**The Clinical years**

The fourth, fifth and sixth years were clinical years. It was during these years that we were exposed to patients for the first time. Now we had to use the theoretical basic knowledge that had been imparted and taught the previous years.

Our uniform changed and became recognizable. White coats were obtained, and on the sleeves, green tapes were sewn about 6 inches from the wrist. This simple fact differentiated us from actual physicians. The coats were worn with pride. At last we had reached the stage where we could interact with patients.

The Littman Company donated symbols of the medical community, a stethoscope, a tuning fork and patella hammer. There were some that carried these symbols hidden in their coat pockets, but there were others where the symbolism carried greater weight and were displayed hooked or left dangling around necks, even though we did not know how to use them. We were easily recognizable and one day while I was walking in the Main Road below the campus, a colored man lay on the pavement, opened his shirt and demanded “examine me, examine me!”

The clinical years were structured so that 4th and 5th year gave a basic exposure to the broad disciplines of Medicine, Surgery, Obstetrics and Gynecology and pediatrics, including surgical subspecialties of Urology, Neurosurgery, Plastic Surgery, Ophthalmology, Orthopedics, Thoracic Surgery and ENT. Medical specialties included Cardiology, Gastroenterology, Psychiatry, Dermatology and Endocrinology. Radiology was not included, but we did visit the radiotherapy department. In the final year the subspecialty rotations were not pursued.

Lectures were given in the morning from 8-10am and the afternoon from 3-5pm. In between we were expected to participate in our assigned area, to attend tutorials and to interact with patients.

Our first tutorial was Internal Medicine. Our group, the eight of us that had formed around the cadaver that had been dissected, had remained intact and sat on chairs around a patient. The person taking the tutorial was a part-time private physician, Dr. Grace. He was 60 -70 years of age. One of us was asked to take the history. Dr. Grace, as we soon became aware, was a stickler for taking a correct history. His interaction with patients and us students was more that of a Gestapo interrogator than a friendly, empathic physician. If a patient stated he was weak, we had to know exactly what was meant by this non-descript term; if a patient stated he was short of breath, we had to be certain how long it had been present, under what circumstances he was short of breath, whether there were relieving or aggravating factors, etc. If he felt the concentration of any of us students were lapsing, we would be singled out and made to feel miserable. At the end of this first tutorial, which had concentrated only on the history, we were exhausted; the patient was probably more so. Weekly thereafter, two of us in the group had to present a patient that we had seen and examined. We felt after that first hour that we had not achieved much, but later as we spent more time with Dr. Grace each week, we got to love his foibles and where he was taking us. A good history, listening to the patient, is probably the most valuable part of a clinical examination. To this day, I am grateful for being taught these basics so well. Today, often, by the time I have taken a history, without even examined the patient or reviewed radiographs or tests, I have a rough idea of the diagnosis and where I next need to go. We were taught to phrase our questions so that the patient gave the answer, not to ask whether he has such and such a symptom, when the answer was likely to be a yes or a no. We were taught to say terms like: "and then what happened? elaborate further." and to nod our heads repeatedly to show that we were interested. We were never allowed to ask the question: "what brought you to hospital?" as inevitably the reply would be - "the ambulance."

Our second tutorial, on the clinical examination started with the pulse. In the USA the only aspect of the pulse determined, usually, is that of the heart rate and in most instances that rate is determined by a machine, either a blood pressure machine or EKG device. Dr. Grace began his teaching with the pulse. He started first with the rate. He held the patient’s arm in his hand and placed his fingers on the radial pulse and looked at his watch. He had our attention; we were watching and waiting for his next pronouncement. He stated after a few seconds of silence, “Good grief, it’s stopped.” It took a few seconds for what he had said to sink in; in the meantime, the patient had turned somewhat ashen. We burst out laughing. He was having us on – ‘stopped’ referred to his watch. He probably did this with every group.

With respect to the simple examination of the pulse we were taught, in addition to the rate and its variations, how to assess the quality of the wall of the vessel, the quality of the pulse – a small rapid pulse may be associated with shock-like conditions or with low-output situations such as mitral stenosis or narrowing of the mitral valve. A pulse with a slow rise may be found with aortic stenosis; with mixed aortic stenosis (narrowing) and incompetence (leakage) a bisferiens pulse or two peaks in the pulse could be felt. A collapsing pulse and the various other supporting clinical signs indicated a likelihood of aortic incompetence or a patent ductus arteriosus. The differences between pulsus alternans (where a weak pulse alternates with a strong pulse), associated with mycocardial disease and pulsus paradoxus (where the pulse diminishes on inspiration), associated with constrictive pericarditis and tamponade of the heart were stressed. I was not very good at auscultation, but these peripheral signs of heart disease, the pulse, venous and blood pressure gave me hints of the likely underlying heart disease and possible murmurs to anticipate.

So, we had to look for these peripheral signs before even using the stethoscope. But there were even more steps we had to do before we rushed to using the stethoscope. Percussion and palpation were the next steps. Percussion would pick up evidence of dullness at a lung base, which may indicate a pleural effusion; percussion may demonstrate that the cardiac dullness is larger than normal indicating cardiomegaly or a pericardial effusion. With palpation, we found the left ventricular apex – if displaced cardiac enlargement may be indicated; a left atrial lift may be indicative of mitral regurgitation, or a right ventricular heave of pulmonary hypertension. Often the murmur could be appreciated by feeling the vibration produced by the turbulence. It felt like a cat purring under one’s fingers. It was called a thrill.

One of the other clinical groups related being taken through the cardiological examination in similar fashion to our group by Dr. Grace. Their patient was a young attractive woman in her early twenties. She obviously had good clinical signs because she was frequently used for teaching. She obviously enjoyed the role. The one medical student was feeling underneath her breast, with some embarrassment, for the apex beat. She innocently asked the medical student, “do you feel a thrill?” The student went bright red and the other members of the group laughed.

Murmurs are produced by turbulence in blood flow. A good analogy is the noise one hears when there is a narrowing in a hosepipe. When there is high pressure as produced by the contracting heart ventricle the murmur is loud and usually heard in systole- the contracting phase of the cardiac cycle. When the flow is at low pressure the murmur, produced by a narrowed mitral or tricuspid valve, is a low rumble and usually occurs in diastole, the phase of the cardiac cycle when the ventricle is filling. When there is aortic and pulmonary valve leakage, the murmur is high pitched and early in diastole. These murmurs occurring in diastole are more difficult to hear. Additionally, left-sided heart murmurs are louder on expiration and right-sided murmurs are louder in inspiration. Using the stethoscope and picking up the murmurs and their subtleties took some practice. We all felt that our lack of ability in hearing these sounds was because the stethoscope was not working as well. This situation continues to exist today, and stethoscopes now have small amplifiers to increase the loudness of the sounds. We were told repeatedly: “the most important part of a stethoscope is the part that goes between the ear-pieces,” meaning the person’s brain. One of the most famous South Africa cardiologists, John Barlow, of Barlow’s syndrome, had produced a LP (long playing) record which we could sign out from the library. The most difficult part of auscultation was picking up 3rd and 4th heart sounds as well as ejection clicks.

A later colleague from India related a story when he was a medical student and being taught to examine the heart. The cardiologist doing the teaching was known for his clinical acumen and ability to diagnose heart disease by auscultation. He stated to the group after he had listened to the heart with his large and expensive stethoscope – the medical students could only afford cheaper stethoscopes. “This patient has mitral stenosis. I want you to listen carefully. You will hear a loud first heart sound near the apex followed by a second sound. Soon after the second sound you will hear a very characteristic opening snap. Soon after the opening snap you will hear a low diastolic rumble. These findings are typical of the disease. I want you all to listen and tell me if you hear the murmur and the opening snap.” He left his stethoscope at the apex, removed the earpieces and passed them on to the first member of the group who placed the ear-pieces between his ears. “Do you hear the snap and the murmur?” he asked.

“Yes, I can,” the student said, nodding his head and smiling.

The physician passed the stethoscope to the next student, who also nodded and said he could hear what needed to be heard. The process continued for about four more students until he handed the stethoscope to a woman medical student. This medical student did not fit in with the others. She was aloof and tended to go her own way. She did not interact well with her peers.

She placed the earpieces and listened intently just like the others. She frowned, but this was not unusual. Most of the other students had frowned while listening. She removed the earpieces and said to the consultant. “I do not hear anything.”

“What do you mean, you do not hear anything?”

“I do not hear anything.”

He took the stethoscope and listened himself. “The signs are all there. Listen again,” handing the stethoscope back.

She again listened. After a while she took off the earpieces and stated again. “I do not hear anything.” The other members of the group who had been standing smugly around were smiling at her discomfort.

At this point the consultant retrieved the stethoscope and unscrewed the soft ends of the earpieces from the stethoscope and withdrew from each metal end a small rolled up piece of paper. “This is an important lesson to you all. There has been only one of you who have been honest in what she heard. The one who said she could hear nothing. You must be honest in what you hear and describe. None of you heard what I suggested. Now listen again.” This was an important lesson to my friend who never forgot to be honest. There was a new respect for the woman student who had stood up to the famous consultant.

The Internal Medicine consultants took immense pride in their clinical ability and I am sure their enthusiasm for making clinical diagnoses wore off onto us medical students. In the 70’s there was no echocardiographic machine to check cardiac function, or the exact cause of a murmur. A diagnosis was made on clinical grounds and a cardiac catheterization was only done to confirm the suspected diagnosis if surgery was to be undertaken – it was not done for any other reason. Some of the cardiologists could estimate the pliability and degree of narrowing of a stenotic mitral valve simply by the quality of the second heart sound and how close the opening snap came to the 2nd sound. Later when doing closed mitral valvotomy surgery I was amazed how accurate these clinicians were. Often the only investigation done before surgery was auscultation with a stethoscope.

When I returned to Groote Schuur Hospital as a cardiothoracic consultant in 1986, I used to sometimes attend the weekly cardiology round, which was structured like a quiz. Here the brief history of a patient was presented and then each consultant had to separately examine the patient for a few minutes and write down what was found and what they believed the diagnosis was. It was fascinating to see the clinical acumen of my colleagues. On one day when a visiting US cardiologist was present, a clinical diagnosis of thyrotoxic cardiomyopathy was correctly made on clinical grounds, by one of the local cardiologists. The US cardiologist stated: “I am impressed, but I think the diagnosis would have been made in the US because almost every patient has thyroid function tests performed!”

Our time in between tutorials and lectures were spent wandering the wards. Wards contained approximately twenty patients each. At each corner of Groot Schuur hospital were wards at right angles to each other; one contained males, the other females. Apartheid still existed; the white patients occupied one half of the hospital; the blacks the other half. There existed divisions between groups of physicians called firms to which patients were assigned depending on the firm’s intake day. The hierarchy of the firm was a senior full-time University consultant as the head, with other consultants either full or part-time beneath. The registrars, or residents in the USA, ran the ward with houseman or interns doing the basic clerking and testing. The students assigned to the firm in the 6th year were lowest on the totem pole. In the 4th year, because of multiple rotations between subspecialties we were not specifically assigned – this happened only in the 6th-year. We were expected to meet patients, introduce ourselves, take a clinical history and then do an examination. It was awkward in the beginning approaching a stranger asking personal intrusive questions and doing an examination, but gradually over time we learnt how to approach a patient. In those early clinical days, our desire was the recognition of clinical signs. There existed a bush telegraph system of communication amongst the medical students. Examples such as: “There is a good case of mitral stenosis, 3rd bed on the left male side, Eales firm” or “easily felt spleen, last bed on left, female side,” were heard daily and followed up. These patients with good clinical signs never got any sleep; they were questioned and examined repeatedly throughout the day. Generally, there were limited complaints from the patients. I think patients appreciated that they were in a teaching hospital and were just grateful they were getting good care.

With respect to rectal bleeding or anemia, where the commonest cause was hidden gastrointestinal bleeding, we were taught that ‘if you do not put your finger in it (the rectum) you will put your foot in it,’ meaning that you may miss something important like a rectal cancer. One day the message “there is a good example of a rectal cancer in bed 9 right side ward 2b,” circulated. This poor patient suffered the indignity of being examined on multiple occasions. One of our group, Garth Denyer, had heard the message and went to examine the patient. He introduced himself. “I’m Garth Denyer, one of the medical students, would you mind if I examine you?”

The patient agreed. “Sure”

“Would you turn on your side.” Garth placed a glove on his right hand, placed some KY Jelly on his forefinger and inserted his finger into the rectum. He could feel nothing. He inserted his finger deeper and felt around, but still nothing. The patient at this stage was squirming and grunting. He had not expected this type of examination. “Don’t worry. Won’t be long” Garth said. At last he finished. He thanked the patient and searched for the registrar.

He found the registrar and asked. “That patient in bed 8 with the rectal cancer. I had a lot of difficulty feeling the tumor. Is it soft? Is it high up?”

The registrar bursts into laughter. “The patient with the rectal cancer is not in bed 8, he is in bed 9.” Garth did not go into the ward for about two weeks, he was so embarrassed.

The initial clinical exposure to Medicine was slanted by the fact that we were in a hospital setting directed towards patients who were more critically ill. We were missing the day to day problems such as sore throats, joint pains and minor illnesses. This fact was not lost on the University. On one occasion we rotated to a venereal disease clinic in Salt River, not far from the hospital. We arrived at the clinic which was in a small building on a busy street. Cars and trucks were traveling back and forth, and pedestrians were walking the pavement. We were about to enter the door when a large scream pierced the air. The scream could be easily heard above the din. ‘What is happening?’ we wondered. We went inside. There was no one to greet us. We went in another door. There on the floor was a young woman violently struggling against three others trying to control her. One was holding a syringe containing about 5ml of clear fluid. While we watched the woman’s, buttock was exposed, and the needle was jabbed in. Another scream pierced the air. After a few minutes, presumably when the pain settled, the screaming and struggling stopped, and the patient left.

The physician explained. “She is a prostitute and has syphilis. She has just had her Bicillin shot. Bicillin is a long-acting penicillin.

In the hour or two we spent in the clinic we saw many patients with venereal disease. Most were repeat customers who knew the ropes; they were not even embarrassed at having their genitalia examined. We were exposed to the chancres of syphilis and the discharges of gonorrhea and trichomonas. We never saw these types of patients in hospital.

The University had built clinics (SHAWCO – Students Health and Welfare Corporation) in the disadvantaged colored areas on the outskirts of the city. Most medical students volunteered and worked there one night a month. The clinic had a waiting area, multiple cubicles and a pharmacy, which was run by the students. About two hundred patients were seen in a night by about twenty medical students supervised by a physician. Some interesting situations developed because of our ignorant stage of training.

One student had a young woman who stated when asked what was wrong: “I have not had a period for some time.”

The medical student asked, “for how long?”

“Three months” she answered.

The medical student stated. “You may be pregnant. We need a urine sample to test.” The next hour was spent getting the patient to provide the sample and then do the test. The student returned to the patient triumphantly and announced. “I am pleased to tell you that you are pregnant.” She then asked the patient to get on the exam table where an obvious bulge of someone 20 weeks pregnant was clearly visible!

Another patient had returned with abdominal pain. He had a history of recurrent pancreatitis likely due to alcohol abuse. The medical student stated. “You have to stop drinking. Think of what you are doing to your body. God didn’t expect you to waste your life away like this.”

The patient replied in his slangy Cape Colored Afrikaans/English accent. “Ag, nee man. Got het die bottljies water wyn gemaak. Die partie was nie jolly enough.” ‘Oh no. God made the small bottles of water into wine. The party wasn’t jolly enough!’

Occasionally the medical students were asked to look after some of the more demanding clinical cases. I remember vividly being asked to look after a patient with aortic dissection. The patient was in his mid-forties and had been admitted with marked hypertension and chest pain. Presumably, based on angiography, because computerized tomography (CT scanning) was not available, a diagnosis of aortic dissection had been made. At that time surgery, because cardiac surgery and vascular grafts had not developed sufficiently, had a limited role in management of this disease and efforts were made to control his elevated blood pressure using a new drug called Arfonad. Arfonad was a short-acting ganglion blocker given intravenously. Over twenty-one days we, the medical students, looked after this patient. He was obese and had a bald head. On the top of his bald head, in the midline, was a large lump measuring about 4cms, due to a sebaceous cyst. Every five minutes we took his blood pressure. If the systolic pressure was over 120mmHg, we increased the rate of the Arfonad drip to bring down the blood pressure. If the blood pressure dropped below 100mmHg we slowed the drip to allow the blood pressure to recover. We were not told how long this treatment was to persist, but one day he suddenly demised when the dissection ruptured into the pericardial sac.