

# The Teaching of Obstetrics and Gynaecology in Singapore from 1905 to the Present

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## Abstract

Medical education commenced a century ago in 1905. In 1922, the Department of Midwifery and Gynaecology was established. This was renamed the Department of Obstetrics in 1951. Medical undergraduate curriculum in Obstetrics and Gynaecology has evolved and undergone radical changes. From a compulsory 11-week residential posting in Kandang Kerbau Hospital, medical students are now only expected to be resident when they are scheduled for night duties. Having been an examination subject by itself in the Final MBBS Examination, Obstetrics and Gynaecology has in the latest revised undergraduate medical curriculum been incorporated into the Surgical tract and has ceased to be evaluated as a subject on its own. In this review, the establishment of postgraduate training in Obstetrics and Gynaecology is traced over the last 50 years and the important changes over the years are described. The first local Master of Medicine (Obstetrics and Gynaecology) was awarded in 1971. Currently, the specialist training for Obstetrics and Gynaecology in Singapore spans a period of 6 years, comprising 3 years of basic structural training and 3 years of advanced structural training. Over the years, the Department of Obstetrics and Gynaecology, National University of Singapore, has played a pivotal role in the teaching of clinical and laboratory research. This has added substantially to Singapore's efforts to become a world-class knowledge hub, especially in the areas of relevance to Obstetrics and Gynaecology.

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## Introduction

The Straits and Federated Malay States Government Medical School was established a century ago in 1905. The name of the school was changed to the King Edward VII Medical School, Singapore in 1912.<sup>1</sup> In 1921, the title was changed to the King Edward VII College of Medicine.<sup>2</sup> In 1949, the College of Medicine became the Faculty of Medicine in the newly created University of Malaya.<sup>3</sup> The University of Singapore was established in January 1962<sup>4</sup> and in 1980, the present National University of Singapore (NUS) came into existence.<sup>5</sup>

The first Chair in Midwifery and Gynaecology was established in 1922 and Professor JS English was Singapore's first Professor of Midwifery and Gynaecology. He retired in 1948 and was succeeded by Dr Benjamin Henry Sheares. The Department of Midwifery and Gynaecology was renamed the Department of Obstetrics

and Gynaecology in 1951 and Dr Benjamin Henry Sheares became the first local to be appointed as Professor of Obstetrics and Gynaecology.

## Undergraduate Teaching in Obstetrics & Gynaecology

### *Curriculum*

The medical undergraduate curriculum in Obstetrics and Gynaecology has evolved and undergone radical changes. From its inception in 1951 to 1985, the clerkship in Obstetrics and Gynaecology was the only posting that entailed, by the University Statute, a compulsory residential stay in the Kandang Kerbau Maternity Hospital. The clerkship was for 11 weeks and it was scheduled in Year 4 of the medical undergraduate curriculum. The Final Professional MBBS Examination in Obstetrics and Gynaecology was then taken at the end of the fifth (final) year of the medical curriculum.

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In 1985, the National University Hospital (NUH) at Kent Ridge was established with a Department of Obstetrics and Gynaecology. With the complete shifting of the University Department at Kandang Kerbau Hospital (KKH) to Kent Ridge in 1986, the 11-week clerkship in Obstetrics and Gynaecology was split between NUH, KKH and SGH. All students spent half their postings in NUH and the other half in KKH, or the Department of Obstetrics and Gynaecology, SGH, which was established in 1986. Only the posting in KKH was residential. With the restructuring of KKH in 1990 and its increasing intake of medical students, it was no longer logistically feasible to continue with the compulsory residency posting in KKH. Since the early 1990s, medical students have only been expected to be resident in the hospital to which they are posted when they are scheduled for night duties.

The medical undergraduate curriculum was restructured in 1996. This resulted in the fourth-year posting being reduced from 11 weeks to 9 weeks. Their performance in the fourth-year posting contributed to 30% of the total marks in the Final Professional MBBS Examination in Obstetrics and Gynaecology. In addition, there was a 4-week posting in the fifth and final year. At the end of this 4-week posting, the students did a gynaecological clinical examination and this constituted a further 10% to the total marks in the Final Professional MBBS Examination. The Final Professional MBBS Examination in Obstetrics and Gynaecology accounted for 60% of the total marks and consisted of short essay questions, multiple-choice questions, an obstetric clinical examination and an oral structured clinical examination (OSCE).

In recent years, there have been many changes to the curriculum and a revised undergraduate medical curriculum was introduced in 1999. Under this revised curriculum, the Final Professional MBBS Examination will consist only of a Medical Track and a Surgical Track. Obstetrics and Gynaecology will cease to be evaluated as a subject on its own but will be incorporated into the Surgical Track. The posting in the fourth year will now be for 8 weeks, 4 weeks being spent at NUH and the other 4 weeks being spent either in KK Women's and Children's Hospital (KKWCH) or SGH.

During the first week of the posting, students will be given an intensive series of lectures to cover the fundamentals of Obstetrics and Gynaecology. In addition, students will be taught the necessary skills of pelvic examination and episiotomy repair on pelvic trainers. In the remaining weeks that follow, small group tutorials, medium-sized group question-and-answer sessions will be conducted for the students in the other aspects of Obstetrics and Gynaecology not covered in the lectures. There will be formative evaluation of skills, knowledge and attitude

during the posting. In addition, there will be a summative evaluation of knowledge and skills in the form of short essay questions, multiple-choice questions, a gynaecological and obstetric clinical assessment and an OSCE at the end of the 8-week posting.

In the final year, students will be posted for a period of 3 weeks to any one hospital. This constitutes the Student Internship Programme. During this internship, they will act as junior house officers under supervision. They will receive further instruction and will be trained to reach the standards of a house officer in the management of Obstetric and Gynaecological cases.

The evaluation in the fourth year and final year will contribute 10% to the 40% allocated for continuous assessment in the Surgical Track. In the Final Professional MBBS Examination, Obstetrics and Gynaecology will again constitute 25% of the 60 marks allocated to the final assessment in the Surgical Track.

#### *Awards and Medals*

*SS Ratnam Obstetrics and Gynaecology Book Prize:* Since 1977, the Board of Trustees of the Congress Trust Fund of the Obstetrical and Gynaecological Society of Singapore (OGSS) has been presenting a book prize valued at \$100 to the best student in each of the 3 groups of medical students during their fourth-year posting in Obstetrics and Gynaecology. The value of this book prize was subsequently increased to \$300 and \$500 in 2002. With the demise of Emeritus Professor SS Ratnam in 2001, this book prize was renamed the SS Ratnam Obstetrics and Gynaecology Book Prize.

*Hoops Bronze Medal in Obstetrics and Gynaecology:* The Hoops Bronze Medal was established before the Second World War and was awarded annually to the student who obtained the highest mark in Obstetrics and Gynaecology. Records and funds for the various medals in the University were lost during the war. As such, there are no records as to how this bronze medal originated or whether it was linked to any person. Due to the lack of funds, NUS decided to discontinue the award of the Hoops Bronze Medal from the year 2001.

*Nihal Kaur Sidhu Gold Medal in Obstetrics and Gynaecology:* In an effort to motivate medical students to continue to excel in Obstetrics and Gynaecology, Professor Kuldip Singh from the Department of Obstetrics and Gynaecology, in 2002, established a gold medal award in honour of his mother, Madam Nihal Kaur Sidhu. This award now replaces the discontinued Hoops Bronze Medal. The Nihal Kaur Sidhu Gold Medal is now awarded annually to the medical student with the highest marks in Obstetrics and Gynaecology in the Final Professional MBBS Examination.

## Postgraduate Training in Obstetrics and Gynaecology

### *Training and Accreditation*

Before World War II, postgraduate medical training was not of a high priority. An organised system for postgraduate training was started only after the Second World War. In the early 1950s, local doctors were sent on scholarships to the United Kingdom for training and postgraduate examinations.

Dr Benjamin Henry Sheares was the first local to qualify for the Membership of the Royal College of Obstetricians and Gynaecologists, London (RCOG) in 1948. In 1955, the RCOG required that trainee positions be created, thus necessitating some form of structural training. The creation of these positions in Singapore in 1963 allowed doctors to proceed to the United Kingdom to take their examinations after completing their required postings in Singapore. This long and expensive process clearly indicated the need for the development of formal local postgraduate medical programmes to train and examine the medical graduates.

The Academy of Medicine was formed in 1957 and the Committee for Postgraduate Medical Studies was set up in 1961. In 1969, the Committee for Postgraduate Medical Studies became the School of Postgraduate Medical Studies (SPGMS) of the NUS.<sup>6,7</sup>

The year 1971 marked the first Master of Medicine (Obstetrics and Gynaecology) Examination offered. External examiners for the M Med Examination were appointed by the RCOG, UK and the Royal Australian College of Obstetricians and Gynaecologists (RACOG). In 1992, the Joint M Med (O & G)/MRANZCOG Examination was initiated by the School with the Royal Australian and New Zealand College of Obstetricians and Gynaecologists (RANZCOG). The first joint examination was successfully conducted in Singapore in 1993. A conjoint examination obviates the need for local doctors to sit for an overseas examination. Over the years, doctors have come to Singapore to sit for the M Med and the conjoint examination. The formal tie with the RANZCOG was revised in 2001, when there were not enough candidates from Singapore for the conjoint examination.

### *Specialist Training and Certification*

The Specialist Training Programme for Obstetrics and Gynaecology is divided into 2 stages, a basic training period followed by advanced specialty training. All training is conducted in teaching hospitals with Obstetrics and Gynaecology units, namely KKWCH, NUH and SGH.

Currently, the Specialist Training for Obstetrics and Gynaecology in Singapore spans a period of 6 years, which comprise 3 years of Basic Structural Training (BST) and 3 years of Advanced Specialist Training (AST). This

structured training programme ensures that all trainees receive consistent and quality training under close supervision.

The basic training lasts 3 years, culminating in the M Med Examination. The collaboration with the RANZCOG has resulted in the current examination structure for the M Med (O & G). Currently, to be eligible for the written/oral examinations, besides having satisfactorily completed 30 months of recognised Obstetrics and Gynaecology postings, candidates must have completed 7 Distance Education Programme modules (DEP) and 3 In-House Clinical Assessment (IHCA) modules.

At the end of the AST, trainees will have to undergo an Exit Assessment to be certified that they have satisfactorily completed their training and that they are qualified to practise as a Specialist. This intensive process will be made structured and standardised in the future, with the aim of having a more consistent evaluation format.

### *Awards and Medals*

The Fourth Asian Congress (O & G) Gold Medal is awarded to the most outstanding candidate in the examination leading to the degree of Master of Medicine (Obstetrics and Gynaecology). The Medal is presented by the Board of Trustees of the Congress Trust Fund of the Obstetrical and Gynaecological Society of Singapore.

### **Teaching in Clinical and Laboratory Research**

Since the end of the colonial era and the appointment of the late Benjamin Sheares as the first local Professor of Obstetrics and Gynaecology, the Department, though relatively small in size, has contributed significantly to international obstetrics and gynaecological research and scientific literature. As the only University Department in Singapore charged with issuing degrees and certifying students by thesis, a large part of our mandate relates to the teaching of graduate students in research. Over the years, we have added substantially to Singapore's efforts to become a world-class knowledge hub, especially in the areas of relevance to Obstetrics and Gynaecology. Since 1981, we have produced 68 graduate students (1 DSc, 11 MD, 34 MSc, 22 PhD).

Our research tradition dates back to Sheares himself, who published Singapore's first work, with international impact, entitled "*Combination of chlorpromazine and pethidine in the treatment of eclampsia*" in the British Medical Journal in 1957. The arrival of Research Professor SMM Karim in 1973 was another milestone in Singaporean research when the Department developed baboon models for pharmacological studies of prostaglandins. He and Research Associate Professor PG Adaikan pioneered the use for prostaglandins for early, mid-trimester abortions

and the use of prostaglandin analogues such as Cervagem and Sulproston for labour and delivery. Recognising these achievements, the Department was designated a WHO Collaborating Centre for Clinical Research in 1972 and a Centre for Maternal and Child Health and Family Planning in 1982. Over the years, numerous WHO Fellows have been trained in these areas. It also led the world in studies on trophoblastic disease, headed by Dr SH Tow and Dr ES Teoh. Subfertility and assisted reproductive techniques (ARTs) was another strong area of research education. Research in ART led by the late Professor SS Ratnam, Professor SC Ng and Associate Professor PC Wong resulted in the birth of Asia's first "test-tube baby" in 1983. This was followed by the first gamete intra-fallopian transfer by Professor PC Wong. Further advances were made by the embryology team led by Research Professor A Bongso in the fields of co-culture, and by Professor SC Ng in micro-injection techniques for fertilisation of oocytes.

This fine tradition has been continued in the late 20th and early 21st centuries by the Department, in areas such as stem cell and embryonic biology, androgen receptor diseases, herbal drug discovery, sexual medicine, reproductive endocrinology and gynaecological neoplasms.

#### *Embryonic Stems (ES) Cells*

Research Professor Ariff Bongso and his team at NUH have pioneered research on zona-free blastocysts for many years. This has evolved into the isolation and development of human stem cell lines from zona-free day 5 embryos. Several cell lines have been established, each of which have been grown past 150 passages without differentiation and remained pluripotent. Cells from the cell lines have been directed into neuronal progenitor cells which have also been directed further into the various specific nerve cell types with confirmation of dopamine and serotonin production. Animal trials are in progress to evaluate the response to engraftment after direct transplantation of these cells into the brain. If successful, human clinical trials will follow. This research has led to important publications, patents and the establishment of an Economic Development Board spin-off company, Embryonic Stem Cell International (ESI), with 3 other institutions (NUS/Monash University/Hadassah University). The company is capitalised at S\$17 million as of June 2000. The US government has recognised 6 of these cell lines. The US-NIH can fund research based on these cells, making these lines extremely valuable. This work has almost single-handedly resulted in Singapore becoming a hub for biomedical research and the training of numerous students and staff.

#### *Androgen Receptor Diseases and Herbal Drug Discovery Programme*

New research breakthroughs in Professor EL Yong's

laboratory include the first description of the molecular basis for successful hormonal therapy of patients with androgen receptor mutations and male infertility; the first report of the role of androgen receptor gene CAG trinucleotide repeats in anovulatory infertility and polycystic ovaries in women; and the first description of an inhibitory domain in the androgen receptor gene, mutations of which led to hyperactivation of the receptor and prostate cancer. These high-impact publications, including 3 in the *Lancet*, have established Singapore as a centre for excellence in the diagnosis and treatment of diseases due to mutations and polymorphisms of the androgen receptor gene. A new exciting research initiative to screen for steroid-active substances in traditional Chinese herbs was started in 1999 as a result of seed funding from OGSS. This has resulted in the identification and characterisation of 6 lead compounds with potent androgenic, oestrogenic, progestogenic activity. Three US patents have been filed for several compounds with highly unusual action on androgen, oestrogen and progestogenic receptors in cells and animals. These compounds have great commercial potential as phytomedicines for use in hormone replacement therapy and hypogonadal states in man and woman. Training of numerous research staff at the PhD, MD and MSc levels has resulted.

All the scientists and clinical researchers in our Department take graduate students and train them in various fields, according to the research interests of the supervisor. Research Professor Victor Goh continues to publish on the endocrinology of fertility, hormonal therapy for ageing, intersex and circadian rhythms. Research Associate Professor Ashim Roy has published extensively on follicle luteinising hormone, luteinising hormone and oestrogen receptor polymorphisms in infertility and polycystic ovarian disease. The role of mitochondrial DNA mutations in gestational diabetes was also discovered by his team. Research Associate Professor PG Adaikan continues to report on impotence, male and female sexuality and herbals for erectile function; and Dr Stephen Koh, on coagulation and fibrinolysis in pregnancy and gynaecology. Dr A Loganath has made discoveries in coagulation changes in cancer, expression profiles of interleukin 15 in early and late gestational human placenta and in preeclamptic placenta. Professor Kuldip Singh contributes in the area of contraception and fertility regulation. He has done extensive work in the introduction of the novel progestogen-only subdermal contraceptive implants and has set the standard internationally for the use of misoprostol for early first trimester unwanted pregnancy and also for pre-cervical priming before surgical vacuum aspiration in the first trimester. He continues to do further research on the use of levonorgestral intrauterine delivery system for both contraceptive users and non-users. Dr LC Foong has made

interesting discoveries of peripheral vascular reactivity in pregnancy-induced hypertension. The late Dr FK Lim has pioneered the use of infrared spectroscopy in the diagnosis of malignant gynaecological conditions. Dr Leena Gole has published on the use of fluorescent probes in cytogenetics. These activities have also resulted in numerous courses being organised to disseminate and educate researchers and clinicians within the local and international community. Between 1987 and 2002, a total of 107 international congresses, courses, workshops, symposiums and seminars have been conducted by the Department.

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