

History of Pulmonary Medicine in Lancaster County, Pennsylvania

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Acknowledgements: As with any specialty of medicine, there is a certain knowledge base that has to develop in a particular discipline before a specialty is created. This was also the case in Pulmonary Medicine. Thus prior to the arrival of pulmonary specialists in Lancaster, the general practitioner took care of the pulmonary problems in the county. At the turn of century pneumonia was the primary pulmonary problem requiring hospitalization. There were a total of 62 cases of pneumonia that were admitted to Lancaster General Hospital (hereafter will be referred to as LGH) between 1893 and 1908. The mortality rate of pneumonia then was 22%. In 1910 there were 15 cases of pneumonia with 33% deaths. In 1916, there were 80 cases of pneumonia and 14 deaths. The cost per day's stay at LGH was \$2.

Infantile paralysis or polio was one of the most dreadful of all pulmonary medical problems and obviously one of the most challenging illnesses confronting the medical practitioner. Acute respiratory distress was a common cause of death. Along with money donated by the March of Dimes, the first respirator, or so-called "iron lung," was purchased by LGH in 1938. A Polio unit under the direction of Dr. William Saul was created at LGH in 1944. In 1946, Dr. Edgar Meiser became the director and along with Dr. Henry Wentz helped to care for the polio patients until the closure of the unit in 1957. The unit was closed as there was no need after the availability of the Salk Polio vaccine and later the Sabin oral polio vaccine. The polio unit at LGH was a government designated unit for Lancaster and Lebanon Counties. Although there were usually 1-2 iron lungs in operation at any given time; at the peak of the epidemic, LGH had 5 iron lungs caring for as many as 14-16 polio patients.

Lancaster had its share of tuberculosis patients also. In 1920, there were 150 deaths in Lancaster County secondary to TB. In those days there was no specific effective treatment for TB. The treatment consisted of rest, good nutrition, sunshine and rest of the affected lungs by certain surgeries. The patients of TB were placed in isolation if they had pulmonary TB. The lungs were and are the most frequently affected organ in TB. The national trend was to put them in hospitals that were called TB Sanatoriums. The Rossmere Sanatorium came into being in Lancaster in 1925. Dr. Murray Spillman was the only Medical director of the sanatorium from 1925 until its closure in June 1957. Miss Mary Herr was the superintendent of the sanatorium. Streptomycin was discovered by Dr. Alan Schatz in 1943, and by 1947 was the first drug used for the treatment of TB. Isoniazid soon became available and was added to the treatment of TB in 1952, followed by Rifampin in 1968. There were a total of 2800 patients admitted to Rossmere Sanatorium. In 1953, 121 patients were cared for at Rossmere for TB. In that year there were 42 deaths due to TB in Lancaster County. Recurrent therapeutic pneumothoraces, which involved the injection of a certain amount of air into the pleural space, were performed by Dr. Spillman. This was the main treatment for pulmonary TB prior to the availability of drugs for TB. Dr. Robert Witmer and Dr. William Atlee performed the chest surgery on selected cases of TB. This involved thoracoplasty (cutting out segments of upper ribs to collapse the chest wall), thoracic plombage (placing balls, the size of ping pong balls in the chest to collapse the corresponding lung) and phrenic nerve crush.

In 1953, a division of Thoracic Surgery was established at LGH under the leadership of Dr. Robert Witmer. Dr. Witmer practiced vascular and chest surgery at LGH. The author had the fortune of sharing cases with him and experiencing his excellent surgery. Once a patient told me that he did not want to have his lung cancer surgery at LGH as Dr. Witmer does not talk much. I asked the patient, if he wanted a talker as a surgeon or a good cutter. He had his surgery and the author did the talking following his surgery. The patient had a good result.

The x-ray department (not called radiology in those days) was started in 1903 at LGH under the leadership of Dr. S. H. Heller, who actually was a surgeon. Dr. Ward O'Donnell became the head of the pathology department in 1951.

Managing tuberculosis in the hospital usually involved a team consisting of the patient's personal physician, the chest surgeon, radiologist and pathologist. In this era, prior to the introduction of the pulmonary specialist these practitioners all served to make for a good pulmonary medicine service.

Dr. Stephen Lockey Sr. (allergist) started his practice in 1933. He started the Allergy Clinic at LGH in 1952. In those days air pumps were used to give adrenaline and penicillin as inhalants to patients. It was Dr. Lockey who found out about "yellow dye 5" being the ingredients in some pills causing asthma attacks. In the 1950's Drs Ward O'Donnell and Richard Mann (cardiologist) published a paper on the link of asbestos to mesothelioma.

By 1970, LGH had 560 beds. It had a good radiology, pathology departments. There was one nephrologist, 2 cardiologists, one rheumatologist, and one endocrinologist. The hospital felt the need for a pulmonary specialist. They went on a search and Dr. William Porter came on board and started the first pulmonary department in the county. He was also the first board certified pulmonary physician in the county. Dr. Porter was interested in starting fiberoptic bronchoscopy. This kind of bronchoscopy had just made its way from Japan to the USA. The physicians in the pulmonary department were among the first employed by the hospital (LGH). Dr. Porter tried to persuade the hospital to buy the scopes. They refused initially. However when a local surgeon offered to buy them, the hospital changed its mind and the fiberoptic bronchoscopes were purchased promptly by the hospital. Prior to this rigid bronchoscopy was already being done by Dr. Hoppy (Arthur) Jones and Dr. Frank Veri. Dr. Jones, a very beloved physician colleague, was an ENT surgeon and at one time president of the medical staff at LGH. Dr. Frank Veri was a vascular and thoracic surgeon. The rigid bronchoscope was invented by a Philadelphia physician by the name of Dr. Chevalier Jackson. The author had talked to Dr. Bill Porter about it. He told the author that Dr Hoppy Jones saw him do 5 fiberoptic bronchoscopes and from then onwards he was given the privileges to do them.

In the early 1970's inhalation therapy was being delivered through IPPB (intermittent positive pressure breathing) machines. The common expectorant used was SSKI (saturated solution of potassium iodide) drops. In the pulmonary lab that was set up by Dr. Bill Porter, he started doing flow volume loops, instead of then traditional time/volume spirometry. The lung volume studies were being done by the Helium dilution method. The caseload of pulmonary patients increased and by 1975 Dr. Porter needed to have another physician. In 1976, Dr. Harshadkumar (Harsh) Patel joined the Pulmonary Department at LGH. He was the second board certified pulmonary physician in Lancaster County.

The 1970's were an exciting time for starting into medical practice. Other physicians were hired by LGH during that period. Dr. John Schubert started the nephrology department and developed the renal dialysis unit. Dr. John Randall, who was hired as an Associate Director in the Family Practice Residency Program, also served as the first infectious disease consultant. In those days the pulmonary team (Harsh Patel and Bill Porter) covered Dr. Schubert for two weekends of every three. Dr. Schubert covered the pulmonary team one weekend of every three. When Dr. Schubert went on vacation, the pulmonary doctors covered nephrology. When that happened, the pulmonary doctors rounded in the dialysis unit before starting rounds in the Intensive Care Unit. The pulmonary team also covered Dr. Randall for Infectious Diseases when he went on vacation. When the second nephrologist, Dr. Larry Carroll joined the nephrology team, the cross coverage with nephrology ended. When Dr. Neil Greene came on board as an ID specialist, the cross coverage for infectious diseases ended. In the early 1970's there were a very few physicians employed by the LGH. The doctors in private practice desired that all physicians be independent. Thus when Harsh Patel came to Lancaster, the pulmonary doctors (called P&P-Porter and Patel) were not allowed to admit anyone. They were admitted to the service of Dr. John Esbenshade, and saw the patients as consultants. Soon thereafter, however, Dr. Patel pushed to change this policy and by the end of 1976 the pulmonary doctors were given privileges to admit patients to the hospital. Also back in 1976, Dr. Robert Witmer did not do mediastinoscopies for lung cancer

patients. It was important to the mediastinoscopies, as in those days there were no other methods to know the spread of cancer to the mediastinal nodes. The pulmonary team discussed this with Dr. Witmer. He went to Hershey Medical Center. He saw one, assisted in one and did one there. Thereafter he started doing them at LGH.

About the same period that Dr. Harsh Patel joined LGH, Saint Joseph Hospital (now called Lancaster Regional Medical Center) obtained a pulmonary physician. Dr. Matlin came to town in 1976. Drs Porter and Patel expanded the pulmonary department with the addition of Dr. John Eshleman in July 1977. At St. Joseph's Dr Matlin added Dr. Goldfarb to his practice. Drs Porter and Patel used cover for the pulmonary patients at St. Joseph Hospital when Dr Matlin took vacations. That ended when Dr Goldfarb came on board. At the Lancaster Osteopathic Community Hospital, Dr. Vincent Gliami established its pulmonary department. He was later joined by Dr Scott Silverstein.

Dr Porter was the medical director of the pulmonary department through the mid 1980's. Dr. Harsh Patel then took on the responsibility as medical director of the department until he retired from clinical practice in 2006. The first of a number of changes regarding how physicians got paid was the development of DRGs (Diagnostic Related Groups). This came into being in early 1980's. With that change, the pulmonary doctors left the employment of LGH and started Pulmonary Associates of Lancaster (PAL) in 1983.

Dr. Porter took an interest in pulmonary exercise testing. He developed a good protocol for cardiopulmonary exercise testing in the late 1980's. This enabled the identification of the cause of a "dyspnea on exertion" complaint. Dr. Harsh Patel developed the pulmonary rehabilitation program. With the advent of computerization, the pulmonary laboratory became computerized in the late 1970's. Dr. Patel set up the body plethysmography. This was a more accurate way of measuring lung volumes, especially in cases of emphysema, than the Helium dilution method that was used in prior years. The first lung compliance test was done by Harsh Patel when he actually inserted an esophageal catheter into his own esophagus. Around the same time Harsh set up a protocol of the carbon dioxide stimulation test to find the response to minute ventilation. This helped to identify cases of idiopathic hypoventilation syndrome, commonly called Ondine's Curse.

Dr. John Eshleman was busy with his own interests. He was very interested in critical care and trauma care. There was a competitive application for trauma center designation between St. Joseph's hospital and LGH. LGH obtained the designation from the Commonwealth. In those days LGH did not have surgical trauma specialists. A group of surgeons with their own private practices took on the task of being on trauma call. They took care of the surgical aspects of the care of those patients. Pulmonary Associates of Lancaster (Porter, Patel and Eshleman) were also called the PEP boys by some of their colleagues as they took care of the medical and pulmonary problems on those cases. Dr. Eshleman and his PEP boys made a great contribution to trauma care to the Lancaster County residents. This changed later after 10 years when the hospital got its own trauma trained surgeons who took care of all aspects of trauma care. Dr. Eshleman also took interest in total parenteral nutrition. He started evaluating actually measured calorie needs for critically ill patients. The pulmonary department at LGH acquired a metabolic cart to get that going. Dr Eshleman was the first board certified critical care medicine physician in Lancaster County.

When Harsh Patel came to Lancaster in 1976, Dr Bill Porter was doing bronchography to diagnose bronchiectasis and to find the exact extent of involvement in the lung. He taught Harsh Patel and John Eshleman to do it. The CAT scanners had been put to use by the radiology colleagues. With high resolution CAT scan of the lungs being available, it was used in diagnosis of bronchiectasis in preference to bronchography as it was non-invasive. In the 1970's ventilation/perfusion lung scans and pulmonary angiograms were being done to make a diagnosis of pulmonary emboli. However with the availability of CAT scan angiography (CTA), the most common test to diagnose pulmonary emboli shifted to CTA of the chest in the mid 1980's.

The ventilators that were used in the early 1970's were Emerson volume ventilators. These ventilators had actually a pressure cooker in them. In the mid 70's Siemens' volume ventilators were purchased. These were much smaller in size and could do much more than the Emerson's. With the Emerson ventilator and other brands of ventilators at that time one could only perform a controlled respiratory rate or assist/control respiratory rate on the ventilator. With the Siemens' Servo ventilator, one use intermittent mandatory ventilation. This modality gave better weaning from the ventilator. Then came synchronized intermittent ventilation. In the mid 1980's one had the capability to use the pressure support modality of the ventilator. In the initial year we jerry-rigged the PEEP to a ventilator when positive end expiratory pressure (PEEP) became available. In the early nineties LGH and its pulmonary doctors started using the concept to permissive hypercapnia on our difficult to ventilate patient with stiff lungs. This situation often arose in cases of adult respiratory distress syndrome (ARDS).

Dr. Harsh Patel became interested in sleep apnea in the late 1970's. The LGH pulmonary department started doing sleep studies initially with only respiratory measurements. It quickly became apparent to Harsh that to know the degree of severity of sleep apnea one had to measure sleep with an electroencephalogram. Thus in 1985, we would admit patients to a private room in the hospital to do a sleep study. In those days an 8 channel Hewlett Packard recorder was used to measure respiratory parameters and a separate Grass EEG machine was used to record the brain waves. Since Harsh Patel had no knowledge of EEG, Dr. Rod Hines (a neurologist) would read the EEGs. Harsh realized that it was not enough to tell a patient of hyper somnolence (increased day time sleepiness) that he/she did not have sleep apnea. They needed to know why they were sleepy and what could be done to resolve it. It became clear to Harsh that he had to learn all aspects of sleep medicine. Thus Harsh started to get trained in sleep medicine under Dr. Virgil Wooten at the University of Alabama in Birmingham over a period of 3 years. The Boards in sleep medicine had just become available. There was no formal fellowship training in sleep medicine at that time. Dr. Harsh Patel became the first Board certified sleep physician in Lancaster County in 1990. He took on the responsibility of medical director of the sleep center at LGH and continued that until 2006 when he retired from clinical practice.

This is how sleep medicine became a part of the Pulmonary Department at LGH. The sleep lab at LGH became the first nationally certified sleep lab (by the American Academy of Sleep Medicine) in central Pennsylvania. We started the sleep lab with 2 beds in 1992. By 1995 an expansion was needed and the sleep lab moved to a different location with 4 beds. It later expanded to 6 beds. By 2008 the lab had 8 beds at LGH and 4 beds at the satellite Kissel Hill location. When the sleep lab was started all scoring of the sleep tracings was done manually. It was not until 2004 that computerized scoring was started at the LGH sleep lab. Right from the beginning the concept was that the sleep center was to be a treatment center for sleep disorders and not just a testing center.

Patients with sleep apnea, insomnia, narcolepsy, restless leg syndrome, periodic limb movement disorder, advanced sleep phase, delayed sleep phase and nocturnal GE reflux were treated. One would wonder why the pulmonary doctors were getting involved in GE reflux. When it occurs often in sleep, it interferes with quality of sleep. Nocturnal reflux is also a cause of difficult to diagnose chronic cough. Also when the sleep lab started the 24 hour esophageal pH monitoring, the service was not available at the LGH hospital. The LGH sleep lab also acquired a wrist Actigraph. This instrument is a watch size device that one wears on the wrist to gather information on the amounts of sleep in a day, times of sleep over 2 to 4 weeks periods. It gave us an idea of sleep patterns in certain patients of insomnia shifted sleep phase.

When the doctors at LGH initially started treating sleep apnea, it was treated with Progesterone. Then in the early 1980's a jerry-rigged continuous positive pressure (CPAP) system was used. Also the severe cases of sleep apnea that had chronic hypercapnia (carbon dioxide retention) were treated with a tracheotomy. But as CPAP machines became

more sophisticated, tracheostomies went out of favor for the treatment of sleep apnea. The CPAP machines initially in the mid 1980's were bulky and noisy. They gradually shrunk in size and the noise level became more tolerable. Also two level positive pressure CPAP machines (in inspiration and expiration) became available. These were called BIPAP machines and LGH sleep doctors prescribed them in selected patients. As an off shoot of this LGH (and other hospitals too) stated using BIPAP and CPAP for nocturnal ventilatory support in patients of severe end stage COPD, muscular and neuromuscular diseases at home.

Over the last 10 years, the CPAP/BIPAP systems are used in acute respiratory failure in the emergency rooms by the local pulmonary doctors and ER physicians in many cases. Thus the concept of treating patients with non-invasive ventilation (without the need of placing a tube in the windpipe) was adopted at LGH. Doctors Porter, Patel, and Eshleman introduced non-invasive ventilation with a Cuirass Ventilator in the 1970s and early 1980s. These ventilators were made of two sealed layers of a plastic shell that fit onto the torso of a patient. By cycling the pressures in the two layers of the shell, one would cause inspiration and expiration. These ventilators were used by the doctors in cases of muscular dystrophy and amyotrophic lateral sclerosis (Lou Gehrig's disease). These ventilators were cumbersome to use. The BIPAP is a much more palatable system for the patient's comfort. As the etiological role of sleep apnea became known in advanced heart failure, coronary artery disease and resistant atrial fibrillation became known, the cardiologists also started sending patients to the LGH sleep center for treatment.

As regards insomnia patients where psychological factors were playing a role, Dr Harsh Patel involved Dr. Edward Purczyki (psychology) and Dr. Richard Brown (psychiatrist) who were interested in sleep.

In the 1960's rigid bronchoscopy was done as a procedure for diagnosis of lung cancer in Lancaster. Fiberoptic bronchoscopy was started with the arrival of the first pulmonary medicine physicians. The bronchial brushes that were first used were unsheathed, but replaced in the 1980's when the sheathed brushes became available. Then came the Wang needles to sample mediastinal nodes and the pulmonary doctors started using them at LGH after getting some training with Dr. Wang in Baltimore. At the same time Dr. Bartlett (an infection specialist) developed a triple lumen bronchial catheter, called the Bartlett catheter. The pulmonary doctors in Lancaster started using these catheters with bronchoscopy to get bacterial cultures from local site of pneumonia in critically sick patients.

Dr. Gillio joined the Pulmonary Associates of Lancaster and the LGH staff in the 1990's for a few years. He brought the skills of laser bronchoscopy and tracheal/bronchial stenting to the department. However, after a few years Dr. Gillio left to pursue his other interests in medicine. The laser bronchoscopy service however was needed only in a select group of patients. Therefore patients needing this procedure were referred to Philadelphia Cancer Centers including Fox Chase.

The tuberculosis patients were being treated at the state health center in Lancaster. To keep their skills up on the diagnosis and treatment of TB, Dr Porter, Patel and Eshleman used to go to the TB clinic in Lancaster, one morning every month from 1971 through about 2003. The pulmonary doctors treated mainly patients with pulmonary TB and also of TB of other organs. At the LGH hospital when patients of active TB were admitted, ultraviolet lights were used in the rooms. When negative pressure systems were available in the 1990's, the UV lights were discontinued.

Doctors Porter, Patel and Eshleman also went to a factory called RM Friction Materials in Manheim, one afternoon a month. This was to see patients of that factory for screening for asbestos-induced lung diseases. They did it for about 10 years, until the closure of that factory as manufacturing of asbestos lined brakes and clutches was halted in the US. They had seen a few cases of mesothelioma, asbestos-induced lung cancer and benign asbestos pleural effusions, through mid 1990. Along the same lines Dr. Porter, Patel and Eshleman saw a few cases of silo filler's lung and

mushroom worker Lung in the period of 1970 to 1985, as most of these patients came from neighboring Chester County where mushrooms are primarily raised. With the introduction of pasteurized compost for mushroom growing, the cases of mushroom worker lung disappeared. In regards to silo filler's lung, back in 1977 Dr. Harsh Patel happened to get 2 patients (a father and son) in the ER during a wet fall season. They both survived. They involved Dr. Patel in giving a couple of talks at farmers' meetings and a couple radio talks about prevention. As the knowledge of the disease spread amongst the local farmers, the cases of silo filler's lung became less.

Through the time that the pulmonary physicians started working at LGH, they provided medical direction for the department of pulmonary medicine, sleep center, pulmonary lab and respiratory therapy. In the years of 1970 through late 1980's they had nursing students, medical students, pharmacy students and family practice residents rotate through the pulmonary doctor's practice for clinical experience. Through the expansion of the pulmonary department at LGH, the respiratory therapists were exposed to and received the opportunity to be pulmonary lab technicians, sleep technologists and pulmonary rehab therapists.

The advances in medicine during the twentieth century have been remarkable. Needless to say, the progress made in pulmonary medicine has been nothing less than spectacular, and Lancaster General has remained on the cutting edge. Much credit goes to the administration at Lancaster General, which include its forward thinking chief executives, Paul G. Wedel and Michael A. Young along with its outstanding vice presidents overseeing the pulmonary department including Daryl Lipmann, Steve Patz, Bill Jefferson, Al Alsedek, and Marion McGowan. It is with their progressive thinking, timely support, and acceptance of good medical ideas that the physicians and the respiratory therapists have able to build an outstanding pulmonary medicine department at LGH and the residents of Lancaster County have been its beneficiaries.

This history is written by my own knowledge of many of the events as I had the good fortune in practicing with fine people in our beautiful Lancaster County and the good Lancaster General Hospital.

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