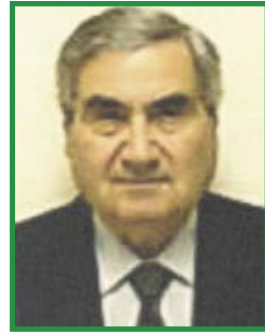


# History of Anesthesia in Lebanon & at AUB



Fouad Salim Haddad, MD, FACA, DABA  
Clinical Associate,  
Department of Anesthesiology



Musa Khalil Muallem, MD, DA  
Professor of Anesthesiology

## Anesthesia at the Syrian Protestant College

Prior to 1850 medicine and anesthesia in Lebanon were conspicuous by their absence. There were few regularly qualified physicians or surgeons in some of the larger cities and these were mostly either Turkish army medical officers or missionary doctors. The majority of the cities, towns and villages had no regular physicians and the population had to depend for medical advice and help upon unqualified practitioners such as bone-setters, barbers and “Mughrabies”(1) fig 1.



Fig. 1

The possibility exists that medicinal analgesic plants (opium, cannabis, mandragora etc fig 2) that were known to exist in Ancient and Middle Age Middle Eastern countries, have descended to us through the millennia and probably used for the relief of pain. The period between 1850 and 1865 is void because of lack of

documentation.

The first attempt to use inhalational anesthesia in Lebanon occurred in 1865 at the hands of Dr. George Post (1839-1909), an American missionary surgeon who had arrived to Beirut in 1863. In order to demonstrate the organs of digestion, Dr. George Post administered chloroform to a dog in the village of Abeih. (Abeih, a small mountain village 20 km south east of Beirut, was the capital of “Lebanon” in the days of the Tannukhi Emirs, the forerunner of the Ma’nis where American missionaries had established there a school and later a theological seminary fig.3)

In 1866 the Syrian Protestant College (SPC) was founded in Beirut by Dr. Daniel Bliss and in 1920 became known as the American University of Beirut (AUB). In 1867, along with Drs. Cornelius Van Dyck and John Wortabet, Dr. George Post founded the Medical School of the Syrian Protestant College (fig.4)



Fig. 3

In 1873, Dr. Post published his book of Surgery, in the Arabic language, (“Almisbah alwaddah fi sinaat aljarrah “Fig.5) in which and for the first time, gave evidence of the use of chloroform at the Johanniter Hospital (Prussian Hospital) Fig. 6 to reduce a dislocated shoulder of a man. (The Johanniter Hospital, established in Jan 7, 1867, was run by German deaconesses of the Kaiserwerth sisterhood. Because of the lack of hospital facilities to the then Syrian Protestant



Fig. 4

College (SPC), the medical care of Johanniter Hospital was entrusted in 1871 to the American Professors of the SPC. This association lasted until 1917 with the entry of USA into WW I).

It is interesting to observe the Arabic terminology used by Dr. Post in his book and later in “Al-Tabib”, to describe the act of administering chloroform (“kulfira”) and the person administering chloroform (“al-mu-kal-fir”), an obvious arabization of the word “chloroform.”.

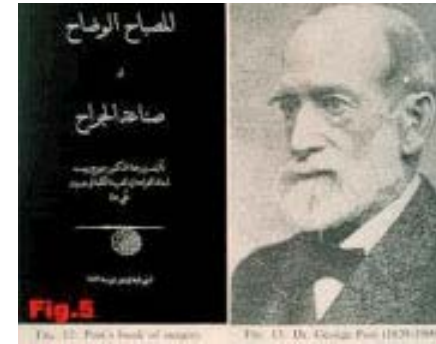


Fig. 5

In his book of Surgery, Dr. Post, under the section of General Anesthesia, described four stages of anesthesia - “Excitement”, “Drowsiness”, “Sedation” and “Deep sleep”. He also described the method of administration of chloroform, was mindful of premedication, aware of the dangers of full stomach and set standards of vigilance (monitoring of pulse and respiration continuously, should not be distracted by the details of surgery or leave his place). He also dealt with cardiac and respiratory arrest.



Fig. 8

In 1874, Dr. Post initiated and was first editor of the first Lebanese medical journal in the Arabic language “Al-Tabib” in which for many years he edited and contributed subjects on anesthesia and related sciences. The journal continued its publication in an interrupted manner until 1914. Between 1874-1912 some of the subjects discussed in “Al-Tabib “ were: resuscitation of the newborn, ether .nitrous oxide, asphyxia, local anesthesia, foreign body laryngeal obstruction, air embolism, endotracheal intubation, morphine and atropine, tracheostomy, hyperventilation, blood transfusions, ethyl chloride, metabolism of chloroform, shock, pain treatment, spinal analgesia and Caisson’s disease .

In 1869 Dr. Post became the first Professor of Surgery at the SPC, and for the following 40 years he became an

eminent surgeon in the Middle East, a function which he served until his death in 1909. fig.8 The favorable influence of Dr. Post can be observed through the rest of the 19th century as the driving force behind the introduction of new drugs and the teaching of sound knowledge of anesthesia. Dr. Post was the founder and first pioneer of anesthesia in Lebanon.

By 1875 comparisons were being drawn between the effects of chloroform and ether. Following the two Hyderabad Chloroform Commissions of 1888 and 1889, the occurrence of death due to chloroform in a Beirut hospital in 1899, the safer ether was reverted to. Around the turn of the century, use of new drugs such as local analgesics was being entertained to avoid the harm of chloroform. In 1899, an article discussing the preanesthetic preparation, the anesthetic management and the postanesthetic care and complications appeared (Al-Tabib 11:252, 1899).

The actual administration of anesthesia seems to have been delegated to qualified physicians, or to medical students. This state of affairs persisted for some time after the death of Dr. Post until 1922, when a nurse anesthetist was brought to Lebanon to share this responsibility.

## ANESTHESIA AT THE AMERICAN UNIVERSITY OF BEIRUT IN THE 20<sup>th</sup> CENTURY

### Period of Nurse Anesthetists 1922-1944



Fig.9 Miss Rena Myers

The first trained anesthetist to arrive to the American University Hospital was a nurse. Miss Alice Osborn arrived in Beirut in 1922 and remained at AUB until 1936 when she was replaced (because of a cataract operation) by another nurse anesthetist, Miss Rena Myers fig 9 (4).

Both of these nurses were occasionally assisted by physicians and medical students, carried the service load of the American University Hospital from 1922 throughout WWII and for several years thereafter.

The practice of anesthesia between 1915–1923 is revealed



in the results of the Questionnaire conducted on four AUB -MD graduates between 1915-1923 An interesting anecdote was in 1922 when Dr. Philip Sahyoun (MD 1922) administered an anesthetic at the home of a patient for a cholecystectomy by Dr. Ward. Also later in 1927, Dr. Sami I. Haddad successfully performed an emergency appendectomy on the kitchen table of a patient in a remote village in Lebanon, with himself giving the anesthetic (spinal) (6). Those days, people were afraid of hospitals.

Between Jan. 1926 – Jan. 1939, the practice of anesthesia is revealed in the Summary of AUH Partially-Burnt Charts of 36 patients salvaged from the fire that occurred in the Adham's House in the old AU Hospital on Dec.30,1939\* (\*"That they may have life" Stephen B.L. Penrose, 1941–Beirut: AUB,1970) . The preoperative preparation in that period consisted of physical examination, urinalysis. Premedication consisted mainly of morphine-atropine, sometimes caffeine. The anesthetic technique was mainly open drop ether sometimes combined with chloroform, spinal with tropocaine, local with novocaine + adrenaline and rectal with ether in oil. Monitoring consisted mainly of pulse and occasionally respiratory counts. The nurse anesthetists then were Alice Osborne, Charlotte Frisbie and since 1936 Rena Myers. The operative list consisted of inguinal hernias, D&C, fractures, hypospadias, C-sections , hydatidiform moles, mastoidectomies and others. Some of the surgeons of the time were Drs. Sami I. Haddad, Charles Webster, William Cruikshank, Harry Dorman, William Ward, Phillip Ashkar, and Yervant Jidejian.

With the arrival of Rena Myers in 1936, part of the duties of nurse-anesthetists was to teach fourth- year medical students. The teaching consisted only of lectures and practical administration of anesthetics (Open Drop Ether). The theory and pharmacy was at the time taught in the School of Pharmacology. Each student was required to administer ten anesthetics, and was excused from lectures and all other work until he finished this number.

**Anesthesia during WWII**

In October 1939 another nurse-anesthetist, Marjorie Flater was engaged, a British subject, but had to leave in July 1940 because of the war situation. On Dec. 30, 1939, fire unfortunately broke up in the then Adham House, thus burning and destroying many of the Hospital patients' charts (Raif Nassif MD. – The Story of AUBMC: A

Perspective by an Emeritus Professor, AUBMC Newsletter Vol. 5 No. 3, March 2000)

During the war years, Rena Myers did not leave Beirut, but continued to work alone, being assisted by interns. However, during the earlier years of the war, very little work was done as most of the Beirut inhabitants had escaped to the mountains. Previous to 1940, the Hospital had closed entirely during the summer months, but from that time hence, a part of it was always left open. In 1941, during the campaign to drive the Vichy-French out of Beirut, the surgical pavilion, which had already closed for the summer, was reopened to keep fifty-five beds available for war casualties.

The worst problem encountered during WW II was the lack of supplies. Ether which had always been shipped from America, became non-existent. Some ether, however, was managed to be obtained from Palestine and tested for purity by the School of Pharmacy. At one time, while using the Ben Morgan, semi-closed apparatus for insufflation anesthesia, there was an explosion; the operation was a removal of a nevus of the face.

As to the practice of anesthesia in that period, reference is made to the Questionnaire responses of the five AUB-MD graduates between 1940-1948. Remarkable changes relative to the pre WWII practice is observed: teaching of anesthesia by nurse-anesthetists, monitoring (pulse, BP, charts), open-drop ether and the Ombredanne inhaler techniques were used, free oxygen available, epidural is mentioned, developing into use of intocostin, ETT and controlled hypotension. Craniosurgery started.



Fig.10 Dr. Khattar Kanaan

**Anesthesia after WWII**

**Period of doctors and nurse anesthetists 1944-1953**

In September 1944, the late Dr. Khattar Kanaan (AUB 1940), was engaged on a part time basis to help Miss Myers (2, 4, 5). In 1945, Mabel Saxton, American nurse-anesthetist joined until June 1947 (4). In 1947 Dr. Veronica Bakamjian



Fig.11 Dr. Khattar Kanaan

who had taken a year's training in America, became the head of the Anesthesia Service. fig.11



Fig. 12 Dr. Veronica Bakamjian and the first anesthesia machine

With the end of the war, it became gradually possible to obtain more funds from America. Two laryngoscopes and few endotracheal tubes were obtained which facilitated the use of endotracheal anesthesia, using the Flagg-can method. In December 1946 one anesthesia machine and I.V. pentothal were procured and in October 1947, two more machines and other equipments were received.

Dr. Veronica Bakamjian was the first MD, AUB graduate to obtain formal training in anesthesiology in USA (she became Diplomat of the American Board of Anesthesia in 1950). In October 1947 she was appointed as the Director of the Anesthesiology Service, then a Division of the Department of Surgery.



Fig.13 Winifred Boulos

She started the system of rotation of surgical residents in anesthesia and of her first uses of intocostin was on late King Hussein of Jordan (then 14 years old Prince Hussein). In 1949, she started a training course for nurse anesthetists to supply the increasing demand for anesthesia service (2, 5) .Of those trained were: Esther Kevorkian, Mr. Muallem and Winifred Boulos.

In 1950, Salam Jeha, who had been trained in America, joined the staff and stayed for several years. In 1947 anesthesia gas apparatus, endotracheal tubes, laryngoscopes and IV thiopental started to appear. With the war over, the number of specialized surgeons was increasing and the demand for well-trained MD-anesthesiologists began to be felt. In July 1953, a two-year residency training program was started.

**Beginning of Residency Training 1954**

In 1954, a 2-year residency training program in anesthesiology was introduced by Dr. Bakamjian. Dr. Adib Abou-Haidar was the first to join this program, followed by Dr. Francois Shemali, Dr. Raja Abdel Karim and then Dr. Musa Muallem. The Fourth continued his career as a member of this department, and presently he is full Professor at AUB Department of Anesthesiology.



Fig. 14 Dr Adib Abu-Haidar



Fig.15 Dr Musa Muallem (MD 1957)



Fig.16: Dr. Bernard Brandsrater

In 1956, Dr. Bakamjian immigrated to USA and Dr. Richard Patterson became Director of the Anesthesia Service for two years and with Dr. Bernard Brandstater as a new member of the staff.

Miss Myers, who joined AUB in 1936, continued her career as a nurse anesthetist for 24 years until she retired in 1960.



Fig.17 Members of the Anesthesia - department 1964



The period of Dr, Bernard Brandstater 1958-1969, the founding period

The years under the Chairmanship of Dr. B. Brandstater 1958-69 witnessed a period of rapid growth and rapid change. The program of residency training was improved and made both practical and theoretical aspects, putting more emphasis on basic sciences and in 1964 was increased to three years. Facilities for research, research equipment and new anesthetic apparatus and techniques were introduced. The foundation of a teaching Anesthesiology Department have been laid down and based on a triad of teaching research and practice.

Dr. Brandstater took pioneering steps in the respiratory treatment of adult polio patients; innovated prolonged intubation in children inflicted with tetanus, and introduced the era of positive pressure ventilation. He also introduced the practice of Epidural Analgesia for painless deliveries, blood gas measurements, low- flow breathing systems, into the Department. In 1962 and 1964 two Postgraduate Assemblies in Anesthesia as satellites of the MEMA meetings were held, in which Dr Harry Churchill-Davidson from St Thomas Hospital, London fig. 18, and Dr John Nunn a research professor from the Royal College of Surgeons London fig. 19, were the main speakers.



In 1965 Dr Brandstater toured the anesthesia departments of the countries of the Middle East and arranged and implemented the First International Congress of the Middle East Societies of Anesthesiologists.



Fig.21 Dr Brandstater and delegates from anesthesia societies of the Middle East.

Establishment of the Middle East Journal of Anesthesiology

In 1966 Dr Brandstater founded the Middle East Journal of Anesthesiology, gave it its famous motto "For some must watch, while some must sleep" (Hamlet-Act. III, Sc, ii), its symbol of the poppy flower, and was its first Editor-In-Chief. In 1968 an Inhalation Therapy Division was established and training of nurses as Inhalation Therapists began (8). (See section on the history of Inhalation Therapy).

The New Medical Center 1970

In June 1970 the new Medical Center was inaugurated and contained 10 operating rooms suites. The many helpful suggestions of Dr. Brandstater in designing the OR suites, were instrumental in the creation of the efficiency of the OR which now the new Medical Center enjoys. In the University Medical Center the Anesthesiology Department enjoyed up-to-date facilities and space for its functions in service, teaching and research. The new operating room suite located in the basement, has 10 operating rooms (each with its Induction Room), each

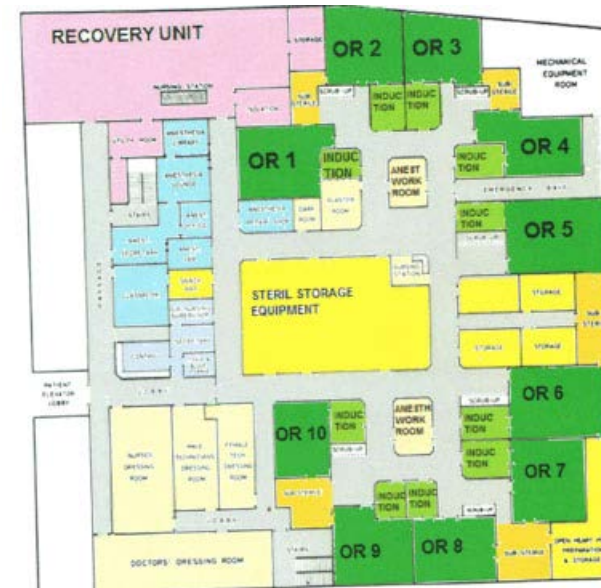


Fig.22 the Plan of the new OR

with a separate entrance and exit. Adjacent to the operating rooms is a spacious Recovery Room, offices, lounge for staff, a library and a workshop for the handyman anesthetists. In 1973, the first coronary artery by-pass graft was done at the American University of Beirut Medical Center by Dr Ibrahim Dagher. In 1998, the first successful liver transplant was performed at the AUB-MC by Dr Mohammed Khalifeh.

The Period of Drs Barada - Muallem 1969-2007

In 1969 Dr. Brandstater immigrated to USA and Dr. Muallem became acting chairman 1969-1971. In 1972-73 Dr Muallem took a sabbatical leave to St Thomas Hospital in London. Between 1971-1972, Dr. Lawrence Egbert, was appointed a chairman of anesthesia department for a very short period, and after his departure, Dr. Anis Baraka, who had joined the Department in 1964, became Acting Chairman in 1972 and in 1974 he became Chairman and Professor, a capacity he continued to hold till he retired in 2007. On the history of anesthesia, Dr. Fouad Salim Haddad, Associate, Department of Anesthesiology, published the first study of the History of Anesthesia in Lebanon and the American University of Beirut in the period between 1800-1914. He established, as earlier stated, that first chloroform administration in Lebanon occurred in the SPC at the Johanniter Hospital in 1873 by the missionary surgeon, Dr. George Post. In June 1971, Dr. Musa Muallem, Professor, Department of



Fig.23 Dr Musa Muallem



Fig.24 Dr. Anis Baraka

Anesthesiology, published "Anesthesiology in the American University of Beirut 1920-1970, in which he gave a detailed comprehensive review of the Department, pre and post its development into an independent Department - both articles were revised in 1982, and updated in 2007-2013.

With the establishment of an independent specialty of anesthesia in 1958 and the laying down of its solid foundations by Dr Brandstater, the Department of Anesthesiology at AUB Medical Center became a well-known Center for training in the Middle East. Doctors of varying nationalities were attracted for residency training, locally, regionally and internationally. More staff joined the Department, technicians and secretaries were added. With the appointment of Dr. Anis Baraka in 1974 as chairman of the Department a new period of growth and excellence in teaching and research started to appear. His warm leadership, pedagogical capabilities, extraordinary ability of clinical research, voluminous publications (more than 500 publications, some were original contributions), fortitude stamina, tenacity and devotion exhibited during the Lebanese civil war, and his worldwide travels and the various honorary awards he received (honorary FRCA London, member of the executive committee of WFS) doubtless placed the Department of Anesthesiology, the American University of Beirut and Lebanon on the "Anesthesia Map of the World". He not only attracted good medical graduates to the front door of the specialty, but also promoted the prestige of the specialty, increased its market demand and gained worldwide recognition of the training at his Department. Dr. Baraka is credited with the training of over 200 residents, many of whom occupy leading positions in Lebanon and abroad. responsibilities he carries, he was also the Editor- In- Chief of the Middle East Journal of Anesthesiology, the journal Dr, Brandstater started in 1965 With the cooperation of other Arab countries Dr. Baraka helped in establishing The Arab Board of Anesthesia and Intensive Care of which he was the Chairman of its



Examination Committee and later elected as chairman of the executive committee.

In 1997, the First Arab Board Examination took place. Dr. Musa Muallem, Professor, has been in the Department for the past 50 years and is credited with teaching, research, publication, handyman's work, and innovation and maintenance of anesthesia equipment and accessories.

Dr. Muallem has developed a jet respirator under the name of "Muallem Jet Ventilator" and a cuff inflator monitor "Muallem cuff inflator".

Currently all OR rooms are equipped with these gadgets. Fig. 25 & 26

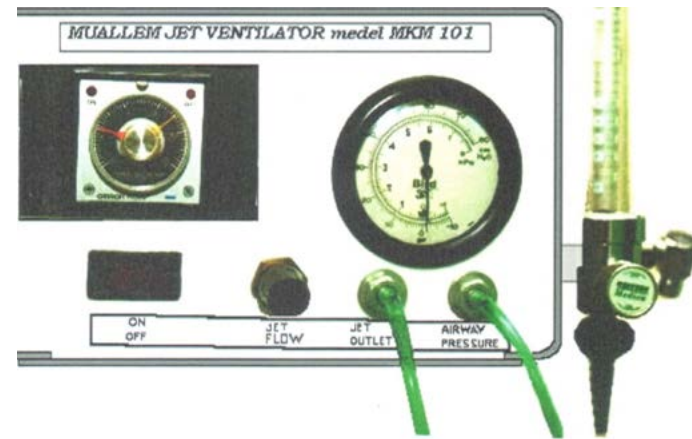


Fig.25 Muallem Jet Ventilator

Dr Muallem also developed a technique and a special catheters and stylets to facilitate intubation of the difficult airway. His devices were adopted, patented, and manufactured, by the VBM Company of Germany Fig.27.

He promoted the use of suspended video-assisted laryngoscopy with pharyngeal oxygen insufflation, and intubation using his ET T. Introducer and J pipe style assembly.

By the year 2000, a comprehensive state-of-the-art of anesthesia and inhalation therapy (Respiratory Therapy), education and practice, preoperative, operative, and postoperative care of patients, was developed.

At the start of the Millennium, the whole Department is made up of 16 full time staff, a residency training program of 4 years (since 1996), fellowship-in cardiac surgery, with 6-8 residents per year and 28 technicians, assistants and secretaries fig 29. The Department is credited with over 700 publications in international journals.

The full time medical staffs by the year 2001 are: Drs. Anis Baraka (Chairman), Musa Muallem, Maurice Baroody, Abdel Nour Sibai, Sania Haroun-Bizri, Faek Louis, Antoine Letayf, Chakib Ayoub, Aliya Dabbous, Samaar Jabbour-Khoury, Maud Naufal, Samar Taha, Sahar Siddik-Sayyid, Marie Aouad- Maroun, Mohamad El-Khatib (PhD),



Fig.26 Muallem cuff inflator/monitor

F AARC), and Ghassan Kanazi. Also there are about 24 residents and fellows.

The Clinical Associate Staff are: Drs. Fouad Salim Haddad, Anne Marie Karam, Joumana Gergis-Tamer, Shehrazade Mouallem, Emma Muradian, Corine Rouhana, Hassana Sinnu, Mohammad Takkoush and Yanda Yazbeck-Karam. Three tragic deaths of three anesthesia staff had bereaved the Department. Late Dr. Khatarr Kanaan (1911-1976)- Senior Lecturer, and late Dr. Rafic Moghrabi (1933-1986)- Senior Lecturer, and Dr. Sania Haroun Bizri, Professor.

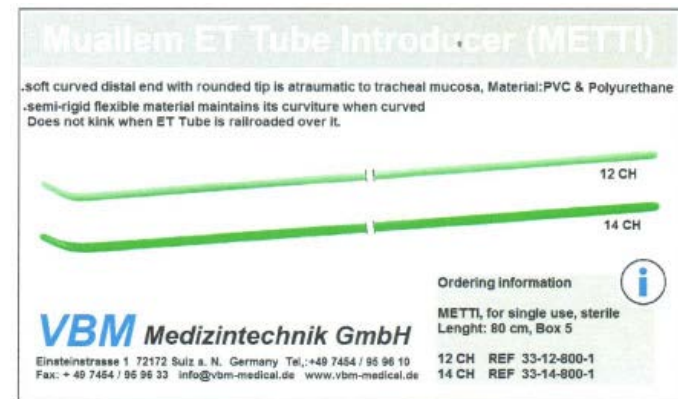


Fig 27: Muallem ET Introducers



Fig. 29: an assembly of Muallem pipe stylet and Muallem ET Introducer (METTI)

### The period of Dr. Ghaasan kanazi 2007-2015

On the retirement of Dr Baraka and Dr Muallem in 2007 Dr Ghassan Kanazi was appointed as chairman of Anesthesiology department.



Fig.29 Staff and Residents of Anesthesia Department -2004

### C-THE ESTABLISHMENT OF THE INHALATION (RESPIRATORY) THERAPY SERVICE

With the establishment of an independent Anesthesiology Department in 1958 and the appointment of Dr Brandstater as chairman, the Department of Anesthesiology took charge of all respiratory support requirements of the Hospital. To start with the only available means of respiratory support was one tank respirator or "Iron Lung" donated by Dr Adib Abou-Haidar a year earlier when his young son contracted poliomyelitis and required controlled ventilation. Using the tank ventilator was not easy and patient's ventilation suffered ups and downs.

The Anesthesiology Department was the first to introduce positive pressure ventilation into Lebanon and AUB Hospital in 1958 by the purchase of two East Radcliff positive pressure ventilators from England. (One was carried by hand on the airplane by Dr Brandstater from London to Beirut) A year later another four East Radcliff Ventilators were added.

Positive pressure ventilation was introduced in Europe soon after the polio Epidemic in Copenhagen in 1954 and the technique spread quickly in Europe and USA. The main indication for respiratory support at that time (late fifties and early sixties) was poliomyelitis and tetanus.

Prolonged endotracheal intubation and controlled positive pressure ventilation was introduced for the treatment of tetanus neonatorum by Dr.Brandstater, Chairman of Anesthesiology Department at AUB. This technique was the first to be reported in world literature by Dr Brandstater in the Anesthesia world Federation Meeting in Vienna. (1960) An English polio patient admitted to AUB hospital in 1959 was put on Positive Pressure Ventilation and was later, after being stabilized, transported to London using a hand operated bellows to inflate the lungs, by Dr.Brandstater. In a later year another patient with polio was transported to

London by Dr. Muallem - an Airplane journey lasting over 12 hours. The demand on the department to provide respiratory support for patients with respiratory failure increased year after year and more ventilators, humidifiers, and oxygen therapy equipment, were added. The department felt that a special team should now be put in charge of the respiratory



Fig.30 DrMuallem in a Poster exhibit for positive pressure respiration during 1959 MEMA.

equipment and respiratory support services. As a result, The Inhalation Therapy Division in the Department of Anesthesiology was established in 1968 by the appointment of Mr. Butros Saba, a nurse Anesthetist, in charge of technical aspect, Mr. Hasan Halawi who was transferred from Plant Engineering, as an orderly/technician, and Dr Musa Muallem as the Medical Director of the division. Two more graduate Nurses Mr. Afif Abdallah (1969) and Mr. Yusif Ibrahim (1972) were added and trained As Respiratory/Inhalation Therapists. The Inhalation therapy division of the Anesthesiology Department grew over the years with the addition of new equipments and personnel. More nurses and technicians were added and trained as Therapists to meet the increased demand for respiratory care services. In 1996 Dr. Mohammed Khatib who holds a PhD in respiratory therapy from USA, and is American Board certified was recruited to the Department of Anesthesiology and was appointed as the Technical Director of Inhalation (Respiratory) Therapy Division. His appointment gave a new impetus to the division and state of the art modes of respiratory therapy such as treatment of sleep apnea and noninvasive techniques of respiratory support, and Nitric Oxide Therapy.

Dr Musa Muallem continued to be the Medical Director of Inhalation Therapy until he retired in 2007.

More up-to-date equipment to handle all types of respiratory problems were being added and replaced over the years - high frequency oscillation, jet ventilation, CPAP/BiPAP and Metabolic Monitoring.