen	2001-3
Dr Lai King-kwong	2003-4
Dr Lee Tsun-woon	2004-5
Dr Ho Kin-ming	2005-6
Dr Chen Phoon-ping	2006-10
Dr Chow Yu-fat	2010-present



HKCA ICS Programme Directors

Anaesthesia Crisis Resource Management (ACRM) (2001)	Dr Ho Kin-ming (Past Directors: Dr Lee Tsun-woon, Dr Sze Tak-suen)
Effective Management of Anaesthetic Crisis (EMAC) (2003)	Dr Timothy Brake (Past Director: Dr Lee Tsun-woon)
Crew Resource Management for Nurses (CRMN) (2002)	Dr Ho Kin-ming, Dr Sze Tak-suen, Mr Alick Chiu Hak-fai
Advanced and Difficult Airway Management (ADAM) (2007)	Dr Chan Yau-wai
Advanced and Difficult Airway Management for Nurses (ADAM-N) (2007)	Ms Cindy Yip Sau-ping
Medical Intervention of Clinical Emergencies (MICE) (2007)	Dr Chen Phoon-ping
Exposure to Anaesthetic Safety and Emergencies (EASE) (2007)	Dr Bassanio Law
Nursing Intervention of Clinical Emergencies (NICE) (2007)	Ms Cindy Yip Sau-ping (Past Director: Mr David Au)
Management of Anaesthetic Clinical Emergencies (MACE) (2008)	Dr Benny Cheng Chun-pong
Enhancing Safety in Sedation Course (ESS Adult) (2010)	Dr Chen Phoon-ping
Safe Sedation Course for Nurses (SSNC) (2011)	Ms Ivy Ma Man-shan
Simulation-based Patient Safety (SPS) (2011)	Dr Chen Phoon-ping
Teamwork to Improve Patient Safety (TIPS) in Operating Theatre (2014)/previously Team-Anaesthesia Course (TAC) (2013)	Dr Desmond Lam (Past Director: Dr Patricia Kan)
Air Crew Resuscitation Simulation (ACRS) (2013)	Dr Benny Cheng Chun-pong
Enhancing Sedation Safety in Children having Diagnostic and Therapeutic Procedures (ESS Paed) (2013)	Co-Director: Dr Stephen Yue
Central HA Intern Orientation Programme - Simulation Modules	Dr Charlotte Lo Chor-kwan

Note

1. Wong SH, Ng KF, Chen PP. The application of clinical simulation in crisis management training. Hong Kong Med J 2002;8:131-5.

College Educational Activities

Douglas Fok and C.H. Koo

Pre-College Era

Hong Kong saw very little formal or structured anaesthesia training until the founding of the Society of Anaesthetists of Hong Kong (SAHK) in 1954 by Dr Zoltan Lett and Dr H.P.L. Ozorio. Over the next three decades, the Society supervised the training and education of local trainees and provided a platform enabling overseas experts to deliver lectures and tutorials.

In the early years, local trainees were required to train in the United Kingdom; however the Faculty of Anaesthetists of the Royal College of Surgeons (FARCS) was reluctant to conduct examinations locally in Hong Kong. However, Dr Lett successfully negotiated this with the Faculty of Anaesthetists of the Royal Australasian College of Surgeons (FARACS) and thus initiated our strong linkage with Australasia. Local trainees could achieve specialist qualifications as Fellows of the FARACS and with the founding of the Australian and New Zealand College of Anaesthetists (ANZCA) in 1992, and this continued until 2013.



*Class of Revision Tutorial Course
in Basic Sciences 2008*

In 1976, SAHK and the Hong Kong Oxygen & Acetylene Co. Ltd established an Education Foundation to sponsor a tutor recommended by the Royal Australasian College of Surgeons (RACS) to come to Hong Kong to deliver a two-week preparatory tutorial course for our Part 1 examination candidates. The long list of visiting tutors included Dr Noel Cass (Melbourne), John Mainland (Melbourne), David Fenwick (Adelaide), William Crosby (Melbourne), Bill Runciman (Adelaide), John Russell (Adelaide), John Harriot (Perth), Rob Salamonsen (Melbourne), and Peter Kam (Sydney).

In the 1980s, informative courses were arranged and conducted by local senior members of SAHK. Most educational activities were conducted after office hours and local trainees had to attend these training courses during their off-duty times after work.

The College Era

The idea of the Hong Kong College of Anaesthesiologists (HKCA) was initiated by SAHK as early as 1984, reflecting their vision and foresight. In 1989, the HKCA was established as the second specialty college in Hong Kong, after the College of Obstetricians and Gynaecologists. Our College

also became a foundation college of the Hong Kong Academy of Medicine (HKAM) in 1993.

During the early 1990s, regular scientific meetings and seminars were held (it was agreed that HKCA would organize meetings in January, May, and September, and SAHK the other months) as well as Examiners' Scientific Meetings. Some of the College educational meetings were held jointly with SAHK to maximize attendance and to reduce duplication of effort. With the inaugural Annual Scientific Meeting in December 1996 being such a success, the joint venture between HKCA and SAHK in organizing this annual gala continues to this day.

HKCA is directly responsible for the examination and qualification of anaesthetists and the setting of professional standards of anaesthesia practice in Hong Kong. The College gradually took over all educational responsibilities from SAHK, including the training of specialists and continuing medical education. The College training programme was established in 1993 and the first Basic Sciences Examination was held in July 1994, with the final examination held in August 1995. All Parts I & II courses were renamed Basic Sciences Courses and Clinical Anaesthesiology Courses. This provided local trainees with an alternative to attending ANZCA refresher courses in Brisbane, Sydney, Melbourne, and New Zealand.

*Lunch with Peter Kam, class
of Revision Tutorial Course in
Clinical Anaesthesiology 2012*



Annual/Combined Scientific Meetings since 1996

	Theme	Chairman	HKCA joint meeting with:
1996	-	Cheung Po-wa	SAHK
1997	-	Steven Wong	SAHK
1998	Technology and Anaesthesia	Ng Kwok-fu	SAHK
1999	Safety and Risk Management	Chen Phoon-ping	10 th Anniversary of HKCA, chaired by Dr John Liu
2000	Perioperative Medicine in the New Millennium	Chow Yu-fat	SAHK
2001	Anaesthesia, Intensive Care and Pain Medicine Delivery — The Next Generation	John Low	ANZCA
2002	New Frontiers	Simon Chan	SAHK
2003	Pharmacology from Bench to Bedside	Mike Irwin	AOSIVA, ISAP & SAHK
2004	An Anaesthesia Odyssey to Intensive Care	Cheung Po-wa	SAHK & HKSCCM
2005	New Horizons in Anaesthesia East Meets West in Pain Medicine	Timmy Yuen	SAHK; official satellite meeting of the 11 th World Congress on Pain
2006	From the Heart and Beyond	Peter Fung	SAHK
2007	Expanding the Boundaries	Jacqueline Yap	SAHK
2008	Mother, Baby and Anaesthesia	Libby Lee	SAHK
2009	Challenge the Status Quo	Tan Song-tuen	SAHK
2010	Surviving Catastrophes	Desmond Lam	SAHK
2011	Seeking the Dragon Pearl	Cheung Chi-wai	ANZCA
2012	A Breath of Fresh Air	David Chong	SAHK
2013	At the Crossroads	Patricia Kan	SAHK
2014	Beyond Horizons	Timmy Chan	RCA, CAI & SAHK

Examination preparatory courses organized by HKCA

Informative Courses

These are held weekly over a period of three to four months, for both Intermediate and Final Fellowship candidates, in the form of lectures with invited lecturers drawn from the College Fellows. These were held initially on Friday afternoons but, with the growth in the number of trainees in individual

departments, it became difficult to release trainees officially at the expense of their clinical duties. In 2005, the courses were rescheduled for Saturday mornings and subsequently, in around 2009 with the implementation of the five-day week in Hospital Authority hospitals, more trainees were able to attend.

Crash Courses

These are held some one to two months before the actual examinations. The Basic Sciences Crash Course is organized as mock viva rotation tables twice a year. On a much larger scale, the Clinical Anaesthesiology Crash Course consists of: (i) a timed mock written Papers I and II, with the settings similar to the conditions during the actual examination and, (ii) a full day on two Saturdays with lectures in the morning on examination techniques, interpretation of laboratory investigations, radiological investigations, and physical examinations, followed by a mock viva/OSCE in the afternoon. It is very labour intensive, involving about 50 Fellows helping out on the course, and currently we can only afford to hold this event once a year. The feedback and responses from participants have been very positive and encouraging.



Clinical Anaesthesiology Crash Course 2009

Revision Tutorial Courses

These were previously named Refresher Courses. As stated earlier, SAHK and the Hong Kong Oxygen & Acetylene Co., Ltd. established a sponsorship programme in 1976 to enable a faculty tutor from FARACS and later ANZCA to come to Hong Kong to deliver a two-week course to the Primary candidates. In 1995, this sponsorship ceased and HKCA took over the funding from 1996 until the present day. From 2002, the regular tutor Prof. Peter Kam agreed, on top of the two-week Part I course, to stay on for another week for the Part II candidates; and the courses were renamed Revision Tutorial Course in Basic Sciences and Clinical Anaesthesiology, respectively.

In 2013, ANZCA launched the revised curriculum for vocational anaesthesia training in Australia and New Zealand. Their Council has resolved, given the high quality of local training programmes and qualifications in the

affiliated training regions, including Hong Kong, Singapore, and Malaysia, that the ANZCA programme has fulfilled its original purposes and that the new curriculum will not be further implemented in these regions. In effect, ANZCA training in Hong Kong will cease in mid-2019. It is envisaged that, given our long shared history and association, we will continue to have ongoing collaborations and exchanges between both colleges in terms of examinations, research, and academic meetings.

Examination preparatory courses organized by HKCA since 1989, with organizer(s)

Primary Informative/ Crash Courses	
1991 - 1993	Cindy Aun/Joyce Wong
1993 - 1994	Tsui Siu-lun
Basic Sciences Informative/ Crash / Refresher Courses	
1994 - 1995	Tong Wai-nung
1996	Annie Wong
1997 - 1998	Peter Fung
1998 - 2000	Steven Wong
Basic Sciences Informative/ Crash Courses Revision Tutorial Course in Basic Sciences (Peter Kam)	
2001 - 2004	Koo Chi-hung
2005 - 2007	Aaron Lai
2008 - 2012	Vincent Ng
2013 - present	Eva Tse/Loretta Leung
Final Informative/ Crash Course	
1991 – 1993	Chandra Rodrigo
1993 - 1995	Hung Chi-tim
Clinical Anaesthesiology Informative / Crash Course	
1995 - 1997	Watt Chi-leung
1997 - 1999	Wong Siu-man
1999 - 2001	Cheung Po-wa/Wong Siu-man
2002 - 2011	Eric So/Douglas Fok
2012 - present	Ip Ka-ho/Stephen Yue
Revision Tutorial Course in Clinical Anaesthesiology (Peter Kam)	
2002 - present	Douglas Fok

Other Educational Activities Organized by HKCA

Simulation Training

In August 2001, the HKCA in collaboration with the North District Hospital (NDH) set up the Institute of Clinical Simulation (ICS) for the training of health-care professionals using simulation. The ICS is managed by a management committee with representation from HKCA and NDH. Courses available at ICS include:

- Effective Management of Anaesthetic Crisis (EMAC)
- Management of Anaesthetic Clinical Emergencies (MACE)
- Exposure to Anaesthetic Safety and Emergencies (EASE): for new Anaesthesia trainees
- Simulation-based Patient Safety (SPS) Course
- Safe Sedation Course for Doctors/Nurses
- Team-based CPR Course
- Advanced and Difficult Airway Management for Anaesthetists/Doctors/Nurses
- Intern Orientation Essential Basic Clinical Skill Course
- Aircrew Resuscitation Simulation Course (ACRS)
- Team Anaesthesia Course (TAC)

Ultrasound Training

Over the last decade, ultrasound has developed into an indispensable tool in anaesthesia and intensive care, and is embedded into our daily practices, such as ultrasound-guided vascular access, ultrasound-guided regional anaesthesia, and echocardiography.

The HKCA sets up an ECHO steering committee in 2013 to look into ECHO training and has organized workshops at our scientific meetings. College members were also subsidized to attend the ECHO Hong Kong meeting, which is a biennial local conference organized by the Ruttonjee & Tang Shiu Kin Hospitals, with the 9th ECHO Hong Kong being held in November 2013.

With technological advancements in high-resolution ultrasound now available, nerves and their surrounding structures can be visualized in real time and with accuracy. Both the Department of Anaesthesiology (University



of Hong Kong) and the Department of Anaesthesia and Intensive Care (Chinese University of Hong Kong) have organized several ultrasound-guided regional anaesthesia workshops with overwhelming response from Fellows and trainees.

Examiners Workshop

Local examiners and Supervisors of Training were invited to attend. In 2010, Mark Priestley, Chair of ANZCA Final Exams at the time and, in 2012, Craig Noonan and Noel Roberts shared their experiences and wisdom in examination techniques and skills.

Regular Departmental CME Activities

These include academic meetings, journal clubs, and Quality Assurance meetings.

Continuing Medical Education (CME) and Continuous Professional Development Programme (CPD)

The CME system was first launched in July 1996 with a three-year cycle. All cycles were synchronized in January 2005 with the issuing of the Annual Practising Certificate by the Medical Council of Hong Kong. Mandatory CME/CPD activities were implemented by the HKAM in 2011, with all Fellows during the three-year cycle needing to record the required active and passive participation in educational activities, or activities on quality assurance, audits, research, publications or self-study. The Council of HKCA has drawn up an approved list of such activities. They are based on a ‘credit point system’ which allocates points for taking part in CME/CPD activities, which are then used for accreditation with the Academy. The purpose is to keep Fellows and Members informed and updated, and to maintain a high standard of professional practice.

A Tribute to Professor Peter Chin-Aik Kam

It would be doing Professor Kam an injustice to write on educational activities in Hong Kong anaesthesia without devoting a chapter to him. Indeed Peter Kam is a legendary icon and his name is synonymous with teaching and examination courses. He has made unstinting efforts in teaching and training

in anaesthesia over the past four decades in Australia, New Zealand, and South East Asia, including Hong Kong, Singapore, and Malaysia.

Peter is a virtual celebrity and no stranger to the Hong Kong anaesthesiology community. Many, including myself, were once his students, and his famous hand-written photocopied transparency films were passed down from year to year, a 'must read' for all candidates preparing for primary examinations, despite the pages often not being in their original sequence. He is known amongst the Australians as 'Yoda'; but, to us, he is better known as 'Uncle Kam' or 'Professor'.

Peter was born in Malaysia, obtained his medical degree at the University of Malaya in 1970, his FRCA (UK) in 1974, and his FFARACS (Aus) in 1975. He emigrated to New South Wales in Australia in 1977. His appointments included Blacktown Hospital and Westmead Hospital. In 2002 he was appointed the inaugural Chair of Anaesthesia at the University of New South Wales at St George Hospital (Sydney), and in 2006 he became the third Nuffield Professor of Anaesthetics at the University of Sydney's Royal Prince Alfred Hospital and remains in this appointment until the present day.



Peter and author

How did Peter Begin His Close Ties with Hong Kong Anaesthesia?

As part of the faculty tutor programme established by SAHK and sponsored by the Hong Kong Oxygen & Acetylene Co., Ltd., Peter was invited in 1985 by Dr Justin Chan, who succeeded Dr Lett as the Consultant in-charge of anaesthesia in Hong Kong at the time, to deliver a two-week tutorial to our Part 1 candidates. Peter's tutoring was interrupted from 1988 to 1994 when he became the ANZCA examiner for the Primary Examination (1987 to 1999) and the Deputy Chair of the Primary Examination Committee from 1991 to 1995. (The tutorship was meanwhile taken over by distinguished teachers, including Bill Runciman, John Russell, John Harriot, and Rob Salamonsen.) Peter was invited again by Dr Ronald Lo and C.T. Hung to return in 1995. For the next 20 years, Peter has taught every year until today. Not only that, he also extended his annual stay in Hong Kong from two to three weeks when





*Class of Revision Tutorial Course
in Clinical Anaesthesiology 2007*

he agreed to take up the preparatory course for our Final candidates as from 2002. Peter became an Honorary Fellow of HKCA in early 2000.

Peter is an enthusiastic teacher; he is always punctual, standing outside the venue at 7.50 am sharp on a cold winter's morning, eagerly waiting to start drilling the candidates. Peter has a photographic memory for candidates' names and faces, so I soon learnt that it was futile hiding at the back of the class; as soon as he spotted my intention, my name would be called out next.

I often wonder just how a person can keep on teaching physiology and pharmacology over and over again for the last four decades. Peter felt the only way to be a good anaesthetist is to develop a solid understanding of the basic sciences. He enjoys and tirelessly teaches candidates to obtain this, so that when faced with problems and difficulties, they are able to solve them by relying on basic concepts and principles.

Peter has a huge range of interests in clinical and academic anaesthesiology, including paediatric and adult cardiac, neurosurgical, vascular, hepatobiliary anaesthesia, acute pain, research, and writing papers and books. Peter is the author of 'Principles of Physiology for Anaesthetists', required reading for those preparing for the physiology paper in the Primary Examinations of both HKCA and ANZCA. He has also contributed chapters

in textbooks and over 120 articles in peer-reviewed journals. He has been a reviewer and assessor for the Cochrane Anaesthesia Group since its formation in 1999. He is also involved in extensive editorial activities, as well as being an active lecturer in Australasia and South East Asia.

Peter was awarded the Robert Orton Medal by ANZCA in May 2002 for his distinguished services to anaesthesia, the highest honour that the College can bestow on its Fellows.

I have had the privilege of being Peter's official chauffeur since 2002, when I was asked by Dr C.T. Hung to organize the Revision Tutorial Course for Part 2 candidates. The list of 'reserved' drivers includes: Bassanio Law, Michael Poon, Gladys Kwan, Vincent Ng, and C.H. Koo. On a personal note, Prof. Kam not only became my super role model, the epitome of professionalism and dedication, but also a good friend and personal advisor on my career path and attitude to life.

Peter continues to visit Hong Kong every winter to deliver his three weeks of tutorials and is showing no signs of retiring. The FAQ most concerning our junior trainees for the past decade has been 'Is Professor coming to Hong Kong next year?' I do not wish to ask or to learn its answer. It will be a titanic task finding someone as devoted as Peter to fill his shoes and I feel sorry for the generations of trainees that will not benefit from his teaching if he retires.

Until then, I wish Peter the very best of health. He is truly our great mentor, our teacher and friend. We salute you!

Notes

1. Lett Z, Lo RJ. Anaesthesia & intensive care in Hong Kong: evolution & present position. Hong Kong: Centre of Asian Studies, The University of Hong Kong; 1997.
2. Ten years and beyond (1989-1999). Hong Kong: The Hong Kong College of Anaesthesiologists; 1999.
3. Fok DK, So EH. History in the making: the father of Hong Kong anaesthesia – Dr Zoltan Lett. HKCA Newsletter, Oct 2003.
4. Kwok WH, Law BC. Face to face with Professor Peter Kam – a great mentor, teacher and marvelous friend of the Hong Kong Anaesthetists. HKCA Newsletter, February 2003.
5. ANZCA Bulletin
6. HKCA Newsletters/Bulletin



Anaesthetists and the Community

Anne Kwan

Most actively practising anaesthesiologists in Hong Kong are working full time at the Hospital Authority (HA) hospitals, university hospitals, or in the private sector. The majority of the public-sector anaesthesiologists are employed in salaried jobs, whereas the ones working in the private sector earn their income on a fee-for-service basis. Considering the large anaesthesia work load, it is hard to imagine how anaesthesiologists ever find the time to serve our community by doing volunteer work. However, caring for the underprivileged and needy remains precious in the hearts of the majority of anaesthesiologists. Despite the fact that many anaesthesiologists are multi-talented, a large part of the community work performed by our fellows is on a voluntary basis and the service is mainly the administration of anaesthesia. Some pain work, especially chronic-pain management, is also provided by our Pain Fellows on an *ad hoc* basis. Doing volunteer work is nothing new. Many anaesthesiologists started to perform various kinds of community work over 20 years ago and many are still contributing towards the community in one way or the other.

Everybody agrees that the most urgent community service was that rendered shortly after the Sichuan Earthquake in May 2009. Almost within two days of this devastating quake, which caused tens of thousands of deaths and many more injured, a group of orthopaedic surgeons in Hong Kong decided to organize a team of surgeons and anaesthesiologists to perform life- and limb-saving operations in Chengdu. West China Hospital was nominated as one of the designated centres by the People's Republic of China and many volunteer health-care professionals from all over the world assembled there within a few days. The 64 available operating theatres and over 4,000 beds were all allocated to performing life- and limb-saving operations. The hospital was quickly set up with a logistics centre for all donated medical equipment and consumables. A missing-persons and patient-tracking IT system was established by Sichuan University students within a matter of days. As the rescue project involved the shifting of a large volume of instruments, medical consumables, and drugs from Hong Kong, the Hong Kong SAR Government decided to offer a helping hand, requesting the HA Support Division to arrange the delivery of all necessary instruments, drugs, and consumables. They also made arrangements to ensure an adequate number of anaesthesiologists, surgeons, and nurses went up to the West China Hospital without unnecessary delay. Within a matter of days, a senior anaesthesiologist from the HA set up the operating theatre and anaesthesia service at the three allocated operating-theatre suites at the West China Hospital. After one week, five more anaesthesiologists followed. The group was headed by Dr Anne Kwan, and the members included Dr Yip Man, Dr Judith Shen, and three others. They worked long hours to complete hundreds of orthopaedic operations. Some of the operations involved crushed limbs which threatened patients' lives with rapidly deteriorating sepsis. A number of pelvic fracture operations were also performed. Routinely, cell saver was used intraoperatively to minimize blood transfusions. Understandably, donated blood was in very short supply. Despite the unfamiliar theatre environment, the different anaesthetic machine models and equipment, and the not-so-well-spoken Putonghua, the team worked safely and efficiently. The team returned to Hong Kong only after West China Hospital had transferred all patients to hospitals in other provinces for fear of major flooding in Chengdu. Shortly after the initial mission, the Hong Kong Red Cross established a

Rehabilitation Centre in Deyang. A group of anaesthesiologists from both the public and private sectors flew up to Deyang every second Friday to anaesthetize patients undergoing orthopaedic procedures. Those from the public sector were Dr Law Man-shun, Dr Regina Choi, Dr Lim Sing-huey, Dr Simon Chan, Dr Grace Hui, and Dr Alice Choy. They stayed until Sunday afternoon before returning home to be ready for their routine work on Monday morning. Despite the exhausting workload and long hours of travelling, the arrangement continued for almost four years. One of the orthopaedic surgeons going up to Deyang Red Cross Rehabilitation Centre regularly was Dr Ko Wing-man, who later became the Secretary for Food and Health. Later in that year when things were more settled, Mr Xi Jinping, then the Vice President and now the President of People's Republic of China, met up with Sichuan volunteers at the Hong Kong Flying Doctors' Quarters to show his appreciation.

Other types of operation that volunteer anaesthesiologists from Hong Kong frequently get involved with are cleft-lip and palate surgery.

During a meeting in Hong Kong, Mr Xi Jinping reminds Dr Anne Kwan that anaesthesiologists played a major role in the Sichuan Rescue



Anaesthesiologists such as Dr Arthur So went with Operation Smile, but the better-known team of plastic surgeons was from the HIS Foundation. The team goes up to China, to Indonesia, and recently to Madagascar several times a year. As most of the hospitals they work in are in remote areas, the operating environment and equipment are often very sub-standard. Nonetheless, the enthusiasm of the volunteer anaesthesiologists together with their experience and high vigilance have enabled them to provide excellent service. So far, no complications have been encountered. Those working with the HIS Foundation Team on a regular basis were Dr Anne Kwan, Dr Amy Lam, Dr Anita Chan, Dr Tim Brake, Dr Mandy Chu, Dr Chan Yau-wai, Dr Judith Shen, and Dr Charmaine Chu. They often work hand in hand with anaesthesiologists (Dr Stephen Ong, Dr Dickson Wu) from the United States.

Apart from anaesthesia, some fellows interested in pain are serving the community by providing free pain-management consultations and simple treatments. Dr Regina Choi used to visit a remote village in Ma On Shan to provide acupuncture treatment for patients with chronic pain. Other longer-term commitments had been made by some younger fellow anaesthesiologists. Dr Carina Li and Dr Annie Chu took time off work to serve with other health-care professionals from Médecins Sans Frontières (MSF) for a few months. Obviously this heavy commitment in terms of both time and effort is not easy to make. Some fellows could act as anaesthesiologists, but there were a number of general health-care tasks which were also part and parcel of the voluntary work. The anaesthesiologists enjoyed the support of the public hospitals they were working at by having a no-paid-leave arrangement, and all volunteer surgeons would love to team up with passionate and experienced anaesthesiologists. It is obvious that anaesthesiologists were always very welcome and in great demand. There were frequent requests to join the surgeons in the volunteer work arena. It is unfortunate that demand far outstrips supply, leaving many surgeons with no option but to employ local anaesthesia personnel to help them.

In recent years, the training of fellow anaesthesiologists in less-developed countries in resuscitation and related disciplines has gained increasing popularity and support from volunteer anaesthesiologists from Hong Kong. Apart from helping doctors in these countries with the establishment of dedicated centres on paper, the training team would also go to start up





A cleft-lip/palate team from Hong Kong working in a country hospital in the Mainland

structured programmes using simulation techniques. The transfer of skills has a more pronounced effect on the anaesthesia services in these countries. In the earlier days, mainland China was a place trainers often visited. Now the more remote areas of Asia are being visited with increasing frequency. A very renowned Advanced Cardiac Life Support programme at Chengdu West China Hospital had the assistance of Dr Joseph Lui in the initial start-up phase. Again, Dr T.W. Lee is a long-standing instructor and workshop organizer for resuscitation programs in Thailand.

Anaesthesiologists serve the community in a number of ways. The tradition of contributing whatever we can within our profession has never wavered.

The Relationship with Our Sister Anaesthesiology Communities: China and Macau

Cheung Chi-wai

The Society of Anaesthetists of Hong Kong (SAHK) has been involved in meetings and exchanges with our Mainland counterparts since 1994, starting in Guangzhou and later in Shanghai and Beijing. Representatives of the SAHK have been invited to attend national scientific meetings, and Mainland hospital and university visits and exchanges have also been arranged. As a result we have developed a very good relationship with the Chinese Society of Anesthesiology (CSA). In recent years, the SAHK and the Australian Society of Anaesthetists (ASA) have sponsored Primary Trauma Care (PTC) courses in China and Vietnam. PTC, which has been adopted by the World Health Organization (WHO), has been designed to facilitate trauma management in rural and remote locations. PTC was developed initially in 1996 from the collaborative efforts of three anaesthetists. SAHK sponsored the PTC courses by sending our Hong Kong PTC anaesthetist



*The first Hong Kong–Guangzhou
Anaesthesia Meeting*

instructors to Xian, Kunming, Beijing, and Shanghai. More information and pictures may be found in the SAHK booklet *Golden Jubilee Commemorative Monograph* edited by Dr Steven Wong.

Over the last decade, SAHK and Hong Kong College of Anaesthesiologists (HKCA) members have attended the Annual Scientific Meeting of CSA on a regular basis. Our colleagues have also been invited frequently to present at CSA meetings in order to share their experience and the research carried out in Hong Kong. In 2007, Professor Yu Buwei (Immediate Past President of CSA and Immediate Past President of the Shanghai Society of Anesthesiologists [SSA]) suggested enhancing the collaboration between CSA and SAHK. Since then, a SAHK symposium has been arranged at the Annual Scientific Meeting in Hong Kong with two speakers invited from the SSA, which in turn invites two speakers from Hong Kong to present at its Annual Scientific Meeting. In addition to Prof. Yu, Professor Yu Weifeng (currently President of the SSA and Secretary of the CSA) and Dr Yang Liquan (current Secretary of the SSA) have also contributed significantly to the development of a close relationship with our Mainland counterparts. Communication between China and Hong Kong has been greatly facilitated by their enthusiasm and



(from left) Dr Cheung Chi-wai, Prof. Michael Irwin, Prof. Yu Buwei, Dr Tsui Siu-lun, and Dr Jean-Claude Lawmin at the CSA Annual Scientific Meeting in 2009

(bottom) Satellite meeting of the Combined Scientific Meeting (CSM, ANZCA and HKCA) 2011 in Shanghai. Prof. Kate Leslie (President of ANZCA in 2011, fourth from right) and Dr Cheung Chi-wai (Chairman of CSM 2011, third from right) take the stage



(top to bottom)

(from left) Dr Jean-Claude Lawmin, Dr Tsui Siu-lun, Prof. Yu Weifeng, Prof. Jacobus Ng Kivok-fu, and Dr Cheung Chi-wai at the Annual Scientific Meeting of the Shanghai Society of Anesthesiologists in 2007



(from left) Dr Tsui Siu-lun, Dr Cheung Chi-wai, Dr Ling Xu, Prof. Wen Daxiang, and Dr Yang Liqun at the 2009 ASM in Hong Kong. Prof. Wen and Dr Yang were the SAHK speakers at the ASM symposium



(from left) Dr Xiao Lizu (Shenzhen), Dr Steven Wong, Dr Cheung Chi-wai, Dr Qiu Qiu, Dr Tsui Siu-lun, Dr T.W. Lee, Prof. Yu Buwei (Shanghai), Prof. Wong Kar-lok (Taiwan), Mr Ross Irwin (son of Prof. Michael Irwin), and Prof. Sun Dajin (Shanghai) joined the 25th Anniversary Dinner of the HKU Department of Anaesthesiology in Hong Kong in June 2013





help. Colleagues and friends from the CSA and mainland China are often invited to Hong Kong to participate in different anaesthesia-related events and activities. In 2011, the Combined Scientific Meeting (CSM, ANZCA [Australian and New Zealand College of Anaesthetists] and HKCA) 2011 was held in Hong Kong. A satellite meeting of CSM 2011 was also organized in Shanghai by CSA and SSA. Prof. Yu Buwei, Prof. Yu Weifeng, and Dr Yang were the Meeting Chairman, Executive Chairman, and Secretary of the satellite meeting, respectively. The meeting was very successful and greatly impressed friends and colleagues from ANZCA, Hong Kong, and mainland China.

Prof. Yu Buwei visits HKCA at the Hong Kong Academy of Medicine building in 2012

In order to obtain a better mutual understanding of the training systems in mainland China and Hong Kong, and to plan for further collaboration in training, Prof. Yu Buwei visited HKCA in 2012. HKCA presented the structure of its Hong Kong training system and fellowship examination to Prof. Yu.

In 2013, HKCA attended the CSA Annual Scientific Meeting. A meeting was arranged by Professor Liu Jin (the current President of CSA) to discuss a range of issues, including collaboration in training and research, the clinical attachment of mainland China fellows to hospitals in Hong Kong, and the organization of World Congress of Anesthesiologists (WCA) 2016.





Prof. Liu Jin (fourth from left) at the HKCA Congregation in 2013

In the same year, Prof. Liu also accepted an invitation from Hong Kong to attend the HKCA Congregation and the HKCA and SAHK Annual Scientific Meeting.

Hong Kong is a popular choice for further training and study by colleagues from mainland China. Currently, both anaesthesia departments at the University of Hong Kong and the Chinese University of Hong Kong receive fellows from mainland China for clinical attachment and research. At the university level, arrangements for academic exchanges between mainland China and Hong Kong are encouraged. For example, the University of Hong Kong's Dr Cheng Yu Tung Fellowships Programme encourages applications from mainland China colleagues so that their attachment in Hong Kong can be arranged and sponsored. Clinical attachments can also be arranged at hospital level with the approval of the individual hospitals.

Last but not least, colleagues from Macau have always supported events and activities in Hong Kong, actively participating in our evening scientific symposiums and Annual Scientific Meeting. Dr Leong Fai and Dr Helena Li are Associate Members of SAHK. Dr Leong Fai was a member of the successful team bidding for WCA 2016 and went to Cape Town to demonstrate the support of the anaesthesiology community in Macau.

The Role in Hong Kong of the Australian and New Zealand College of Anaesthetists

Simon Chan

Until its handover back to China in 1997, Hong Kong had been a British colony. However, the development of anaesthesiology and training in anaesthesia during the 1960s did not follow the British way but, due to a number of constraints in place at that time, aligned instead with the Australian system. Since then, the Australians have had a profound and long-lasting impact on the development of anaesthesiology in Hong Kong. Although the Australian and New Zealand College of Anaesthetists (ANZCA) withdrew their training programme from the Asian region in 2012, its influence on the Hong Kong anaesthesiologists community is still felt in a number of areas.

Training and Development

During the 1960s, trainees in Hong Kong seeking a professional qualification in anaesthesia from the Faculties of Anaesthetists of England or Ireland were



Dr Peter Livingstone, Dean of FARACS, presenting the President's Jewel of Office to Dr Michael Moles, HKCA President, at the HKCA Third Congregation

required to undergo a one-to-two year training period overseas and to sit their fellowship examinations in the United Kingdom. This arrangement was soon found to be impractical and too slow for the purposes of training up adequate specialist anaesthetists in Hong Kong. This prompted Dr Zoltan Lett to write, on 15 March 1967, to the Faculty of Anaesthetists of the Royal Australasian College of Surgeons (FARACS) requesting that a Primary Examination be held in

Hong Kong.¹ This examination was initially arranged in Singapore under the Colombo Plan which enabled trainees to undertake the Fellowship examination and approved training without having to travel overseas.

Under these auspices, the first primary Fellowship examination of FARACS was conducted on 25 September 1969 in Hong Kong for nine candidates, with the examiners being drawn from Australia. Subsequent annual visits to Hong Kong by FARACS examiners to run teaching courses and tutorials were very popular among and strongly recommended by local trainees. This collaboration eventually led to the approval of training posts in anaesthesia at Queen Mary and Queen Elizabeth Hospitals in 1972. The final Fellowship examination of FARACS in Hong Kong soon followed and the first of these examinations was held in 1974.¹ However, candidates from Hong Kong were still required to travel to Australia to sit the oral exam, as only the written exam could be held locally at that time; but despite this, the training programme offered by FARACS then remained the only feasible option for local trainees to obtain their professional qualification.

When the Hong Kong College of Anaesthesiologists (HKCA) was founded in 1989, the local anaesthesia training programme was largely modelled on ANZCA.² The main differences between the two programmes were the caseload requirement and the final Fellowship examination.³ Despite these differences, due to the similar training requirements of the two programmes, and aiming for a more widely recognized international

fellowship status as well as better promotional prospects, it was common for trainees in Hong Kong to enroll in the training programmes of both colleges, especially in the 1990s.⁴

The number of Fellows holding the FANZCA in Hong Kong has steadily risen over the last 25 years. In 1989 there were 37 FARACS trainees in Hong Kong¹ and, by 1999, there were 12 ANZCA accredited hospitals with 62 approved training posts and 24 provisional fellow posts in Hong Kong.² However, by 2010, there were 188 Fellows holding the FANZCA and 76 trainees residing in Hong Kong, which was almost half of all specialist anaesthesiologists in Hong Kong and made it the region with the largest number of FANZCA outside Australia and New Zealand (according to ANZCA).

Collaboration between HKCA and ANZCA

Collaboration between the two colleges exists in a number of areas, such as training, continuing medical education (CME), scientific meetings, and research. Although the two colleges' training programmes are independent, they have a number of features in common. The HKCA Intermediate Fellowship Examination and ANZCA Primary examinations are recognized by both colleges, on a reciprocal basis, as their Part One examination. Submission of a formal research project is required in order to complete the training for both HKCA and ANZCA. The same formal-project officers are shared and approved formal projects are mutually recognized by both colleges. Attending the Effective Management of Anaesthetic Crisis (EMAC), a simulation-based training course developed by ANZCA, is a prerequisite for completion of both HKCA and ANZCA training. Trainees in Hong Kong are able to participate in EMAC in Hong Kong, as the HKCA's Institute of Clinical Simulation remains the only centre outside Australia and New Zealand accredited to provide EMAC training. External examiners from Australia had been invited even before the formation of HKCA, and this practice will continue for the current HKCA Intermediate and Final Fellowship examinations.

Because of the large number of fellows with FANZCA in Hong Kong and the necessity for these fellows to fulfil the CME requirements of both colleges, the CME programmes are recognized by both colleges on a



Successful examination candidates with the chairmen of the HKCA and ANZCA Boards of Examinations, respectively, Prof. Tony Gin and Dr Peter Klineberg (from left): (back row) S. Wong, T. Hui, C. Wong, and M. Chan; (front row) P. Klineberg, C.T. Hung, T. Gin, and L. Strunin



reciprocal basis. A combined scientific meeting with the HKCA and ANZCA was organized at the Hong Kong Convention and Exhibition Centre in 2001 and, because of its huge success, again in 2011. The meetings organized outside Australia and New Zealand were very successful, one attracting the largest number of delegates ever attending. Hong Kong has been involved in a number of important multi-centre clinical trials initiated by ANZCA, such as the MASTER trial⁵ and POISE study.⁶ The results of these multi-centre trials have had a significant impact on the practice of clinical anaesthesia worldwide. Meanwhile HKCA guidelines and standard of practice have also been modelled on ANZCA with some modifications.

The Future

On the morning of 21 April 2012, the author received a telephone call from Dr Kate Leslie, the then president of ANZCA, informing us that the ANZCA Council had decided not to implement a new training programme, as from 2013, in South-east Asia. As a result, the ANZCA training programme in Hong Kong, Singapore, and Malaysia will be discontinued in 2018. Collaboration between the two colleges, however, will continue in areas such as the exchange of training and education materials, multi-centre research

trials, CME programme, guidelines and standards on clinical practice, EMAC course in Hong Kong, and external examiners from ANZCA, as per the previous arrangements. Most importantly, both colleges will be treated on an equal basis.

Although the news greatly shocked the anaesthesiology community in the regions initially, the community soon realized that HKCA itself has evolved and grown into a mature college since its founding in 1989. The training programme has been implemented successfully, with more than 500 highly regarded, international-standard, specialist anaesthetists trained today to serve the community of Hong Kong. While celebrating its 25th anniversary, HKCA should certainly be proud of its achievements over the last 25 years and of its unchallenged status as an independent international college.



Notes

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Dr Ed Loughman presenting a mounted drawing of 'Ulimaroa' (ANZCA House in Melbourne, Australia) as a souvenir to Dr C.T. Hung



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Years of Anaesthesia in Hong Kong

SECTION IV

Beyond 2014 – Riding Opportunity

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*There is an increasing trend
in simulation-based medical
training and ultrasound-guided
procedures in anaesthesiology*



The Future of Anaesthesiology in Hong Kong

Michael Irwin and Chow Yu-fat

In contemplating the future of anaesthesiology it would be pertinent to take an observational audit of our current status. A good place to start would be to ask ourselves what it is that makes our specialty special. One aspect that comes to mind is that, by nature, anaesthesiology is often a victim of its own success: the better the job one does, the less one is noticed. This is true from both the patient's and the surgeon's perspectives. We deal with challenges that, on the basis of probability, are low but, should one occur and not be dealt with expediently, dire consequences will ensue. Yet mortality attributed solely to anaesthesia nowadays is exceedingly low, due to the pioneering work of our predecessors in patient safety, both here and abroad. Without the appreciation of what it has taken for this to be achieved, our surgical colleagues understandably often attribute peri-operative success to their technical prowess alone. Perhaps there is some truth in the surgeon's perspective, for the best delivered anaesthetic is no match against a wayward scalpel! The success of our specialty also encourages surgeons to progressively revise their expectations of acceptable surgical risks, resulting in more complex and invasive procedures now being offered to older and sicker patients.

It is against this backdrop that anaesthesiology operates in 21st-century Hong Kong. For anaesthesiology to thrive and survive, it needs to take on a number of challenges. Some of the challenges, many of which are attitudinal and non-technical, originate from within and some from beyond our collegial circles. It goes without saying that the goal of maintaining and even improving our high technical standards is paramount. To do so requires great rigour to be applied to the training processes, the widespread adoption of best practices, and the strict maintenance of professional standards. For some, this may be a call to colleagues to participate in the training and examination activities of our College and Society. For others, it may take the form of fighting for resources to adequately staff departments or to develop effective management practices so that both trainees and senior staff may have time for professional development. A 'no blame, no shame' learning culture should be fostered within departments so that service provision is not the only reason for going to work. Interesting cases or near-misses should be regularly and openly discussed, and staff encouraged to do so. Senior staff and department heads have to fight for resources and adequate staff to maintain a safe service delivery and to facilitate an enjoyable working environment which ultimately benefits our patients.

Another important challenge we should tackle is one of our professional image. To improve patient well-being, one needs resources and these usually flow to where there is perceived potential for adding value. Unfortunately, in an age when health resources are limited, it is no longer enough to do a good job—we must be seen to be doing one. Being born as a 'supportive' specialty, we are generally not perceived to be providing direct therapeutic interventions. For some surgeons, a working definition of anaesthetic success is simply rendering a patient immobile and unconscious and ensuring the patient returns post-operatively to the status quo. Ironically, to achieve these outcomes can sometimes require a tremendous amount of work. One of the by-products of our success is that we often make difficult and complex tasks 'look' easy, and what we contribute to the well-being of patients can, therefore, go unrecognized. However, where we are often noticed is when we 'cancel' an operation due to unacceptable risks to a patient, at which point we may appear to be obstructive and unnecessarily risk-averse, and to be denying the patient a chance for therapy. We thus need to take credit for the



good we have done by the informal education of our colleagues and patients. Most of all, we need to make our presence felt in the health system. For this to be achieved, some sacrifices may be warranted, as it requires the devotion of time and energy, commodities that are often in short supply in modern living. However, there is seldom gain without at least some pain.

We need to advance our professional image not only for the well-being of patients but also for the well-being of our profession. After ensuring our professional standards are impeccable, we should take every opportunity to explain the rationale behind our management role to patients, surgeons, medical students, and nurses. It is difficult to expect an appreciation of the complexity of our craft by other health professionals, and even by medical specialists, without giving them a reason, given our contribution is usually not intuitively obvious. Inter-departmental educational activities should be encouraged. We should take time and take care when communicating with patients pre-operatively. Pre-operative consultation should not only be an encounter for fact-exchange but also for rapport-building between a doctor and a patient. Where possible, we should minimize investigations and consultations that would not ultimately change the management or the outcome. If possible, we should pay a visit to the patient post-operatively to check on their peri-operative experience. This not only reinforces, in the patient's eyes, your contribution to his or her care but also educates you about your management process.

Technology will also drive changes in our profession. We are likely to see the more widespread use of patient simulators for training, maintenance of standards and revalidation, and in the instruction of new techniques and devices. We hope to see better monitors, particularly of cerebral function, and possibly even of nociception. The drugs we now have are already very good, but I am sure our colleagues thought the same in the 1960s!

Research is extremely important. It drives innovation and better evidence-based care. It should be seen as an essential part of our work and trainees encouraged to participate where possible. It is gratifying to see Hong Kong anaesthesiologists at the forefront of much research, particularly in high-impact multicentre trials. Such data irrefutably emphasizes the importance of our work and its effect on the whole health care system.

So what is the future of anaesthesiology in Hong Kong? It is always difficult to predict. As often envisioned by a number of anaesthesiologist gurus, there are two possibilities for our future. One possibility is that anaesthesiology will become an extinct specialty, while the other is that anaesthesiology could be a dominant specialty.

Anaesthesiology could become extinct if surgical anaesthesia becomes less and less demanding as surgery becomes rarer and less invasive; intensive care will be managed by physicians; and an acute-pain service would be less in demand, and pain clinics will give way to palliative care clinics... It could also be imagined that anaesthesia will be automated via closed-loop feedback, administered and monitored by computers. Surgical anaesthesia could be conducted even in the absence of a physician. The required skills for anaesthetists, including airway management, vascular access, and regional anaesthesia—once regarded as core competences—will become less and less challenging as technology advances with different mobile, video, or imaging-assisted devices. Computers can assist navigation using a high-quality 4D image of any structures not visualized by the naked eye. Robotic arms can master any dexterity-based procedures. In addition, non-invasive continuous monitors will occupy a major role and make invasive physiological monitoring unnecessary or obsolete. These changes will undoubtedly impact the whole medical profession but surgery and anaesthesia could be more affected than others.

On the other hand, anaesthesiology can still play a leading role. The hospitals of the future might only have intensive-care beds and operating facilities. The need for general medical and chronic beds will be very low. These will be managed in community-centred and home-based health-care facilities. Anaesthesiologists will transform into caregivers for patient safety, comfort, and the smooth and rapid restoration of function after surgery. Anaesthesiologists will look after the hospital critical-care beds, resuscitation, and disaster response. Our commitment to critically ill patients will intensify in order to improve their overall health outcome.

All these are possible because of the intellectual foundation on which the specialty is based as well as its ability to help all branches of medicine in their development through anaesthesia-related research. Postgraduate teaching programmes in anaesthesia are structured in such a way as to place



more emphasis on pre-operative evaluation, post-operative care, and on lessons in applied research. The traditional slow-track anaesthesia service will become obsolete.

As regards your existence as an anaesthesiologist, unless you are equally skilled in the conduct of clinical anaesthesia, managing critical care, and proficient in running a pain service, as well as doing research and administration, you may also become extinct!

The future is what we make it. As a specialty we have done well so far, but as the world changes we need to change with it. We must not be complacent with the gains we have made in patient safety but must be prepared to expand our reach into the wider domain of peri-operative care. We have begun well with resuscitation, pain services, and critical care, but more could and should be done with 'prehabilitation' and quality of recovery. We should become more involved in the whole peri-operative care process. This is a global trend, with research in this field now demonstrating what a difference our interventions and patient preparation can make to morbidity and mortality. Essentially, anaesthetists should be peri-operative physicians; after all, we are the specialists best equipped for this role. We should be involved in making clinical decisions with greater accountability for the outcomes of our patients. We should continuously demonstrate a commitment to excellence rather than perform mediocre daily practice. In the final analysis, the specialty that adds value to medicine, to science, to humanity, and to mankind at large, is the one that will survive.

Pain Medicine in Hong Kong: The New Era

Steven Wong

The year 2014 marked the beginning of a new era in the development of pain medicine in Hong Kong. It began on 1 January with the commencement of training for the Fellowship in Pain Medicine of the Hong Kong College of Anaesthesiologists (HKCA). The establishment of fellowship training coincided with the recognition of pain medicine as a medical specialty in Hong Kong. Medical practitioners possessing the qualification or equivalence may now register themselves on the specialist register of the Medical Council of Hong Kong as specialists in pain medicine. The writer was fortunate enough to be able to witness the whole process and the following is an account of the story from its beginning to the present.

The Need for Pain Specialists

Over the last decade, awareness of the need for greater care of patients suffering from chronic pain has steadily increased. The prevalence of chronic

pain in Hong Kong has soared from a figure of about 11 per cent, according to a telephone survey conducted within the last decade,¹ to a figure of about 35 per cent, according to a similar survey recently conducted.²

Despite the fact that pain medicine has been recognized as a specific medical specialty in most developed countries, including the United States, the United Kingdom and Australia, as well as in China, pain medicine in Hong Kong was not recognized until recently by the Medical Council of Hong Kong as a medical specialty.

In the private sector, doctors from different specialties, such as neurology, neurosurgery, orthopaedics, and family medicine, provide treatment to patients with painful disorders. In the public sector, patients with chronic pain are taken care of by anaesthesiologists, who have been running the pain service in major hospitals for the past 15 years or so, through in-patient consultations and out-patient pain clinics. However, most of the anaesthesiologists providing a pain service in the public sector are doing so on a part-time basis. The current capacity of the service can barely cope with the ever-increasing demand. Many patients have difficulty accessing the service due to limited service hours and long waiting times.

The Need for a Formal Training Programme

As far as training is concerned, the HKCA in Hong Kong is as yet the only organization offering a structured training programme in pain medicine.

(from left) Drs P.P. Chen, C.T. Hung, Roger Goucke, and Steven Wong at the Pain Forum 2008





Training had hitherto taken the form of a post-fellowship training programme, offered only to fellows in anaesthesiology. Completion of the programme now results in the awarding of the Diploma in Pain Management (HKCA), which is a quotable qualification in Hong Kong. However, the diploma programme, being a one-year full-time training course, does not carry the equivalence of a fellowship training programme and thus does not qualify the holder for specialty registration.

Dr Steven Wong presenting at the Pain Forum 2008

The diploma programme was initiated in 1998 through the work of the HKCA Pain Management Committee chaired by Professor Joseph Yang. In September 2008, after running the programme for about ten years, the HKCA Board of Pain Medicine (formerly the Pain Management Committee) recommended upgrading the programme to make it equivalent to the fellowship training. A subsequent forum on the 'Future Development of Pain Medicine in Hong Kong' was held in October 2008. Speakers included: Dr Roger Goucke, Immediate Past Dean of the Faculty of Pain Medicine, Australian and New Zealand College of Anaesthetists (FPMANZCA); Dr C.T. Hung, Past President of HKCA and Chairman of the Hospital Authority Taskforce on Multidisciplinary Pain Management; Dr P.P. Chen, Chairman of the Board of Pain Medicine at that time; and the writer. The forum demonstrated a general consensus among our Fellows on the development



of a fellowship training programme, the subsequent recommendation was tabled for discussion at the College Council in November 2008. A Working Group was formed in January 2009 under the leadership of Dr P.P. Chen. Members of the Working Group were drawn from different training centres and included Drs C.W. Cheung, M.C. Chu, Libby Lee, Theresa Li, S.L. Tsui, and the writer, as well as representatives from the Board of Education, Dr Y.F. Chow, and the Board of Examination, Drs P.T. Chui, C.T. Hung, T.W. Lee, Anne Kwan, and Professor Michael Irwin acted as advisors. A proposal was developed and approved by the College Council in April 2009. The writer took over the chairmanship of the Board of Pain Medicine in August 2009.

The Origins of the New Fellowship Training Programme

A consultation paper was drafted and sent out to all members and Fellows of our College in October 2009. The paper highlighted the need for the development of a fellowship training programme, provided a brief overview of fellowship training programmes overseas, and made a proposal for our own training programme. A list of frequently asked questions and answers was also included. The paper was accompanied by a survey of the requirements and important issues involved in the preparation of the fellowship programme.

In December 2009, a forum on the ‘Fellowship Training Programme in Pain Medicine’ was held. It was well attended by our Fellows and most of the questions and comments related to training and examinations. These were very useful in the subsequent design of the training curriculum.

The Working Group went on to draft a number of documents in relation to the new fellowship in pain medicine. These documents went through numerous revisions after discussion by the Board of Pain Medicine and College Council, before being approved by the Council for submission to the Hong Kong Academy of Medicine. Needless to say, countless hours were spent by members of the Working Group on this process.

The following documents were drafted covering various aspects of the fellowship training programme:

1. Vocational Training Guidelines on Fellowship in Pain Medicine
2. Guidelines on Examination and Assessment for Fellowship in Pain Medicine



3. Guidelines on Accreditation of Training Unit for Fellowship in Pain Medicine
4. Administrative Instructions for Admission of First Fellows of the HKCA Fellowship in Pain Medicine
5. Guidelines on Transition from Diploma to Fellowship Training in Pain Medicine

Drs Beverly Collett, M.C. Chu, and Steven Wong at the Examination Workshop 2013

The establishment of the fellowship training programme was finally approved by the Hong Kong Academy of Medicine in December 2011.

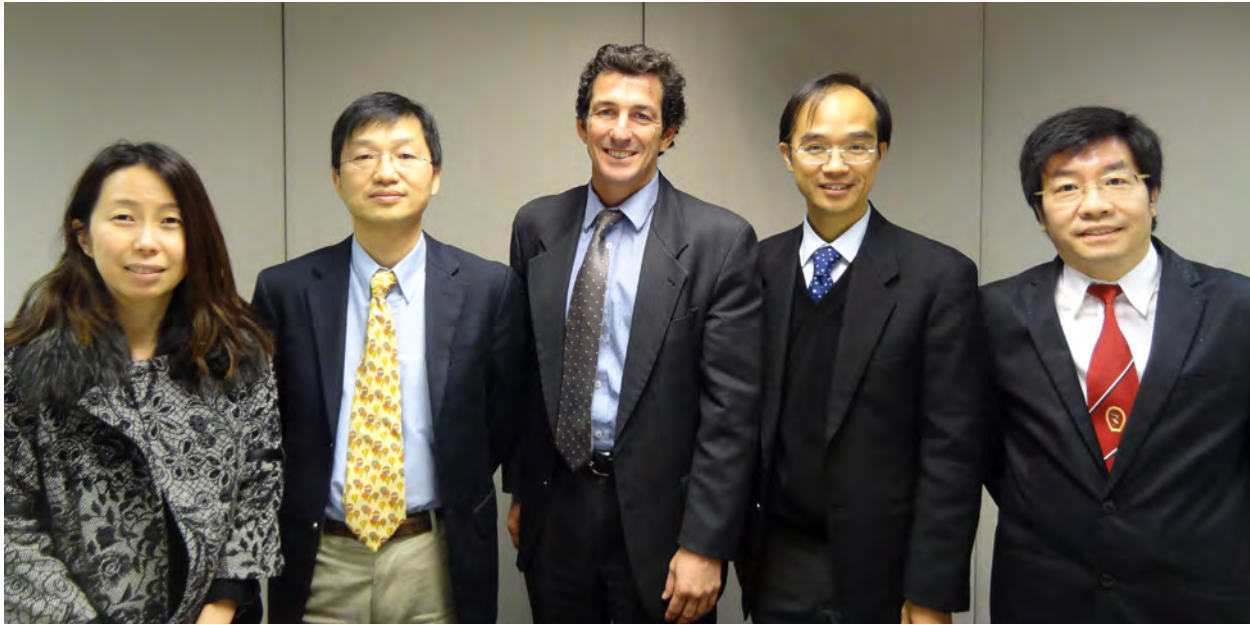
Admission of First Fellows

It is very important that we have a critical mass of trainers at the commencement of the fellowship training programme. A substantial amount of time has been spent by the Council on the deliberation of the criteria for accreditation of First Fellows and the process of admission for First Fellows.

In principle, the training experience of First Fellows should be at least equivalent to that of future pain-fellowship trainees. Therefore, a number of criteria have been laid down with reference to the minimum clinical exposure requirement during the vocational training period.

In order that the process of accreditation of First Fellows be a fair and open one, a Censor Subcommittee was formed, chaired by Dr Jacqueline





(from left) Drs Jacqueline Yap, Simon Chan, Brendan Moore, Steven Wong, and C.H. Koo at the First Fellow Special Assessment 2013

Yap, to vet all applications. Successful applicants were invited to attend a special assessment. The panel of assessors consisted of an external assessor from an overseas college, and representatives from the College's Board of Examination, Board of Censors, Board of Education, and Board of Pain Medicine.

Three rounds of special assessment were held. The first round was held on 12 and 15 September 2012. Dr Roger Goucke was invited to act as external assessor. The second round was held on 20 April 2013, with Dr Beverly Collett, Board Member of the Faculty of Pain Medicine, Royal College of Anaesthetists, as external assessor. The third round was held on 30 November 2013, with Dr Brendan Moore, Dean of the Faculty of Pain Medicine, the Australian and New Zealand College of Anaesthetists, as external assessor. Altogether, 42 applicants fulfilled the criteria and were admitted as First Fellows in Pain Medicine.

Accreditation of Training Centres

The Accreditation Subcommittee, chaired by Dr Theresa Li, was set up to carry out the accreditation of training centres. This took place in May and June of 2013 when altogether six centres were accredited as training centres: New Territories East Cluster, Queen Mary Hospital, United Christian

Hospital, Queen Elizabeth Hospital, Tuen Mun Hospital, and Pamela Youde Nethersole Eastern Hospital.

The Way Forward

Pain medicine is a multidisciplinary specialty. We need to extend relevant training to doctors from other specialties by extending an invitation to members and fellows of other colleges to join the training programme. Further collaboration with other specialties in both the training curriculum as well as the examination is crucial.

We also need to benchmark the standard of our training programme against international standards. Here, we need to liaise with overseas colleges: on training issues such as overseas clinical attachments, and examination issues such as invitation of external examiners. Mutual accreditation of training is our ultimate goal, to allow exchange of training opportunities and to broaden the learning experience of our future trainees.

Pain Medicine is a medical specialty still in its infancy and still very much needs the dedication and hard work of our Fellows to help nurture and develop it.

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Looking to the Future for Intensive Care in Hong Kong

Gavín M. Joynt

The beginning of the future always lies somewhere in the past. The severe acute respiratory syndrome (SARS) outbreak in 2003 remains vivid in the memory of intensivists who were practising intensive care in Hong Kong at the time.¹ It was a defining challenge for intensive care, but the results of meeting the challenge have had a largely positive effect on intensive care unit (ICU) practice in Hong Kong. The key functions intensive care provides within the health care system were highlighted, both for the public and for our fellow medical professionals. ICU teams earned the respect of non-intensive care colleagues who witnessed their dedication and ability to cope.^{2,3} Importantly, the relatively under-resourced nature of ICU in Hong Kong was highlighted.⁴ Despite limited manpower and facilities, the reputation, profile, and goodwill gained by ICUs throughout Hong Kong meant that, after some years of stagnation, recruitment of high-quality trainees to ICU increased in the years that followed, giving us the present healthy base of new specialists that is needed to move forward. Most importantly, it reminded us of the need for ICU to develop with an eye to the future, not only through enhancing preparedness against pandemics,⁵ but

also in terms of strengthening Hong Kong's overall ability to provide intensive care to meet the increased expectations of the public for high-quality care, and the increasing volume demands associated with our ageing population. What are the key areas that need to be addressed now, and in the near future, to facilitate a healthy specialty and the provision of consistently high-quality intensive care to our patients in the future? I believe there are several and I will address them in order.

The central role of the College is to maintain the standards of education and examination that ensure the competence of intensive-care specialists in Hong Kong. In this regard the College has made great strides in the modernization of the examinations process to ensure that desired competencies are met by our Fellows prior to them embarking on professional practice. The setting of a competency-based examination also serves to drive learning, so that prospective candidates concentrate not only on acquiring core knowledge, but also perfecting technical skills, decision-making, and communication. Thus the examination design is one that now tests in all these domains. The challenge will be to keep moving forward at the same pace as ICU advances to ensure that the examination process continues to challenge prospective Fellows to learn appropriately. For example, bedside clinical competency, currently examined over a relatively short period of time in the Final Fellowship Examination as two 30-minute 'hot' cases, could effectively migrate to become part of the 'in training' assessment, allowing a much more extensive assessment of competency at the bedside. As techniques such as echocardiography and ultrasound become a larger part of our diagnostic armamentarium, those of contextual bedside assessment skills will become necessary. Of course these changes will present challenges, but no doubt these can be overcome with perseverance and creative planning. This is but one example of a general direction that could be taken in making the future competency assessment of the College more efficient and effective.

While the examination process has developed very positively under the guidance of Dr Peggy Tan and the court of examiners, and the effect on learning can be clearly seen, the curriculum has not been formally reviewed or reformed for several years. Curriculum reform should be an area of priority going forward. The concept of outcome-based learning is a modern approach that can be used to inform curricula in a positive way and ensure a



robust, structured and appropriately focused curriculum.⁶ Many universities and other colleges, particularly in Australia and Canada, have embraced this approach with apparent success. It seems sensible for us to do the same.

The resources required to develop an outcome-based curriculum would be substantial, especially as intensive care forms a relatively small part of the College, and support from the College will be essential to the success of such a project. As important could be the re-igniting of attempts to unify the separate training and examinations processes—HKCP (Critical Care) and HKCA (Intensive Care)—of the Hong Kong College of Physicians and Hong Kong College of Anaesthesiologists, respectively. The combination of the resources of these two Colleges, who each currently award an independent intensive-care/critical-care qualification, would greatly facilitate such reform. Although attempts to come together in the past have failed, it remains, to my mind, fundamental to achieve at least functional unity if intensive care in Hong Kong is to thrive into the future. The Hong Kong Society of Critical Care Medicine (HKSCCM) is a unifying body that welcomes all intensivists in Hong Kong, and could be used as a forum to promote a coming together of the two Colleges. The HKSCCM has in recent years again become an active and useful resource for Hong Kong intensivists, and participation by all HKCA Fellows in the activities of the society, two of whom (Drs Kenny Chan and Gordon Choi) occupy positions on the HKSCCM council, should be strongly encouraged. The HKSCCM also provides an increasingly visible contact point with other international intensive-care organizations, both for clinical and research collaboration through its official journal *Critical Care and Shock* (<http://criticalcareshock.org>).

The Board of Intensive Care of the College has enjoyed a historically close relationship with the College of Intensive Care Medicine of Australia and New Zealand (CICM), and Hong Kong has derived many of its historical systems, including training, curriculum and examinations processes, from the FICANZCA (Faculty of Intensive Care of the Australian and New Zealand College of Anaesthetists) and JFICM (Joint Faculty of Intensive Care Medicine), predecessors of the CICM, with their generous permission. Currently one of our Fellows (Prof. Gavin Joynt) occupies an elected position on the Board of CICM, and another (Prof. Charles Gomersall) sits on their court of examiners. The CICM has recently completed an extensive and

comprehensive curriculum review, based on desired outcomes, and their experience could serve Hong Kong well. The CICM is likely to offer access to their processes and curriculum details, and the immense cost and effort this would save our College, and intensive care in Hong Kong, highlights the advantages of maintaining close personal contacts with CICM. It is therefore important for the next generation to continue to maintain strong personal contacts so that the generosity of the well-resourced CICM continues to help Hong Kong develop in a constructive way. Of course, developing systems that suit Hong Kong specifically will be equally important, and for this we rely on the local expertise of Hong Kong intensivists.

Educational initiatives from individual College Fellows, often forming small collaborations, have resulted in substantial educational material that is available to trainees and Fellows of the College. The Combined Colleges training course that embodies two hours of teaching and bedside clinical teaching, takes place most weeks during the year, and covers a broad range of knowledge and skills training (http://www.hkca.edu.hk/IC/courses_meetings_tutorials/tutorial_progam.htm). Established for trainees of the College by the Board, under the dedicated leadership of Dr Anne Leung, it is

Board of Intensive Care, June 2014. (from left): Drs Stanley Chan, Peggy Tan, Kenny K.C. Chan, Anne Leung, Dominic So, Gavin Joynt (Chairman), So Hing-yu (Secretary), Judith Shen, Gordon Choi, Gladys Kwan, and Dr Wilson Lee



now a combined initiative of the College and HKCP. The great success of this course should serve as a model and encourage closer collaboration between HKCA and HKCP in the future. Several other educational initiatives by Fellows have become established sources of education. The BASIC Collaboration was founded, and remains based, in Hong Kong. The steering committee is now international, but remains headed by Prof. Gomersall with the support of several HKCA(IC) Fellows (Drs So Hing-yu, Gordon Choi, and Gavin Joynt). Many Fellows participate in the delivery of generic short courses that are now regularly delivered in over 50 countries. Courses range from a basic introduction to ICU, to more advanced courses on mechanical ventilation, nephrology, and paediatric intensive care. The Collaboration's objective is to teach trainers at participating centres who then run courses independently.^{7,8} BASIC Collaboration courses are also run regularly in Hong Kong. A similar course covering all clinical aspects of brain death and organ donation was established by Dr Gordon Choi with the help of other HKCA Fellows, and is regularly offered in Hong Kong. A comprehensive Extra Corporeal Membrane Oxygenation (ECMO) course, run at Pamela Youde Nethersole Eastern Hospital, has been developed by Dr Kenny Chan and other College Fellows (Drs Anne Leung and K.M. Chan). While these initiatives by individuals are laudable, as it stands the future development of material remains in the hands of interested and dedicated individuals. The future should see the College devoting meaningful resources to encouraging the development and maintenance of educational material by its Fellows. This could be done by sponsoring development, establishing a repository of available educational material, and endeavouring to become a premier source of educational material for its Trainees and Fellows.

The writing of this chapter comes at a time of handover from the first generation of ICU specialists, who trained outside Hong Kong, to the new, Hong Kong-trained, generation. The first Chairman of the ICU Committee, as it was then known, Dr Tom Buckley, will retire from the Hospital Authority (HA) this year, and after 12 years as Chairman of the ICU Board, I will retire from the Chair, the last of my College positions. What major challenges face the new generation trained by the Hong Kong College? There are several. Apart from the development of training, education and examination discussed above, the College has other important roles. These include maintaining

the professional standards of its Fellows, attracting new trainees to be our future Fellows, ensuring a safe ICU environment for our patients, both in HA hospitals and in private institutions, and the promotion of the advancement of ICU care through research and innovation.

Maintenance of professional standards is currently achieved through a continuous professional development (CPD) programme, which the College currently provides. The future will, however, demand much more than self-initiated CPD-related learning. There is an increasing expectation by public and patients that Doctors stay up to date and knowledgeable in key aspects of their clinical practice. Medical advances are more and more rapid, and the reliance on informal learning to keep up to date appears to be failing. We have already seen recertification become mandatory in the United Kingdom (GMC),⁹ it is being discussed at professional meetings and within regulatory bodies in Australia, and its adoption in Hong Kong in the future is, I believe, inevitable and correct. There are two approaches the College can take. The first is to anticipate the changing requirements and proactively develop educational and assessment methods that progressively meet future needs for recertification. I believe this is the preferred route. The second approach is to await the directive of regulatory bodies and then meet their requirements. I believe that, as professionals, we are in a better position to develop high-quality recertification programmes, rather than await regulatory, bureaucratic instructions to follow prescribed programmes. The College will have to start soon if we wish to stay ahead and in control of our educational destiny.

Attracting new, bright trainees to the College ICU programmes has been, and will continue to be, a challenge. Private practice for intensive care specialists in Hong Kong is poorly developed, and not currently attractive as a career. Hospital practice has great career potential because the number of ICU beds and units in Hong Kong must increase with time to service our ageing population. Thus advancement and promotion prospects for young doctors entering intensive care training are excellent. Meeting the challenges ahead should be even more rewarding. On a daily basis, and uniquely in medicine, intensive care offers the dual reward of working in a challenging environment and watching critically ill patients recover rapidly from the benefits of critical interventions. Somehow these facts need to be communicated to young doctors deciding on future career paths, so that





At the signing of the Memorandum of Understanding between HKCA(IC) and HKCEM, allowing the Colleges to co-recognize and administer training so that double Fellowships can be achieved without unnecessary delay, or redundant training time. Fellows of HKCA present were (back row, from left) Drs Peggy Y.H. Tan and Dr John T.C. Liu; (second row, from left) Drs Gladys Wai-man Kwan, Samantha Y.Y. Lee, and Chi-hung Koo; (front row, from left) Prof. Gavin Joynt and Dr Yü-fat Chow

intensive care becomes a career of choice. The recent collaboration, the culmination of our efforts over three to four years, with the Hong Kong College of Emergency Medicine (HKCEM), resulted in the signing of a memorandum of understanding that streamlines the emergency-medicine and ICU training programmes of the respective Colleges and allows trainees to specialize in both disciplines in a reasonable time. Fellows of each College also have significant cross-recognition of prior training, encouraging dual Fellowships. Initiatives such as this should result in a larger pool of specialist intensivists with diverse skills and insights.

For some time Hong Kong has been burdened by a shortage of bedside nursing manpower. International-standard, 1:1 bedside nursing 24 hours per day, is not achievable in Hong Kong given the HA's minimum standards of 4.2 nurses per bed. The problem will become more acute in future. The complexity of ICU cases is increasing with time, for example ECMO is being increasingly used in Hong Kong.¹⁰ The need for infection control and patient isolation is also more common, necessitated, for example, by the increasing incidence of multi-drug resistant *Acinetobacter* spp. Without an increase in bedside nursing ratios, good standards and a sustainable working environment for nurses will become impossible. To ensure excellence of ICU

care in the future it will be necessary for the College, through its Fellows and the individual ICU accreditation process for training, to ensure that nursing manpower standards are improved.

Similarly, it will be necessary to assess, through the inspection process, the presence of adequate supervision and training facilities for future trainees in accredited ICUs. Ensuring adequate physical facilities, such as bed space, also remains a College responsibility that should be addressed through the ICU accreditation process. In addition, the general shortage of ICU beds in Hong Kong is a chronic problem, highlighted by the routine need for triage in most units across the territory^{11, 12} and/or the need for mechanical ventilation in the general wards.¹³ This unsatisfactory situation should be addressed, potentially through College-supported programmes designed to establish the magnitude of the need for intensive-care beds and facilities in Hong Kong. The College is maturing and ICU is no longer a fledgling specialty, and together we will need to take a leadership role in these key areas if the intensive-care specialty is to develop in excellence and sustainability.

One area that remains a challenge to Hong Kong intensive care is research and innovation. While individuals who are Fellows of the College are involved in both local and international collaborative research, the College currently has limited involvement in the direct support of research activity. A formal project that should incorporate research methodology is required of trainees, but many find it difficult to meet the requirements of the formal project, especially those working outside the university hospital units. Although some research funding has recently been earmarked, the College should be pressured by the new generation to markedly enhance its funding of research projects, preferably through a formal research-grants process, both for trainees and Fellows. The College is now financially secure, and without substantial risk is in a position to award substantial grants that recognize research excellence. This encouraging approach should be considered in the future. The Board of Intensive Care does offer support for trainees completing formal projects through the Formal Projects Officer and the University units, but these resources are seldom used, and further efforts to encourage research activities by trainees and young Fellows should be a future strategy.

The development of high-quality intensive-care provision in the privately funded health sector should be encouraged. This may be a method



A practical simulation station at the Final Fellowship Objective, Structured, Clinical Examination (OSCE). Candidate undergoing an examination of how to manage a severely injured trauma patient. (Published with the permission of candidate Dr Duncan Lam, now a Fellow of the College)



of alleviating some of the current burden on publically funded intensive care, but it also offers individuals more options for career development and makes intensive care a more attractive career option for junior doctors making career choices. The College could play a potential role in the future by setting standards and ensuring compliance through accreditation and maintenance of professional standards mechanisms.

In conclusion, the HKCA through the Board of Intensive Care has begun the journey that will result in Hong Kong delivering excellence in ICU care to its citizens in the years ahead. I have outlined what I believe are some of the major challenges. Some will require innovation, but many simply a dedication to good sense, and a refusal to allow compromise, whether political or practical, to interfere with the drive for excellence. I wish my colleagues currently serving on the Board of Intensive Care, HKCA wisdom, strength, and most of all, courage, so that they can do what they believe is right for the future of intensive care in Hong Kong.

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Translational Research and the Future of Anaesthesiology in Mainland China

Jin Liu

Medicine is a science of studying human beings, while clinical medicine deals with pathogenesis and the development and prognosis of diseases. Clinical medicine also explores methods of disease prevention, diagnosis, and treatment. Anaesthesiology belongs to clinical medicine, naturally encompassing all its disciplines and research aspects.

A large and ever-increasing amount of funding has been invested in medical research in mainland China since the 1990s. Basic medical research has brought about significant outcomes in terms of the invention of new technology, accumulation of new knowledge, and the publication of a myriad of papers (in 2013, anaesthesiologists in mainland China published about 1,500 SCI-indexed papers). However, few of these findings and advances have translated into practical applications that can actually improve human health. Obviously, a giant barrier exists with a serious disconnect between our medical research and the needs of our patients. Instead, what we have been pursuing is the publication of papers, professional promotion, and more funding opportunities and rewards, all of which appear to disregard

a very basic rule that medical research should be patient-oriented (Patient Driven Research).

In 2003, in its 21st century roadmap, the US National Institutes of Health proposed a concept of translational research or translational medicine: focusing on patients, moving questions from bedside to basic research, and then conveying promising research findings from the bench back to the bedside to improve the quality of health care. I will use '4Bs' here to illustrate this roadmap, as in: raising questions from clinical settings (from **B**edside), doing research in laboratories (to **B**ench), applying the research results back to clinics (back to **B**edside), and achieving a better outcome for medical care (with **B**etter outcome).

How do we find and propose an appropriate research project? This is actually a very hard question and one that has tripped up many researchers. The availability of modern technology and medicine may help. Meta-analysis and big-data analysis are capable of producing valuable clues for cutting-edge research. Of course, clinical observation, especially in combination with basic research, including well-designed, small-sample size, and single-centre randomized controlled trials (RCT) with ideal results, provides an important basis for project proposal. However, it should be clearly acknowledged that meta-analysis, big-data analysis, and the above RCT cannot be replaced by the prospective, large-sample, multi-centre, long-term follow-up RCT.

The key factor in translational medicine is to bring the research findings back to clinical practice promptly (back to Bedside). That means not going back to the bedside with empty hands. To return from the laboratory to the bedside, new and effective intervention should be targeted for clinical use. I will interpret these new findings with '4Ps': new **P**roducts, new **P**rocedures, new **P**rotocols, and new **P**roof. New practices should only be fully developed if they apply to clinical conditions. Unfortunately, a very large portion of our research terminates in laboratories before this real translation, that is, the research ends at 'mid-point', rather than at clinical 'end-points'. Under these circumstances, it is regrettable that even mid-term results that seemed very promising often cease abruptly.

What are the 'golden end-points' for medical research? As stated above, the ultimate goal of medical science is to meet the needs of patients. What then are the final needs of our patients? Patients come to doctors because



they feel sick and that they have a shorter life span and poorer quality of life in comparison with people of the same age. Although they may encounter different diseases, and seek out different departments or doctors to treat various conditions, ultimately, they all hope to extend their life span and improve their quality of life. Besides these two essential prerequisites, patients also hope to spend less money. At the same time, society expects us to get the most out of our medical resources. In addition, patients and their families also expect a highly satisfactory health-care service. Therefore, I use '4Ss' as 'golden endpoints' to indicate whether '4B' have actualized the 'better outcome' in translational medicine, as: **S**ave more lives, **S**ave higher quality of life, **S**atisfy more patients, and **S**ave more medical resources. If one (or a series of) medical research finding(s) has been proved to have at least actualized one S without hurting other three Ss, then, it should be characterized as a decent research. If one piece of (or a series of) medical research finding(s) meets the '4Ss' simultaneously and fully satisfies the demands of patients and their societies, then it can be called a great scientific achievement. We conclude the translational research to: '4B+4P→4S', that is, '4S' is realized by '4B' via '4P'.

To prove the '4Ss' have been achieved normally requires systematic evaluation based on prospective, large-sample, multi-centre, randomized controlled, '4S'-endpoint-orientated, long-term follow-up clinical studies. Regarding the process of diagnosis and treatment of a patient in hospital, the anaesthesiology department is a kind of 'middle department' as it often provides a medical service in the middle of a patient's hospitalization. This might be the main reason why most of our previous clinical research ended at 'mid-points', but was usually accredited by ourselves as 'end-point' research.

Anaesthesiologists in mainland China are learning and implementing translational medical research based on the 4B+4P→4S model. Our ongoing study of **P**eri-**O**perative **T**ransfusion **T**rigger **S**core (POTTS) may serve as an exemplar.

This research originated from a popular phenomenon in clinical practice (from the bedside). According to guidelines in the USA, UK, and China on peri-operative transfusion, red blood cell (RBC) transfusion is not required in patients with haemoglobin (Hb) ≥ 10 g/dL, and is recommended when Hb < 6 or 7 g/dL. However, it is not uncommon to have surgical or trauma

patients with Hb between 6 and 10 g/dL in the peri-operative period. As there is currently no objective evidence to help guide RBC transfusion for this group of patients, the situation relies on the subjective clinical judgement of attending anaesthesiologists or surgeons. The guidelines contain the following potential limitations and problems: firstly, RBC-transfusion triggers failed to have strong evidence from randomized controlled trial results. Secondly, in the guidelines, it seems that the concept of 'individual medicine' is generated and well pursued, but actually the decision as to whether RBC transfusion should be triggered, and how much RBC need to be transfused, is mainly assessed by doctors based on their own experience because of the absence of quantification or semi-quantification of the patient's situation. Thirdly, the target Hb concentration after transfusion is not defined in the guidelines. It is therefore easily accepted by many peri-operative physicians that it is not wrong to keep the Hb concentration at 100 g/L. As a consequence, over-transfusion of RBC is often prescribed.

In order to overcome the above problems, we can review the basic physiology concepts (to the bench). The objective of RBC transfusion is to restore the oxygen-carrying capacity of the blood in order to maintain the body's oxygen supply/demand balance. In clinical practice, the body's oxygen supply/demand balance can be estimated by mixed venous oxygen saturation (SvO_2). Under normal conditions, SvO_2 is directly proportional to the oxygen-carrying capacity of the blood, but inversely proportional to body oxygen consumption (which is mainly determined by basal metabolic rate and body temperature). The oxygen-carrying capacity of the blood is related to cardiac output, Hb, and arterial blood oxygen saturation (SaO_2). Therefore, in order to maintain the oxygen-carrying capacity in the peri-operative period, RBC transfusion will likely be required in a patient who requires inotrope infusion in order to maintain cardiac output and/or increase the inspired oxygen concentration to keep the pulse oximetry oxygen saturation (SpO_2) $\geq 95\%$. On the other hand, transfusion may be needed to meet increased oxygen demand, in the event of fever, for example. Furthermore, a higher oxygen-carrying capacity is desirable in patients with coronary artery stenosis. Thus, we proposed a peri-operative transfusion trigger score (POTTS) to guide RBC transfusion for surgical patients with Hb between 6 and 10 g/dL (see Table).



Table. Peri-Operative Transfusion Trigger Score (POTTS)

Points added	Adrenaline infusion rate	FiO ₂ to keep SpO ₂ ≥95%	Core body temperature	History of angina
0	Not required	≤35%	<38°C	No
+ 1	≤0.05 µg/kg/min	36-50%	38-40°C	On exertion
+ 2	≥0.06 µg/kg/min	≥51%	>40°C	During normal daily living or at rest

POTTS score = points aggregated for all 4 items plus 6.

The highest score is 10, i.e., if final aggregate ≥ 10, POTTS score = 10.

If score ≤Hb, no RBC transfusion is needed.

If score >Hb, RBC transfusion is needed and target Hb = score.

RBC transfusion (u) = (score-Hb) x 2

(1 u RBC collected from 200 mL fresh whole blood in mainland China)

Using POTTS to guide peri-operative RBC transfusion has several advantages. Firstly, the method is very simple and it can be easily and promptly carried out in the operating theatre, intensive care unit (ICU), and surgical wards at any time on all patients. Secondly, such semi-quantification of the patient's situation based on the balance of oxygen supply and consumption would promote an 'individualized transfusion strategy' which may benefit different patients with different conditions. Thirdly, it provides not only the trigger but also the target Hb concentration for RBC transfusion.

Since August 2012, in co-operation with 22 other hospitals in mainland China, West China Hospital has been carrying out a prospective, large-sample, multi-centre, randomized controlled, one-year follow-up clinical study to evaluate the safety and efficiency of this scoring system. Some 779 cases have been completed so far. The results showed that, compared with the current Chinese RBC transfusion guidelines, under the guidance of POTTS the requirement of allogenic RBC transfusion was significantly reduced by 50 per cent. Meanwhile, hospital costs were saved on average by 3,000 RMB per patient and the post-operative infection rate was decreased by 2.1 per cent. However, the same ICU admission rate, wound healing, and 30-day post-operative mortality were found in both groups. Taken together,

using POTTS as an individualized transfusion strategy, we can save medical resources, such as allogenic RBC, and hospital costs without affecting survival rates and quality of life. If POTTS were used throughout China, some 1,500 tons of allogenic RBC donated by five million people and 20 billion RMB of hospital costs would be saved annually. A survey by the Chinese Ministry of Health showed that, in recent years, the number of surgeries in China has increased by 13.5 per cent annually, but with only a two per cent increase in blood donations. By 2020, if we continue using the existing blood-transfusion guidelines, the requirements for peri-operative RBC transfusion will double. On the other hand, if we apply POTTS as a peri-operative individual transfusion strategy, we can double the number of operations by 2020 without requesting additional blood donations.

Translational research is of crucial importance to the overall development of anaesthesiology in China. Yet, a '4S'-oriented model is not only applied in translational research, but also in a variety of other aspects, such as medical education, standardized residency training, clinical anaesthesia, and department management. In view of this, greater efforts need to be made to achieve 'the 4 translations' for the development of anaesthesiology in China. Firstly, translation from satisfying anaesthesia safety to ensuring peri-operative safety and improving long-term outcomes for surgical patients. Secondly, translation from satisfying pain relief for surgical procedures to an anaesthesiology-guided, multi-disciplinary department-collaborative 'pain-free hospital'. Thirdly, translation from non-standardized apprentice resident training in small hospitals to an extensive standardized resident training system. And lastly, translation from ending at 'mid-points' and paper-publishing-oriented research, to ending at '4Ss' and patient-driven translational research. In mainland China, we performed 30 million operations in 2013 and the number will be 50 million by 2020. If we perform the same amount of surgery on the basis of population as the USA does today, there will be 150 million operations a year in China. If we commit ourselves to translational research, the huge clinical resources for medical education and research in anaesthesia disciplines in China cannot fail to make an important contribution to the development and improvement of global medical science.



Anaesthesiology in Singapore and Hong Kong: Similarities and Differences

Chen Fun-gee

Singapore became part of the British Empire when Sir Stamford Raffles, the Lieutenant Governor at Bencoolen, arrived to sign a formal treaty with the Sultan of Johor on 6 February 1819. The Straits Settlements, comprising also Penang and Malacca, were formed because the British East India Company needed a base to protect British ships trading in the China and South-east Asian trade.¹ The medical services, based initially in Penang and moving to Singapore in 1835, were staffed by army surgeons assisted by medical subordinates.²

Prior to 1842, Hong Kong was a small fishing community. Following the First Opium War with China, Hong Kong Island was ceded to Britain under the treaty of Nanking. The Kowloon Peninsula and Stonecutters Island and subsequently the New Territories came under the control of the British in 1860 and 1898 respectively. Henry Pottinger, the first governor of Hong Kong, reported in 1843 that the 'barren and rocky island' was afflicted by many severe and fatal diseases, and that there was considerable mortality and morbidity amongst the settlers and troops.³ A medical service was instituted in the same year under the first Colonial Surgeon, Dr Alex Anderson, who

wrote that, given the unfavourable conditions of excessive atmospheric heat and great humidity, the most prevalent sicknesses were fevers of remittent and intermittent type, dysentery, and rheumatism.

The Birth of Anaesthesia

Early accounts of anaesthesia are mired in controversy, especially as to who was the first to administer anaesthesia. On 16 October 1846, William T.G. Morton was the first to demonstrate, at Massachusetts General Hospital, Boston, how ether could be used to allay the pain of tumor excision; but he was neither the inventor nor the discoverer of anaesthetics.⁴ The news spread rapidly and Robert Liston used ether anaesthesia when he amputated a patient's leg at University College Hospital, London, on 21 December 1846.

Publications regarding ether and the apparatus for its administration soon reached the Straits Settlement of Penang, Malacca, and Singapore. It would have taken 40 days for mail to be sent by sea to Egypt, then overland to the Red Sea, and thence by sea to Bombay, Ceylon, and finally to the Straits Settlement. On 28 April 1847 in Malacca, Mr A.J. Ratton operated on a seaman whose hand had been blown off by a gun. He used ether, using a simple Mudge's inhaler, with the patient unaware of the operation. He described the procedure on 30 April 1847 in the Singapore Free Press, whose editor expressed hope that the success of the 'experiment' would be of use to 'spare pain to the person operated on and facilitate the operation'. This was followed by reports of the successful use of ether in Penang on 29 June 1847 and in Singapore on 2 August 1847. Mr Robert Little, a surgeon in private practice, successfully operated on an Indian boatman to remove a large splinter of wood from his hand. The patient subsequently said he felt no pain and was amazed by the sight of his bandage.²

In Hong Kong, the earliest mention of anaesthesia was in the annual report of Dr J.M. Atkinson, superintendent of the government hospital, in 1889. The report states that two patients with gunshot wounds were anaesthetized, the first on 7 April. There was no mention of the method or the agent used.⁵ The 1896 annual report for the Alice Ho Miu Ling Nethersole Hospital reported '84 operations under the influence of an anaesthetic; cured 64; improved 16; died 4'. Chloroform or ether, singly or mixed, dropped on



to an open mask was a routine technique and anyone from medical student upwards could perform the task.

The First Trained Anaesthetist

In Hong Kong, Dr George Thomas started administering chloroform as a senior medical student in 1910 at the Alice Ho Miu Ling Nethosole Hospital and at the Faculty of Medicine taught many, if not all, subjects in the curriculum. Dr H.P.L. Ozorio was the first doctor from Hong Kong to undergo training in anaesthesia, from 1949 to 1951 at the Nuffield Department of Anaesthesia, Oxford. Dr Ozorio also had training in obstetrics and gynaecology and practised in both specialties in Hong Kong. The position of Specialist Anaesthetist to the Hong Kong Government was created in 1954 and the first appointee was Dr Zoltan Lett from the United Kingdom. Drs Lett and Ozorio then set about properly organizing Hong Kong anaesthesiology, elevating it from a colonial medical service to a professional medical specialty.⁵

In Singapore, Dr A. Barnsley was appointed Anaesthetist in Singapore on 7 May 1927. He had no anaesthesia qualifications, but was familiar with chloroform and ether anaesthesia. He published articles on anaesthesia and noted the mortality associated with chloroform.⁶ After the war, Dr Edward Morrison was appointed as Anaesthetist, having received formal training and holding the appropriate qualifications.⁷ Local Singapore doctors were sent for anaesthesia training in the UK, including Drs B.E.G.D. Bras, F.W. Pais, and George Tay. They formed the nucleus of the first Department of Anaesthesia in Singapore, sited at the Outram Road Hospital today known as Singapore General Hospital. As early as 1964, the department had set up meetings for audits, such as weekly mortality and morbidity meetings.⁸

Colleges and Societies of Anaesthesia

In both Hong Kong and Singapore, the anaesthesia societies played leading roles in the development of the specialty. The Society of Anaesthetists of Hong Kong was set up on the premises of the Hong Kong Alumni Association on 17 June 1954, with Dr H.P.L. Ozorio elected Chairman and Dr Z. Lett the Vice Chairman. The Society promoted interest in the science and art of anaesthesia and organized meetings to educate doctors and the public in the importance of the discipline.⁹

The Hong Kong College of Anaesthesiologists was founded on 26 September 1989. The original idea of the college was first mooted in 1984, when the Society of Anaesthetists of Hong Kong set up the Board of Studies in Anaesthesiology and Critical Care under the chairmanship of Dr Andrew J. Thornton. The Board met 24 times before being formally incorporated as the Hong Kong College of Anaesthesiologists, the second specialty college in Hong Kong. It was one of the founding colleges of the Hong Kong Academy of Medicine, collaborating with fellow colleges in the development of professional standards, guidelines, and examinations.⁹

The Singapore Society of Anaesthesiology (SSA) was established on 3 January 1964 with 13 members. The next general meeting was held on 3 November 1966 with the same 13 members. It was only on 2 December 1967 that membership grew to 32. The society organized the 4th Asian Australasian Congress of Anaesthesia in September 1974 and became a member of the World Federation of Societies of Anaesthesiologists.⁸

The Chapter of Anaesthetists was formed under the Singapore Academy of Medicine on 5 September 1974, with 13 members. Unlike in Hong Kong, this was not an offshoot of the SSA. The members all had to meet the requirements of the Academy of Medicine, that is, three years' experience gained after obtaining a recognized postgraduate qualification. The chapter, together with the SSA, was instrumental in organizing meetings, lectures, and workshops for trainees and specialists. In 1978, with the formation of the specialist certification advisory committee, the chapter became responsible for accrediting specialists in anaesthesia.⁸

Postgraduate Anaesthesia Training

The postgraduate training and examinations we know today were instituted in 1969 with the formation of the School of Postgraduate Medical Studies (SPGMS) at the University of Singapore. A Board administered it, with members from the Faculty of Medicine, the Academy of Medicine and the Ministry of Health. Its main function was to conduct courses, oversee training, and conduct examinations leading to the degree of Master of Medicine. The Master of Medicine in Anaesthesia was first conducted in 1974 (part 1), and 1975 (part 2). SPGMS was renamed the Division of Graduate Medical Studies DGMS, which today forms part of the Yong Loo Lin School of Medicine.⁸



Prior to this, Singapore doctors pursued their postgraduate training in anaesthesia in the UK. In 1967, the Faculty of Anaesthetists, Royal Australasian College of Surgeons (FARACS), administered their Part 1 examinations in Singapore followed by Part 2 in 1971. The UK and Australasian Colleges played a very significant role in helping Singapore shape its training and conduct of the Master of Medicine examinations, and to date still contribute their experience in benchmarking the local examinations.

Hong Kong postgraduate anaesthesia training followed a similar history. Hong Kong anaesthesiologists were initially sent to the UK and Australia for training. It was only in the late 1960s that FARACS sent examiners to accredit training and conduct examinations in Hong Kong. The first Part 1 examinations were conducted in 1969.

The Hong Kong College of Anaesthesiologists today accredits training and conducts anaesthesiology examinations in Hong Kong. The successful candidate, having fulfilled all the requirements, is conferred a Fellowship of the Hong Kong College of Anaesthesiologists (FHKCA).⁹ The examination bears similarities to the examinations set by the Royal College of Anaesthetists (UK) and Australian and New Zealand College of Anaesthetists, as both colleges played a role in the set-up as they did in Singapore. Today external examiners from the two colleges still contribute to standard settings of the professional examinations.

Similarities and Differences

Singapore and Hong Kong share more similarities than differences in the specialty of anaesthesia. Anaesthesia has grown from a minor technical service to a major distinct specialty, providing national leadership in safety, education, and hospital operations. The development of anaesthesia shares a common colonial heritage, being developed along the lines of British and Australian models of practice. Singapore had an earlier head start in the provision of anaesthesia services, simply because knowledge arrived by ship and Singapore was nearer the birthplace of anaesthesia than Hong Kong.

The anaesthesia societies were instrumental in the development of the specialty of anaesthesia in both their territories. The training institutions were different, being the responsibility of the Hong Kong College of Anaesthesiologists and, in Singapore, the responsibility of the National

University of Singapore. The training curriculum was adapted from the Royal College of Anaesthetists of the UK , as well as the Australian and New Zealand College of Anaesthetists. These two colleges still contribute external examiners to the anaesthesia examinations of the two countries in order to benchmark standards. Because of their heritage and development, frequent meetings and exchanges, a patient will have difficulty differentiating between an anaesthesiology specialist in Singapore and Hong Kong.

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Ambulatory Patients: Ambulatory Anaesthesiologists

John Low

Office-based Anaesthesia Practice

Our specialty is, by its very nature, a service provider. We are entrusted to ensure the safety of our patients during their surgical procedure; to provide suitable conditions during which our surgeons are able to apply their skills; to do so without pain and physiological stress to our patients; and, overall, to provide a tranquil if not entirely pain-free experience for our clients.

Apart from using our technical anaesthesia skills to the limit, our problem-solving skills are also challenged daily in our anaesthesia practice. During each operation in which we are involved, we are constantly working out solutions—how best to arrange the layout of the operating theatre most ergonomically for the particular operation; how best to maintain control of the patient's airway; how best to manage post-operative pain tailored to the patient and their operation; how to minimize costs and maximize resources; how to find a better way of accomplishing what we are already doing, with better drugs; how to implement more effective regional and/or post-operative analgesia; how to mitigate the side-effects of the drugs we use; and how to achieve faster recovery and patient turnover. Our problem-solving skills are clearly what

help us achieve successful outcomes whenever we encounter critical incidents in our clinical practice. In the realm of a public health service, the driving force moves naturally towards the most efficient use of resources; achieving the highest productivity with available manpower; maximizing our hardware resources; and minimizing the cost of disposables and drugs. The benchmarks for our performance would be closely related to achieving such goals.

By contrast, in dealing with private patients, we are challenged with providing the best personal experience for our clients. Although cost containment is still important, with many clients, this is of secondary importance to a peaceful and tolerable experience. Moreover, some clients are now demanding not just a stress-free and pain-free experience during their surgical procedure; there is an added client preference for one-stop convenience. A further major consideration is that many public and private hospitals simply do not have access to some of the advanced clinical technology available in some private clinics.

Necessity is the Mother of Invention

I was once approached by several dental surgeons to help provide a suitable technique for managing such clients for minor oral surgery. The clientele was comprised of two major groups: one was a group of paediatric patients who required extensive dental restoration, but were not co-operative enough to allow the dental surgeon to work properly. The other consisted of adult clients who required prolonged dental surgery (dental implantation and minor oral surgery) but who wished to be unaware of the whole procedure. Previously, the patient would be formally admitted to the hospital, and the procedure

Table 1. Advantages of office-based anaesthesia

Advanced medical technology not available in hospitals
Convenient one-stop treatment for the client
Clinical documentation already available
Control over scheduling by the clinician
Cost containment on behalf of the client
Avoidance of hospital-acquired infections

would be undertaken under general anaesthesia. However, I felt challenged to find a better solution to provide the same conditions for the dental surgeon, but to achieve a better overall experience for the client; the client is offered one-stop convenience for the treatment, and hopefully a bonus would be that of achieving a financial saving for the client.

I researched the then current international requirements for contingency equipment for such a scenario, that is, administering monitored anaesthesia care (MAC) in an environment outside the confines of a major hospital, and found very little practical information. The most useful document was a consensus statement published jointly by the American Society of Anesthesiologists and the American Dental Association.

The document was the result of a consensus agreement by both professional organizations to define the minimum mandatory equipment required. The concept was presented that there is a continuum of sedation from 'conscious sedation/anxiolysis' to light, moderate, and deep sedation, to general anaesthesia. The extent of contingency equipment should therefore be tailored to the intended level of sedation to be given to the patient, assuming that there is always a chance that the level of sedation could be a deeper level than that originally intended.

Thus, for example, when a dental patient was only given oral anxiolytics, the availability of a supplementary oxygen source was necessary, although full intubation equipment was deemed unnecessary. However, should total

Table 2. Continuum of sedated conscious states

	Minimal	Moderate	Deep	General anaesthesia
Responsiveness	Verbal commands	Purposeful movement	Response to deep pain	Unrouseable
Airway	Normal	No need for intervention	May require chin lift	Airway +/- chin lift needed
Ventilatory function	Normal	Adequate	May not be adequate	Often inadequate
Cardiovascular function	Normal	Usually well maintained	Usually maintained	May be impaired

intravenous anaesthesia– monitored anaesthesia care (TIVA-MAC) sedation (moderate/deep sedation) be planned, it would then be necessary to make available all necessary equipment, including airway management equipment, in case unintentionally the patient entered the level of general anaesthesia.

The consensus document was therefore a very practical guideline to recommended safe levels of contingency equipment, balancing practicability with cost containment. Equipment such as defibrillators are relatively costly, and therefore remain in the optional category. A supplementary source of 100% oxygen was essential, as was a means of manual intermittent positive pressure ventilation; however, since automatic ventilators were expensive and required labour-intensive maintenance, the recommendation was that an AMBU bag was essential, although automatic ventilators remained optional.

Table 3. Essential contingency equipment

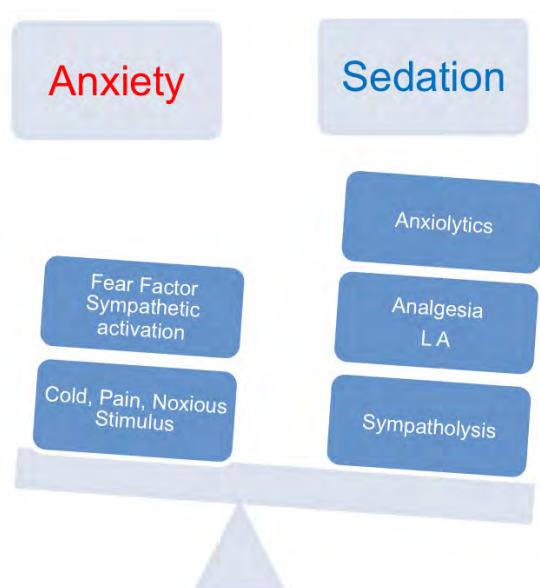
Oxygen supply	Oxygen cylinder Oxygen concentrator	Mandatory Optional; but very practical
Vital signs monitor	NIBP SpO ₂ Heart Rate ECG Capnography	Mandatory Mandatory Mandatory Mandatory Optional; Artifacts common
Means of IPPV (intermittent positive pressure ventilation)	Manual (AMBU SPUR II) Automated Ventilator	Mandatory Optional
Resuscitation drugs	See separate table	Mandatory
Contingency airway	See separate photograph	Mandatory
Heart-rhythm management	ECG monitor AED/defibrillator	Mandatory Optional
Intravenous access	Intravenous cannulae; giving sets 3-way taps; syringes; syringe pumps	Mandatory Optional; cheap and practical

Most clients who suffer from dental phobia may indeed have a relatively low threshold for discomfort, especially in the oral cavity. This would have been compounded by a previous traumatic experience at a dental surgery,



Table 4. Strategies for reducing sympathetic activity

Anxiolysis	Benzodiazepines (p.o./i.v./intranasal)	Midazolam Low-dose propofol
↓ pain stimulus	Local analgesia	Lignocaine Articaine; mepivacaine
Sympatholysis ↓ pain stimulus	Opiate analgesics	Fentanyl Remifentanyl
Sympatholysis	β-adrenergic blockade	Labetalol Esmolol
Sympatholysis	α-adrenergic blockade	Dexmedetomidine Labetalol; clonidine
Sympatholysis	Non-pharmacological	Reassurance; avoid cold Avoid full bladder



Achieving anxiolysis and sympatholysis

resulting in a vicious cycle of anxiety and fear of visiting a dental surgery; as well as procrastination in seeking treatment, leading to further and more severe deterioration of dental condition, thus resulting in even more invasive surgical procedures for oral rehabilitation. Although pain and discomfort is a major problem, the anticipation and subsequent anxiety results in considerable activation of the sympathetic nervous system. Thus a multimodal approach should be used to reduce both anxiety and the resulting sympathetic over-activity.

Certain clinics undertaking treatment for an adult population only would need only to install equipment for intravenous induction and maintenance. However, many clinics, especially dental clinics, would be preparing to deal with a considerable number of paediatric cases. I discovered that it was common, in dental practice, to administer nitrous-oxide sedation, the patient breathing spontaneously by means of a nasal mask. This allows the dental surgeon to work within the oral cavity. Many dental surgeons already had some simple equipment for the administration of nitrous oxide/oxygen-relative analgesia for their patients.

This (Fraser MATRX™) consisted of a pair of gas cylinder yokes for N₂O and O₂ mounted on a mobile stand. A Quantiflex™ flow meter allows up to 10 L/min fresh gas flow, and the FiO₂ may range from 0.3 – 1.0.

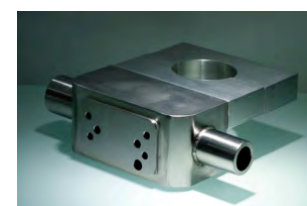
I adapted this equipment to allow me to use the more familiar Ayre's T-piece, but still found that the depth of sedation was not satisfactory; in addition, the need to share the airway resulted in extremely slow progress during the procedure. A further addition to the system was a cage-mount Sevoflurane vaporizer, allowing us to achieve a deeper level of sedation. I was able to locate a local technician who was able to customize a suitable adaptor in stainless steel and aluminium, with which we could convert a Penlon Sigma Delta™ Sevoflurane vaporizer from the standard Selectatec system, for use on a Fraser MATRX™ machine. However, the problem of the shared airway was still not resolved.

The solution came when I decided to use TIVA with propofol. The inhalational apparatus was still essential in helping to establish intravenous access in the paediatric patient, but the need to share the airway intermittently could now be eliminated. Simultaneously, the problems of atmospheric pollution (in an office building with a closed air-conditioning system) could be avoided. Syringe pumps are easily affordable and provide a safe and convenient means of intravenous propofol administration.

Pharmacological Toolbox

Many other drugs have been recommended as being suitable for procedural sedation (Table 4). In practice, however, the most commonly used drug during MAC is intravenous propofol, in sub-anaesthetic doses, with or without adjunct drugs.

The choice of techniques is very personal, but the major consideration clearly is that of a rapid recovery from the sedation, allowing the anaesthesiologist to be able to leave the clinic premises, knowing that the patient is able to maintain a safe airway. Thus, the pharmacokinetic profile of the most suitable drugs will have the most rapid elimination phase. Predictably, the drugs of choice for many practitioners will be sevoflurane for inhalational induction, and propofol for intravenous induction. Maintenance of sedation would be by TIVA–MAC propofol. Suitable adjunct drugs are also used and include fentanyl, remifentanyl, and midazolam.



(top) Fraser Matrx™ Nitrous Oxide Oxygen Gas Supply

(bottom) Custom-built metal adaptor



Table 5. Pharmacological agents

Narcotic agents	GABA _A receptor modulation	Propofol Sub-anaesthetic dose
Mild sedatives	Benzodiazepines BZ–GABA _A activation	Midazolam, diazepam Lorazepam, triazolam
Potent sedatives	α-blockade	Dexmedetomidine Clonidine
Synthetic opiates	4-Anilidopiperidines	Fentanyl, alfentanil Remifentanyl
Dissociative agents	NMDA receptor antagonist	Ketamine
Paediatric induction	Inhalational agents	Nitrous oxide Sevoflurane

Table 6. Contingency drugs

Postoperative nausea and vomiting	Ondansetron Metoclopramide Dexamethasone
Myocardial ischaemia STEMI (ST-segment elevation myocardial infarction) and non-STEMI	Nitroglycerine patch/s.l. Aspirin
Hypertensive crisis	Nifedipine Hydralazine Labetalol
Hypotension	Intravenous Fluids Phenylephrine Ephedrine
Bradycardia	Atropine Dobutamine
Tachycardia	Fentanyl Esmolol
Bronchospasm	Ventolin Aminophylline
Anaphylaxis	Adrenaline Hydrocortisone
Malignant hyperpyrexia	Cold iv saline dantrolene Ice pack (convenience store)
Benzodiazepine and μ-receptor antagonists	Naloxone Flumazenil

Quality Assurance of Surgical Facilities

All the clinics indicating an interest in undertaking procedures with MAC were visited personally to assess the suitability for MAC. Various aspects of the clinic were assessed, including adequate space for undertaking MAC; adequacy of equipment and contingency measures; adequate staffing for such procedures; ventilation and air quality; oxygen supply and contingency oxygen supply; documentation; patient preparation and workflow; and suitable contingency planning for transferring patient to a local hospital.

After this visit, a list of mandatory equipment and facilities required for MAC would be given to each clinic for reference. A second visit to the clinic would be made after a suitable interval, to ensure that all mandatory equipment and necessary consumable items would be available for use. Mandatory requirements for undertaking MAC have been promulgated by the Hong Kong Academy of Medicine and Hong Kong College of Anaesthesiologists. Only if, and when, the anaesthesiologist was satisfied that all these mandatory requirements had been met, would the arrangements be made for booking a patient for treatment.

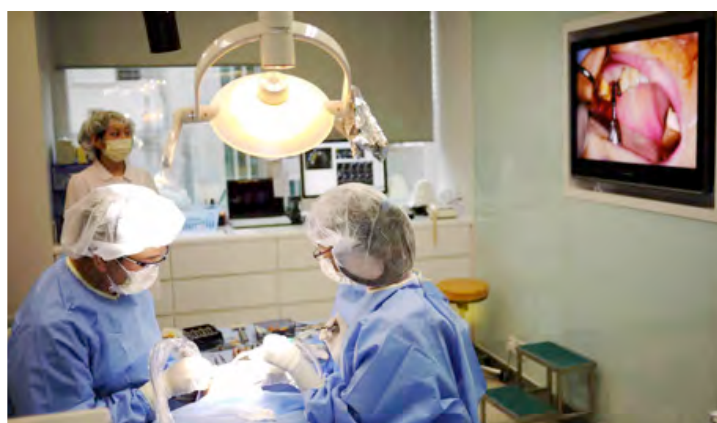
The practice has now become well established and probably at least 12,000 cases a year are being undertaken in such a setting throughout the territory. The case mix has expanded from dental procedures to non-invasive cosmetic treatment, cosmetic surgery, gastro-intestinal endoscopy, and oocyte harvesting for in-vitro fertilization management.

A Task Force was established in June 2013 by the Department of Health, the terms of reference for which will propose legislation with regard



(above) Contingency airway and malignant hyperpyrexia kits

(below) Typical office-based surgical facilities





Hong Kong's unique geography

to surgical/medical procedures being undertaken in the office-based clinic setting. It has been strongly recommended that all clinics in which MAC is undertaken should be obliged to be registered under the future ordinance.

In the USA and the UK, as well as in Australia, there are many dental surgeons who dream of having access to this type of ambulatory anaesthesia service for their clients. However, the constraints of the time involved in travelling between hospitals and the dental clinic have precluded such a service.

Hong Kong has a unique geography, with many people living and working in a small physical area. However, being a vertical city has its advantages—the travelling time, between the hospitals and clinics which require our services, is extremely short and one can be doing MAC in the office-based surgery, and then be in a major hospital within 15 minutes. The photographs above show the intense density of buildings in Hong Kong's Central district, while the map demonstrates the clustering of clinics where we can offer the clinic-based MAC service. This has resulted in a very time-efficient *modus operandi* for the delivery of specialist anaesthesia services. As the case work develops in each particular clinic, improvements can be made in each aspect of the patient work flow. As visiting anaesthesia specialists, we can bring the experience of one clinic to another, in order to avoid the wasted effort of 're-inventing the wheel'.

Table 7. Practice management and patient workflow

Patient assessment – screening questionnaire
Treatment plan
Written fasting instructions (NPO >6 hours)
Patient escort (strongly encouraged)
Explicit written consent – procedure
Explicit written consent – sedation
Payment prior to procedure and sedation
Documentation – procedure
Documentation – sedation technique; vital signs during procedure
Recovery Stage I; Stage II escort home from the clinic
Written post-operative instructions; medication; analgesics
Documentation of satisfactory recovery from sedation
Post-operative follow-up (telephone call day 1)
Robust follow-up system for, e.g., malignant pathology

Summary: From the Ether Dome to E D 95

The significant development of office-based anaesthesia has imposed a paradigm shift: not only are the patients undertaking ambulatory procedures, but the anaesthesiologist has also become ambulatory. There is a precedent in history. The very first general anaesthetic was undertaken at the Ether Dome,





*The Johnson & Johnson Ethicon
SEDASYS®*

on the fourth floor of the Bulfinch Building at Massachusetts General Hospital in Boston, Massachusetts. The first anaesthesiologist, a dental surgeon, Dr William Thomas Green Morton, had to bring his own ether vaporizer to the site of the surgery. Thus, the first generations of anaesthesiologists were in fact itinerant. We have now therefore turned full circle, by delivering our anaesthesia skills and services outside of the hospital environment and in that of the office-based surgical centre.

What of the future? On 13 May 2013, the US Federal Food and Drug Administration gave its approval for the pre-market approval application (PMA) for the Johnson & Johnson medical device known as SEDASYS™, a computer-assisted personalized sedation system. This device is a robotic, automated system for the delivery of intravenous propofol for the purposes of upper and lower gastro-intestinal endoscopic examination. The device has been programmed with appropriate pharmacokinetics for propofol infusion and, after programming the patient's baseline vital signs, body weight and body mass index, the device will deliver an appropriate loading and maintenance dose during the endoscopy procedure. A voice synthesizer prompts the patient to take a deep breath should the arterial oxygen saturation start to fall. Thus, an endoscopist will be able to undertake the procedure, with automated delivery of propofol, as long as a medical anaesthesiologist is readily available in the endoscopy complex. However, it is very unlikely that anaesthesiologists will be out of work: a recent survey of anaesthesiology manpower in the USA estimated that there is still a shortfall of some 3,000 specialists. However, if technology can help us in multi-tasking, and if clinics can use our skills, then our future lies in thinking outside the hospital box.

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The View from Future Anaesthesiologists: What Lies in the Future?

Nick T.K. Tsui

I still remember, on Day 1 six years ago when I first stepped into the operating theatre as an anaesthesia trainee, how puzzled I was when the nurse asked me what drug I wanted, and also my shaky hands when inserting my first spinal anaesthetic with my senior sitting right next to me. Time flies, and six years down the road the trainee stage will soon be completed. Whenever I think of how we have made it through these years, I always feel we are the lucky ones.

Bit by bit, we slowly picked up skills and knowledge from every single case and from the experience of our seniors. That's how we grew: learning from mistakes and learning from experience. It was the pearl of our anaesthesia training; no other specialty can have the luxury of having such close supervision for so many years. This is because the human factor is of the utmost importance in anaesthesia. A first-year trainee and a very senior anaesthetist may be using the same drugs, a similar dosage, and a similar technique, but what makes the difference is the touch and sense that one gains over the years. There is no easy shortcut, only putting in the time.

From the era of no anaesthesia to the rapid development of anaesthesia skills and techniques, anaesthesia evolved for the better safety of patients. Anaesthesia is constantly taking up new challenges due to the advancements in surgical procedures, to name a few examples: the evolution of laparoscopic and robotic surgery, radiological interventions, and thoracoscopic-assisted cardiac surgery all pose newer and tougher challenges to anaesthesiology.

The increasing use of ultrasound machines has added to the safety and accuracy of anaesthetic care. Ultrasound-guided central-line insertion is now the standard of care. Peripheral nerve blocks have become much safer with the precise visualizing of the nerves and surrounding structures. It is an amazing improvement from just being able to feel to now being able to see.

However, it is up to us to decide how to utilize this amazing tool. We should not forget the basics of our anaesthetic practice, anatomy, and landmarks. I can still remember vividly how Dr P.C. So inserted a subclavian central line before I could prepare the sterile ultrasound probe in a patient suffering from haemorrhagic shock. Ultrasound and many of the new technologies should be useful tools in assisting us. We should master them but not rely on them. We should not forget the basics.

Taking the opportunity of the 60th anniversary of the Society of Anaesthetists of Hong Kong and 25th anniversary of Hong Kong College of Anaesthesiologists, I would like to express my deepest gratitude to our seniors who have passed on their knowledge and experience, generation after generation. As budding anaesthetists, what we can offer to the profession is to pass on what we have learnt from our predecessors, taking up new challenges, and inspiring newer generations.

Stanley Wong

During my two-day anaesthesia attachment as a medical intern seven years ago, I was taken to the operating theatres where I was shown the important role the anaesthetist plays during the intra-operative period. There I came to understand how much expert clinical knowledge, clear judgement, and meticulous attention to detail are needed to ensure a safe and comfortable anaesthesia. Soon after that I decided anaesthesiology was the career I wanted to pursue.



Now, sitting here, I am thinking what I can show the next batch of young interns coming for their introductory attachment in anaesthesia. Shall we spend all our time in the operating theatre, demonstrating how we anaesthetize patients for different types of surgery? Probably not. The role of anaesthetists has expanded beyond the operating theatre. Maybe I could introduce them to peri-operative medicine in the pre-admission clinic or in the wards. Or take them to observe our acute-pain rounds, chronic-pain clinics, or even interventional-pain procedures. I might even take them down to the simulation centre to show them how we manage crisis situations.

The landscape of anaesthesia has been changing and will continue to change. There is an increasing role for anaesthetists beyond the intra-operative period.

The concept of anaesthetists as peri-operative physicians is now becoming more important. The world population is ageing. More than ever we are faced with the challenge of providing care for high-risk patients with multiple comorbidities. Despite this difficulty, safety in anaesthesia has improved: both peri-operative and anaesthesia-related mortality has declined significantly over the last 50 years. Focus is now being placed on peri-operative management and optimization of patients both before and after surgery to reduce peri-operative morbidity and mortality. Anaesthetists are required to play a bigger role as peri-operative physicians: assessing risk, identifying potential medical problems, and coming up with management plans for medical optimization. Many anaesthetists are now eager to equip themselves with skills in both trans-oesophageal and trans-thoracic echocardiography. I would not be surprised to find anaesthetists performing bedside echocardiograms during their pre-operative assessments in the future. The Alfred Hospital in Melbourne, Australia, established a fellowship programme in peri-operative medicine for anaesthetists in 2013, and I can certainly envision similar training programmes being introduced in Hong Kong.

Pain medicine is another area of growing interest. Pain, as the fifth human vital sign, has been well recognized for some time. Both the general public and health-care workers alike realize the importance and possibility of effective pain control. Pain medicine has gained a lot of steam as a hot subspecialty. Many areas of pain medicine, including interventional procedures and pharmacological treatment, have vast potential for further

development. In Hong Kong, the Fellowship in Pain Medicine was established on 15 December 2011 to replace the diploma in pain management, giving pain medicine full recognition as a specialist qualification. Training in the pain fellowship programme started in 2014.

Things certainly do not just end here and there are numerous opportunities in other areas of anaesthesia. Dedication and innovation will lead to improvement and positive developments. I am confident in the future of anaesthesia in Hong Kong and I am sure the next attachment intern will have an even more enlightening experience than I did.

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Rowena Lee

On graduation, when I told my mother I wanted to be an anaesthetist, she was stunned and puzzled, and asked: 'Why can't you be a doctor?'

Anaesthetists used to be mistaken for surgeons' assistants. Despite their equally professional peri-operative patient care, they were seldom repaid with the same level of recognition and respect.

With the evolutionary development of surgical and anaesthetic techniques and the structured training of anaesthetists, the standing of anaesthetists has been significantly raised.



Devil cake. Effort repaid. On a busy call night, I was well fed, warm and happy



I have been praying for my career as an anaesthetist throughout my training. On the day I completed my fellowship exam (thank God!), God gave me these words:

Enlarge the place of your tent,

Stretch your tent curtains wide,

Do not hold back;

Lengthen your cords,

Strengthen your stakes

For you will spread out to the right and to the left. (Isaiah 54: 2-3)

God asked me to go *beyond* my territory.

Beyond the Operating Theatre: Enlarge the Tent, Stretch the Curtain Wide, Do Not Hold Back

Regarded as ‘doctors in OT’ by many, I reckon my ‘tent’ of care is far beyond that. Holistic anaesthetic care starts with my first meeting with patients in ward or clinic, when I assess my patients, promote health concepts, and give individualized pre-operative counselling to relieve anxiety. After meticulous intra-operative care, a post-operative visit enables me to provide better analgesia and support to my patients. Their feedback also helps me improve my practice and gives me job satisfaction. I have been doing post-operative visits to my high-risk patients and I hope I can do more. Though demanding,

perseverance can yield better patient outcomes as well as professional recognition.

Beyond My Community: Lengthen Your Cords

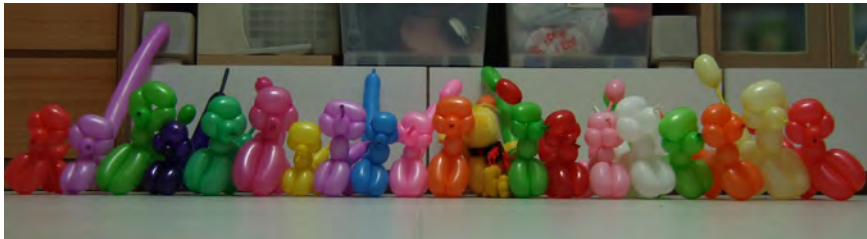
‘Help the needy’. I do want to help more. Anaesthetists are important in various medical voluntary services in developing countries. My experience with HIS Foundation, which provides corrective orthopaedic surgery for children in the Mainland, shows me how lives can be changed if I am willing to take part. It also seeds my interest in paediatric anaesthesia. Come and join us!

Anaesthesia in Henan. My first trip to Henan with HIS FOUNDATION was the first time I performed spinal anaesthesia, in this case on a four-year-old boy with cerebral palsy



Beyond My Fellowship: Strengthen Your Stakes

Obtaining my fellowship is not the end of my training, but signifies more opportunities and independence. Paediatric anaesthesia and analgesia is a challenging subspecialty which requires knowledge, skill, and devotion in caring for both children and their parents. The currently evolving fetal medicine also intrigues me. It is an amazing thing to take care of the little ones, from when they are as small as fetuses. There are so many things for me to explore. I cannot wait to start my work! I am really excited at the establishment of the Centre of Excellence in Paediatrics. See you there!



Dog banner. Let me introduce my anaesthesia balloon-dog team. They are excellent partners in making my patients happy

Beyond Anaesthesia: Spread Out to the Right and to the Left

A good anaesthetist should not be limited as a healer, but should aim to be a multifaceted professional: a scholar, a teacher/mentor, a counsellor, an administrator, and a leader. The pursuit of academic excellence and dedication in peer education requires discipline, self-motivation, and sacrifice. Being simple and quiet, the latter areas are even more challenging. Yet, I wish to take every opportunity to learn, to grow, and to metamorphose for the future challenge in my career.

“Oh, that you would bless me and enlarge my territory! Let your hand be with me, and keep me from harm so that I will be free from pain.” (1 Chronicles 4:10)

Yesterday when my uncle asked me “Why can’t you be a doctor?” my mom was stunned and puzzled, and told him: “Anaesthetists *are* doctors.” Indeed, our efforts will eventually be recognized.



Anaesthesiologists Outside the Theatre: Past and Future

Libby Lee

Our anaesthesia training has bred professionalism in critical thinking, in analytical power, in the ability to keep calm in the midst of a storm, and in leadership, as well as in the strength to properly co-ordinate and collaborate. This acquisition of ability also enables anaesthesiologists to exert their influence on global well-being instead of just the patient lying on the operating-theatre table. Throughout history, anaesthesiologists have not simply demonstrated their professionalism and talents in the closed rooms called operating theatres.

The Past

History has recorded for us the contribution of anaesthesiologists, with their special skill mix, not only in the theatre setting but also in enhancing public well-being. John Snow (1813–58)¹ is perhaps the best illustration of how our ancestors contributed to the well-being of the general public. He was the leader in the adoption of anaesthesia in England and renowned as the first to study and calculate the correct dosages in the use of ether and chloroform as anaesthetic agents. He designed the apparatus to safely administer ether

to patients as well as a mask for chloroform administration.² He conducted obstetric anaesthesia using chloroform on Queen Victoria when she gave birth to Prince Leopold in 1853 and Princess Beatrice in 1857,³ thus establishing the foundations of obstetric anaesthesia and the use of nitrous oxide as well as analgesia.

Snow was the pioneer in epidemiology in public health, particularly during the cholera outbreak of 1849.⁴ At that time, miasma theory (bad air) was the dominant theory regarding the transmission of infectious disease; the germ theory had not yet been developed. Thanks to his anaesthesiologist's skills in critical thinking, good observation, and the mastering of statistical analysis, Snow identified the source of the cholera outbreak as the public water pump on Broad Street (now Broadwick Street) in London, and was able to demonstrate the connection between the quality of the water source and cholera cases. His work influenced policy change and convinced the local government to disable the well pump. Snow's study was a milestone in the history of public health and the development of epidemiology. His theory was also the fundamental principle behind Hong Kong's successful fight against severe acute respiratory syndrome (SARS) in 2003.

The Future

The extended role of the anaesthesiologist did not stop with the era of John Snow. The skills of a seasoned anaesthesiologist enable the profession to influence public health far beyond the one-doctor-to-one-patient scenario.

Every year there are 234 million surgical treatments and surgical interventions.⁵ These account for an estimated 13 per cent of the world's total disability-adjusted life years (DALYs).⁶ While surgical procedures are intended to save lives, unsafe surgical care can cause substantial harm. The reported crude mortality rate after major surgery currently ranges from 0.5 per cent to 5 per cent. This equates to between 5,000 and 50,000 deaths per million major operations. Mortality from general anaesthesia in developing countries such as in sub-Saharan Africa has been found to be as high as one in 150. More than 77,000 operating theatres worldwide do not have access to a pulse oximeter, meaning that over 30 million operations are performed worldwide annually without basic safety monitoring. One quarter of the patients develop complications after an in-patient operation. In industrialized





countries, almost half of the adverse events that occur in hospitals are related to surgical care, and half of them are considered to be preventable.

Meanwhile, approximately two billion people worldwide do not have proper access to fully functioning surgical facilities, a factor which contributes significantly to the current global public-health crisis.

Although the United Nations has directed huge efforts towards the Millennium Development Goals (MDG),⁶

there has been very little progress towards reducing child mortality and maternal mortality. The maternal mortality rate in developing regions is 15 times higher than in developed countries.⁶ Analysis suggests that a lack of safe anaesthesia and basic intensive care for the acutely ill mother is an essential root cause of the poor maternal mortality rate.

There is no doubt that enhancing surgical and anaesthetic safety is an urgent matter. The World Health Organization (WHO) has positioned this as one of the key initiatives necessary to enhancing public health this century. The World Health Assembly (WHA), a decision-making governing body of the WHO that consists of every minister of health or delegation from 193 member states, has recognized the importance of safe surgical and anaesthetic care in global health.⁷ A WHA resolution has proposed creating a Department of General Surgical Care and Anaesthesia to oversee development strategies and plans for improving global surgical and anaesthetic care. WHO has also developed a Surgical Checklist, based on a familiar concept commonly used in anaesthetic training, that is, crew resource management. Hong Kong is one of the few places that makes full use of the Checklist in the public hospital system. It has been found that the implementation of the Checklist has been associated with concomitant reductions in the rates of death and complications among patients, of at least 16 years of age, undergoing non-cardiac surgery in a diverse group of hospitals.⁵

As key members of the operating team, anaesthesiologists are equipped with adequate skills and charged with the duty to lead the team towards surgical safety, both from a micro level in the individual operating theatre to a macro one at the global forefront.

Conclusion

As professionals in their field, especially in Hong Kong, our Fellows in anaesthesiology have acquired a full set of skills, logical thinking, and best practices in enhancing safety. Anaesthesiologists now stand at the forefront in advocating the safety of patients.

Health inequity also happens in surgical care. Poverty is an undeniable social determinant accounting for this health gap. Anaesthesiologists are in a position to bridge this gap by upholding the standard of care, enhancing training, and developing the profession in the global aspect. We, as anaesthesiologists, should not only protect the patient on our operating table, but also the unknown ones receiving any type of anaesthetic care anywhere.

Notes

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The Hong Kong Academy of Medicine and the Hong Kong College of Anaesthesiologists: The Next Ten Years

Donald Li

Back in 1989, when the Hong Kong College of Anaesthesiologists (HKCA) became a founder college of the Hong Kong Academy of Medicine (HKAM), anyone who predicted the size, reach, and complexity of the role played by the College today would have been accused of dreaming very big dreams indeed.

As other authors have explained (in fascinating detail in other chapters of this book), by becoming a founding college of the HKAM, the HKCA was not only advocating for better training and accreditation of anaesthetists in Hong Kong but also for recognition of anaesthesiology as a specialty separate from surgical disciplines. In other parts of the world, the accreditation and training of anaesthetists has been officially under the wing of colleges overseeing surgical quality, and academic and training standards. When Hong Kong's anaesthetists, then a small but talented and determined band, decided to set up their own college rather than become a division of a surgical college, they were among the first in the world to take such a step.

Dreamers of big dreams they may have been, but prescient observers might have noted the pioneering spirit that was driving both the founders of the College and the HKAM itself. Coupled with the innovative passion long associated with Hong Kong and its people, this spirit fertilized the seeds planted back in 1989, and which have now come to such extraordinary fruition. Today, Hong Kong is not only recognized as a centre of excellence for anaesthetics but as a net exporter of anaesthesia knowledge. This is indeed a remarkable achievement in little over two decades—but what of the next ten years?

The ‘fruit’ we are enjoying today is not a one-off harvest. It has grown from the seeds of knowledge, commitment, and belief in quality anaesthetic care in Hong Kong which needs to be continually nurtured and supported to produce ever greater and diverse yields. In this chapter I will discuss what the future holds, and how the achievements of the College as part of the HKAM are a firm foundation for future growth and ever greater achievements as a provider of training, quality control, and innovation, and as the guardian of patient safety. These principles, so evident in the achievements of the College, are equally fundamental to the work of the HKAM.

Within the HKAM, the HKCA plays a wide range of roles: training, accreditation, dissemination of knowledge, and actively contributing to the editorial board responsible for the *Hong Kong Medical Journal* and other major academic titles. There are also some very specific areas that anaesthetists take a lead in. One of these is simulation training. A simulated environment provides safe, controlled conditions in which trainees can learn difficult, complex, lifesaving procedures without putting patients at risk. Although the first simulation mannequin was developed in the 1960s, and although first-aid training, especially cardiopulmonary resuscitation, has commonly been carried out on mannequins since that time, it was not until the late 1980s that simulation became an important tool in the training of anaesthetists. The HKCA has been at the forefront of this development, setting up a simulation training centre, the Institute of Clinical Simulation (ICS) at North District Hospital, in August 2001.

Since then, simulation training in anaesthesia has flourished, with training now provided across subspecialties such as obstetric anaesthesia and cardiothoracic anaesthesia. It has also permitted the upgrading of



skills for resident doctors, who may not be intending to become specialist anaesthesiologists but who need to acquire lifesaving skills, such as intubation and insertion of central lines, without putting patients at risk.

Recently the HKAM has recognized the important role simulation training plays, not only in preparing trainees to take up their roles as specialist practitioners, but also for updating members currently in practice. The Hong Kong Jockey Club Innovative Learning Centre for Medicine of the Hong Kong Academy of Medicine, which opened in December 2013, provides a platform and facilities for postgraduate medical training in Hong Kong and beyond.

Thanks to simulation training, the ‘bad old days’, when people were warned never to go to hospital during the first few weeks after a fresh intake of newly graduated resident doctors, should be behind us. Patient safety is a core issue for the HKAM: it could even be said to be the most important reason for our existence. Providing the highest quality, evidence-based training and ensuring that only those practitioners reaching the highest standards of knowledge and practice can become members of our colleges, means every Hong Kong patient has access to world-class medical care. However, patient safety means more than maintaining top-quality medical standards. It is a complex issue requiring good teamwork, vigilance, and attention to detail by every member of the patient-care team, excellent communication skills and a well-resourced, well-integrated and well-functioning health-care system. Recognizing not just the complexity of this issue, but the need to change ‘mindsets’ about medical errors, the HKAM, in conjunction with the Medical Protection Society, is now awarding a patient safety prize for innovation in patient safety.

In this area of work—fast becoming a new health-care discipline—anaesthetists are pivotal. It is anaesthetists who act as the patient’s advocate in the operating theatre, keeping watch on their vital signs, ensuring that blood loss is corrected, intervening—always diplomatically, of course—when a surgical procedure may not be in the patient’s best interests, and holding the operating team together.

The anaesthetist’s job does not stop in the operating room, but continues long after the surgeon has thrown off gloves and gown. Should things go wrong, it is the anaesthetist who is called first, and who needs to understand who to

call, what to do, and how best to protect the patient. So it is hardly surprising that the HKCA is at the forefront of the patient-safety movement in Hong Kong. In December 2013, when the Hong Kong Jockey Club Innovative Learning Centre for Medicine was opened, improving patient safety was one of the main subject areas of a special conference devoted to improving training. Research indicating that use of simulation training in emergency procedures improved patient safety significantly by reducing the medical error rate was described, along with research showing how simulation training could change attitudes and therefore have a lasting positive effect on patient safety.

One particular area of medical practice attracting attention, and concerns about safety, is ambulatory care, the sometimes risky and complex procedure increasingly being performed in private doctors' practices or in out-patient clinics. Questions are now being asked as to who should be permitted to carry out such procedures and what sort of procedures can be performed in this sort of setting. This has prompted the setting up, by the Hong Kong Department of Health, of the 'Working Group on Defining High-Risk Medical Procedures/Practices Performed in Ambulatory Setting'. The HKAM has been working to ensure that all member colleges contribute to the deliberations of the working group, and the HKCA has been a major contributor in our response to this group. We hope that the HKAM will play a role in ensuring ambulatory care is both feasible and safe by accrediting appropriate courses and ensuring that practitioners are qualified to perform high-risk procedures in an ambulatory setting.

No discussion of future medical developments in Hong Kong would be complete without mentioning our increasing collaboration with colleagues in mainland China. Our ties grow ever closer and we work together, learn together, and face new challenges together more often and more effectively than ever before. Once again our anaesthetist members are at the forefront, working with colleagues in China; at present the Society of Anaesthetists of Hong Kong are working with their counterparts in China to hold a satellite meeting at the World Congress of Anaesthesiologists in 2016.

Will the extraordinary achievements of the HKCA during the last 25 years continue over the next ten years? I have no crystal ball but, without a doubt, I can say there will be plenty of excitement to come, and that the HKAM will continue to be part of that very exciting future.



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Years of Anaesthesia in Hong Kong

SECTION V

Development of Anaesthesiology: Perspective from a Department

Chapter 26: The University of Hong Kong

Chapter 27: The Chinese University of Hong Kong

The Viewpoint from the First Professor of Anaesthesiology in Hong Kong

Academic Anaesthesia in Hong Kong at the Department of Anaesthesia and Intensive Care

Chapter 28: Queen Mary Hospital

Chapter 29: Queen Elizabeth Hospital

Chapter 30: Grantham Hospital

Chapter 31: Alice Ho Miu Ling Nethersole Hospital

Chapter 32: Prince of Wales Hospital

Chapter 33: Kwong Wah Hospital

Chapter 34: United Christian Hospital

Chapter 35: The Duchess of Kent Children's Hospital

Chapter 36: Pamela Youde Nethersole Eastern Hospital

Walking with Nethersole: A Journey from Bonham Road to Lok Man Road

Chapter 37: Alice Ho Miu Ling Nethersole Hospital

Chapter 38: Tuen Mun Hospital

Chapter 39: Tseung Kwan O Hospital

Chapter 40: North District Hospital



There is a time-honoured controversy as to the most important single discovery in the history of the human race. Some opt for fire; some for the invention of the wheel; some for the growing of corn. For my part I would give my vote to the invention of anaesthetics.

From *The Recovery of Belief* by Professor C.E.M. Joad



CHAPTER 26

The University of Hong Kong

Ross Holland and Michael Irwin

Staff History

Until 1998 Hong Kong University medical degrees were fully recognized for registration with the General Medical Council (GMC) of the United Kingdom. In 1986, a delegation from the GMC, which included a prominent academic in anaesthesia, Professor M. Vickers, expressed surprise and concern that the Faculty of Medicine did not include a chair and department of anaesthesiology, as well as a few other specialties.

The Faculty then advertised the position of professor of anaesthesiology, to be accommodated within the Department of Surgery. It was noted, however, that such a position was, therefore, not independent and that the status of Anaesthesiology appeared subordinate to that of Surgery. Such a situation was not acceptable to many potential applicants, although at least two persons expressed an interest. Both applicants were invited to visit important persons in Hong Kong, amongst whom were the Dean of the Faculty of Dentistry as well as the Professor of Surgery, Professor John Wong.

The first applicant to be offered the post advised that his acceptance would depend on certain conditions, some of which were unacceptable to

the University and/or the Faculty. As a result this applicant withdrew and an offer was made to Dr Ross Holland of Sydney, Australia, who accepted. Prof. Wong had unofficially informed Dr Holland that he did not envisage Anaesthesiology as being permanently subordinate to the Department of Surgery, and it was on this basis that Dr Holland accepted the appointment as Professor. He took up his appointment in October 1987. In mid-1988, Prof. Wong notified the Faculty of Medicine that he was no longer prepared to support Anaesthesiology, and recommended that the specialty be an independent department. This was not a popular situation in some quarters, but it was recognized that the outcome was now a *fait accompli*. So the Department of Anaesthesiology is now recognized as having been established in July 1988.

The initial academic staff establishment for the department was for one professor, the post filled by Dr Holland, and a senior-lecturer post that was taken up by Dr Douglas Jones, also from Australia. A secretary and a technician were provided as the support staff. Miss Betty Chan had fulfilled the role of secretary during the period that Anaesthesiology was part of the Department of Surgery and was employed by them. However, Miss Chan chose to join the new department, and it is a pleasure to note that she remains its Secretary to this day and is consequently its longest-serving member.

In late 1990, Prof. Holland was asked to consider an extension of his appointment for a further two years. Almost immediately he was also invited to apply for the Chair of Anaesthesia and Intensive Care at the University of Newcastle, New South Wales. While both these matters were under consideration, enquiries revealed that no changes to the support for Anaesthesiology were contemplated by the Faculty of Medicine or by the University of Hong Kong. Consequently Prof. Holland's application to the University of Newcastle was successful. Honorary appointments were offered to and taken up by members of the Emergency Department at Queen Mary Hospital (QMH) who undertook to instruct students in the new specialty of Emergency Medicine and assist in undergraduate resuscitation training.

Prof. Holland served out the remainder of his initial term of appointment and handed over administration of the Department to Dr Jones, who remained as Acting Head until June 1993, when he left to take up the Chair



1st Pain Institute Scientific Meeting of Anaesthesiology at the University of Hong Kong

of Anaesthesia at the University of Queensland. Prof. Jones subsequently left the medical profession and is now a successful barrister in Hong Kong.

Through late 1993 to 1994, there were no full-time academic staff in the Department of Anaesthesiology. Dr Ronald Joy Wah-lo was the Chief of Service at QMH and also acted as Head of the University Department during this interim period. Teaching was organized by Dr Michael G. Irwin who had been working at Duchess of Kent Children's Hospital (DKCH) since his appointment in March 1992.

A new search was made and Professor Joseph C.S. Yang was appointed Head in December 1993. He was educated in Taiwan, gained his medical degree in Germany, and had previously been a professor at New Jersey Medical School in the United States.

In March 1994, Dr Irwin was appointed as full-time Lecturer and was promoted to Senior Lecturer (Associate Professor) in 1997. Prof. Yang retired in 2000 and Dr Irwin became Acting and then Substantive Head of Department. He became a full Professor in 2007. Dr Jacobus Ng Kwok-fu joined the Department in January 1996 as Clinical Assistant Professor. He

was promoted to Clinical Associate Professor in July 2000 and to Professor in July 2011. He left the Department in July 2013 for private practice and Dr Stanley Wong Sau-ching took up his position in August 2013 as Clinical Assistant Professor.

Since then it has not been possible to increase staff numbers with the funding that the University has allocated. In fact, the Department has received no additional funding from either the University funding bodies or the Faculty of Medicine since its inception to pay for additional academic-staff appointments. Several additional persons were initially recruited by means of appointments to DKCH. As a relatively small subvented hospital at that time, DKCH had some difficulty attracting and retaining middle-grade anaesthesiologists. The HKU Department was able to recruit young specialists from the UK who were also given opportunities for research and assisted with undergraduate teaching. QMH was very important in the early days of the Department as it employed a succession of highly motivated staff and provided an excellent environment for teaching and clinical research.

The Department did, however, gain two additional professorial appointments through an arrangement with the Faculty of Dentistry, whereby the two staff provide teaching to undergraduate dental students and anaesthesia support to its oral-maxillofacial surgical services. Dr Chandra Rodrigo had been appointed as Lecturer in the Anaesthesia Department of Oral Surgery and Oral Medicine on 1 Feb 1984 and was promoted to Senior Lecturer in June 1987. He joined our Department following the amalgamation in October 1998 and served there until his retirement in June 2005. Dr Cheung Chi-wai and Dr Gordon T.C. Wong joined the Department in April and August 2005, respectively, as Clinical Assistant Professors funded by the Dental Faculty. Dr Cheung and Dr Wong were promoted to Clinical Associate Professor in January 2013 and July 2013. Additional growth in staff numbers has been achieved through various alternative sources of funds supporting teaching staff on a contractual basis. One of the longest-serving staff members under this arrangement is Dr Caroline Jenkins, who joined the Department in 2007 and has been with HKU ever since.

In 2003, a grateful patient of Professor Irwin donated a generous sum of money that enabled the establishment of a basic-science research laboratory.



Under the leadership of Prof. Irwin, and with help from Dr Xia Zhengyuan who joined the Department in 2007 as Research Assistant Professor, the laboratory expanded and later incorporated the Laboratory and Clinical Research Institute for Pain.

As of July 2014, the HKU Department of Anaesthesiology has one professor, two clinical associate professors and one clinical assistant professor. There are also one non-clinical assistant professor, two research assistants and three postdoctoral fellows, as well as one senior secretary, a clerk, a technician, and a laboratory assistant. A more comprehensive list of current and previous staff can be found at the end of this narrative.

History of Departmental Activities

Clinical

In addition to establishing undergraduate teaching, Prof. Holland undertook to administer anaesthesia for certain surgical lists at QMH, including those used by Drs T.K. Choi and John Boey, and later Dr S.T. Fan. Dr Jones provided anaesthesia services to the surgical programme at DKCH, and supervised trainees appointed as above. Since that time, the academic staff have maintained a strong clinical presence in the Department of Anaesthesiology at QMH. In recognition of his strong leadership, as well as being head of the academic unit, Prof. Irwin was appointed Chief of Service in the Department at QMH in 2012 after the retirement of Dr Susan Joyce Wong.

The Department also contributes significantly to the development of Pain Medicine in Hong Kong. In 1995, the Council of the Hong Kong College of Anaesthesiologists (HKCA) appointed Professor Joseph C.S. Yang of the Department as the Chairman, and Dr S.L. Tsui (Honorary Associate Professor of the Department) as the Honorary Secretary of the Pain Management Committee of the HKCA. In the same year, the HKCA Accreditation Committee approved QMH and Prince of Wales Hospital as the first two Training Centres for the Diploma of Pain Management. In 2012, the Hong Kong Academy of Medicine (HKAM) approved the Fellowship Programme of the HKCA. A/Prof. Cheung Chi-wai and Dr S.L. Tsui were members of the Working Group chaired by Dr P.P. Chen (later by Dr Steven Wong) to set up a Pain Fellowship Programme. HKU approved



*25th Anniversary Annual Dinner of
the Department of Anaesthesiology
at the University of Hong Kong*

the first doctoral thesis and granted a Doctor of Medicine (MD) degree in Pain Medicine (Dr S.L. Tsui) in 1997. A/Prof. Cheung was also granted his MD degree in Pain Medicine in 2011. In order to strengthen research in the Basic Science of Pain, with the support of the Li Ka Shing Faculty of Medicine, HKU, the Laboratory and Clinical Research Institute for Pain was established in 2012 with A/Prof. Cheung as the first Director.

The Pain Institute aims to provide a knowledge-exchange platform to facilitate co-operation among scientists, clinicians, and health-care providers who are interested in pain research. It also aims to increase the awareness and recognition of pain disorders and the need for therapeutic intervention in various medical disciplines. In order to promote education in pain medicine, the pain fraternity in Hong Kong produced two major medical textbooks, in 2002 and 2010 respectively, which were published by Hong Kong University Press.

Research Activities

Important pharmacokinetic studies in children were undertaken by Dr Jones at DCHK, during the course of which he obtained valuable collaboration from Dr Kelvin Chan of the Department of Pharmacology, Chinese University of



Hong Kong. This partnership was almost frustrated by objections from the Department of Surgery at the Chinese University, but these were overcome by appeal to higher authority. Prof. Holland demonstrated methods of veterinary anaesthesia involving small animals (mice and rats) with greatly increased survival rates over previous techniques. He also studied the effects of anaesthesia on the development of cancers in tumour-prone mice. The results were inconclusive.

Our academic staff currently carry out a variety of clinical and laboratory research studies covering the areas of acute and chronic pain management, anaesthetic drug and therapy development, and organ protection (ischaemia reperfusion), particularly diabetic cardiomyopathy. Our Pain Laboratory studies the mechanisms of pain, specifically hyperalgesia and chronic pain development, as well as possible therapies for pain management. We use a variety of pain models, including inflammatory pain, post-stroke pain, and neuropathic pain *in vivo* in transgenic mice and SD rats. We also study the mechanisms of several drugs with the aid of various astrocyte cell-culture models.

Our cardiovascular research focuses in the protection of myocardial ischaemia-reperfusion injury (IRI) in diabetic hearts, specifically in diabetic cardiomyopathy. *In vivo* animal models, as well as *in vitro* cell culture and isolated cardiovascular models are used to study, respectively, the reactive oxygen species (ROS) in diabetic cardiomyopathic conditions, possible therapeutic antioxidant treatments for myocardial IRI, and anaesthetic pre- and post-conditioning in diabetic cardiomyopathy.

Over the past five years, the HKU department has attracted more than HK\$8 million in external competitive research-grant funding, which includes seven RGC/GRF grants, one SCA/IARS (Society of Cardiovascular Anesthesiologists/International Anesthesia Research Society) research starter grant, and two grants from the NSFC (National Natural Foundation of China). During the same period, staff and postgraduate students have published more than 150 original research articles, reviews, and editorials in major international peer-reviewed journals, including *Diabetes*, *Anesthesiology*, *Critical Care Medicine*, *Free Radical Biology & Medicine*, and the *European Journal of Pain*. Prof. Irwin is on the editorial board of some 11 journals, including *Anaesthesia*, *Expert Opinion in Pharmacotherapy*, *HKMJ*, and *Anaesthesia and Intensive Care Medicine*.

The past several years have also witnessed outstanding achievements in the training of postgraduate research students and residents. Two of our postgraduate students received the much sought-after ASPET (American Society of Pharmacology and Experimental Therapeutics) Graduate Student Travel Awards to present their research work at Experimental Biology conferences in the USA and won one Graduate Student Best Abstract Award. Our journal staff have won one Best of Category Abstract

Award (IARS 2011 annual meeting) and one Resident Best Abstract Finalist Award (IARS 2014 annual meeting). These achievements and recognition in research have greatly deepened our co-operation with colleagues locally and internationally. Also, the recent establishment of the Laboratory and Clinical Research Institute for Pain, endorsed by the Li Ka Shing Faculty of Medicine of the University of Hong Kong, is a milestone achievement for research which will greatly promote future research locally and internationally.



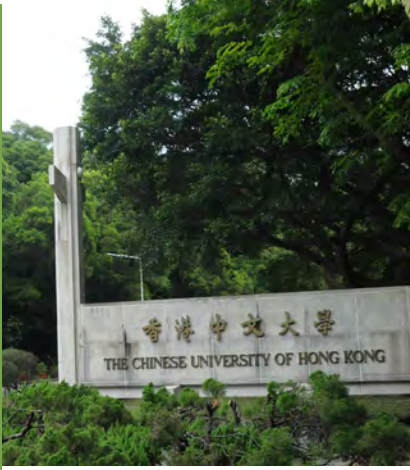
25th Anniversary Scientific Meeting of Anaesthesiology at the University of Hong Kong – Prof Ross Holland and Prof Michael Irwin

Teaching

Small-group tutorials for all students of one academic year were initiated with the inauguration of the Department and have proved extremely popular. Notes on the topics covered in these tutorials were provided to all students at the end of the programme and were warmly welcomed. With the substantial change in the MBBS curriculum at HKU in 1997, Prof. Irwin was able to secure an increase in the time available for anaesthesia teaching for medical students. Currently, in addition to traditional lectures, undergraduates receive anaesthesia teaching through clinical attachment, human-patient simulator sessions, and small-group problem-based and basic-science tutorials.

Meanwhile, staff of the Department continue to participate in preparation for the fellowship examinations of both the Hong Kong College of Anaesthesiology and the Australia and New Zealand College of Anaesthetists with excellent results.





CHAPTER 27

The Chinese University of Hong Kong

The Viewpoint from the First Professor of Anaesthesiology in Hong Kong

Andrew Thornton

The following are my observations on the development of the Department of Anaesthesia and Intensive Care at the Prince of Wales Hospital and the Chinese University of Hong Kong (CUHK).

I had the good fortune to acquire the challenge of Foundation Professor of Anaesthesia at the CUHK in 1983.

I moved into an 'anabolic' environment. I was surrounded by highly motivated and intelligent colleagues, all keen to learn and contribute to the development of the Department.

I had been aware, for some years, of the endeavours of anaesthetists in Hong Kong to advance the specialty. However, they were often frustrated by the dominance of the system by the surgeons—anaesthetists being regarded as those who should keep quiet at the head of the operating table and do what they were told! The old colonial system was also a cause of additional frustration, as rigid guidelines were laid down as to staffing levels. There appeared to be, in most instances, only one consultant anaesthetist per hospital, he/she being supported by a number of 'juniors'. The number appeared to be related to the number of operations (anaesthetics) required. No account was taken of



*Andrew Thornton (centre) in
Hong Kong*

pre-operative visits, post-operative care, training, and other duties. Certainly, no account appeared to have been taken of the rapidly developing demands of modern medicine and surgery.

I was fortunate in having the staunch support of the Dean (Gerald Choi) and the Professor of Surgery (Arthur Li), who had both trained in surgery in the UK. The Professor of Medicine (John Vallance-Owen) and Arthur Starling (Planning Officer) also provided much needed help and support.

Several features soon became evident, notably that the planned number of staff and the experience required relative to the demands of the surgeons were totally inadequate. There was no intensive care unit.

I took an immediate position with the Department of Health: the number of operating theatres that would be opened would depend upon staffing levels and experience and training, and I cited as firm guidelines those currently enunciated and prevailing in the UK (citing the Faculty of Anaesthetists of the Royal College of Surgeons of England). I was told that if I relented I would get an invitation to the Queen's Birthday Garden Party at Government House—needless to say I never received an invitation! I persisted with this policy until, after five years, we were able to provide a full service.

An agreement was reached with the Faculty of Anaesthetists in England whereby senior registrars in anaesthesia in the UK would have one year of



their Higher Professional Training recognized if they had spent one year as a lecturer in anaesthesia at CUHK.

Despite the fact that many surgeons aspired to sophisticated high-risk surgery, no intensive care unit had been planned for the Prince of Wales Hospital. John Vallance-Owen magnanimously handed over the space that had been earmarked for a coronary care unit. Arthur Starling adapted this into a 12-bed intensive care unit plus two isolation beds, all with individual wash-hand basins. It was staffed around the clock by a lecturer/senior medical officer and a trainee anaesthetist. Rose Chan (Senior Nursing Officer at the Department of Health) enthusiastically joined in and provided two outstanding sisters and staffed the beds on the basis of six nurses per bed. I was Director of Intensive Care. An arrangement with the Chemical Pathology Department enabled the results of specimens (which had been taken by the night staff) to be available for the patient review conducted by myself at 8 am. A ward round was held at regular intervals during the day. Clinicians were welcome to attend these rounds but actively discouraged from attending at other times, unless in an emergency. No clinician was allowed to change therapy without informing the medical officer-in-charge. This was a highly disciplined environment.

I was fortunate enough to recruit two outstanding anaesthetists as senior lecturers: Dr Jean Horton, a neurosurgical consultant anaesthetist from Cambridge, and Cindy Aun, who had been trained at the Royal Free

Hospital London. Jean took over the responsibilities for neurosurgical anaesthesia and Cindy was in charge of paediatric anaesthesia. Both undertook many other heavy duties with other members of the Department, which was rapidly growing.

We were also very fortunate to have, as Theatre Superintendent, Thomas Li, who ran the large number of operating theatres with superb efficiency.

We had responsibilities for training and teaching, not only of our own staff, but also of undergraduates and ancillary staff, such as nurses. Such duties appear not to have been taken into account in assessing the number of staff required.

Postgraduate teaching and training: Formal postgraduate teaching and training was not recognized in Hong Kong and it was not until late in my tenure that the Hong Kong Government recognized the necessity for a structure and appointed a postgraduate dean at CUHK Medical School. The anaesthetists in Hong Kong can be recognized as pioneers in this field. Before my arrival in Hong Kong, anaesthetists, supported by the then Society of Anaesthetists of Hong Kong, had organized courses for anaesthetists, helping them to prepare for the Australian and New Zealand examinations. Thus the additional resources of the CUHK Department were further grist to the mill.

Within the Department, trainees rotated through all sub-specialties of anaesthesia on a regular basis, receiving exposure and training in all branches. With the agreement of the surgeons, no anaesthetists were available, other than for emergency cover, on a Wednesday morning. Thus time was made available for morbidity conferences. These conferences were enhanced by a statistical review of work carried out by the Department during the previous period. I was fortunate, in starting a new department, to establish a computerized record system whereby *all* anaesthetics were recorded on a data sheet. A full-time secretary was employed to collect and analyse this data.

Undergraduate teaching: We did have a remit for this teaching, as opposed to postgraduate activities. Undergraduates audited a course of lectures and were attached to anaesthetists for 'hands-on' instruction in airway control, resuscitation, venepuncture, intravenous therapy, safe sedation, and a general overview of patient support during surgery.



Obstetric anaesthesia/analgesia: As soon as staff became available, a lecturer/senior medical officer and a trainee were permanently posted to the Obstetrics Department.

Pain service: Sadly, because of staff shortages, this came low on our list of priorities as we developed the Anaesthesia/Intensive Care Department. However, before I left the Department, a rudimentary service was developing under the guidance of the professor of physiology (who was an established neurophysiologist).

We also found time in this busy schedule to carry out research into the development of intravenous anaesthesia.

This was a busy but very rewarding five years, and it was a delight to work with such well-motivated colleagues who devoted so much time and energy towards establishing the Department.



The Chinese University of Hong Kong

Academic Anaesthesia in Hong Kong at the Department of Anaesthesia and Intensive Care

Tony Gin

The Department was founded as an academic unit in 1983 and has enjoyed great success over the last 30 years. We believe we have made significant contributions to the development of anaesthesia and intensive-care medicine in Hong Kong and around the world. Readers are invited to visit our Department website at: <http://www.cuhk.edu.hk/med/ans/v3/index.htm>.

Structure

The Department is unique in that it has always been an integrated Department of Anaesthesia and Intensive Care in both service and administration, combining the Chinese University of Hong Kong (CUHK) and Hospital Authority (HA) departments at the Prince of Wales Hospital. There is now only one other such combined HA Department in Hong Kong. The University of Hong Kong has a Department of Anaesthesiology, but a separate HA Intensive Care Unit.

Our integration is facilitated by having the same person as Chairman of the University Department and Chief of Service of the HA Department. The University Department depends on HA staff to assist with teaching and research. In return, HA staff benefit from having more opportunities for and exposure to academic research and teaching and clinical advances in anaesthetic practice, as well as international visits and visitors. The University Department also provides financial support to HA staff for professional fees and educational activities. We believe that this integration is mutually beneficial, but it does come at some cost.

Since the establishment of the Department, academic staff have always spent considerable time on clinical service. Each academic staff is counted by the HA as providing 0.55 full-time equivalent (FTE) service. The academic staff have also shared the same on-call duties as their HA counterparts. While this relatively equal treatment is important in creating a cohesive department, it also creates a significant extra hurdle for the academic staff. Their performance within the Faculty of Medicine is compared with clinical and non-clinical staff in other departments who are able to spend more of their time on achieving academic goals.

On the HA side, working hours are longer and more difficult than at many other HA hospitals. Our anaesthesia staff spend a significant proportion of their time in the Intensive Care Unit. While we believe that this integration produces excellent skilled staff who can easily manage the complex medical problems seen daily at a university-affiliated tertiary referral hospital, this pattern of work is very demanding.

The size of the academic Department has varied between nine and 11 academic staff over the last 15 years, but the number of supporting staff has increased from a handful to over 20. The Department now includes graphic artists, computer programmers, technicians, research nurses, research assistants, and research fellows. There are also currently six postgraduate students enrolled in our doctor of philosophy (PhD) programme.

Education and Teaching

The teaching of medical students is one of our core functions. We believe that our integration of applied pharmacology and physiology and the teaching of practical useful clinical skills in acute medicine are attractive to students.

The Department runs one of the top-rated teaching programmes within the Faculty, and attracts top students to choose anaesthesia and intensive care as their career. The Department chooses an external examiner every year for the final-year medical student examinations, and has regularly invited prominent international experts to Hong Kong for this purpose.

The Department has run postgraduate certificate and diploma programmes in critical-care nursing since 1996, and has produced over 600 graduates to date. These programmes were very important for the development and recognition of critical-care nursing in Hong Kong.

Our postgraduate programme started to enroll students on a regular basis after the year 2000 and, in the face of competition from the rest of the University, it has taken a sustained effort to increase this programme to six concurrent PhD students. In the last ten years, we have graduated 18 PhDs in both basic and clinical anaesthesia and intensive-care research.

The Department established a visiting scholar programme in 1998 and over 60 overseas anaesthesiologists have worked in the Department for periods ranging from three months to two years. In particular, visiting scholars come regularly from the Peking Union Medical College Hospital and recently the Beijing Tiantan Hospital at Capital Medical University.

The Department runs its own high-fidelity METI human-patient simulator, and uses this for undergraduate teaching, anaesthesia training, and research. We also hold annual simulator workshops for anaesthesiologists from China in collaboration with colleagues from the Nanshan Hospital in Shenzhen.

A very successful initiative for the Department is our international ultrasound course and workshop for anaesthesia and pain medicine: the International Symposium on Spine and Paravertebral Sonography (ISSPS). Now in its sixth year, this is an advanced teaching course that attracts the top experts in ultrasound regional anaesthesia and pain medicine from all over the world.

Every two years we have also been holding the Asian Intensive Care conference, attended by world experts, with a focus on collaboration in teaching and research with Asia and within Asia.

The flagship international teaching programme of our Department is the BASIC Collaboration. This is a grouping of intensive-care specialists from



across the world led by staff from the Department. The BASIC Collaboration aims to provide high-quality educational course material free to those involved in the management of critically ill patients both inside and outside an intensive care unit. Since 2004, over 850 courses have been run in over 50 countries (see map opposite), and courses have been developed with the European Society of Intensive Care Medicine and *Médecins sans Frontières*. The Collaboration has a commitment to humanitarian teaching and teaches courses in low-income countries at no cost to the host institution. Recently, we conducted a course at the request of the World Health Organization. Currently available courses cover acute care for medical students, acute care in low-resource settings, patient safety, introduction to adult intensive care, introduction to paediatric intensive care, introduction to intensive care for nurses, intensive-care nephrology for advanced trainees, mechanical ventilation for advanced trainees, and airway management for advanced trainees. Courses for acute-care nursing in low-resource settings and hospital management of cardiac arrest are currently being developed.

Research

The initial research in the Department was based around talented individuals who would pursue mainly clinical research in their areas of interest and clinical expertise. Professor Teik Oh created the structure and environment for expanding this early research, and he also provided the international reputation and opportunities for further research in intensive care. More members of the Department stayed for longer terms and established their own interests in paediatric anaesthesia, anaesthetic pharmacology, obstetric analgesia and anaesthesia, cardiac-output monitoring, regional anaesthesia, neuro-anaesthesia and neuromonitoring, pain management, peri-operative medicine, epidemiology, and intensive-care medicine. This pattern of research has continued to this day and many Department members are internationally recognized world leaders in their field, publishing high-quality research in the top journals, authoring books and book chapters, and holding positions in various international societies and editorial boards. However this may not be enough in the current research environment!

Medicine at the Chinese University of Hong Kong is rated within the top 50 in the world, and all CUHK departments are subject to intense scrutiny of



Locations of BASIC Collaboration courses since 2004

their research. The Department is benchmarked against other departments within the Faculty and worldwide. An increasing proportion of funding is top-sliced and returned to departments only if they can obtain more research grants than the average. Of course, anaesthesia research does not produce the interesting headlines and breakthroughs that regularly appear in other medical fields, such as oncology or cardiology. To compete at a higher level, it is no longer sufficient for us to just publish in the top anaesthesia journals and obtain a few grants from the Research Grants Council. We should publish more highly cited papers in the major high-impact medical journals, compete for more postgraduate PhD students, and work towards obtaining very large grants such as those provided for theme-based research or areas of excellence (or obtain very large donations!). This requires a change in research strategy and a move to concentrate future research in a few areas that are likely to overperform. Some of these research fields will be multi-centre peri-operative medicine and outcomes research that have significant clinical impact, and multi-disciplinary research areas in neuroscience, pain, and consciousness.

Fortunately the Department has made significant progress in these areas, largely through the leadership of Professor Matthew Chan, who has been a key



investigator in many recent multi-centre trials such as the B-Aware, POISE, POISE-II, IMASH, ENIGMA, ENIGMA-II, CoDA, POSA, and VISION studies. Each of these trials has led to multiple publications in top medical journals, such as the *New England Journal of Medicine*, *Journal of the American Medical Association*, and *The Lancet*. We are also developing our basic-science research on pain mechanisms. On the intensive-care side, our expertise in infectious diseases and sepsis and collaboration in international research, such as EPIC II, have also produced a foundation for future progress. All these achievements have secured our position as the top academic department in Asia, and within the top 20 in the world.

The current research environment can be very harsh. The University salary structure and working conditions are significantly worse than in the HA and private practice, discouraging local doctors from joining the University. Academic staff are constantly pressured by continuous evaluation of their teaching activities, research output, and service to the University and community. The academic Department has been staffed predominantly by overseas-trained doctors, but the current medical registration regulations make it difficult to attract further overseas academics to Hong Kong for the long term. Thus an important goal for the Department is to recruit local staff into University positions to continue our academic excellence. There are great opportunities and satisfaction to be gained from an academic career, especially when this is coupled with the attractive clinical and intellectual features of our specialty.

We have a common goal with the Hong Kong College of Anaesthesiologists in promoting high standards of anaesthesiology and intensive-care medicine, and believe that this requires not just exemplary direct patient care, but strategic local and international networking and collaboration. We believe that our Department, through its local and international leadership, is able to complement and support the efforts of the College.



CHAPTER 28

Queen Mary Hospital

Susan Joyce Wong

Queen Mary Hospital was founded in 1937 as a replacement for the Government Civil Hospital. Since its inception, apart from a break during the war years, it has acted as the teaching hospital of the University of Hong Kong, performing a dual role that continues to this day.

Early records are sketchy, but we do know that in 1939 Dr H.P.L. Ozorio was appointed as Medical Officer and part-time teacher in anaesthesia to the University. He served in the Second World War and helped reorganize anaesthesia services at Queen Mary Hospital post-1945.

In 1954 he was joined by Dr Zoltan Lett, who took up the appointment as the first 'Specialist Anaesthetist' of the Medical and Health Department, based at Queen Mary Hospital. In this position, Dr Lett assumed responsibility for the anaesthesia services at all government-run public hospitals, at that time principally Queen Mary Hospital and Kowloon Hospital.

Dr Lett characterized the situation when he arrived as being 'far from ideal'. He described the shortage of doctors working in anaesthesia, the fact that many new recruits were assigned to the specialty even though they had



Queen Mary Hospital, c1950s. The hospital, part of the government medical services, stands high on a hill above Pokfulam Road, on the south-western side of Hong Kong Island. Its construction began in 1932, but owing to some financial constraints, it was not completed until 1937 when it replaced the old Government Civil Hospital at Sai Ying Pun, as the principal in-patient hospital on the Island

no intention of pursuing a career in anaesthesia, and the constant resignations by those leaving to join the private sector. In addition to a heavy clinical workload, anaesthetists at Queen Mary also carried out all the teaching in anaesthesia for undergraduate medical students.

By the early 1960s, the number of staff in the Department was still fewer than ten. The work of the anaesthetist at Queen Mary took place almost entirely in the operating theatres. Patients were seen pre-operatively by consultation only, and anaesthetists were not routinely called to resuscitation and trauma cases. The Intensive Care Unit, which opened in 1970, did not involve anaesthetists in its daily administration. There were no recovery rooms, patients being discharged directly to the ward. But by the early 1970s, the hard work of the anaesthesia consultants in pushing for improvements was rewarded by the allocation of nursing staff for a recovery-room service.

In 1969 the Faculty of Anaesthetists of the Royal Australasian College of Surgeons held its first Primary examination in Hong Kong. Prior to that,

candidates had no choice but to travel (usually to the UK or Australia) in order to sit examinations and complete their clinical training. This took a minimum of a year of study leave and was a disincentive for young doctors from acquiring the Fellowship. The Australian Faculty's system of accredited training at approved hospitals in Hong Kong benefited both the trainees and the Department at Queen Mary Hospital. The relatively comprehensive and well-developed standards which the Faculty required of accredited training centres covered professional, training, and educational and administrative matters, and served as one of the drivers of progress prior to the establishment of the Hong Kong College of Anaesthesiologists.

As a snapshot of time past, by February 1974, 20 years after the appointment of the first Specialist Anaesthetist, staffing consisted of four consultants, four Senior Medical and Health Officers, and 13 Medical and Health Officers. A trainee joining the Department would be assigned to a list anaesthetist, and was expected to attend tutorials given by a Fellow after working hours. After a few weeks, and depending on the trainee's progress and the staffing situation, the supervision was less direct. Quite soon, the

Queen Mary Hospital, 2014



trainee was on emergency call and expected to run a theatre independently. Occasionally there was no other anaesthetist on site. Rather than repair to the call room, which at that time was some distance away down a hill, on-call anaesthetists would take a rest when the opportunity arose on the table in the nearby small library room (this practice continued for another 20 years). After a few more months, the novice trainee would be assigned to provide independent anaesthesia cover for obstetrics at Tsan Yuk Hospital.

Despite the increasing number of young doctors joining the Department for training, there continued to be a considerable outflow of experience and expertise to the private sector, and to other hospitals in the public system. From the outset, being a tertiary referral centre, a fairly large component of the clinical workload at Queen Mary Hospital consisted of complex and challenging cases. Continual loss of skilled and experienced staff therefore presented special problems when trying to maintain the standard of service.

From the start, given its place in a teaching hospital, the Department and its individual members played an important role in the teaching of medical students. However a milestone came in 1987 with the establishment of the first Chair in Anaesthesia at the University of Hong Kong. Initially a division of the Department of Surgery, it separated in July 1988 to become the independent Department of Anaesthesiology. Thus, just over 50 years from when this teaching hospital opened its doors, Queen Mary Hospital finally had an academic department of anaesthesiology. The original Anaesthetic Unit was renamed the Government Anaesthetic Unit, and the hard work of building a credible academic department from scratch began.

In 1990 the Department started an acute and chronic pain service, the first formal pain-management service in Hong Kong. Thanks to an extraordinary amount of hard work by very dedicated staff, this has evolved into the full-fledged Division of Pain Medicine, with its own clinical sessions and administrative support.

By 1994, 40 years after Dr Lett's arrival, staffing of the Department of Anaesthesiology (renamed again in 1993 following the establishment of the Hospital Authority) consisted of six consultants, five Senior Medical and Health Officers, and 17 Medical and Health Officers. The Department of Anaesthesiology at the University of Hong Kong consisted of just two staff: one professor and one lecturer.

In terms of the facilities supported by the Department at Queen Mary Hospital, a major change came in 1995 with the opening of four new theatres in F Block and four theatres on the eleventh floor of K Block, bringing the total number of theatres to 18. At the same time, the Department implemented, as far as possible, a specialist-based service for elective lists. This was a change from the previous practice which had one Fellow supervising two trainees in adjacent theatres. In conjunction with surgical colleagues the Department also actively fostered specialization at a senior level, with the establishment of specialist anaesthesia teams for liver-transplant surgery, paediatric surgery, neurosurgery, obstetrics services, orthopaedic surgery, head and neck surgery, and vascular surgery, in addition to pain services, among others.

Another welcome development was the relocation of the Oral Maxillofacial Surgery Unit of the Faculty of Dentistry to Queen Mary Hospital and the subsequent incorporation of their anaesthesia service into the Department in 1998.

A further change came in 2001 when the obstetrics service with two theatres and epidural service moved from Tsan Yuk Hospital to the ninth floor of K Block. Some of the advantages of this relocation were tempered by the logistics of running a modern theatre service on three major sites in the hospital. Hopefully this issue will be addressed in future planning. The acquisition and implementation in 2001 of an integrated computer record and monitoring system allowed real-time viewing of the status at the various locations delivering anaesthesia and proved to be of some assistance in co-ordinating the service.

A department cannot function without administrative support. For us, in the early years that consisted solely of the consultant-in-charge's personal secretary, who was under no obligation to deal with other matters. In 2014, in addition to the personal secretary and academic administrative staff, five extra Executive Assistants were added for the daily running of the Department. Nursing input is also essential to the smooth running of an anaesthesia service. At Queen Mary Hospital, the Department of Anaesthesiology works in partnership with an effective and efficient Operating Theatre Services Department. The early days of relying exclusively on Operating Theatre Assistants have been superseded by the involvement of well-trained teams of nursing staff in many areas of the anaesthesia service.



In 2012, the Head of the Department of Anaesthesiology at the University of Hong Kong was appointed as Chief of Service at Queen Mary Hospital. This was an extremely important and positive development for the status of the specialty of anaesthesia in a teaching hospital setting, where didactic and academic output ranks equally with clinical expertise.

In today's Department of Anaesthesiology at Queen Mary Hospital, 77 years since it opened and 60 years after Dr Lett's arrival, the full and part-time staff consists of ten consultants, 16 associate consultants, 18 residents, four professors, and seven honorary clinical and teaching staff. In addition to teaching and performing research in both clinical and basic science and delivering anaesthetics in the operating theatres, anaesthetists are also found in the radio-diagnostic suites for interventional radiological procedures and high-frequency focused ultrasound, in the endoscopy unit for procedural sedation, in the psychiatric department for electroconvulsive therapy, in the labour ward providing an epidural service, and taking part in trauma response and resuscitation, as well as seeing patients in the pre-operative assessment clinic, pain clinic and in the wards. The Department attracts many high-quality applicants from among aspiring anaesthetists who must now compete to join the training programme.

This is a far cry from the situation in 1937 which is, of course, just as it should be.

Notes

1. Lett Z, Lo RJ. Anaesthesia and intensive care in Hong Kong: evolution and present position. Hong Kong: The University of Hong Kong, Centre of Asian Studies; 1997.
2. Hung CT, editor. Ten years and beyond. Hong Kong: Hong Kong College of Anaesthesiologists; 1999.
3. Departmental Records



CHAPTER 29

Queen Elizabeth Hospital

Amy Lam

It has been my greatest satisfaction in life to witness and participate in the total transformation of the anaesthesiology specialty within the 30-year span of my public service at Queen Elizabeth Hospital (QEH) in Hong Kong. The original image of anaesthetists as ‘technicians’ who administer gas in the operating theatre (OT) has now been replaced by the roles we play—across the whole spectrum of peri-operative physicians, champions in airway management and resuscitation, and experts in intensive care and pain management. In addition, we are privileged to act as facilitators and collaborators, not only inside the OT, but also in many of the Hospital’s multi-disciplinary services.

This transformation was not an overnight phenomenon, but a journey during which a great number of people and events have interacted. We have gone through a number of distinct stages of development, each of which has had its own intrinsic value and made its own contribution.

(facing page)

Equipment used by

anaesthetists in the past:

*(a) pulse and blood-pressure
monitors, (b) methoxyflurane
and ether inhalers,*

(c) a cyclator ventilator, and

(d) a Manley ventilator

1970s: The Era of ‘Low Tech’ and ‘High Touch’

With Only Our Senses as Monitors

In the days when I first joined the anaesthesia specialty, anaesthetists were few in number and worked solely in the OT environment. All we had were anaesthetic machines with vaporizers of ether, trilene (both in glass bottles), and methoxyflurane. The halothane vaporizer, in its earliest glass Goldman model, was considered a luxury.

In those days, when we could only use our senses to monitor patient progress during anaesthesia, conversations like these in the OT were not uncommon:

“Doctor, have the slippers ready! Your patient wants to get off the table!” a surgeon remarked to the anaesthetist half way through surgery.

“Sorry, my gas flowmeter has just come down. Can you hold on a minute,” responded the anaesthetist, while squeezing the respiratory reservoir intermittently between his knees, at the same time busy changing an empty gas cylinder. “The patient needs some more scoline. Glad to see the patient can move. At least I know he’s still alive!”

Those were the days when everything seemed very simple superficially because, when everyone was in the dark, nothing was revealed. All we needed was to remain vigilant and keep all senses alert because they were our only monitors.

With only the mercury sphygmomanometer for blood-pressure monitoring, we had to rely on our senses to detect patient responses and changes of condition simply by a finger on the pulse, keeping an eye on the patient’s colour, pupils and tears, and the feeling of skin temperature. At the same time we had to watch the oxygen and nitrous-oxide flowmeters attentively and be prepared to change cylinders when they were exhausted. Ventilation of the patient was mostly done manually through intermittent squeezing of the respiratory reservoir bag and, at the same time, feeling for adequacy of muscle relaxation. The only way to have an easy day was to arrive in the OT early in the morning and grab a Goldman vaporizer and a cyclator (a simple pressure-cycled ventilator), of which only a few were available. Otherwise, we had to squeeze the reservoir bag all day and rely

on methoxyflurane (before the reported nephrotoxicity) and wait a long time for patients to recover on the OT table. Since there was no recovery room, as soon as patients opened their eyes and moved their legs, they were wheeled straightaway to the wards.

Anaesthesia for surgery on the upper airway and the chest was always the most terrifying nightmare and challenge for anaesthetists. The bottom line for asking the surgeon to stop manipulating was the combination of severe cyanosis and bradycardia in the patient, not to mention the highest level of adrenaline that the anaesthetist himself could tolerate.

Under these circumstances, with our own hands ventilating the patient through the respiratory bag, we were in close touch with the patient's every single breath. When Manley ventilators appeared in our OT in the mid-1970s, we were all overjoyed because they meant more than a Mercedes Benz to us. Towards the end of the 1970s, a few electrocardiography (ECG) monitors also arrived but were seldom used because of the annoying interference.

Reflecting on the years of evolution of anaesthesiology, direct patient contact was felt most intensely in those days when the luxurious monitors that we enjoy using nowadays simply were not available.

1980s: The Era of Technological Boom and Professional Foundation

At the beginning of the 1980s, thanks to Dr S.W. Kwong's perceptive forward planning, we had all the old types of Boyle's machine replaced. All those machines painted apple-green with their glass bottles of triline and ether vaporizers hanging up over the bar were replaced by new stainless-steel machines with temperature-regulated halothane vaporizers. We also started using some newer models of defibrillator monitor. One of these is still remembered, even by a surgeon, as the 'cocky machine', which crowed with the patient's every heart beat!



(a)



(b)



(c)



(d)





Farewell party for Dr S.W. Kwong: (from left) Dr Roy Lau, Dr Sylvia Liu, Mrs Judith Kwong, Dr S.W. Kwong, Dr K.M. Chung, Dr Amy Lam, and Dr Yue Siu-kit

Pre-operative visits, which started in the early 1980s, brought anaesthetists into the environment outside the OT. Although a difficult start, it proved to be a most rewarding advent for us because our image as ‘technician’ was gradually changing to that of a physician.

The introduction of the recovery rooms for patients was a tedious story. Having been used as convenient equipment and storage areas, the room on each OT floor was slowly evacuated to make space for post-anaesthesia care of patients. With our reciprocal knowledge of the value of good recovery care for patients, we were grateful that the OT nurses took up this essential role.

The Professional Foundation

Prior to and during the 1980s, our specialty development had always been limited by the unattractive nature of our work. Because of the lucrative prospects in private practice, most Fellows left public hospital service soon after they passed the Fellowship Examination. For many years, with only a few specialists remaining in the public service, we had to depend on the recruitment of overseas fellows to fill the few SMO (Senior Medical Officer) positions. We also had to persevere with the training of new entrants. Our fervent and persistent battle was slowly rewarded. The high point of our

achievement was in the memorable year of 1986, when a dozen trainees passed the Final Fellowship Examination. We were overwhelmed with immense satisfaction and immeasurable joy.

Within the next few years, although more than half of this group of Fellows had left for private practice, we were still grateful that a few stayed behind and contributed significantly to the modern foundation of our specialty development at the Hospital. All of them now hold Consultant positions and are eminent and devoted leaders of our profession.

New Technology

In hand with this professional development came an upsurge in technology all around the world. Thanks to his talent and dedication, Dr. Ronald Lo opened the Department to the whole realm of new technology. One by one, new types of equipment appeared in the Department. There were new ECGs with pressure and temperature monitoring; and the first non-invasive blood-pressure monitors with the EME came on to the scene. New types of ventilator were developed, including the high-frequency jet ventilator. The availability of fibre-optic laryngoscopes for difficult intubation banished our nightmare of failed intubation on patients. By the end of 1980s, after several critical incidents in Hong Kong, mandatory monitoring of oxygen saturation and end-tidal carbon dioxide accelerated the standard of anaesthesia monitoring with oximeters, capnographs and, later on, anaesthetic agent monitors. As a result, patient safety was significantly and rightfully enhanced. Huge varieties of consumable items were also procured which facilitated many of our procedures. An office was converted into a storage area to house our expanding stocks. Life was really exciting!

1990s: The Era of ‘High Tech’ and ‘Outreach’

Pain Management Services

In the early 1990s, when anaesthesiologists around the world had started post-operative acute pain services for patients, an enthusiastic group of anaesthesiologists at QEH took the initiative to organize a post-operative epidural analgesia service, initially for gynaecology patients and later involving surgical and orthopaedic patients. Because of the wide hospital base, it was





Farewell party for Dr Ronald Lo: (back row, from left) Dr Y.F. Chow (COS, 2005-14), Dr Vincent Ho, Dr P.W. Cheung, Dr K.P. Ng, Dr K.W. Au Yeung, Dr Steven Wong, and Dr S.M. Wong; (seated, from left) Dr Amy Wu, Dr Eileen Au, Mrs Judith Lo, Dr Ronald Lo, and Dr Amy Lam

a great challenge to gain the support of the entire nursing profession, both inside and outside the OT. Besides taking three 'Pain Rounds' to patients in wards every day, we also organized education programmes for nurses. With the collaboration of all parties involved, the pain programme gradually expanded. In February 1993, we held the Acute Pain Symposium at a scientific meeting of the Society of Anaesthetists of Hong Kong (SAHK). One question raised at the meeting was: 'Now that patients have a good pain-relief service, how can the anaesthetists be relieved of the pain caused by all this hard work?' The answer was obvious: patient satisfaction and comfort were our satisfaction. That was all that mattered.

Having been successful in post-operative pain relief, we started chronic and cancer pain services by collaborating with the clinical oncologists in their clinics. Clinic consultations, local injections, regional blocks, and interventional procedures in OT were prescribed as appropriate. We were privileged that those of our patients who needed hospitalization could be admitted to the wards for pain management. We also worked very well with the obstetricians and midwives in initiating our obstetric epidural service, which has gradually expanded into a 24-hour service.

Intensive Care Unit and Trauma Services

On the establishment of the independent ICU at QEH in 1995, we contributed our share of expertise to work hand-in-hand with the Medical Team in a multi-disciplinary approach. The collaboration turned out to be extremely satisfying and congenial in the delivery of a comprehensive and high-quality service to critically ill patients in the Hospital. At the same time we continued to contribute our expertise in airway management and resuscitation to patients throughout the Hospital on demand.

To support the Hospital in upgrading the management of patients with severe trauma, we played an active role in the Hospital Trauma Service and in disaster management. The devastating fire at the Garley Building in Jordon in November 1996 was still fresh in our minds, as many victims suffering from smoke inhalation were admitted to the Accident and Emergency Department on that dreadful evening. Almost the entire Department of Anaesthesiology turned out to stand by and help in the resuscitation and airway management of these patients.

Open Heart Surgery

The integration of Kowloon Hospital's Thoracic Surgical Service with QEH in March 1994 opened up an opportunity for the development of a comprehensive cardiothoracic service at our Hospital. After extensive deliberation, planning, and training on all related specialties, the first open-heart surgery was performed in April 1996. Our commitment to this service carries with it an enormous responsibility since we are determined to sustain the service with the highest quality of care and with a commensurate level of expertise.



*Dr Amy Lam receiving the
Outstanding Department prize
from Dr York Chow in 1997*



(facing page)

*(top left) Celebrating the last
OT day at the old OT block:*

*(from left) Dr C.F. Fung,
Dr Amy Wu, Dr Anne Leung,
Dr K.P. Ng, Dr C.T. Hung
(COS 2000-5), Dr Amy
Lam, and Dr K.C. Lui*

*(top right) Celebrating the last
OT night at the old OT block*

*(bottom left) Final emergency
operation at the old OT block:*

*(from left) Mr K. Cheung,
Dr Y.W. Chan, Dr Amy Lam,
Dr Tony Cheng, and
Dr Eric So*

*(bottom right) First OT day
in the new OT block: (from
left) Dr C.C. Ma, Dr K.M.
Ko, Dr Phoebe Lam, Dr Amy
Lam, and Dr K.P. Ng*

Day Surgery Service

In October 1993, with the emergence of day surgery in all advanced countries, we initiated a small-scale service within the QEH hospital complex. An opportunity arose with the new Ambulatory Care Centre project. A theatre suite was designed as the Day Surgery Centre and we started to provide anaesthesia for day surgery in August 1997. A year later, with further support from the Hospital, we were fortunate to obtain facilities for the establishment of our first anaesthesia clinic. We could now reach out to the community by providing a pre-admission service for out-patients.

The Introduction of Advanced Technology and Information Technology

Amidst all these developments, the 1990s were filled with a multiplicity of advanced technologies, ranging from the Integrated Anaesthesia System with computerized patient monitoring and alarms to multifunction monitors, neuro-muscular function monitors, computerized ECG machines, blood-gas analyzers, thromboelastograph, and new types of fibre-optic bronchoscope for intubation, and so on. Also appearing on the market was a wide range of fast-acting anaesthetic agents and muscle relaxants. A wide choice of consumables was also available, with many innovations emerging on to the scene. With these we are now empowered to accept very difficult surgical procedures and seriously ill patients for anaesthesia as well as tackle extremely precarious airway problems.

Exceptional quality of care has finally materialized. Towards the end of the 1990s, information technology started to take a specific role in the delivery of our patient services using, for example, the Operating Theatre Information System and the Clinical Information System. With this, patient data and laboratory and radiological investigation results could all be easily retrieved. The networking of information delivers the world of knowledge to our fingertips, and all these changes have immensely improved the quality of care and substantiated the safety of our patients in a way undreamed of years ago.

Into the Millennium

Relocation of the Operating Theatre and Theatre Sterile Supplies Unit

As we moved into the new millennium, the long-awaited relocation of the OT and Theatre Sterile Supply Unit (TSSU) finally materialized. For many years the inconvenience and inefficient design of the old multi-storey F Block, with only one lift to serve ten floors, plus all the hazards of electricity and gas-supply failures and the deteriorating sewage system, had threatened the safety and



quality of OT services. In August 2000, this ‘time bomb’ was finally eliminated by the relocation of the entire Theatre Services and TSSU to a new location on the other side of the Hospital. The new design utilizes a two-floor concept containing 21 OT rooms, one of which is doubly spacious, to allow for future development of new technological procedures and multidisciplinary services.

With the provision of this new OT Block, we are able to move forward into the new century in line with the latest surgical and technological advances to meet the challenges of delivering high-quality and efficient services to our patients.

Hospital-wide Resuscitation Programme

In the early 2000s, our Department was actively involved in establishing a hospital-wide resuscitation programme which would standardize resuscitation protocols, equipment, and training throughout the Hospital, which include all wards, radiology and paramedical departments, and covering the entire hospital complex. The aims are to enhance the efficiency and effectiveness of resuscitation for patients in all areas of the hospital, and upgrade the skills and knowledge of all hospital staff. We were extremely grateful that this programme gained wide support and co-operation from the hospital administration and all medical and nursing staff, as well as supporting services and the telephone operators. A regular training programme delivered by doctors and nurses has been organized to uphold quality and maintain the standard of resuscitation.

Dr Amy Lam with Dr Steven Wong (Present COS from March 2014) and Ms Irene Pang (first anaesthesia nurse)



Involvement in Operating Theatre and Hospital Management

Because of our daily close working partnership with the OT nursing staff and all surgical specialties, we always look upon all OT personnel as a team. Thanks to our familiarity with and overview of multiple surgical services, we further add value to our health-care system through the development of good leadership and management skills, and exhibit our best in OT management by fostering good communication, contributing to high utilization, minimal delays, and intelligent cost-control measures.

Within the hospital system, by providing an unbiased view of both the dynamics of patient flow and the value of capital expenditure, we are also developing and implementing care plans and clinical pathways for surgical procedures to enable shorter hospitalizations and standardized care for effective outcomes. We have therefore participated in the design and function of the entire peri-operative programme, advancing ourselves from pre-admission services, intra-operative care to the post-operative period. We have therefore established our status as true peri-operative physicians.

How Shall We Hold On To and Create Our Own Future?

Our greatest opportunity lies in our unique position as an effective component of an integrated health-care system. Because of our training background, we



*Dr Zoltan Lett with QEH
staff at SAHK Spring Dinner
2005*

know how to prioritize medical issues and provide sound medical judgement in a crisis. With our constant contact with different departments and specialists, we can see and exercise the benefits of teamwork, cultivate good working relationships, and observe issues from many people's perspectives. This has effectively paved the way for anaesthesiologists to lead the hospital team in hospital management and be involved in the health-care system of the entire community. To meet the needs and expectations of patients for quality service and safety, anaesthesiologists will further take up a strong role to contribute to the community. Being experts in resuscitation and daily involvement in risk and quality management of patients, anaesthesiologists are excellent collaborators in the standardization of protocols and upgrading training of resuscitation for health care providers of both public and private sectors.

Without doubt there will be no boundaries or limits in the development of technology and knowledge. Like any other specialty, in no time anaesthesiology has been swamped with multitudes of computerized devices and machines to assist us in the diagnosis and management of patients. We now live in a wholesome technically oriented world where certain procedures are now being done by robots. On the other hand, health-care financing has become the cornerstone in delivery of our service. The productivity, efficiency, and cost-effectiveness of our service are challenges we need to face with courage and deftness.

However, the ultimate value of all these developments should never detract from our role as anaesthesiologists who pay the highest attention to the peri-operative needs of our patients. Throughout all the years of my experience in anaesthesiology, no advanced model of the anaesthesia monitor could ever replace the 'finger on the pulse' in our care of patients. Direct and vigilant patient care, sound clinical judgement, and continuous professional development will remain the hallmarks of our dedicated delivery of anaesthesia care to patients for years to come.

In closing, to all those who have participated in the development of our anaesthesiology specialty at QEH, including all past and present colleagues and the hospital management, we are indebted to you for all the achievements and offer our tributes with the fondest remembrance and gratitude.



CHAPTER 30

Grantham Hospital

Devasírvatham Sudhaman

Historical Background

Grantham Hospital (GH) was founded in 1957 to provide institutional care to tuberculosis (TB) patients at Aberdeen, which was then a sleepy, remote village away from the popular residential areas. The hospital was declared open by the then Governor of Hong Kong, Sir Alexander Grantham, hence the name. In 1960, Dr Nancy Butt from New Zealand became the first anaesthetist at GH. In the 1960s, GH gradually developed into a TB and chest-diseases hospital. At that period, the orthopaedic unit at Queen Mary Hospital (QMH) had been allocated some beds at GH as the demand was greater than the available beds at QMH. Thoracic and orthopaedic surgical procedures were then performed at GH.

The year 1968 was a landmark in the history of Hong Kong for it was then that Dr K.W. Kwong started regular cardiac surgery at GH. From 1968 to 1980, Dr Butt and other anaesthetists, namely Dr Sylvia Hui, Dr Justin Chan, Dr C.S. Chan, Dr Mike Grant, Dr Mike Cooke, Dr Terry Clarke, and a few others provided regular anaesthesia service on a part-time or full-time basis at GH. In 1980 the department managed to get two additional senior



Grantham Hospital and Senior Staff Quarters

medical officers (SMO) in addition to the existing consultant and SMO. From then on, the department gradually grew in number in line with the workload and, by the time it moved to QMH in 2008, the complement was two consultants, four associate consultants, and a resident.

The Anaesthesia Service

Apart from the two orthopaedic sessions the service was essentially cardiothoracic anaesthesia and ventilatory management in the post-cardiac surgical intensive care unit (ICU). In the mid-1990s, when the orthopaedic service was withdrawn from GH, it became solely cardiothoracic. As one might expect, the development of anaesthesia depended on the development of cardiothoracic surgery. In the late 1970s, apart from valvular and simple congenital heart diseases, some coronary-artery bypass procedures were also performed. In 1980, the cardiothoracic surgical unit became a professorial unit, with Professor C.K. Mok at its helm. Prof. Mok had a passion for paediatric cardiac surgery. That same year, the paediatric cardiac unit was

established at GH, which led to more cardiac catheterizations under general anaesthesia (GA) and more complex cardiac surgical procedures. The first Fontan operation and separation of Siamese twins using cardiopulmonary bypass were carried out in 1982. Complex cardiac procedures, such as Sennings and arterial switch, with and without deep hypothermic circulatory arrest, became more frequent.

By the mid-1980s, apart from the two daily OT sessions, a cardiac-catheterization session had to be accommodated at least three days a week. In addition, one member had to be in charge of the ICU during working hours. Understandably, it was a great relief when the third SMO was approved. Until the beginning of this century, very few local Fellows were keen on working full time in cardiac anaesthesia. During the whole of the 1980s and 1990s, only three local Fellows, namely Drs. Arthur P.C. So, L.C. Goh, and Joseph C.Z. Lui, worked full time for long stretches of time. Throughout the 1980s, we often had to depend on overseas fellows working on short contracts lasting from three months to two years. They were attracted mainly by the experience they could gain in paediatric cardiac procedures. However, from 1990 onwards, the situation slowly changed, thanks to the formation of the Hospital Authority (HA). Until 1991, GH was government subvented and opportunities for promotion, career advancement, study-



Drs K.W. Kwong, J. Leung, J. Lee, Nancy Butt (centre), C.K. Mok, and others

*Open heart procedure at the
Grantham Hospital, 1972*



leave allowance, and other aspects of career progression were not on a par with government hospitals. Under the HA, these differences were ironed out. Rotation to cardiac anaesthesia in the Vocational Training Programme for the Fellowship examinations enabled the trainees to come to appreciate the specialty. As a result, many budding anaesthetists have since opted for a career in cardiac anaesthesia.

The year 1992 saw the first heart transplant in Hong Kong. Later in the decade, several heart, lung, and heart-lung transplants were successfully performed. Subsequently, more and more neonatal switch and Norwood procedures were seen. In 1996, informed consent with video presentation, the first of its kind in Hong Kong, was introduced for thoracic epidurals.

Later in the decade, when increasing numbers of type-A aortic dissections were operated on, additional spinal-cord monitoring and protection techniques were introduced. Other major advances during this period included alpha-stat management of acid-base balance during cardiopulmonary bypass, modified ultrafiltration in paediatric procedures, and the use of aprotinin in high-risk



cases. Intra- and post-operative nitric-oxide (NO) therapy was inaugurated in 1997. In the late 1990s, intra-operative transesophageal echocardiography (TEE) became a regular modality of monitoring, and anaesthetists took on the additional responsibility of running the intra-operative TEE service. In this context, Dr Peter Y.T. Hiong deserves special mention for his interest and effort. During this period, the paediatric unit had been performing an increasing number of less-invasive procedures, such as occlusions, dilatations, stentings, and electrophysiological studies, among others, under GA in the catheterization laboratory. On a normal working day, the anaesthesia staff coped with two or three OTs, cath. Lab., ICU, acute-pain management and intra-operative TEE, not to mention the on-call and pre-operative rounds that were routinely accommodated. But for the dedication and continued service of Drs A.W. Aitken, R.J. Morais, S.R. Das, Y.T. Hiong, and L.C. Ling, the department could not have successfully coped with the workload. Arguably GH was the only place in Hong Kong where the anaesthesia consultants

Separation of conjoined twins





(clockwise from top left)

Infant Star (old)

Infant Star

Servo 900B

Servo 900C

Monaghan

were, routinely, first on call and this is still current practice at its present home in QMH.

The first LVAD (Berlin Heart) insertion was performed in 2001. From the mid-1990s, the department has been getting one or two vocational trainees (Year 4) on an almost regular basis. In a major shift with HA policy in 2008, the anaesthesia department, along with the surgical and paediatric units, was relocated to QMH.

Equipment

In the 1970s, Monaghan ventilators were used for adult post-operative ventilation in the ICU and Infant Star for babies. In the OTs, Manley ventilators were the mainstay for adults and Saccab and

Sheffield ventilators were available for babies. However, with the paediatric ventilators being unsatisfactory for small infants and neonates, manual hand ventilation was employed. In the early days, in the absence of modern monitors, the anaesthesia staff had to stay with babies and hand ventilate, even during injections with high radiation! In 1981, the Siemens Servo 900B was introduced, which could be used in OTs as well as ICU. A few years later, the Servo 900C with multimodal ventilatory patterns and an updated version of Infant Star replaced the older ones. On the monitoring front, HP consoles came in as the old Honeywell monitors were phased out. Other monitors for cardiac output measurement, thrombo-elastography, central nervous system monitoring, NO delivery systems, TEE, and so on, came into use in line with other major cardiothoracic centres around the world.

Intensive Care Unit

GH ICU, a post-operative cardiac surgical unit, needed the anaesthetists' constant presence during working hours, as they were responsible for

monitoring and ventilator care. The on-call anaesthetist looked after the weaning, extubations, and related issues. The surgeons and paediatricians shared the management of other aspects, however there was no rigid demarcation between their responsibilities.

On the Academic Front

In spite of the workload, GH anaesthetists have always been involved actively in undergraduate teaching and postgraduate training. GH has been accredited for both FCAA&NZ and HKFCA training programmes. While the local and overseas anaesthetists received training in cardiac anaesthesia, a close association with the University of Hong Kong (HKU) Department of Anaesthesiology was nurtured throughout. The members have always taken part in the undergraduate and postgraduate teaching programmes. At regular intervals, seminars on anaesthesia and related topics were held in the name of Grantham Clinics and were well attended by members from all institutions. Despite inadequate funding as a subvented hospital, the department was not lagging behind in publications and its participation and contributions at international conferences. The Cardiothoracic Nursing Programme witnessed our active involvement and, in 2004, a training programme for perfusionists,

*Heart Transplantation Team,
1992*





co-organized with the HKU Department of Surgery, attracted participants not only from Hong Kong, but also from neighbouring countries.

An account of how the anaesthesia department grew from humble beginnings to a major clinical unit along with the hospital has been given here. The credit for the growth and achievements goes to the dedicated and hardworking staff, the support of other medical and paramedical colleagues, the hospital management, and HA. At present, as part of QMH under the aegis of the Department of Cardiothoracic Anaesthesia (DCA), the staff continue their well-established and deep-rooted service to the community. Best wishes are extended to Dr S.R. Das and his colleagues in the DCA for success in all their endeavours.

Acknowledgements

I wish to thank Dr K.W. Kwong and Dr Jan W.T. Lee, retired cardiac surgeons, and Dr S.R. Das (DCA, QMH) for their advice and information.



CHAPTER 31

Alice Ho Miu Ling Nethersole Hospital

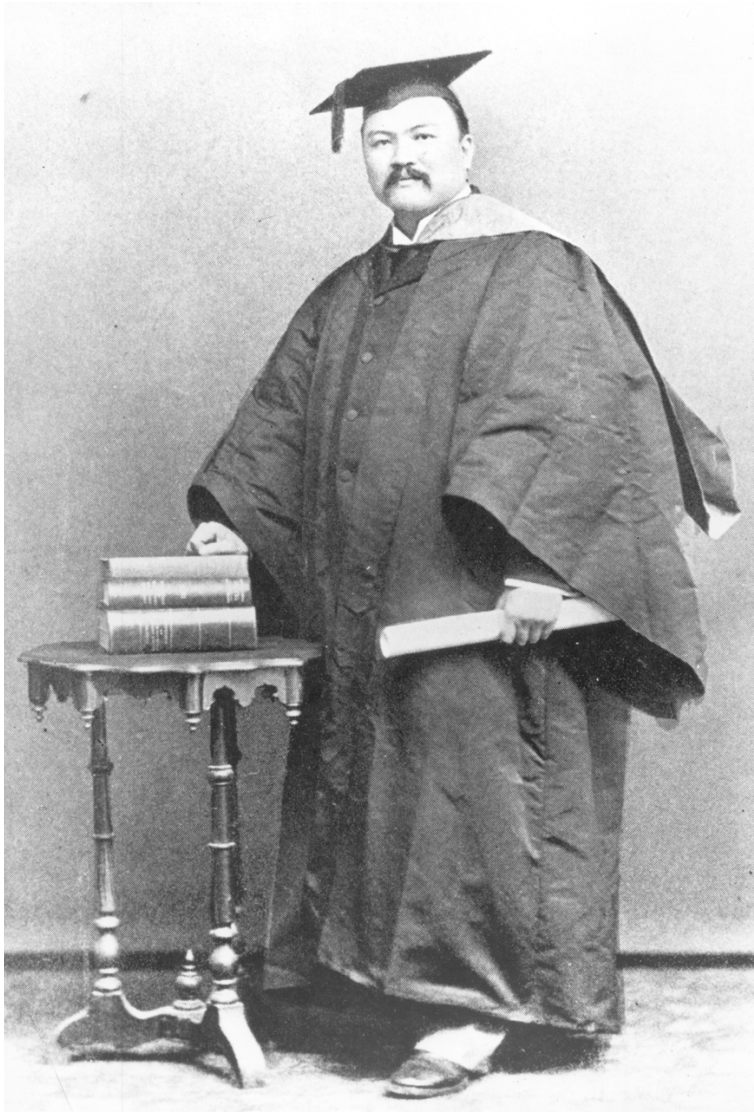
Jean Allison

Shortly after I joined the Nethersole, in 1966, the hospital celebrated its 80th anniversary and Hong Kong had its own eventful year—the Star Ferry riots and the floods.

Hong Kong Island and some of the outlying small islands, a total of 29 square miles, were ceded to Britain in 1841. The Kowloon Peninsula, of four square miles, was ceded in 1860. In 1898, the New Territories were leased to Britain for 99 years, bringing the total area of Hong Kong to about 390 square miles.

In the early days, there was a civil hospital and a mission hospital, but all records have since been lost. The history of anaesthesia at the Alice Ho Miu Ling Hospital is closely associated with the Ho family and the Hong Kong College of Medicine for Chinese, which later became the Faculty of Medicine at the University of Hong Kong.

Ho Kai, born in 1857 was the son of Ho Fook Tong, a pastor of the London Missionary Society. Ho Fook Tong was also a successful business man which enabled him to send his son, Ho Kai, to Britain to be educated. At the age of twenty, Ho Kai graduated in Medicine from Aberdeen University



Sir Ho Kai was a key player in many aspects of early Hong Kong development, including the founding of Alice Memorial Hospital and the founding of the Po Leung Kuk. The small photo shows his wife, Alice Walkden

in 1879 but later switched to law and, in 1880, was called to the bar at Lincoln's Inn. He married Alice Walkden in 1881 and returned to Hong Kong in 1882 to practice law.

At the time Hong Kong was not a healthy place and prone to frequent epidemics. Ho Kai lost his wife Alice

to typhoid in 1884. At the time, Ho Kai was on the board of the Nethersole Dispensary—founded by the London Missionary Society and named after the Chairman's mother, Mrs Davis. Ho Kai persuaded the board to build a hospital in Hollywood Road to give poor Chinese the benefit of modern western medicine and surgery under anaesthesia. With his generous donation, Ho Kai was given the right to name the new hospital, which he did, after his wife, and the Alice Memorial Hospital opened in February 1887.

In October the same year the Hong Kong College of Medicine for Chinese was founded in the Alice Memorial Hospital. Two Scots, Sir Patrick Manson, a pioneer of tropical medicine, and Sir James Cantlie were on the



*An emergency plague hospital
in Hong Kong: men's ward at
the Kennedy Town*

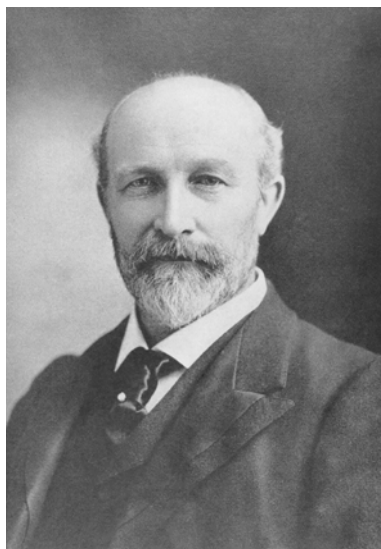
staff of the hospital. Their first students included Sun Yat Sen. Cantlie returned to London and was able to rescue Sun Yat Sen when he was imprisoned in the Chinese Embassy. Later, during the First World War, Cantlie trained ambulance personnel. Later students included Li Shu Fan and George Thomas. After graduation Thomas lectured in anaesthesia, which at the time consisted of ether or chloroform or a mixture of both. In the early twentieth

(left to right)

Sir Patrick Manson
(1844–1922)

Sir James Cantlie
(1851–1926)

Li Shu Fan (1887–1966)



century, Li Shu Fan was engaged in political work with Sun Yat Sen in China. It was during this time that he developed his formula '333' for spinal analgesia: caffeine 3 grains, Novocain 3 grains, water 3 cc, injected at the third lumbar inter-space. He would administer the block and then operate.

Within a few years, the 80-bed Alice Memorial Hospital had become too small and no more land was available in Hollywood Road. However, the London Missionary Society held a plot of land in Bonham Road that was made available for the new Nethersole Hospital, which began operating in 1893.

Early in the twentieth century, Ho Kai persuaded his sister, Miss Ho Miu Ling, to help finance a hospital for women and children. It opened in 1906 on government land in Breezy Path next door to the Nethersole Hospital. It was called the Ho Miu Ling Hospital. Dr Alice Sibree was appointed to the hospital—the first female medical practitioner to work in Hong Kong.

The Alice Memorial Hospital was subsequently moved to Bonham Road behind the Nethersole and, in 1953, when extensive redevelopment was initiated, the three hospitals were formally amalgamated and a bridge was built over the nullah to connect the two buildings. It was commonly known as the Nethersole Hospital or by a Chinese transliteration thereof (Na Da So).

In 1967 a new east wing was opened with new surgical operating theatres and a six-bed intensive care unit (ICU) under the control of the Department

*Opening of the new Nethersole
Hospital in 1938*





of Anaesthesia. It was also used as a coronary care unit. Equipped with one cardiac monitor and two ventilators, it was the second ICU to be opened in Hong Kong, the first being at Kwong Wah Hospital. By the time the hospital closed, the ICU had cardiac monitors and pulse oximeters at each bed as well as four ventilators.

Intensive Care Unit in 1990

Early records list the number of operations performed under anaesthesia but do not say who administered the anaesthetic and do not always give any indication as to whether ether or chloroform was used.

During the Second World War, the European staff were interned in Stanley Camp and the hospitals were run by the remaining Chinese staff. After the war the operating theatres were improved and the need grew for specialist anaesthetists, but recruitment was difficult due to restrictions on employment conditions at subvented hospitals. At the same time, anaesthesia was not a popular speciality in Hong Kong (until chairs of anaesthesia were founded at the Chinese University in 1983 and Hong Kong University in 1987). In 1958, Dr Brenda Dempsey FFARCS became the first qualified anaesthetist to be appointed, but only stayed here for some two years.

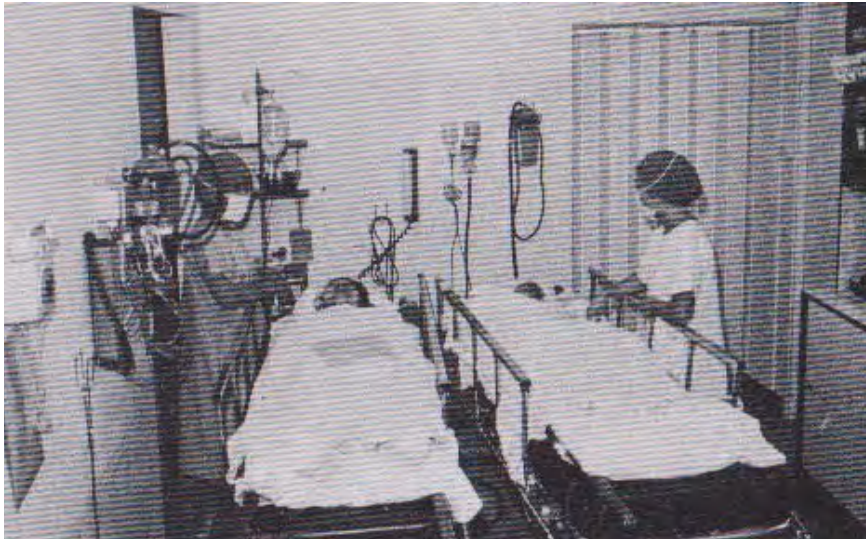


In January 1966, Dr Jean Allison (the writer) was appointed. At the annual meeting that year, Dr Paterson, the Superintendent, said he was reluctant to appoint expatriates to the position as they tended not to stay. I stayed for 25 years but was unable to recruit a qualified local anaesthetist as an assistant until 1988, when Dr Wallace Chu was appointed. Incidentally, that is the only time I know of that Dr Paterson was wrong!

In 1966 the Department of Anaesthesia at the Nethersole was part of the Department of Surgery and the number of anaesthetics was listed in the surgical report. By around 1970, anaesthesia was recognized as a separate department. The staff consisted of two anaesthetists and, in 1967, the Government allowed the hospital to appoint suitably qualified staff as senior medical officers (SMOs), giving me a promotion to SMO. Eventually, in 1979, I was made consultant at the United Christian Hospital (UCH) and the Nethersole. This was a problem, as two posts at the Nethersole were recognized for training for the FFARACS, so I would spend one afternoon a week at the departmental meeting at UCH and was second on call when the SMO was unavailable. Two years later consultants were appointed at both hospitals.

At the time of my appointment in 1966, the anaesthetists almost invariably used general anaesthesia while in the third operating theatre the surgeons would administer spinal or local anaesthesia with a nurse looking after the patient. When fine disposable needles came on the market in the mid-1970s the anaesthetists used regional blocks more frequently. We tried using epidural blocks for caesarian sections but no one liked them—neither the patients, the obstetricians, nor the nursing staff—so we switched to spinals. When the obstetrician, Dr Pamela Leung Ming-Kuen, noticed an improvement in the Apgar scores for the babies delivered by caesarian section, she instructed the nurses to tell the patients that spinal analgesia was best; even one of our own maternity staff requested ‘a spinal’.

In 1983 the Royal Australasian College of Surgeons held their annual scientific meeting in Hong Kong. At that time, Dr Paterson was superintendent of the Nethersole and UCH. He cancelled all elective surgery at the Nethersole so that we could attend the meeting. Dr M.L. Yeung and I were on the planning committee for the meeting, which gave me invaluable experience for planning the 7th AACA in 1986 in Hong Kong.



*Surgical recovery room in
1990*

In 1987 Dr Susan Gray presented a paper at the Asia Pacific Congress of Obstetrics and Gynaecology on Spinal Analgesia for Caesarian Section. Dr Gerald Banwell, the first qualified obstetrician to be appointed at the Nethersole, was in the audience and commented that he used to administer spinal analgesia prior to performing a caesarean section.

I retired in 1990 and was replaced by Dr Wallace Chu. By this time the Department had two SMOs and four MOs, almost an adequate staff for a hospital of that size, that is, 388 beds. The first thing Wallace did was improve the monitors in the theatres and ICU.

The Department went from strength to strength until the hospital closed in 1993. Most of the staff were transferred to the Government's new Pamela Youde Hospital at Chai Wan. The Nethersole Board refused the Government's initial request to transfer to the new hospital, saying they would only do so 'if they could take their name and their policy of running it as a Christian hospital'. The Eastern District Board objected as they had been responsible for getting the hospital for Chai Wan and did not want a foreign-sounding name. However, after lengthy negotiations an agreement was reached, hence the cumbersome name: 'Pamela Youde Nethersole Eastern District Hospital'.





CHAPTER 32

Prince of Wales Hospital

Cindy Aun and Amy Cho

History

In 1974, following the recommendation of the Health and Medical Development Advisory Committee that the territory would need an additional annual local supply of 100 doctors, the Legislative Council approved the establishment of a medical school at the Chinese University of Hong Kong (CUHK).

The Prince of Wales Hospital (PWH), the regional hospital for Shatin, was designed to be a 1,400-bed tertiary teaching hospital affiliated to the Faculty of Medicine and construction was scheduled so that the first batch of medical undergraduates could be received in 1981.

The Department of Anaesthesia was established in 1983 following the founding of the new Faculty of Medicine of the CUHK in 1981, which incorporated the first academic department of anaesthesia in Hong Kong. It was an integrated department having both CUHK staff and clinical staff of the then Medical and Health Department. At the instigation of Professor J.A. Thornton, our founding professor, the area originally designated as the coronary care unit was converted to a dedicated 12-bed intensive care



*Department of Anaesthesia,
The Chinese University of
Hong Kong, 1983*

unit (ICU), for the first time under the full administration of the anaesthesia department. Thus the Department of Anaesthesia and Intensive Care came into being.

The 'Container' Days

Because of the delay in the completion of the Prince of Wales hospital building, the problem of clinical teaching for our first batch of medical students was resolved by arranging a temporary clinical facility at the United Christian Hospital (UCH) and Kowloon Hospital from 4 July 1983 until we moved into the Clinical Sciences Block at the PWH on 16 January 1984. The University had arranged for ten cargo containers parked in the UCH hospital grounds to serve as offices for teaching staff, and as a common room and seminar rooms for medical students. The commissioning of PWH took place in stages. Phase I was completed on 1 May 1984, and the hospital became fully operational in September 1985.

The 'Setting-up' Days

Prof. Thornton, the chair professor, arrived in early 1983 from Sheffield in the UK to set up this academic department. He was joined by two senior



*Department of Anaesthesia
and Intensive Care, Prince of
Wales Hospital, June 1984*

lecturers (Jean Horton and Cindy Aun) and a further four lecturers later in the same year. Among them, all except one (Arthur So) were visiting. The full complement of six lecturers was in place by 1984. Prof. Thornton negotiated with the Royal College of Anaesthetists for the post-fellowship registrars to have their training recognized for their one-year secondment as visiting lecturers at CUHK. Rapid turnover in senior members continued until the mid-1990s when the department started to attract trained expatriate specialists.

A shortage of specialist anaesthetists in the public sector had always been a problem. Anaesthesia was regarded locally as an unpopular specialty. The then Government Medical and Health Department recruited its senior medical officers (SMOs) from overseas. Nearly 90 per cent of our senior staff were expatriates. Medical officers (MOs) were mostly recruited locally. The first batch joined in April 1984.

The 'Progression' Days

Prof. Thornton retired in September 1987. He was succeeded by Professor T.E. Oh from Perth, Australia, in February 1988. Prof. Oh was the Chairman and Chief of Service until 1998. His expertise in intensive care, his innovation and excellent leadership led the department to a peak in productivity.

Through his engineering, intensive care was developed into a specialty in Hong Kong. And under his ingenious leadership, this department was put on the world map of anaesthesia and intensive care. In 1998, he was succeeded by Professor Tony Gin who had served at the department as senior lecturer under Prof. Oh. Prof. Gin's enthusiasm in research has been instrumental in cultivating an investigative ambience in the Department.

Clinical Service

From the outset, this Department maintained a specialist-led service providing 24-hour on-site specialist cover for ICU, emergencies and obstetric service, while a dedicated 24-hour on-demand epidural and obstetric service was also provided. Trainees were never left without access to specialist help. Our cardiac anaesthesia service commenced a few years later.

A dedicated resuscitation team was formed to handle all cases of in-hospital cardio-respiratory arrest. A senior member of this department headed the hospital Resuscitation Committee. Jean Horton was the first team leader.

Pain management was a neglected area in Hong Kong at the time, perhaps because it was always believed that the Chinese were stoic. The first

*Departmental photo with
Prof. T.E. Oh*





*Departmental photo with Prof.
Tony Gin*

collaboration was with the Department of Physiology, resulting in a 'pain clinic', which in the end could not be sustained due to staff shortage. Our pain-management service started officially on a small scale later in 1988, attending in-house cases on request. The acute and chronic pain service is now well established at PWH and within the cluster.

Operating Theatre Management

As opposed to other hospitals, a designated Chairman of the Operating Theatre Committee was seconded from the Department of Anaesthesia. This committee, with representatives from surgical, anaesthesia, and nursing departments as well as hospital administration, oversaw the management of the operating theatres and the theatre sterile supply unit.

Postgraduate Training

The First Month

The new MOs received one whole month of full-day lectures before starting clinical work. The first case was an orthopaedic operation on a young female patient, which went smoothly under the watchful eyes of Jim McPherson (SMO) and Amy Cho (MO).

At that time, the training programme offered by the then Faculty of Anaesthetists of the Royal Australasian College of Surgeons (FARACS) was running in Hong Kong. PWH alone offered a mentor/mentee system, modular training and dedicated time for tutorials.

In the early 1980s, the Central Training Committee sent trainees to Australia or New Zealand for a period of up to six months for their mandatory three-month exposure to intensive care, as well as with taking the final examination and obtaining exposure to overseas anaesthesia subspecialties. This was discontinued when the local training facility became self-sufficient.

The ICU in this Department was later recognized for the compulsory intensive care component of the anaesthesia training provided by FARACS, and took in anaesthesia trainees from all Hong Kong hospitals for this part of their training. This department was also the only ICU outside Australia and New Zealand recognized to provide training for the Australasian Intensive Care Fellowship diploma. Tom Buckley was the first trainee.

Examinations

Candidates in Hong Kong in those days sat the Australian fellowship examinations. In our second year, four MOs passed the primary FFARACS

*Farewell dinner for Prof. T.E.
Oh in 1998*



examinations at their first attempt. Later candidates sat both the Australian and Hong Kong fellowship examinations. Trainees from this Department have consistently won the top prizes, including a few Renton prizes in the primary examinations, as well as the Don Harrison Prize medal for the intensive care examination from the Australian and New Zealand College of Anaesthetists (ANZCA), and prizes in the Intermediate Fellowship Examination and Final Fellowship examination of the Hong Kong College of Anaesthesiologists (HKCA).

National and International Visitors

A programme was set up to give anaesthetists and intensivists from Mainland China real hands-on experience in this department. These physicians were given the status of visiting scholars to the University. Later on many visitors from other Asian countries also visited to learn other skills, such as ultrasound techniques and regional anaesthesia.

The department regularly hosts distinguished visitors from various eminent institutions around the world in various capacities such as examiners, visiting professors, and visiting lecturers/tutors.

Quality Assurance

In 1990, this department implemented the first official anaesthesia quality-assurance programme in Hong Kong. We conducted regular peer reviews, drafted critical-incident reports, and held mortality and morbidity meetings on clinical services.

Medical Student Education

The bulk of this consisted of teaching the final-year students who were attached in small groups initially for four weeks. This teaching programme has evolved into a two-week anaesthesia and two-week intensive-care/acute-medicine format following the change in the medical curriculum at CUHK. Over the years, anaesthesia has also evolved from an unpopular specialty into an attractive specialty. Data from the HKCA shows that 22 per cent of practising specialists and 46 per cent of current trainees are CUHK graduates now contributing to the anaesthesia work force in Hong Kong. One of them (K.K. Lam) holds a Chief-of-Service post.

The Founding of the Hong Kong College of Anaesthesiologists

Many senior members of this department were on the Board of Studies for Anaesthesia and Intensive Care during the formative years of the HKCA. Prof. Thornton was the first Chairman. Many members have served the College in key positions since its incorporation.

Development of Anaesthesiology in Hong Kong from Our Perspective

This department had the opportunity to act as a catalyst for change in the development of standards in anaesthesia and in the health care system in general in Hong Kong.

In the early days, academic staff from overseas had imported non-traditional ways of organizing and running an anaesthesia and intensive care department. With time, these practices, such as 24-hour specialist cover for emergencies and obstetrics, have by and large become routine in our daily work. Specialist-led services are now not limited to anaesthesia alone;

*Department of Anaesthesia
and Intensive Care, Prince of
Wales Hospital, 2014*



instead it has become a norm in all Hospital Authority clinical departments. Administrators have also come to embrace the principle of adequate staffing for safe anaesthesia. Every anaesthesia department now runs a Critical Incident Reporting System, along with many other quality-assurance programmes. More hospitals are entrusting OT management to anaesthesia departments.

Through the efforts of our predecessors and current staff, our department has become internationally known. In the same way, our College has also put Hong Kong on the world map of anaesthesia.

Looking to the future, College and Society affairs are now solidly in the hands of colleagues spread evenly across all hospitals. Medical graduates now consider anaesthesia a popular specialty, and increasing numbers of bright candidates are attracted to the field. Anaesthesiology in Hong Kong is set for a bright future.

We thank Mr Daniel Tso and staff of the Office of the HKCA for providing data for analysis.



CHAPTER 33

Kwong Wah Hospital

Lee Ying-yin

Kwong Wah Hospital was built in 1911 and was the first hospital on the Kowloon peninsula to be set up by a charitable organization to serve the local Chinese residents. Although there is no exact record of when anaesthesia was first conducted, an operating room (labelled as 割症房) was provided for in the original hospital building at that time. After the Second World War, significant growth in population due to the influx of refugees from China caused an escalation in demand for hospital services. The hospital was redeveloped and expanded into three 12-storey towers in 1965. Since then the number of beds has soared to more than 1,000. Meanwhile, the original hospital building was converted into the Tung Wah Museum.

The hospital is a district general hospital delivering all common surgical specialties. In the 1970s an anaesthesia service was provided at the hospital by a general practitioner with experience in anaesthesia. In the early 1980s, the first specialist anaesthesiologist was appointed by the Tung Wah Group of Hospitals to head the anaesthesia service at three hospitals: Tung Wah Hospital, Tung Wah Eastern Hospital, and Kwong Wah Hospital. The founding of the Department of Anaesthesia in the hospital marked the beginning of



specialized anaesthesia services. In those days, one major problem the newly formed department encountered was the recruitment of staff, including both specialist anaesthesiologists as well as trainees. Anaesthesia was not a popular specialty in those days and nearly all medical officers who worked in the department were not destined to be trainees in anaesthesia. They looked on their service in the department as transitional while waiting for more popular posts in specialties such as internal medicine and surgery. Training for junior doctors was a rarity. Though faced with hurdles, the development of services did not come to a halt. In addition to the provision of anaesthesia services in the operating theatre, the department also managed cases of difficult intubation for resuscitation as well as provision of respiratory care to intubated cases in the Intensive Care Unit and the Neurosurgical High Dependency Unit. In the mid-1980s, a small recovery room was established with three beds in order to monitor patients during the post-operative period.

In the early 1990s, Dr Arthur So was appointed as Head of Department. He was the first local Chinese appointed to lead the department. In line with the development of anaesthesiology as a whole, there were rapid advancements in the scope of services as well as provision of specialized care in our department. Meanwhile, increasing numbers of specialists as well as trainees were attracted to the department. And since the mid-1990s our department has been the recognized training centre for fellowship of the

Hong Kong College of Anaesthesiologists. Since then there have been a number of important milestones in our development.

In 1997, an anaesthetic machine with electronic ventilator was first introduced to the department. This was used to replace the legendary Boyle's Machine with Manley Ventilator. This 'new' anaesthetic machine had a number of advantages over the Manley Ventilator, such as pressure-controlled ventilation and the ability to ventilate a wide range of patients from infants to adults as well as patients with poor lung compliance. Despite all these advantages, its introduction was not welcomed at the time by many staff who refused to try the 'new' anaesthetic machines at the start and insisted on swapping back to the Manley ventilator on a day-to-day basis. This attitude changed gradually with an improvement in training and an increase in the number of specialists in the department. Nowadays, the electronic ventilator has become standard equipment in the modern anaesthetic machine.

Our department pioneered the use of the Anaesthesia Information Management System (AIMS) in Hong Kong and this was first installed in 1998. It served the functions of networking physiological monitors in different operating rooms, data entry, and the creation of electronic anaesthesia records. Some skepticism surrounded the use of AIMS, such as the increased amount of time needed for data entry and creating anaesthesia records, the medico-legal implications of the capturing of artefacts, and the extremes of physiological data. These were overcome in a number of ways, including: careful design of the format of data entries and anaesthesia records, a series of training sessions, consideration of the feedback from all



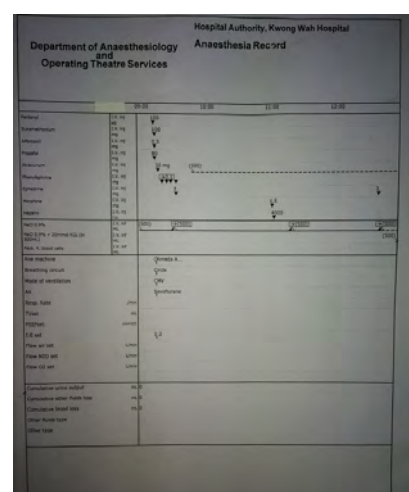
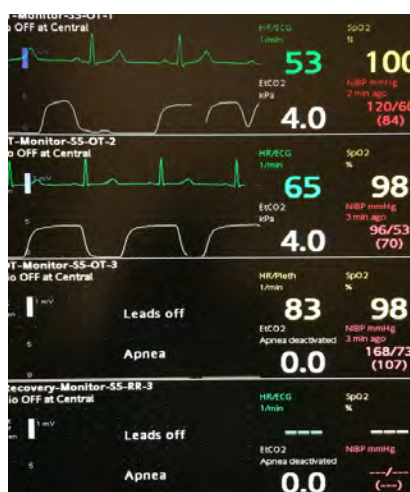
The front panel of the electronic ventilator (top) and the anaesthetic machine with electronic ventilator (bottom)



stakeholders in the implementation process, and gradual implementation in staggered phases. The whole system was successfully implemented in full within one year of installation and was welcomed by all staff. AIMS facilitated the supervision of junior anaesthesiologists by virtue of its ability to view the physiological monitor in different operating rooms and the central station. This was especially important in those days as the department consisted only of six specialist anaesthesiologists out of a total of 20 staff. The electronic anaesthesia records and comprehensive capturing of physiological data facilitated clinical audit and the quality-assurance programme as well as the review of outcomes regarding new drugs and equipment. In this way, the quality of the anaesthesia service was improved. In 2010, a major upgrading of AIMS was carried out. Additional features included the networking of electronic anaesthesia records; the ability to view the physiological monitors and electronic anaesthesia records at any workstation within the hospital intranet by LAN or Wi-Fi; clinical guidelines being implemented which can be accessed via all AIMS workstations; implementation of electronic records in the recovery room; and uploading of anaesthesia records to the Hospital Authority Clinical Management System with integration into the electronic patient records.

With the improvement in manpower and an increase in specialist anaesthesiologists' input in the department during the 1990s, our department expanded its services beyond the operating rooms into clinical management in the Intensive Care Unit as well as into pain management in general wards

*AIMS central monitor (left)
and printout of an electronic
anaesthesia record (right)*





The combined Chinese-Western Clinic for pain management

and the out-patient department. The department was subsequently renamed the Department of Anaesthesiology and Operating Theatre Services. Before the establishment of an independent Intensive Care Team at the hospital in 1997, our department had played an active role in the provision of respiratory support management and co-ordinating the care of patients between different clinical departments in the Intensive Care Unit. The Pain Management Centre was first established in 1996 to provide out-patient clinical services and to apply interventional procedures for pain management. An in-patient consultation service for pain management was also offered. Management services for acute pain started in 1997 for the delivery of pain management to patients in the post-operative period. Patient-controlled analgesia with intravenous narcotics and epidural analgesia were also made available. In the 21st century, the pain-management service was further expanded with the founding of the Pain Society in 2002 and the combined Chinese-Western Clinic for pain management in 2006. The Pain Society is a non-profit-making organization run by health-care workers, patients suffering from chronic pain, and patients' relatives. Its aim is to improve the quality of life of patients suffering from chronic pain.



Moving into the 21st century, our services in anaesthesia were further consolidated. In 2009, the Pre-anaesthesia Assessment Clinic was established to assess patients in the out-patient setting before anaesthesia. This helps to minimize the patient's hospital stay through better preparation of the patient before anaesthesia and subsequently improves the efficiency of the hospital. In addition to the provision of services in a busy department, medical research is also carried out in the department and the results are published in international medical journals.

Over the past 30 years, our department has evolved from a small department run by non-specialists providing only basic services in anaesthesia for surgery into a major department providing comprehensive anaesthesia services in operating theatres and beyond. The number of specialist anaesthesiologists has surged from one consultant in the 1980s, looking after three hospitals, to the present headcount of 14, which constitutes 50 per cent of the total number of staff. Our department continues to attract staff of a high calibre and who are dedicated to providing excellent service. With the future redevelopment of the hospital, our department will continue to flourish in the provision of high-quality services in anaesthesia and pain management to the members of our community.



CHAPTER 34

United Christian Hospital

Clement Yuan

Anaesthesia, medicine, and surgery are closely interrelated. Many anaesthesiologists were physicians or surgeons before taking up anaesthesia. In Hong Kong, we owe much to British, European, and American influences. Figures such as James Simpson, John Snow, Joseph Priestley, Humphrey Davy, Horace Wells, Crawford Long, and William Morton set the stage for the use of chloroform and ether. In Hong Kong, chloroform use was first documented on 8 March 1848 at the Seamen's Hospital, now the Ruttonjee Hospital. The anaesthetic machine was invented in 1912 by Gwathmey, improved by Boyle in 1917, and commercialized by the British Oxygen Company. Circuitry, accurate gas mixtures, and enhanced safety mechanisms were later applied.

The British came to China after their colonization of India, Sri Lanka, Burma, North America, and Australia. They set up trading posts in Canton, Shanghai, Peking, Macau, and Hong Kong. Missionaries were very much part of the newcomers, playing important roles in forging relations with the local inhabitants and providing social benefits and medical care, and building clinics. Dr William Lockhart, Dr Benjamin Hobson, and Dr Peter Parker



Disinfection work shown in this picture taken at the end of Po Hing Fong near Po Yan Street, 1894. The word 'DONE', meaning completion of the disinfection process, can be seen on the wall of the building on the extreme left

(USA) taught western medicine in China and built medical institutions which would be the forerunners of the hospitals still existing today in Canton, Shanghai, and Peking.

Britain prevailed in the Opium Wars (1839-42, 1856-60) but anti-foreign sentiment arose during the Boxer Rebellion (1900-01) when foreign missionaries were killed. Retaliation from a combined British, European, and US effort resulted in China ceding many ports and cities to foreign control. The British came to Hong Kong in 1841 and claimed Central District, the Peak, and the hills below for their own use. The local inhabitants were forced west to Sheung Wan and Western District. Later on, medical institutions were built in those districts to treat infections and epidemic diseases. One was the Government Civil Hospital, which was used by the British, civil servants, and police. Few local Chinese used it.

The period 1850–1911 was marked by overcrowding, infectious diseases, poor sanitation, mass migration, water shortages, bubonic plague,

and typhoons. In Tai Ping Shan Street, at the Kwong Fuk I-tze temple, the sick and the dead were piled up. A local group started a clinic, distributing free Chinese medicine, and obtained a government grant and land to build a hospital. The Tung Wah Hospital (TWH) opened in 1870. The Tung Wah group was a charity that provided a burial service and repatriated the dead to their homeland, and built schools providing free schooling for the poor. TWH expanded to include Kwong Wah Hospital in Kowloon in 1911 and Tung Wah Eastern (TWE) in Causeway Bay in 1929.

In 1881, a clinic was established by the London Missionary Society (LMS) to provide free medicine to local people. After his wife died of typhoid in 1884, an unofficial Executive Council member, Sir Kai Ho (MB ChM, Aberdeen), funded and pushed for a hospital. The Alice Memorial Hospital (AMH) was built at 77-81 Hollywood Road in 1887 and was managed by the LMS. Eminent physician the Rev. Dr Chalmers, Dr Cantlie of Charing Cross, and Dr Patrick Manson took charge. Private doctors were asked to work there. When the AMH opened, the Hong Kong College of Medicine (HKCM) was inaugurated on its premises. A maternity and O&G unit was also established there and run by Dr Hartigan and Dr Alice Hickling. These



*The Alice Memorial Maternity
Hospital*

would become part of the future Faculty of Medicine of the University of Hong Kong (HKU).

When AMH became overburdened, it merged with the new Nethersole Hospital (NH) on Bonham Road in 1893. Sir Kai Ho's sister provided funds for the support of a hospital on Breezy Path. Built in 1903, it was called the Ho Miu Ling Hospital. In 1954, combining with the NH and AMH, it became the Alice Ho Miu Ling Nethersole Hospital (AHNH). In the mid-1960s, Dr E.H. Paterson, from AHNH, planned the building of a 663-bed hospital, the United Christian Hospital (UCH). It was built in 1973. The AHNH was transformed into the new Pamela Youde Nethersole Eastern Hospital in 1993, which Dr Paterson planned and commissioned, but the Hospital Authority took it over. After AHNH was finally demolished, it reappeared as AHNH in Tai Po in 1997.

In the early years, UCH anaesthesiatic staff were recruited from British India, Sri Lanka, and Burma. Holding DA (UK) diplomas, they were dedicated, reliable, and hard-working. Initially, there were recruitment problems. But a visit by Professor John Nunn from the UK resulted in the approval of a 12-month training course leading to the FRCA, subject to the presence of two full-time consultant anaesthetists. Dr Michael Cooke, a Canadian Fellow who had spent two years at Grantham Hospital, joined Dr Ponniah SriRagavan FRCA at UCH.

Dr Paterson, Medical Superintendent of Alice Ho Miu Ling Nethersole Hospital in Tai Po, posing in front of the portraits of Sir Ho Kai and his wife Alice, the patrons of the hospital



This led to the employment of British graduates by the department for training purposes. Thus we saw four British trainees in the early 1980s. Later on, a visit by the accreditation committee of the Faculty of Anaesthetists of the RACS approved UCH for three training posts for the first year of training, but with a 1:1 supervision ratio. This sparked interest from Australian graduates. The department thus received its first Sydney, Melbourne, and Adelaide trainees.

At the time many types of local nerve block were carried out, including eye, femoral, sciatic nerve, iliac crest, brachial plexus, and penile blocks. A complete range of surgical specialties was available, with an emphasis on the huge load of geriatric and orthopaedic cases. Cleft-palate surgery performed by Dr E.H. Paterson was a specialty. Complex facio-maxillary surgery was introduced by dental surgeon Dr T.K. Chow. Obstetrics and emergency departments were also very busy.

In 1984, Professor A. Thornton, Dr Jean Horton and Dr Cindy Aun, appointed to the Department of Anaesthesia, Faculty of Medicine in the Chinese University of Hong Kong (CUHK), were scheduled to teach students at the new Prince of Wales Hospital in Shatin. As it did not open in time, UCH was recruited to train medical students for the CUHK. Professor Arthur Li and his surgeons and university anaesthetists joined UCH staff in providing patient care while teaching. Subsequently, trainee rotation started between the two hospitals. In 1988, Professor Teik Oh assumed the Chair of Anaesthesia at the CUHK. He asked our staff to join him at his Saturday academic meetings we accepted gladly. He, together with Prof. Arthur Li, forged strong collaboration between the two institutions, the latter becoming the Chairman of the UCMS Committee for many years. He forged a good collaboration between our departments and indeed one of our senior anaesthetists was later co-opted to work for a stint in his department.

After a review of our training programme, the Australian and New Zealand College of Anaesthetists (ANZCA) approved UCH for two years' training for each trainee. Following this, a collaboration between Queen Mary Hospital (QMH) and UCH resulted in an exchange trainee rotation between the two hospitals. Indeed, many senior staff from QMH and Grantham Hospital expressed a wish to work in UCH, and many did come over to work





*United Christian Hospital
Block S, 1999*

at UCH. Drs Joseph Lui, K.M. Ho, G. Fok and others became welcome additions to the department. Increasing numbers of trainees also came to the department.

The following were some of the important events subsequently occurring at UCH and in Hong Kong.

1. The Hospital Authority was established in 1991, with staff given the choice to join or not join.
2. A preparatory Board of Studies formulated the constitution before founding the Hong Kong College of Anaesthesiologists.
3. The hospital extension, a 1,400-bed facility in new block S, to be planned and built by 1999.
4. Day surgery centre, pain management team and obstetric pain service created at UCH.
5. A Chair of Anaesthesia was established at HKU. Joseph Yang was first chair professor, then Ross Holland.

The extension project was a new structure and building to replace the old hospital. It includes a new theatre complex with centralised gas supplies

and scavenging. Our overriding concern was patient and staff safety. We demanded zero theatre pollution. Detailed specification of all equipment was undertaken. Faults in anaesthetic machines in recovery and changing room layout were corrected. The use of oximeters, oxygen monitors, capnography, agent-gas monitors, electrocardiography, non-invasive blood pressure, neuromuscular monitors, invasive monitoring, and cerebral monitors has been a great advance, whereas previously we relied on our senses and experience alone. Safer drugs and intravenous infusion techniques have heralded a new era in anaesthesia, which has thus become much safer for patients.

The writer has tried to link the missionary movement and charitable organizations in Hong Kong with the formation of the many hospitals concentrated in Sheung Wan and Western District. Time and space constraints limit a more detailed and rich account. I would like to thank Dr Jean Allison for inviting me to UCH in 1980 while I was working in her unit at the AHNH. Since retiring in 2003, I note that a second expansion project at UCH is taking place. And many 'old' staff in the unit at UCH have now taken leading positions in the Hospital Authority.

I thank the Society and College for asking me to write about UCH, its historical origins, and its development in anaesthesia. That Hong Kong people enjoy the longest lifespan of any western community in a highly intelligent society can be attributed in many ways to improvements in its quality assurance and medical and health systems. All this in a vibrant, fiscally prudent economy with full support from China. So we can be very confident about Hong Kong's future.





CHAPTER 35

The Duchess of Kent Children's Hospital

Bernadette F.M. Chow

Located at Sandy Bay in Pokfulam, in close proximity to the University of Hong Kong's (HKU's) Queen Mary Hospital, the Duchess of Kent Children's Hospital (DKCH) has been one of the Hospital Authority's West Cluster hospitals since 1991. Before that the hospital was a subvented hospital founded and run by the Society for the Relief of Disabled Children (SRDC). It was opened in 1956 thanks to the aspirations of two great men; Professor A.R. Hodgson (Head of the HKU Department of Surgery Orthopaedic and Trauma Unit) and Mr Noel Croucher (Chairman of the Hong Kong Stock Exchange), who aimed to treat and to provide a convalescent home for disabled children.

During the 1950s, infectious diseases spread throughout the colony, and many of the children who came to the convalescent home at Sandy Bay were disabled with poliomyelitis, tuberculosis (TB) of the spine, and limb and bone infections. When surgery was required, the children were transferred to Queen Mary Hospital (QMH) or the Ruttonjee Sanatorium. There were huge demands on operating time but only two children's beds at QMH dedicated to orthopaedic cases. In order to solve this problem,



DKCH annual Christmas party organized by SRDC and Hospital Staff Committee. There was a tradition that Santa would be brought by a different vehicle each year to the hospital to distribute presents to the children. Here staff from different departments (managerial, nursing, and medical) join patients to await the arrival of Santa on his 'sleigh'

SRDC expanded the convalescent home into a hospital with an operating theatre. The first operation to be performed at the 'Sandy Bay Children's Orthopaedic Hospital and Convalescent Home' took place on 25 July 1968. Following the visit of the Duchess of Kent in 1974, the hospital then took its present name. In the early days, the Columban Catholic Sisters ran the hospital. Sister Barbara O'Sullivan was the first matron from 1966 to 1975, running the hospital with another physiotherapist and a few nurses, while administration was handled by the Red Cross on behalf of the SRDC. Prof. Hodgson and his orthopaedic team from QMH rendered their services free of charge. The anaesthetists were also drawn from QMH, among them Dr Zoltan Lett who recalled that every time they had to transport all anaesthetic equipment, including the Boyle's machine, down to DKCH by van.

Over the years, DKCH has made many medical breakthroughs. The first of these was the 'Hong Kong Operation', a ground-breaking spinal frontal-approach technique pioneered by Prof. Hodgson and Dr Arthur Yau for TB spine, then Dr John O'Brien's 'halo-pelvic traction', both of which put Sandy Bay Hospital on the world medical map. Sandy Bay became a 'mecca', attracting generations of overseas orthopaedic surgeons who came for visits, conferences or training, and these interactions have continued till this day. In 1993, professors John Leong and Keith D.K. Luk established the Centre for Spinal Disorders, a multidisciplinary centre treating patients with spinal problems which was the first in Southeast Asia. It is also the territory's tertiary

referral centre for spinal disorders. And now, DKCH is world renowned for its services and research into spinal disorders, paediatric orthopaedic problems, cerebral palsy, leg-length inequalities, and congenital skeletal abnormalities. Various complicated, innovative spinal and paediatric orthopaedic, and paediatric dental surgeries are regularly performed at the hospital.

In 1987, the HKU Department of Paediatrics under Professor Virginia Wong built Hong Kong island's first Child Assessment Centre, which later became the Children's Habilitation Institute (CHI). CHI is the referral centre for children with developmental or neuromuscular problems, e.g., muscular dystrophies. It has garnered global recognition and serves as a model centre for habilitation and 'rehabilitation' for chronically handicapped children in China and Asia.

Miraculously, Sandy Bay has transformed from a tiny convalescent home into a highly specialized world-famous centre for spinal and paediatric orthopaedic disorders and paediatric neuro-habilitation. With financial help from the SRDC, DKCH now possesses the most up-to-date facilities, along with the orthopaedic expertise, experience, and infrastructure needed to treat and operate on the more complex spinal cases. It was the wish of professors

DKCH Annual Fair Day on the first weekend of November, a time for fundraising and reunion with old friends: (from left) C.C. Yu (HCE MMRC), Y.H. Li, B. Chow, K. So (HAHO DDO), Prof. Arthur Yau (founder of DKCH), M.L. Fok (SRDC), W. Goh (COS Paed), R. Law (GM Finance), and J. Fu



Leong and Luk to provide integrated and holistic care at Sandy Bay for the more complicated spinal surgical cases where the patients are already familiar with the environment and the supporting health personnel. A consultant-anaesthetist post was created at DKCH in 1995 to strengthen the anaesthesia services in support of the ever-increasing surgical endeavours.

At that time, the anaesthesia team consisted of two people who were responsible mainly for running the two operating theatres. Dr Sue Gunawardene was the senior anaesthetist and worked devotedly at the hospital for 17 years until she retired in 2004. Popular among the patients, who called her 'Auntie Sue', she lived on site and would be called upon for help at night by the nurses whenever there was any medical emergency. Sue was the 'go to' person for all patients and nurses. The other anaesthesia post would normally be occupied by overseas-posting fellowship registrars who came for specialized experience before their higher specialist training in their home countries. Recruitment could be difficult at times and this did, on occasions, interrupt the operating schedule.

I finished my Higher Specialist Training in anaesthesia in England and returned to Hong Kong to work at QMH in 1994. The new post at DKCH attracted a lot of applicants. Out of curiosity, I went to DKCH for a visit, even though, as a relative newcomer to Hong Kong, I felt my chances of success were pretty slim. Apart from the old building, I was totally captivated by the spirit and atmosphere there—the 'Sandy Bay Spirit'. The hospital was quite different from other hospitals I had worked at; everybody was really friendly and helpful, even to a stranger. The children looked so cheerful in spite of their various disabilities and having to wear a lot of strange-looking prostheses. I had an interview with Professor Luk, the then Hospital Chief Executive; I shared his vision and felt that there were many areas where I could contribute towards enhancing patient care. I was fortunate to secure the consultant and chief-of-service post and worked there until 2006, a period when I derived tremendous job satisfaction.

One of the treasures of Sandy Bay is the nursing team, led by Ms Julia Fu, the General Manager of Nursing; they are the key players making everything possible. They are very professional and yet open-minded, receptive, dedicated, and adaptable. Without their help and devotion, the hospital would not have achieved as much as it has. At DKCH, getting things done was relative easy as



DKCH Governing and Management members at the hospital annual dinner: H. Fung (GM AH), B. Chow (COS Anaes), J. Fu (GM N), K. Luk (HCE), L. Hsu (chairman, SRDC), Y. Chow (CCE), Y.H. Li (COS Orth)



all activities are patient-centred. Staff of all disciplines from the top down are dedicated, constructive, and helpful; communication is direct with minimal bureaucracy and there is close liaison between departments.

With these strengths and the clinical expertise available, DKCH has a lot of potential for advancing our specialty. I nurtured the vision of building a dynamic, forward-looking but convivial department through which we could provide a safe, high-quality anaesthesia service for these high-risk patients. I planned on expanding the scope of scientific enquiry through education and research, which I believed could make our work more meaningful. I recognized that getting college accreditation was paramount for its further development. The new department had one consultant, one senior medical officer, and one medical officer.

With the help of SRDC, the facilities (anaesthetic machines, monitoring machines and equipment) in the operating and recovery rooms were updated. To improve peri-operative care, a pre-admission anaesthetic consultation clinic was set up in 1996 for high-risk cases. A pre-admission autologous blood donation programme was also implemented for all idiopathic scoliosis patients, which proved to be more cost effective and most welcomed by the patients. High-risk in-patients were encouraged to be seen early and better pre-operative optimization was possible. The cancellation rate was reduced significantly and scheduling of operations was also easier. The upgraded High

Dependency Unit (HDU) was run by the anaesthesia team which allowed for continuity of care. An acute-pain service was initiated at the same time, but use of the pain-relief devices (mainly nurse-controlled analgesia pumps) was first restricted to HDU patients only. Regional blocks were used whenever possible. Quality assurance was monitored by the introduction of various guidelines, protocols, incident reporting, and outcome-auditing activities.

Being geographically close to HKU/QMH was a real advantage, both clinically and academically. The HKU anaesthesia department under Professor Michael Irwin has close links with our department and provided us with unstinting support in education and research. Research activities were a norm at DKCH where the orthopaedic research centre is based. The staff at DKCH also welcomed research, which is unique for this hospital, and a substantial number of research papers were generated by the department. We were involved in teaching clinical and resuscitation skills for both inside and outside theatres to medical students, nurses, and other allied health workers. We also participated in the continuing medical education activities at QMH. In 1997, we were granted accreditation of training status by both the Australian and New Zealand College of Anaesthetists and the Hong Kong College of Anaesthesiologists. This went a long way towards solving our manpower problem, especially after we formed an anaesthesia training-rotation programme with QMH. The rotating trainees were a breath of fresh



Trainees from QMH spend six months at DKCH as part of their vocational rotation:
G. Wong, T. Chan, F. Lui,
L. Sin, A. Cheng, Y.F. Chung,
L. Fung



air and brought with them lots of new ideas which further improved our services for our children.

Participating in the various changes at the hospital, we collaborated with the Spine Centre and initiated a chronic-pain service with in-patient consultation service and an out-patient pain clinic. This was an area where I felt we could have contributed more to the benefit of our patients if we had more manpower. The other major advance was providing the service for the pulmonary rehabilitation programme at CHI. This was a rather challenging but ultimately rewarding experience. We took part in the planning, preparation, and then escorting of these ventilator-dependent children to classes at the school across the road from the hospital during their hospital stay. We went on ward rounds with the paediatricians and our department provided cover for these children's ventilator problems when the pediatricians were not on site.

With only three of us to cover all the activities, it was hard and challenging work. We took on our fair share of major orthopaedic surgeries (e.g., major spinal corrective surgery for Duchenne muscular-dystrophic children) at a remote site where immediate help from QMH was not always available. But with careful screening, optimization, meticulous care, close co-operation between surgeons and anaesthetists, and expert help from all other health personnel, we managed to achieve successful outcomes for many of our high-risk patients. At DKCH we provided invaluable experience for our trainees who were involved with the entire peri-operative patient care scenario and were able to appreciate how anaesthetic care could materially impact on the success or otherwise of these complicated operations. It was indeed a rewarding experience for all.

DKCH is special because of its 'Sandy Bay Spirit'. It is like a big family filled with respect, harmony, and passion. Everybody treasures the multidisciplinary collaboration for the benefit of the patients. It is the unflinching dedication, impeccable work ethic, the history of pioneering medical breakthroughs, the professional pride in providing the highest standard of care, and the research and training coupled with the vitality and courage of the sick children that make DK a special place. We all made lifelong friends here: colleagues, trainees, and patients. This camaraderie and selfless culture is a rarity in our present health system and hopefully this spirit will remain despite all the renovation and re-organization.



CHAPTER 36

Pamela Youde Nethersole Eastern Hospital

Walking with Nethersole: A Journey from Bonham Road to Lok Man Road

Wallace Chiu

The Alice Ho Miu Ling Hospital at Bonham Road enjoyed a long and distinguished history spanning over 100 years. While the ‘new Nethersole’ at a new site in Tai Po was being planned, Nethersole staff were invited to assist with the commissioning of the new Pamela Youde Hospital at Lok Man Road, Chaiwan, in Eastern District. Since the Tai Po Hospital would not be ready for several more years, decanting to another new hospital was a welcome move. The new hospital at Lok Man Road was subsequently named Pamela Youde Nethersole Eastern Hospital (PYNEH), reflecting the Nethersole involvement. The Nethersole at Bonham Road was closed in 1992 and PYNEH was officially opened in October 1993.

The Nethersole at Bonham Road was well known for its obstetric service. When I first joined the Nethersole at Bonham Road in 1988, the Department of Anaesthesia was a very small department with no more than half a dozen anaesthetists. Despite

limited manpower, 24-hour epidural service was always available adding quality to the high standard obstetric service. Spinal anaesthesia, being safer, was our preferred mode of anaesthesia for Caesarean section while general anaesthesia was still used by most others. We also pioneered a Day Surgery Service for gynaecology patients in the late 1980s when ambulatory service in Hong Kong was still in its infancy. Anaesthetists also looked after the four-bed 'intensive care unit' on a part-time basis.

In contrast to the 'old Nethersole' at Bonham Road, the PYNEH in 1993 was labelled a state-of-the-art 'high tech' hospital. The new hospital faced the usual teething problems, with manpower shortage being the most critical. This was a chronic issue for anaesthesia which, in those days, was not a popular specialty for local graduates. Overseas recruitment was the norm whenever senior-medical-officer positions (now called associate consultant) were advertised. There being perpetually vacant positions in many parts of Hong Kong, overseas applicants often had the luxury to choose the posts or hospitals they preferred. Few local trainees were willing to work in a new hospital with an uncertain training status. Facing a shortage of junior staff, frontline work came to depend on a handful of service medical officers, some of whom were also recruited from overseas. During the first few years of PYNEH, the anaesthesia department was highly international with anaesthetists from Malaysia, Singapore, Australia, New Zealand, Mauritius, Myanmar, and the United Kingdom forming the majority of the workforce. Before the birth of the Hong Kong College of Anaesthesiologists (HKCA), possession of a recognized overseas diploma in anaesthesia would qualify a doctor for a senior appointment. The Australian, British, and Irish fellowships were the most popular when local anaesthetists wished to train for a higher qualification.

With the rapid development of new services at the new hospital, increasing demands were placed on the anaesthesia service. Phased commissioning of a comprehensive range of surgical disciplines (ENT, oral maxillofacial surgery, neurosurgery, thoracic surgery, and paediatric surgery) took place over the first few years. Subspecialty development in anaesthesia went hand in hand with the addition of new surgical subspecialties and offered more interesting learning opportunities and experience for trainees. Together with a better structured local training programme after the inauguration of the HKCA, the

department and also the specialty were becoming increasingly popular among local graduates. It was a blessing that local graduates were gaining an interest in entering our specialty as, after the 1997 handover, foreign graduates were not licensed to work in Hong Kong. The overseas anaesthetists who joined us in the early days were the fortunate ones. Many of them are continuing their careers in Hong Kong and are doing fine. Some have taken up senior positions in public hospitals and a number have gone into private practice.

After the Hospital Authority had taken over the public health service in the early 1990s, government health funding grew astronomically and there was a drive to improve efficiency and productivity. Day surgery and same-day surgery were advocated at that time to reduce the length of stay of surgical patients. While more patients were admitted only on the day of surgery, a pre-admission service (PAS) was introduced to manage their pre-operative care. The design of PYNEH in the 1980s had not taken into account this new development and a day hospital was not included in the architecture. To overcome this deficiency, in-patient wards of different departments were converted into specialty day wards where ambulatory care services could be carried out. The PAS at PYNEH is a multi-disciplinary one-stop day programme. Patients booked for PAS are admitted to surgical day wards several days before their scheduled operation. Pre-operative work-up by anaesthetists and surgeons and consultations with other departments are all performed on the same day. Presently, our pre-admission service is handling almost 30 per cent of our elective cases. Recently we have initiated a special pre-admission programme for patients undergoing major vascular surgery. More thorough cardiac assessments and peri-operative advice are provided by colleagues trained for that programme. With anaesthetists taking more ownership of peri-operative care, there are ample opportunities to further develop the practice of peri-operative medicine.

The acute and chronic pain service in PYNEH commenced together with the anaesthesia service when the hospital opened in 1993. With substantial funding available for a new hospital to procure new equipment, patient-controlled analgesia (PCA) and epidural opioid analgesia were freely available for patients requiring the acute pain service. At our peak, nearly all patients who underwent major surgery under general anaesthesia were prescribed some form of acute-pain therapy. However, with the gradual replacement



of open surgery with the less painful minimally invasive approach, demand for the acute-pain service is declining. Furthermore, with increased use of ultrasound-guided regional anaesthesia, the need for traditional analgesics for post-operative pain control is also reduced. In contrast to the acute-pain service, the workload for the chronic-pain service has shown a steady rise over the years as people become more educated about 'pain' and more aware of the availability of the pain service within public hospitals. Currently at PYNEH, there are pain clinics, an occupational health clinic and combined oncology clinic to cater for different types of requirement. Interventional procedures are performed at scheduled sessions in the operating theatre with imaging support. Multi-disciplinary pain meetings are held regularly to discuss difficult and complicated cases. The department has been accredited for pain-management training by the HKCA since 2003.

Although intensive-care medicine is now a separate specialty on its own, it was once recognized as a subspecialty under anaesthesia. The intensive care unit (ICU) at PYNEH started off in 1993 as an 'open' ICU. The parent teams would look after their own patients, with anaesthetists responsible for cardiorespiratory and other more specialized care. There was no dedicated medical staff on call for the ICU until several months later when the department could recruit sufficient junior staff to form an ICU roster. Still without a full-time ICU specialist, senior cover was provided by the on-call anaesthesia senior medical officers who had to look after both emergency service and the ICU at the same time. Full-time ICU specialist cover was not available until August 1994, when the first ICU consultant was appointed to the department of anaesthesia. In the year 2006, the ICU was established as an independent department separate from the anaesthesia department.

The hospital celebrated its twentieth anniversary in 2013. Looking back, I see major developments in anaesthetics practice with new drugs, equipment, and technology with tremendous improvement in the quality of anaesthetic care. Subspecialization has made significant progress. Outside the operating room, anaesthetists are now working in pain, intensive care and peri-operative medicine. Resuscitation and trauma care also require our expert service. In addition to our core duty as an anaesthetic care provider, we have established ourselves as co-ordinators and managers of operating theatre services. For senior anaesthetists working in the public sector, these managerial roles

are becoming increasingly tedious and demanding. Resources, especially manpower, are always in short supply but demand from users of our services is forever growing. Besides, there are performance and budgetary targets to be met. Much effort and skill are also needed to maintain morale, harmony, team-work, and discipline in a multi-specialty environment. Quality and risk management, and patient and medication safety have become our major responsibilities. Entrusted with these expanded roles, anaesthetists are presented with new challenges and learning opportunities. Some colleagues may find new directions in their career development. More importantly, our specialty has consistently demonstrated credibility and a capability to earn the professional recognition and respect that we deserve today.





CHAPTER 37

Alice Ho Miu Ling Nethersole Hospital

H.Y. So



1997 was an important year: Hong Kong changed its sovereignty, Princess Diana lost her life, and the Alice Ho Miu Ling Nethersole Hospital (AHNH) was relocated to Tai Po after serving the citizens of Hong Kong Island for 110 years. In that year, we established the new Department of Anaesthesiology, Intensive Care and Operating Services at AHNH. As a new department with no history, we were in a good position to bring in new ideas and practices.

Traditionally, department heads and the department operations managers decided on the plan and the staff simply followed; doctors and nurses seldom worked together. However, we believed that everyone should contribute to our plan and that doctors and nurses must work together. So we organized senior and junior doctors and nurses into teams, each focusing on a clinical area. This was initially very difficult and we had to put in a lot of effort. But after two years, I was pleased to see that all the teams actually initiated their own planning activities and chased me to discuss their plans.

We also believed in the empowerment of nurses because they were closer to the patients. This was especially important in a department where medical manpower was limited. We designed a number of protocol-driven



procedures in which nurses, after appropriate training, were asked to make adjustments according to protocol. These protocols were refined according to our evaluation. One example in the Intensive Care Unit (ICU) was the titration of insulin for tighter control of the glucose level. I was amazed by the dedication of those involved—they actually designed their own slide-rule to simplify the tedious procedure. Another example in the operating theatre (OT) was the protocol-driven intravenous (IV) morphine injection in the recovery room. I later found that we were the first OT that allowed nurses to give IV morphine to patients by protocol. Ms Sammei Tam worked on this project, for which she won the Hospital Authority Head Office (HAHO) President's Award in 1999.

OT opening in 1997

In 1998, the Central Nursing Department of AHNH invited the Hong Kong Productivity Council to run a series of workshops on document control. We found that very useful and started designing our own document template and document-control system. While there was initially some resistance, staff soon saw the value of the system. This was later adapted as the document-control system for the New Territories East Cluster.



Our department was responsible for management of the Operating Services, and the DOM (Departmental Operations Manager) reported directly to the Chief of Service. We used the Operating Theatre Management Committee as the forum for liaising with the users. The CEPOD (Confidential Enquiry into Perioperative Deaths) classification of operations had just been published the year before and we adopted that, set performance targets, and made arrangements for those targets to be met. We regularly reviewed the findings in the Committee and, most of the time, we were able to achieve our targets. We also looked into the issue of long operating hours and this was resolved quite harmoniously. Surgeons who anticipated a 12-hour operation could inform the OT in advance and we arranged staff to cover that. The surgeons would cut short their next list in compensation.

We then initiated a formal arrangement for transfer of patients between the ICUs of AHNH and Prince of Wales Hospital. This was the prototype on which the HAHO guideline on inter-hospital transfer of the critically ill was based.

We also put a lot of effort into training and staff development. New doctors were all given a manual before they joined the department. They also followed a structured orientation. The department was quite well equipped for airway management by the standard then prevailing. Being a new unit

meant we had the opportunity to buy more modern equipment. We seized that opportunity and organized airway-management workshops even before the Hong Kong College of Anaesthesiologists. Continuous renal replacement therapy (CRRT) was just starting to take off in the 1990s. We were the first ICU in HA to buy third-generation CRRT machines. In order to get our staff to familiarize themselves with CRRT, we organized several workshops using videos, lectures, and live demonstrations. I was fascinated by how enthusiastic and imaginative our staff were. After familiarizing with the basics, we then explored for further improvement. We were one of the first ICUs in Hong Kong to introduce citrate anticoagulation for CRRT. The first patient we put on citrate anticoagulation was a young man suffering from septic shock and multi-organ failure due to trauma. We had to change the filter three times a day while using heparin as the anticoagulant. After changing to citrate, the filter did not clot for a whole week (this may not be acceptable nowadays)!

We understood the importance of communication and the limitations of classroom teaching. Some suggested using actors to help train doctors in communication techniques. One of our nursing officers, Ms Lily Ngai, had a good connection with a group of amateur actors and she invited three of them to help us. We wrote up scenarios and used our interview rooms as the venue. Some staff brought in a video camera and extension cords so that we



Airway workshop





could all observe everything on a monitor placed in another room without interrupting the interview. The actors then debriefed the doctors—an early form of simulation. Because of our proximity to the Coronary Care Unit and a good relationship with our cardiologist, we were able to get ourselves trained in echocardiography. Dr Dick Lee and I even took the National Board Examinations in Echocardiography in the USA and passed. We then started our own Echocardiography Course for our own staff.

We also introduced regular follow-up of patients on the ward after their discharge from the ICU. We would try to optimize patient care so as preclude their readmission into the ICU. This experience was an education for our doctors because we could see how we transformed critically ill patients back into normal people. We later found this described in the literature and so we were actually ahead of the field by two to three years.

Under the leadership of Dr P.P. Chen, there were rapid developments in our pain-management services, initially on acute pain and then followed by chronic pain. Dr Christopher Chu and his team started using PDA (Personal Digital Assistant, i.e., an electronic hand-held information device) to capture data and found that very effective. AHNH also became the first hospital with a dedicated Pain Management Centre in 2002 and, in the same year,

the first multidisciplinary pain-management programme in Hong Kong was started there. I was also impressed by the Critical Incidents Reporting System which was introduced right after we established the department. While this was by no means original, the atmosphere was really good. Staff found the sharing sessions most educational and, because they felt so secure, they often volunteered to tell others more about the case even when it was meant to be anonymous.

AHNH emphasized very much the concept of holistic care. Our department also believed in that and I was overwhelmed by the passion of our staff in every position. This was reflected partly by the couplets (對聯) on the wall outside the Operating Theatre: 手雖云妙可回春，仍賴片片慈心，始得舒病人痛苦。術堪稱仁能濟世，若非人人協力，何以保患者安全。(We cannot rely only on technique but also on our love to heal our patients. We cannot rely only on capable individuals but also on teamwork to ensure patient safety); and those outside the ICU: 深明醫道，杏雨同沾，膏肓危疾猶可治。切諳護理，春風共沐，心靈重創亦能療。(We not only

Y2K photo



understand how to manage patients' critical illnesses but also their damaged minds). Ms Gigi Fung even arranged for volunteers to play the violin to entertain patients every week.

The year 2003 of course introduced a major change to the department. A number of staff at AHNH had been infected by SARS (severe acute respiratory syndrome) and morale was low. I was appointed Infection Control Officer. I had to scramble to equip myself with some basic knowledge of infection control and started a train-the-trainer course to cascade the learning. Also, an inspection team was set up to pick up on issues and get the subject officer to have them resolved quickly. So these were our duties in addition to management of patients in the OT and ICU. I was also amazed by the creativity of our staff in the search for new ways to reduce the risk of SARS transmission. After SARS, there was a major restructuring within the cluster. The surgical and anaesthesia services were mostly relocated to the North District Hospital. Many staff were also transferred to the ICU of North District Hospital. Despite that, the staff that remained at AHNH remain dedicated to their work, and those who left continued to be good friends. Maybe our initial team-building, our logo, our song, and our social gatherings had all contributed to that. AHNH is a small cozy hospital with a big capacity for innovation—yes, I agree entirely with Dr H.M. Lee.



CHAPTER 38

Tuen Mun Hospital

Sathasivam Anandaciva

Tuen Mun Hospital (TMH) is an acute hospital with a designed capacity of 1,915 beds serving Tuen Mun town and the north-west New Territories. The planning of the hospital complex began in 1979. After more than ten years of planning and commissioning, the hospital became operational and admitted the first patients on 8 March 1990. The Day Procedure Unit was opened in 1990 to provide day-care services to patients. The 24-hour accident and emergency services were initiated in January 1992.

Anaesthesia services began at Tuen Mun Hospital in March 1990. A total of nine operating theatres were built in three floors, and an additional obstetric theatre was commissioned on the eighth floor of the 11-storey main block.

Initially, anaesthesia services were provided for surgery, orthopaedic and trauma, and obstetrics and gynaecology. Neuro-anaesthesia services commenced on December 1991 and a five-bed intensive care unit (ICU) was also commissioned in that month. Obstetric epidural services were initiated in August 1992.

In 1993, as the scope of services was extended, the management of the hospitals in Hong Kong changed from government control to Hospital Authority.



The first management team was thus established and the Chief of Service for Anaesthesia and ICU, Dr S. Anandaciva, was appointed.

Anaesthesia was gradually extended to all the various specialties, including urology, thoracic surgery, paediatric surgery, vascular surgery, plastic and reconstructive surgery, orthopaedic surgery and traumatology, neurosurgery, ENT surgery, ophthalmology, dental, and maxillo-facial surgery. Anaesthesia in remote areas, that is, intervention radiology, electroconvulsive therapy, radiotherapy, and cardiac catheterization laboratory were also provided. Other services included labour analgesia and post-operative pain services. Chronic pain services and intervention pain services were commenced in November 1994.

The TMH Department of Anaesthesia and ICU pioneered several service improvements for patients in Hong Kong. The first trauma resuscitation team in Hong Kong was established in August 1994 by the Department of Anaesthesia and ICU, and Accident and Emergency Medicine. The pre-operative assessment clinic was introduced in 1996, and day surgery was established in 1997. In the same year, the Department introduced a scheme by which parents were allowed to accompany paediatric cases until the child was induced (the first time such a practice was allowed in Hong Kong). This has contributed to a considerable improvement in patient experience.

The Department of Anaesthesia and ICU introduced a paradigm shift by training most of the nurses at TMH in cardio-pulmonary cerebral resuscitation (CPCR), and authorizing them to resuscitate using intravenous medications and also defibrillate in case of cardiac arrests. This programme was initiated in 1997 and has significantly reduced the delay in providing essential life-saving treatment for critically ill patients.

Apart from active participation in patient care, the Department also provides a rigorous training programme for the staff, as well as quality-assurance and clinical-improvement programmes.

The Department was duly recognized for its training for the postgraduate fellowship by the Hong Kong College of Anaesthesiologists in 1998, and by the Australian and New Zealand College of Anaesthetists in April 1998.

Over time the Department has continued to grow and extend its range of services. The number of ICU beds was progressively increased to 14 beds and, since the SARS epidemic, a separate isolation ICU with 12 beds has been established. The ICU is duly recognized by both the Hong Kong and Australian colleges of intensive care for training.

*ICU staff after the installation
of Clinical Information System*





*Training nurses in advanced
airway management*

The unit is fully equipped with state-of-the-art technology and is managed by a multi-disciplinary health-care team of physicians, nurses, and other support staff, who provide comprehensive and collaborative care for acute emergencies and illnesses.

Computerized clinical archiving was introduced in the ICU in 1999, and subsequently in the operating theatres in the first quarter of 2011.

The Department has also provided anaesthesia services to our sister Hospital, Pok Oi, since October 2007, and the ICU at TMH now also supports a five-bed HDU (high-dependency unit)/ICU at Pok Oi.

Currently five operating theatres are functioning and intervention pain procedures are carried out every Monday at this hospital with a pain-clinic service.

The ethos of the Department of Anaesthesia and ICU is to achieve excellence in all areas of care. This goal is supported by a focus on the training and development of staff, and the efficient use of time and resources to provide our patients with high-quality, safe, and accessible health care.



CHAPTER 39

Tseung Kwan O Hospital

Cheng Hung-kai

As an anaesthetist who commenced his career in anaesthesia in the mid-1980s, I have been privileged to witness the rapid progress of and advancements in anaesthesia in its various aspects, including technology, popularity, training, and quality assurance, to name a few.

The Department of Anaesthesia of Tseung Kwan O Hospital was established at the turn of the century, in the year 2000. Being the youngest anaesthesia department in this locality, it was fortunate to be equipped with the latest advances in technology. The integrated anaesthetic machines bring us convenience, accuracy, and safer anaesthesia. These machines have built-in electronic rotameters, sophisticated physiological monitors, breathing circuits, computerized ventilators, and various alarms. These contrast sharply with the relatively primitive Boyle's anaesthetic machine and stand-alone bellows-type ventilator, ECG monitor, and manual sphygmomanometer, which I had a taste of when I first started my training.

Thanks to the designers of the hospital and the department, we have expertly laid network cables which made the implementation of the Anaesthesia Clinical Information System so much easier. The system not only

helps free the anaesthetist's hands from manual charting but also gives us a clear and accurate recording of vital signs. Furthermore, data can be collected easily according to whatever variable is of interest and subsequent auditing and data analysis can be done with just a flick of the finger.

Another striking change in anaesthesia is its popularity. In the earlier days, not many interns were willing to become anaesthetists. That meant that interns were frequently 'pressed into service' while waiting for posts in their favourite specialties. Indeed, I was one of the few 'clever' guys who went to the consultant in-charge, Dr Justin Chan at that time, asking for a post! Having expatriates from countries all over the world working in anaesthesia was unique among all medical specialties in Hong Kong. In the earlier days, our department encompassed a varied group of anaesthetists coming from different countries, such as the UK, Australia, India, Sri Lanka, Singapore, and Malaysia. This 'United Nations' department became history as, over the last two decades, anaesthesia gradually became one of the most popular specialties.

*Expatriate anaesthetists:
Drs Foster, Jacob, and Hla*



Training is unequivocally the most important element enabling a specialty to thrive. The foundation of the Hong Kong College of Anaesthesiologists (HKCA) in 1989 ushered in a new era in anaesthesia training. Trainees in our department, like most of their colleagues in Hong Kong, are trained under the HKCA rather than the Australian and New Zealand College of Anaesthetists. Nowadays, trainees may complete every part of their training in Hong Kong and the high quality of anaesthesia training, together with operational and administrative convenience, is maintained to a high standard.

On top of clinical competence, training on the academic side is also incorporated into the new curriculum. Today's trainees all get a taste of conducting clinical research or studies—our trainees and younger fellows nowadays are undoubtedly placed at a better starting point in their careers.

Simulation training gives trainees a new and enlightening perspective on how to handle real medical situations. Through high-fidelity scenarios that simulate genuine crisis management, trainees can learn not only medical management, but also the dynamics of collaboration, communication, and teamwork among other health care providers.

Today we have a Quality and Safety Committee, hospital accreditation programmes, and quality-improvement projects, etc. We have developed numerous guidelines and protocols on clinical matters, training, and administrative areas. As a result we have standardized our practice and can assure the quality of our service. But the situation 30 years ago was exactly the other way round. Clinical guidelines were exceptional. Anaesthetists simply 'read, saw, and tried' the various techniques of interest! Young fellows explored the science of anaesthesia with curiosity and passion.

One further notable improvement in quality and safety has been adopting specialist onsite calls. In the early days, having a second-year trainee take care of a first-year trainee in the hospital during on-call duty was not an infrequent occurrence. Nowadays, this practice is obviously not acceptable. The marked reduction in serious complications over the years has proved that the investment in manpower resources was worthwhile.

As for new techniques, we all appreciate the recent advances in technology. Among them, ultrasound has had a very significant impact. Ultrasound-guided nerve blocks and vascular access have eliminated most of the potentially serious complications from landmark techniques and



blind needling. The quality of blocks achieved is high and fewer attempts are needed. Our department also applies ultrasound in other areas of anaesthesia, such as confirming correct endotracheal tube placement by lung or airway ultrasound. We also perform transthoracic echocardiography in pre-anaesthetic assessment clinics and transoesophageal echocardiographic monitoring intra-operatively for indicated cases. All these developments exemplify how a clinical department advances with technology.

Anaesthesia has become a mature specialty and anaesthetists are now taking on decisive roles during the peri-operative period. We are no longer passively 'doing cases as booked' but proactively take a holistic approach to patient care, that is, we discuss with our surgical-stream colleagues how to devise the best peri-operative care plan for our patients. Thus we have extended our role to become peri-operative physicians.

Today, clinical effectiveness and efficacy are areas which are often reviewed by hospital administrators. Anaesthesia and operations are

HA Convention





not spared. Anaesthetists have extended their roles in operating-theatre management. We have developed new clinical-service models and pathways to enhance the effectiveness, efficacy, and quality and safety of our services. The fact that quite a number of our anaesthetist colleagues work or have worked as hospital or cluster chief executives, within or outside the Hospital Authority (HA), well demonstrates our expertise in this area.

Anaesthesia is a specialty which is highly stressful and demands total concentration. The Society of Anaesthetists of Hong Kong, the HKCA and the HA place high importance on our well-being. We can thus enjoy a variety of social and leisure activities organized for us outside the realm of our routine daily work. Of course, scientific meetings which are held regularly in Hong Kong are ideal occasions for continuing medical education and social networking among anaesthetists working in different clinical institutions and sectors.

I am happy to have seen all these achievements in anaesthesia in Hong Kong and I am proud that our department, though somewhat small, is a part of it. With our strength, zeal and experience, anaesthesia in Hong Kong is

*OST Award Fast Track
Surgery Programme*



already stepping into the international arena and stands shoulder to shoulder with other developed countries.

I wish anaesthesiology in Hong Kong a bright future in going farther and achieving greater things.



CHAPTER 40

North District Hospital

Sze Tak-suen

Man cannot discover new oceans unless he has the courage to lose sight of the shore.

—Andre Gide

My entire career in anaesthesia has been an adventure.

The Shore

I started on my professional pathway in the year 1987 as an anaesthesia trainee. This significant year enabled me to not only witness early anaesthesia practice in Hong Kong, but also participate in the development of anaesthesia and the evolution that brought anaesthesia into a new era.

It was in fact by accident that I joined the Department of Anaesthesia at Princess Margaret Hospital. At that time, anaesthesia was not a popular specialty at all for newly graduated medical students. Each year, around 10 to 20 new medical officers (MOs) would be assigned to the anaesthesia departments of various government hospitals. Most of these new anaesthesia MOs had only a basic idea of what anaesthesia was. And by the end of their one-year compulsory anaesthesia service, more than 50 per cent of them

would leave the field of anaesthesiology. Of those who chose to stay in the field, only around 50 per cent of them would go on to finish their training in anaesthesia.

Somehow, 26 years ago and for many reasons now forgotten, I took the road to anaesthesiology. It was between 1987 and 1997; Hong Kong had developed into a cosmopolitan world-city, and there had also been major developments in anaesthesia. With the introduction of new drugs, new monitors, and new knowledge, the role of anaesthetists became more and more important; our contribution to better patient care was getting better acknowledgment. In the early 1990s we used to call ourselves ‘guardian angels’ but, by the year 2000, anaesthesia had become the single most important foundation for the development of surgery. We provide Intensive Care Unit care, post-operative pain management, and, most important of all, we provide almost a ‘gift of God’ to our dear surgical colleagues, that is, a patient safely anaesthetized for a very flexible period of time.

The Ocean

In 1998, my career in anaesthesia moved into a new phase. By leaving all the traditions behind in other hospitals, I brought my knowledge and skills to a brand-new hospital: North District Hospital.

The Department of Anaesthesiology at North District Hospital was established with only two staff: Dr Ho Kin-ming and myself. Although Dr Ho and I have very different personalities, we shared a similar vision of developing a new department operating at the highest anaesthesia standards of the time. Between 1998 and 2004, Dr Ho and I devoted most of our time exerting our best efforts to achieve our goals. In this newly built hospital, with state-of-the-art equipment and a team of well-motivated staff, we earned support and recognition from both within and outside the hospital. Within two years, the Department of Anaesthesiology at North District Hospital was providing a high standard of anaesthetic care and had become a training centre for anaesthesia trainees of the Hong Kong College of Anaesthesiologists (HKCA). We also managed to implement two distinct advancements in anaesthesia that were well recognized: Comprehensive Anaesthesia Electronic Record Keeping and Clinical Simulation Training in Anaesthesia.

My interest in electronic data on anaesthesia record-keeping can be dated back to 1994, when I was inspired by Dr Ronald Lo. When he was department head at Queen Mary Hospital, Dr Lo was one of the pioneers in keeping anaesthesia data in database format. After finishing my fellowship training, I was allowed access to these databases, which were actually stored on a floppy disk, and somehow I accidentally corrupted the files. In order to rectify the damage, I had to sit in front of the computer every night for two to three months, before I could finish re-entering all the data.

When I first joined North District Hospital, I was only able to write simple computer scripts for entering data into databases. After two to three years of hard work, we were able to develop a comprehensive electronic record-keeping system, with a demographic database, electronic vital-sign charts, automated critical-incident reporting system, peri-operative nursing modules, and consumable items tracking system.

After the success of applying information technology in our Department, we received a huge amount of support from the hospital and started to explore the establishment of a clinical training centre in North District Hospital. The initial plan was to set up a small training centre, similar to an ACLS (Advanced Cardiac Life Support) training centre, with the use of an advanced simulator manikin. Dr Lee Tsun-woon, the president of HKCA at that time, supported our idea and he further suggested introducing the Anaesthesia Crisis Resource Management (ACRM) course into the training centre. So as the planning evolved, a small training centre became an institute, an ACRM, and later an EMAC (Effective Management of Anaesthetic Crisis) training centre for the HKCA.

After our training as ACRM instructors in Australia, I had my eyes opened wide. The ACRM course is actually one of the most advanced forms of medical training and we were proud to introduce it to the Hong Kong medical field. The concept behind ACRM is a behavioural and cognition training, which is important not only to anaesthetists, but to all personnel involved in the medical field. It is enough to know that three of the first eight ACRM instructors in Hong Kong have been appointed and promoted to hospital chief in the prime of their careers.



Epilogue

In 2004, I left the Hospital Authority and joined a private anaesthesia practice. In my mind, I was entering the final chapter of my career in anaesthesia. But life is full of challenge and I was amazed to find new interests and challenges even in my private anaesthesia practice.

Over the past few years, there has been a dramatic increase in the demand for Monitored Anaesthetic Care in private practice, and a few incidents of anaesthetic mishaps have been reported. In 2013, I successfully incorporated the well-known pharmacokinetics equation for Propofol-Marsh Model into a self-developed android application. This 'app' can provide extra help for any type of Monitored Anaesthetic Care using Propofol bolus, and is available for free download in the Google Play Market, with the name 'Propofol Kinetics Basic'.



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Hong Kong Anaesthesiologists work with skill and EXPERTISE
Always pursuing EXCELLENCE
Taking care of patients with heartfelt EMPATHY
Uncomplaining, working diligently with ENJOYMENT



