The History of the Intensive Care Unit and Nursing at Lancaster General Hospital Lancaster, PA

The Early Years: Part 1
1961-1970

By Elizabeth J. Thompson, RN, BSN, MBA

History of Intensive Care Units

The recognition that separating critically ill individuals to provide specialized care more efficiently and effectively originates with Florence Nightingale. During the Crimean War, Ms. Nightingale oversaw all the nursing care provided to its soldiers. She led the effort to place the most severely injured close to the nurses' station, to provide more intensive nursing care. Following World War I, and throughout World War II, there were efforts to separate and triage critically ill postoperative patients to better address their needs. References to the more modern intensive care unit (ICU) originate in 1953 with the Danish anesthesiologist, Byorn Aage Ibsen. A polio epidemic was raging in Denmark and he argued for specialty treatment and a dedicated area for those individuals whose breathing was compromised, which equipped with ventilators and could provide close monitoring. Earlier in 1950, Peter Safar, also a Danish anesthesiologist, had established the concept of "Advanced Life Support" comprised of sedating and ventilating critically ill patients, as a means to reduce morbidity and mortality. In addition, Drs. Safer and James Elam invented mouth to mouth resuscitation in 1956. In that same year the first successful external defibrillation was undertaken by Dr. Paul Zoll in the United States. Dr. Safer went on to establish one of the first true ICUs, at the Baltimore City Hospital in 1958. At the same time, Drs. Weil and Shubin opened a 4 bed "shock ward" at the USC Medical Center in Los Angeles. In the early 60s it became the standard to congregate and closely monitor patients for cardiac arrhythmias in patients following an acute myocardial infarction (MI), as they were prone to develop heart block, ventricular tachyarrhythmias and sudden death. These early specialized cardiac units were usually called Coronary Care Units. As intensive care units opened across the country they were variously identified as ICUs, or CCUs-coronary care units or critical care units. [1-4]

The 1960's

Lancaster General Hospital ICU

At her retirement in 1949 from Lancaster General Hospital (LGH), the Directress of Nursing, Ms. Sarah Rinehart said that, "Specialization is necessary to give the proper nursing service required."[5] A few years later the Board of Directors heeded that advice and in 1960, with the endorsement of Dr. Smeltzer, Executive Board Director, initiated a study to determine the feasibility of establishing a separate ICU to be located on 6 East. Varying dates have been given for its opening; Dr. Wentz states that the ICU was "opened in the early 60s", Barb Kent believes it was it was 1961, and Carolyn Kresge, 1963. Indeed, the official date was April, 1961.[6] Some of the confusion may be because the hospital chose to increase bed capacity slowly. Initially it was operating as an 8-bed unit, then expanded to 11, and then to 13 beds: 7 surgical on one side and 6 medical on the other, with one surgical room used for isolation as needed. Patients shared rooms, with as many as four individuals accommodated in a single medical side room. There were no monitored beds at its opening, then two were installed on the medical side. Ultimately all were monitored on that side, with none on surgical side. A nurses' station was located at the bend in the corridor with a desk, stools, cupboards and a small refrigerator for medications. Located behind the nurses' station was a clean utility room and across the corridor, a small bathroom for staff. No patient bathrooms according to Barb, "They were too sick and rarely out of bed." A linen cart was stationed in the department, but a kitchen and larger dirty utility were shared across the hallway with 6 West. The Obstetric Wing was located on 6 North. Elevators were located between east and west side, servicing the whole floor.

Initially called ICU, the unit's name was changed to Constant Care Unit (CCU) with the move to 2 Stauffer in 1970, then back again to ICU in the 90s. To avoid confusion, I have elected to label it as ICU throughout the narrative. Later in the 70s, 6 East became incorporated into the maternity wing, combining deliveries and

rooming-in together into each patient room. Once Women and Babies Hospital opened in 2000, the department was again renovated and became a cardiac telemetry unit.

The ICU was mainly for adults, but some children were admitted, primarily those with craniotomies/trauma/head injuries/burns, and many of those were farm-related injuries. It is challenging for nurses and health care professionals to care for sick children at any time; these children were often very ill indeed. Dr. Polcyn, hired in 1960, was the primary neurosurgeon and despite his reputation for being exacting, would suffer immeasurably if a child died. As a resident, Dr. Alan Peterson remembers a situation with Dr. Polcyn. He was in the office when Polcyn was "told by phone that one of his infant patients in the ICU had just died. I saw a tear roll down his cheek." Many such stories about children are harrowing. Ruth Hepler remembers a young boy who was injured during a snowstorm. Dr. Davidson was his physician and she remembers how horrific it was…" all hands on deck" to try to save him. Both legs needed to be amputated.

Nurse Historians: Barbara Kent RN, Carolyn Kresge RN, June Stum RN, BSE, Ruth Hepler RN, BSN

Barbara Kent

Barb Kent came to LGH in 1961 from Pottsville Hospital. She had planned to be a physiotherapist and looked assured of a scholarship as she achieved the highest grades for the exam in high school. Not to be, the scholarship was awarded to a young man. So, she chose to go into nursing and has never regretted it. Following her hire to LGH she worked briefly on med-surg, then transferred to the new ICU on night shift at the suggestion of a Ms. Shibery, night supervisor. She believes her head nurse was a Ms. Fidler, and remembers a Julia Silsdorf taking charge on day shift, followed by Claudette Strohm. There was no orientation; you just learned on the job. Barb remained until 1963 and then went on to a long career as a night supervisor (where she started most of the IVs on her shift), Head Nurse on 4 North, Director of

the Transitional Care Unit and Staffing Coordinator in the Nursing Office. She is proud of the dedication of her co-workers and how conscientious they were in providing for their patients' needs, despite their lack of specialized training. "They were very happy times." Julia Silsdorf later managed other units and taught at the Nursing School. Claudette Strohm went on to attain a degree from Millersville University in library science and was the librarian for LGH and the Nursing School for over 2 decades.

Following her graduation from the LGH School of Nursing, Carolyn Kresge worked 7 years in the Emergency Department (ED). In those days it was called the "Receiving Unit." At that time, to be promoted to a Head Nurse position, a nurse showing potential and leadership abilities was approached by the Director of Nursing. In this case it was a Mrs. Tingley who suggested Carolyn for the Head Nurse position on the Women's Surgical Unit on the first floor. However, it wasn't to her liking and fairly quickly she transferred to the ICU. As Carolyn remembers it, Mary Grace Kratz, who had held the position for a year or so, was leaving. It is Carolyn's understanding that Mary Grace was the second Head Nurse in the ICU, the first being a Georgia Frankos, whom, she believes, opened the unit in "1963." Claudette Strohm led the unit as an interim Head Nurse briefly before Ms. Kratz. Regardless of who was first and who followed whom, there was clearly significant turnover those first couple of years.

Carolyn Kresge

Carolyn was Head Nurse from 1965-1968. Despite having held a nursing leadership position for a few months and being eager for a change, Carolyn felt woefully inadequate, receiving about a week's orientation from Ms. Krantz. She had never worked with monitors or ventilators. The

Figure 1:Carolyn Kresge, RN pictured on right, 1968.

chief cardiologist at the time, Howard Esbenshade, said "all you need to know is v-fib" when she expressed reservations about caring for patients with monitors. Eventually Carolyn was able to attend a course in Philadelphia on basic arrhythmias interpretation, bringing back an invaluable workbook by Gail Walraven that she shared with her staff. Millions of ICU nurses have benefited from this workbook, now in its 8th edition. Another invaluable resource was the "Rapid Interpretation of EKG's" by Dale Durbin.

Another issue for Carolyn was the lack of a ward secretary. The med-surg units had them but not the ICU. Therefore, she (and all the nurses in charge) wasted valuable nursing time answering the phone, ordering supplies and doing myriad other secretarial jobs. When Paul Wedel assumed the CEO position at LGH in 1964 he called all the Head Nurses together to have them air their issues and concerns. Carolyn told him she needed a ward secretary and why. Later in the meeting, when reminded of her expressed needs, he said "Little Kresge, she really cares about her patients." The problem was soon solved. Carolyn never forgot that and remained very impressed with his intellect, memory for details, and focus on patients' needs.

Figure 2: June Stum, RN, BSE.,1969

The first ward secretary was Rebecca Forward, followed by Toni Ehrhart. Another thing Carolyn is proud of is that she was involved in planning the design of the new unit on the 2nd floor before she left in 1968.

June Stum

Following her graduation from LGH School of Nursing in 1960, June Stum worked for 2 years on 2 West, a med-surg unit (later becoming the Intermediate Care Unit) first as a staff nurse, then Head Nurse. She then transferred to 3 West, also med-surg and also in a Head Nurse role. In 1968 Carolyn needed

to leave due to pregnancy, and June was asked by Ruth Todd to assume her position after Myron Rubin, MD recommended her. Note, in those days there was no maternity leave. You could maintain your position if you were able to find someone who could assume your role, a largely impossible task. Otherwise, you were not allowed to return to work for 6 months, and your previous position was not assured. This practice continued well into the 80s.

June also felt she was "thrown into the lion's den. There was no training and no expectations. We were so naïve." She, too, is very complimentary of Paul Wedel. "Everything started when Mr. Wedel came." She says he was a tough administrator, but he was visionary, and focused on operations, budgets, resources and finances. These, she says, were missing from the previous CEO, Dr. Smeltzer, who understandably was primarily focused on clinical operations.

Ruth Hepler

A 1949 graduate of Geisinger Nursing School, Ruth Hepler moved to Lancaster in 1950 with her new husband who had accepted a position at Armstrong Industries. Initially she worked in the Delivery Room, a very busy department as post war baby boomers were being born in great numbers. She worked full and then part-time on night shift, as her own babies were being born, and also part-time in Dr. Jim Martin's office, where she shared a position with Barb Kent. Shortly after June assumed the head nurse position, Ruth's then supervisor for med-surg, Ms. Rollins, suggested she might be interested in transferring to critical care. (Deliveries were also down now due to the introduction of the "Pill".) So, Ruth transferred to the ICU, continuing on the nightshift. She would often ride in with Barb Kent, who also worked part-time night shift, often after leaving Dr. Martin's office and going home to catch a couple hours sleep! Ruth's daughter would babysit Barb's children those nights. Ruth always preferred medical nursing and worked on that side most of the time. Barb preferred surgical nursing.

Physicians

In these early years, key physicians were J. Howard Esbenshade Sr, and later his son John H. Esbenshade Jr, along with William Tinney and Richard Mann: cardiology; John Polcyn and later in the decade Dr. James Argires: neurosurgeons; Myron Rubin, William McCann and Harvey Seiple: internists; Robert Witmer: thoracic surgeon; John Farmer, Paul Davidson, John Pontius, Gary Kirchner: general surgeons; residents assisted in providing for patient care as well. According to Dr. Henry Wentz, post medical school graduates could spend a great deal of time finding a suitable residency. There were between six and eight any given year and it was an exceedingly competitive pool to recruit from. [5] Dr. Zervanos actually interned at LGH in 1962 and 63, then went on to train at University of Pennsylvania and Harvard. He established the Family and Community Medicine program at LGH in 1969. It recently celebrated its 50th anniversary.

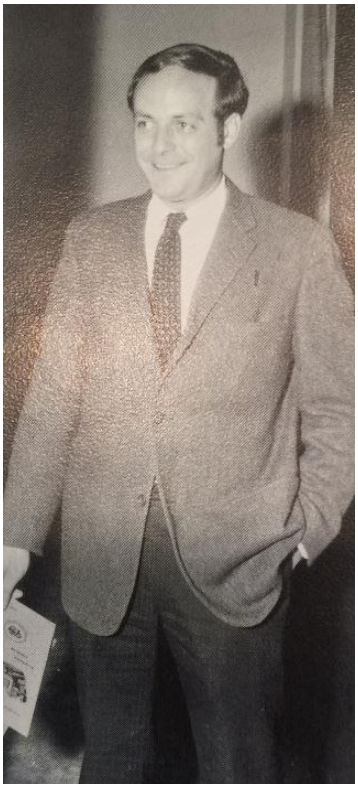

Figure 3: Dr. John Esbenshade Jr, Cardiologist

During these early years Dr. Rubin was the Medical Director and Dr. Farmer, Surgical Director. Relationships with physicians were primarily hierarchical and nurses needed to gain their trust and confidence by asking questions at the bedside and watching them practice. Physicians were concerned by the nursing staff turnover. “We just get them trained and they leave,” Dr. Rubin told June in frustration. Locating a physician could also be a challenge. Overhead paging in-house was the norm as there were no pagers until the early 70’s. Unless the physician left a specific number to call if there were an issue, phone calls could be placed at the doctor’s office, another hospital or their home before catching up with that person.

Nursing Practice

Each shift had a total of 2-3 nurses. Originally, "We didn't keep a nurse on medical side," says Barb, "we just listened for the beeps." Later, one bedside nurse remained on either side, helping each other out as necessary. You relied on the nursing assistant to deliver most of the basic care. Nurses wore their school cap, white dress uniform, shoes and hose. Pants were reluctantly agreed to only in the early 80s. Mandatory cap wearing wasn't eliminated (unless you were in isolation) until about 1991. Still, a few hold out nurses continued to wear their caps even then. The Head or charge nurse took report, rounded with the physicians, called for orders or updates, administered medications, and assisted with patient with activities of daily living (ADL)s as necessary. This nursing model continued into the late 70's, when those responsibilities were increasingly assumed by the bedside primary nurse. The nurses were almost exclusively female. Carolyn does remember two male nurses during her tenure, a "Joey" and Chip Seiple, son of Dr. Seiple. Joey was African and had been sponsored, she believes, by the "Engle women", three nurses who collectively had leadership positions in the maternity wing. Neither man remained long in ICU and no more is known about them. However, Lestz recounts another Engle sister who was a graduate of the nursing school. She lived in Nairobi, but would periodically return to Lancaster, so that might explain why a nurse from Nairobi came to work at LGH.[6]

A bedside nurse's shift was hard physical work, bathing and turning patients regularly every two hours, providing a back and heel rub at the same time, transporting to X-ray if stable enough, monitoring vital signs (VS), managing intravenous (IV) and blood infusions and lines, administering tube feeds, checking diabetic urine tests, providing wound and trach care, suctioning a) through an oral airway to reduce the risk of aspiration, or b) nasotracheally or endotracheally, completing routine assessments (albeit much briefer than by today's nurses), even mopping floors. A basic assessment included skin tone, color and quality; mentation; apical pulse check, and peripheral pulses; listening for rales and rhonchi (as they were then universally called); listening for bowel sounds and palpating the

abdomen; and assessing a patient's muscular strength and mobility levels. Eventually, nurses learned how to do pupil checks, but this came slowly and only when Carolyn assumed the lead role. That was not a skill taught in nursing school, and she had to learn specifically from Dr. Polcyn. She tells the story of when she was a student nurse she was assigned to remain with a neuro patient, taking the blood pressure and doing a pupil check every 15 minutes. She had no idea how to do the latter as there was no one to show her, so she diligently took the patient's blood pressure (BP) as ordered. When Polcyn called in and asked about the patient's pupil reaction she had to admit she had no idea how to do it. He was furious but then proceeded to guide her through the procedure and was very pleased to hear his patient had a brisk pupil reaction. There was a situation during her ICU years when Dr. Polcyn was called to a patient's bedside whose neuro status was deteriorating. Carolyn had notified him of the lack of pupil reaction in one eye. He complimented her and was reminded that he had explained the procedure years before. "Well, I taught you well," he said. There were no IV pumps; nurses applied a strip of tape along the side of the bag to approximate hourly volumes, and routinely counted drip rates with the second hand of their watch. The IV solutions were mainly D5, and D5 and a half saline. Later, Plasmolyte 56 and Plasmolyte 148 (a mixture of specific electrolytes, minerals and calories) became more common, particularly for surgical patients. IVs were changed only if the site was reddened. There were no protocols for routine change. Nurses would add potassium (KCL) to the drips as ordered drawing the solution up from a large bottle of potassium. Bedside nurses did not start IVs, but some nursing supervisors performed that duty. Cutdowns were done if the nurses or interns could not access a vein. The

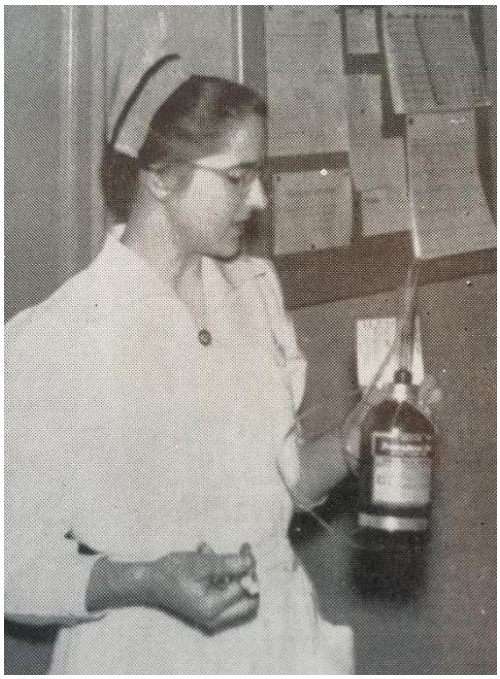

Figure 4: Blood transfusion setup, circa 1960s.

thermometers were glass with mercury inserts that needed disinfecting after each use. Blood transfusions were administered with two nurses verifying the authenticity of the order with each infusion. Packed cells were the norm on medical side as many of the patients were in congestive heart failure (CHF). Nurses recognized the potential for CHF and advocated accordingly to avoid fluid overload. In Part 2 (The 1970s), there is an example of this advocacy through Ruth's actions.

If urine output was being measured hourly, the urine had to be emptied into a jug and recorded. Urometers were unavailable then. Intakes and outputs (I/O) were calculated manually at the end of each shift and recorded on the I/O record kept at the bedside. Shift totals were then transposed to the graphic sheet. No calculators, just old-fashioned arithmetic. In addition to urine, outputs could include emesis, naso-gastric (NG) drainage, chest tube drainage, wound drainage, and drainage into a rectal foley, depending on why the patient had been admitted. Color and consistency were noted as well. At the end of the shift, or daily, suction cannisters were emptied by the aide, rinsed and then replaced at the bedside. Virtually all equipment was non-disposable and needed cleaning and re-sterilization where necessary. Terminal cleaning occurred, of course, with each discharge or death. Morgue care was done by aides, with the death certificate being completed by the in-house or on call resident, or attending.

If patients were being fed via gastrointestinal (GI) tubes, it was by gravity; again, there no pumps available, thus nurses needed to keep a close eye on the drip rate. Aspirate was drawn up with a 50-cc glass syringe to determine if the next feed should be given. If it was too much, typically 100cc or more, the nurse would try again after an hour. If still excessive, the feed was withheld until the next scheduled time and physician notified as necessary. Levine tubes were attached to intermittent suction to rest the stomach or duodenum and to limit distension and pressure on the suture line. Anderson tubes were on a continuous suction cycle. Woe betide if the general surgeon (principally Dr. Davidson!) discovered an Anderson tube not bubbling. These tubes were irrigated every eight hours with saline to also ensure patency. Each patient had a bowl of sterile saline at the bedside covered with a sterile towel which was changed daily.

There were no specialty pressure-relieving beds or mattresses until the early 80s, so the rather hard, flat mattresses exacted a lot of shear, friction and pressure. The nurses and aides would turn the patients every two hours using a turn sheet. Pressure sores (bedsores) did occur, albeit rarely, primarily on the heels despite the frequent turning. "We turned the patient rigidly" every two hours, says Barb. If a sacral bedsore developed you turned the patient on his/her side, applied methiolate and/or Maalox and directed a heat lamp on the site for a period of time, always watchful for burning. This treatment was later found to be of no value.

The person in charge would pass all medications and made most of the calls to the physicians. Intramuscular (I.M.) medications were given using glass syringes and non-disposable needles. Oral medications were removed from bottles in a cupboard at the nurses' station and placed in individual medicine cups on a tray. The nurse used small pink cards to identify a patient's name, dose and time of administration. The unit secretary transcribed this information onto the card in pencil. A medication record hung on a clipboard at the end of the bed along with other documentation forms. Nurses' documentation in the medical record overall was minimal and to the point. It was also color-coded; blue ink for days, green for evenings and red for nights. Nurses all carried a ballpoint pen that incorporated all the colors. If a patient experienced ventricular tachycardia (v tach) on night shift, you had to call the night supervisor to notify the physician and then she would come up to administer the Zylocaine (lidocaine) 100mg intravenously. Eventually, nursing staff questioned this and the convoluted procedure was eliminated.

There were no formal nursing care plans. Orders were transcribed onto a paper kardex which was the primary reference for transcribed orders and for with the shift to shift report. It also included specific patient needs or preferences to pass on during report. These were transferred with the patient along with the chart. Physicians used progress notes to document their rounds and orders. You called for stat medications if they were unavailable on the floor; otherwise pharmacy rounded periodically and picked up new, routine orders and restocked as necessary.

The nursing scope of practice was "flexible". "You didn't think about legal things" says Barb. "What was asked of you, you did." Nurses could, for example, be

asked to tighten or loosen an external carotid screw, depending on symptomatology (following commands or not/changing level of consciousness) in a patient post craniotomy. Post anesthesia patients came after hours to be recovered in the ICU. They were delivered on gurneys to the nurses' station, with no monitor, no suction, with VS taken initially every 15 minutes. One of the unit nurses had to remain with the patient leaving possibly one other to care for all the rest. A nurse anesthetist was the one who usually came up and extubated the patient when they had recovered sufficiently. Then an ICU nurse would need to transport them to a floor, if they were not being admitted to the unit. Per June Stum, one year there were no interns recruited, so nurses were taught to do cut downs during a code to deliver IV therapy, if they were unable to start an IV.

As a nurse you learned critical care skills and thinking on the job, from the doctors and your fellow nurses. Orientation was brief at best and overseen by the head nurse. There were no staff development nurses to educate you. You learned for example, to "milk" chest tubes (also making sure it was bubbling appropriately), and to do nasotracheal suctioning with a catheter to induce coughing post operatively, while the aide would hold a pillow to bolster the chest. Carolyn was routinely asked to go to a surgical floor by Dr. Witmer to provide this procedure to a postoperative patient.

Supportive equipment used was bulky, cumbersome and rather primitive. Equipment included, for example, Stryker frames, circoelectric beds, traction set-ups, and glass chest tube bottles which sat on the floor for gravity drainage, or connected to a suction setup. The bottles needed to be taped securely to the floor to remain upright and steady; no bed attachments available in those days. Crutchfield tongs, Bucks traction and Thomas splints were frequent used, the latter for lower extremity fractures. These devices had a ring around the femoral region with the leg stabilized by iron band splints. Groin skin care needed to be meticulous to avoid skin breakdown and thrush infections. Specially designed fracture bedpans were maneuvered into place, but spills were not unusual. Moving these patients required 2-3 individuals minimum and was especially risky with Crutchfield tongs. You also needed to coordinate a team to turn the patient in a Stryker frame and it took real

planning. You needed the house orderly to assist. For very young children with lower extremity fractures the "Gallows" traction was used. Here, the child's legs were suspended at a 90-degree angle and the buttocks were off the bed a little bit. Weights for the tractions were either suspended at the end or top of the bed, depending on type of traction.[7]

Given the volume of work, nurses' aides were invaluable in assisting the nursing staff with bedside care and cleaning of equipment and environment. Several highly capable aides included Flossie Lefever, Janet Metzler, and "Toots" Yoder. There was usually an aide to assist on each side. According to Ruth the aides were highly adept and did a lot more than today's aides, receiving on the job training from the nurses. They set up for foley or IV insertions, took VS, attached oxygen to the patient, suctioned, turned and bathed patients, put them on bedpans and gave out urinals, offered emesis basins for nausea, cleaned and returned instruments to central supply.

Per June, family interaction was much more limited than today. There were set and limited visiting hours and they were firmly adhered to. The doctor's word was "gospel" and families didn't question the care or decisions. Nurses could not provide any lab or other results; that was strictly the purview of the physician in charge. That isn't to say nurses did not form close relationships with their patients and families, they certainly did.

Pulmonary

Face masks and nasal cannulae revolutionized oxygen delivery modes, however, oxygen tents remained an important mode for treating patients with compromised lung function such as pneumonia, CHF and esophageal and lung cancers well into the 60s. The tent combined oxygen delivery with humidification. Being encased in a plastic tent provided a means of cooling a feverish, restless patient, but made access problematic. The flaps could not be opened for any length of time, to limit the loss of circulating oxygen to the exterior. Also, it was difficult to work with the patient within the rather steamy atmosphere. June remembers the

added challenge of nursing postoperative patients in an oxygen tent as they typically had multiple drainage tubes from operative sites. She also recalls that there was no surgery performed at LGH at that time for patients with esophageal cancer, and care was supportive only. She says that many such patients basically received end-of-life and comfort care within their oxygen tent, and that the odor when the flap was opened from the cancer source was horrendous.

Carolyn Kresge learned "on the fly" how to set up an oxygen tent when she was only six months into her training. In those days, the hospital was largely staffed on the off shifts by nurses still in training. At that point, she was assigned to a med-surg unit on nights with an aide. She was the only nurse on duty but the supervisor was available for assistance. Her patient who had "dropsy" (CHF with peripheral edema), was becoming very dyspneic and her lips were turning blue. Carolyn had not yet had the clinical training session to be competent with the setup but had seen others do so. It was an emergency so she called the supervisor for help, but knew time was of the essence and she needed to intervene immediately. So, she set it up intuitively and oxygen began to flow from the oxygen tank, to the patient's relief. Still, it says a lot about the expectations placed on trainee nurses that wouldn't, and shouldn't occur today.

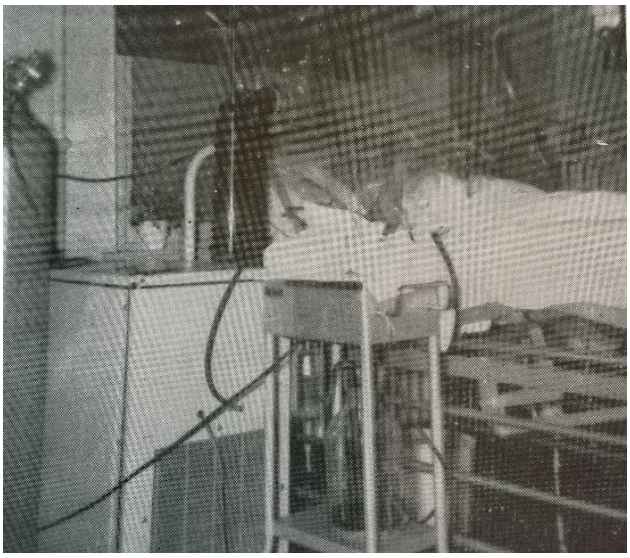

Figure 5: Oxygen tent setup.

Ventilators became more routine for patients severely compromised or post operatively. However, in those early days with no specific formal education, ventilator management was another huge hurdle for the nursing staff. There were a few "inhalation technicians" employed by the hospital. Over the years their title has changed from inhalation to respiratory technicians, then respiratory therapists, and most recently, pulmonary therapists. Larry Bowman was the lead therapist and then, Ron Denlinger, whom everyone remembers with great affection. He and others were invaluable in supporting and teaching the nurses. Nurses suctioned and extubated while the therapists and physicians managed the vents. Early ventilators delivered set volumes or pressures with set rates. Two common positive pressure ventilators were the Emerson and Bird Mark 7. Another vent that Carolyn describes as a clamshell-like device around the patient's midriff, creating a non-invasive volume ventilation through negative pressure, but was unable to identify its name. Research revealed it was probably the Chest Cuirass or "turtle shell".[8]

Figure 6: Dr. Robert Witmer, General and Vascular Surgeon.

Treatment of many lung disorders such as bronchiectasis, tubercular lesions, or carcinoma was largely with surgical intervention. Patients underwent a lung or lobe resection, drainage for empyema, thoracoplasty and more. The introduction of the lifesaving antibiotics, streptomycin, isoniazid, rifampin and penicillin and later, cytotoxic drugs, has greatly reduced the need for these surgical interventions. Note: nurses could only reinforce Dr. Witmer's chest surgical sites, not redress them due to the concern for dislodgement of a chest tube resulting in a pneumothorax. Visits by Dr. Robert Witmer remained legendary until the last days of his practice. He always had a cigar in his mouth when entering the unit which he would place on the counter in the nurses' station while seeing his patient. Actually, in the mid-70s, Debbie Milliken

(then Smith) threw his cigar out, not knowing whom it belonged to and suffered his wrath! Smoking by nurses, respiratory therapists and doctors was common in those days. They all could be encountered taking a smoke break in the nurses' lounge at any time of the day. More importantly, Dr. Witmer was considered a highly skilled and visionary surgeon. He performed the first aortic aneurysm with graft repair at the hospital; previously patients were referred to Philadelphia or Hershey. He performed mitral commissurotomies well into the 1970s. He also established the 6-month surgical residency experiences for suitable candidates at LGH in the late 1950s.[5]

Carolyn recalls another patient, an elderly woman who was trached and on the ventilator. She had suffered serious injuries in a motor vehicle accident and could not be weaned from the respirator. She was awake and alert despite her situation, but would turn blue if she were disconnected from the machine, even for a short period. Finally, the decision was made by her primary to begin short periods off the ventilator, as he attributed much of her problem to "panic attacks." Carolyn believed otherwise…. "I just thought there was something seriously wrong with her." She chose not to remove her from the machine and instructed her staff likewise. Next day on her return the patient's bed was empty. Weaning was instituted on evening shift per the doctor's renewed request. However, soon after instituting the weaning the patient had suffered a pulmonary and then cardiac arrest. Due to the nature of her original injuries she was a coroner's case. A post mortem revealed bilateral pulmonary pnemothoraces.

Figure 7: Ground Floor Medicine Nursing Unit, 1968.

Polio had been rampant in the county since the 20s. In 1944 until 1957, because of the number of cases and iron lungs needed, a separate polio unit was

established at Lancaster General. That unit would open during the peak seasons for the polio outbreak in the summer and fall months of the year.[5,9] A group of nurses who graduated in 1954 remember the location as "Ground Medicine" on the hospital's ground floor. In 1957 it was closed permanently for polio patients once the Salk and Sabin vaccines were introduced. Subsequently, any gravely ill polio or other patients came to ICU for care. Carolyn and June remember one patient who had myasthenia gravis but it is unknown how long that individual was in the department. Ruth remembers a patient with bulbar polio who was cared for primarily by private duty nurses, one of whom was Jenny Baker, a highly competent and respected nurse of that era. She was a mentor to Ruth and taught her a lot. In her waning years Ruth took care of her as her family had passed on. She just recently died at age 103 years.

Nursing care of patients in an iron lung absorbed a lot of a nurse's time, skill and focus. It was a ventilator functioning through a combination of positive and negative pressure respirations. A nurse remained in the room with them, always tuned to the "whooshing sound" it made with each respiration. "You prayed the electricity wouldn't go off," says Barb. If it had, the nurse would have had to manually pump by pushing and pulling the wheel-like structure at the end of the iron lung. Thankfully, Barb never had to do that. Even when the patient was accustomed to the lung, it was still a struggle as they had to lie on their back and view the surroundings with a mirror in front of their face. A foam collar fitted snugly around the neck to prevent air leakage. Side ports allowed for easier access to provide care for those more critical patients, unable to breathe independently if the upper chamber was opened. Some patients could tolerate periods of time off the lung, and then be weaned from it, but it was a laborious

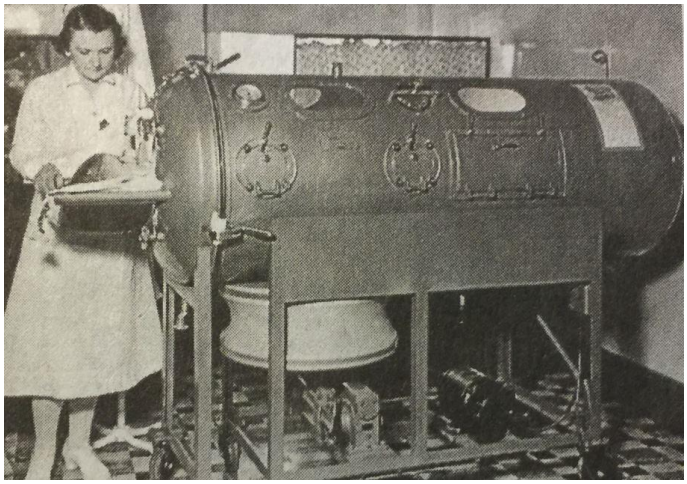

Figure 8: Iron Lung.

process. Some were never able to come off the machine in their lifetime. An iron lung used at LGH is on display at the Edward Hand Medical Museum in Lancaster. You are invited to read an article by Franklin & Marshall student, Ellen Hendrix, *Poliomyelitis in Lancaster County with Emphasis on the Iron Lung,* for a more complete examination of all aspects of polio in Lancaster County.[9]

Along with analgesics the "Sister Kenny" hot flannel compresses were a mainstay of treatment for victims with paralyzed, or weak, stiff and painful limbs, and for the neck and back. Sister Kenny was an Australian bush nurse who made a significant difference in polio (and other) victims' lives and care, both in her home country and America. She also strongly advocated gentle, passive exercises. These and other approaches became the forerunner of modern-day physical therapy.[10,11] Barb said that at the height of the last polio epidemic in Lancaster in the early 60s, there could be as many as 3 patients a week in iron lungs, some with varying degrees of limitation. That's all the iron lungs LGH had in stock! She remembers three individuals - a young boy, young girl and a young woman, all from the same family, two of whom had tracheostomies. They were kept on the surgical side in a room together and there was no room for any additional equipment. "You stayed with them in the room…. You were very vigilant in observing these patients….It was very stressful." The good news is that all three were eventually discharged home. Carolyn tells of an Amish child with polio whom the doctors agreed could go home in his iron lung. One can only imagine the logistics of transporting him home and subsequently taking care of him, not the least of which would be that it needed to be powered by a generator.

<u>Cardiac</u>

Often referred to as "oscilloscope", the Burdick Cardiac monitors were the first style of monitors in the unit. Initially there only two.

Figure 9: ICU bedside cardiac monitoring.

The screens were very small (5 inches in diameter) and orange, with a "bouncing ball" graphic. These early monitor prototypes displayed the ECG signal and heart rate, had alarms for high and low rates, and were attached to a separate ECG printout device. Patients were attached by a cable to the bedside monitor and lead attachments were simple: two on each upper arm, two on each upper thigh. The reason for the "bouncing ball" was that the single trace image stayed displayed for only a second or two as the older image faded away.[12] Any detailed EKG examination, however, required a full 12 lead EKG.

Early on, nurses pretty much "ignored" the monitor patterns. They did learn to recognize premature ventricular contractions (PVCs) and v tach on the monitor and to bring the crash cart if a patient coded. Interns "ran" the codes. Dr. John Esbenshade instituted the formalized Code Blue response in 1962, and in 1965 began using the "MaxCart" for which a patient was moved onto for resuscitation. Every cart had a monitor/defibrillator but no external pacing. Those were unavailable until Dr. Zoll perfected them in the early 80s. Dr. John Esbenshade was the first to administer A/C defibrillation, again in 1962.[5] Ambu bags were available in the unit (but surprisingly, not in the ED until 1975 according to Carolyn). Interns or residents defibrillated the patients, applied the "thumper" for compressions (a mechanical chest compressor), while pulmonary physicians or anesthesia intubated

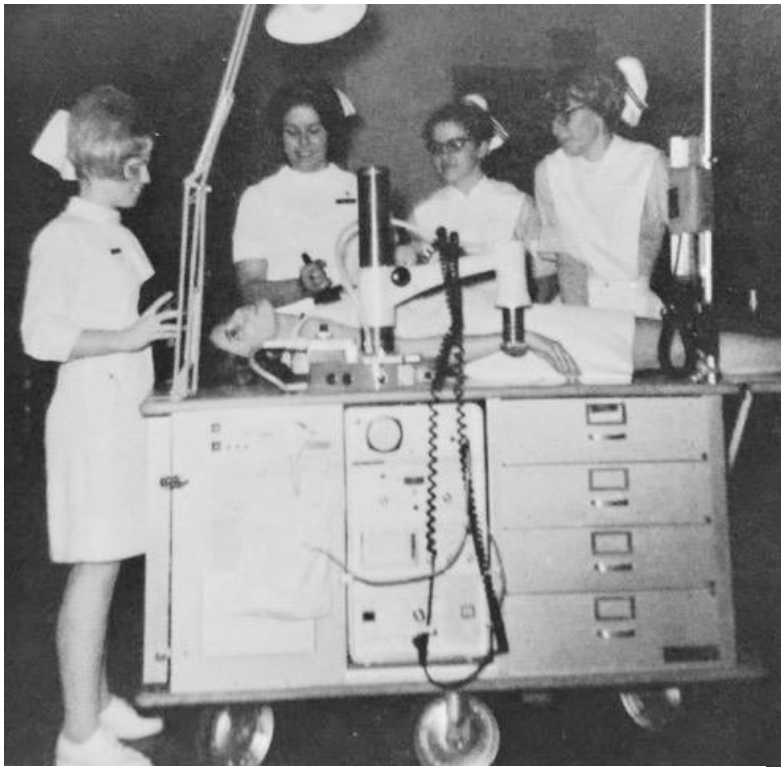

Figure 10: 1970, Sandy Hinkle, RN (pictured on left) demonstrating use of the MaxCart to nursing students.

if needed. Nurses administered meds, suctioned, managed IVs, etc. The famous "Aramine" wash was administered in those early days and into the 70s during codes, or if the patient became severely hypotensive or obtunded. Its origin is not really understood. It entailed pulling up a small amount of Aramine (metaraminol), a powerful sympathomimetic drug, into a 2.5 cc syringe, adding a small amount of saline, then injecting it and flushing the line with saline. Boluses of Aramine were also administered 2.5 or 5 mg at a time. Epinephrine was administered frequently during a prolonged code, and these cardiac stimulating drugs could have a dramatic effect on circulation. Attending physicians were notified of codes if not present and were expected to come and see their patients. There were no blood gases. Per Carolyn, Dr. Seiple would periodically say, "Give some more baking soda" (referring to sodium bicarbonate) during a prolonged resuscitation. ICU nurses also responded to all house codes, along with the residents.

There were much fewer cardiac medications at that time. Thiocyanates, phenobarbitol and rauwolfia were available to reduce significant hypertension.[5] Oral anti-hypertensives included hydralazine and Aldomet (methydopa). Digitalis was administered for rapid atrial arrhythmias, with Quabain the faster acting form. Quinidine was also administered for atrial arrythmias. A 1966 paper by Drs. Rubin and John Esbenshade highlights their ability to convert their patient's atrial fibrillation to sinus rhythm, when electric shocking had been unsuccessful.[13] Certainly, the patient would have been in the ICU. Myocardial infarction and other cardiac patients were on complete bed rest and required total care, often for a prolonged period of time. They were bathed and fed (even so far as having a glass and straw held by the nurse or aide while the patient drank). Bedpan use was obligatory and very difficult for patients, so laxative use was common. Ice water was strictly prohibited, as it was thought to induce a vagal response (a practice which has been long debunked). Patients were usually kept mildly sedated with Valium (diazepam) to limit restlessness from inactivity. Chest pain was treated with I.M. Morphine or Demerol and sublingual nitroglycerine. Heparin boluses were introduced around this time but the historians are unsure when. The same for Warfarin (or its early prototype, dicoumarol). Methods for determining ischemic

heart disease were limited. The Master Two Step was a precursor to treadmill tests and cardiac catheterizations. Following a resting 12 lead EKG the patient walked for a period of time. Post exercise another EKG was performed. If ST depression occurred, it was considered highly suspicious for heart disease.[14] These were done in the Cardiology Department. It is unlikely an ICU patient ever underwent this procedure while in the unit. Possibly it was done following their discharge.

Rotating tourniquets were a primary method of treatment for a patient in pulmonary edema. All four limbs had their own individual cuff which, when inflated to 20, 40, 60 or 80 mmHg, limited venous return to the heart, reducing cardiac workload and intracardiac pressures. The cuffs were connected to a machine which alternated deflation of the cuffs in a rotating manner (one limb was always deflated) typically in an incremental fashion.[15] These patients were usually critically ill needing close nursing supervision. At the height of their pulmonary edema they could be frothing at the mouth, sometimes requiring intubation. Morphine was administered to reduce venous return and the resulting panic of respiratory distress, as well as oxygen, digitalis and diuretics. Occasionally, patients were admitted with actual rubber tourniquets on their limbs which the physician removed one by one as the patient's condition improved.

By the early 60s, Dr. Witmer began inserting permanent epicardial pacing wires for patients with complete heart block and syncope. In 1965 he and Dr. Mann collaborated on the insertion of the first permanent pacemaker via a thoracotomy approach. In 1969 Dr. Witmer inserted the hospital's first transvenous pacing wire into the right ventricle. Early pacemakers were strictly ventricular, in a fixed rate pacing mode. Drs. John Esbenshade and Bowman (Radiology) performed the first heart catheterization in the late 60's in the X-Ray department.[5] Per Ruth, Dr. Mann was irritated at the slow pace of cardiac catheterization implementation, so he reviewed the literature and from 1971 proceeded to perform them routinely.

Surgical/Other Medical Conditions

Extensive abdominal surgical procedures were common at that time, especially gastrectomy for gastric ulcer or for gastric cancer. This was long before proton pump medications and other non-surgical treatments were available. June tells of the strange approach used for thyroidectomy patients, either on the floors or in the unit. Those were the days that patients were admitted for an elective surgery 2-3 days ahead of the proposed date. But this specific patient group was not notified about surgery until the actual day. June's understanding is it was because of the potential for hyperthyroidism and thyroid storm. Thus, these individuals were identified as "sneak thyroids" and the patient was quietly made nothing per mouth (NPO) the night before. They were informed of the impending surgery just before going to the operating room (OR). These were Sol Pontius' patients by and large. On their return, a sheet was placed over any mirror in the room to spare their feelings so they wouldn't see the bulky neck dressing! Post-thyroidectomy patients were kept as immobile as possible. Ice packs were placed on their necks and pillows beside their head and neck as bolsters.

Figure 11: Postoperative thyroidectomy patient.

Despite everyone's best effort to prevent infection it did occur. Abdominal incisions were often extensive with retaining sutures in place. Wound dehiscence occurred with some frequency and nurses grew knowledgeable about pre-dehiscence signs, "a kind of puckering along the incision" according to June. They alerted the surgeon immediately.

Prior to Trauma Neuro Unit's opening in 1982 acute head injury, severe stroke, burn, orthopedic and trauma patients were admitted to the ICU. Mannitol was frequently administered to head injury and other neuro patients in 50 cc bolus increments, based on decreasing level of consciousness. Dr. Polcyn would order it on being notified of the patient's worsening condition. Barb remembers that it could only be defrosted "in the sink" just prior to administration. It was a mad dash to defrost it as he made his way into see a patient. It frequently crystalized and there would be white powder all over the syringe. Diuretics were administered IM as was morphine or demerol. Paraldehyde was used as an anticonvulsant and relaxant for severe alcohol withdrawal. Acute alcoholic intoxicated patients were often admitted to the unit and coincidentally, per June, many of them had vascular aneurysms. To calm these patients during their delirium tremens (DTs), nurses routinely administered IM Librium, constituted in the unit by mixing the Librium powder with saline. Dr. Kirchner would often order IV alcohol infusions during the acute alcohol withdrawal phase. Ruth tells the story of a patient who remained restless and difficult to manage despite sedation and the drip. He asked his nurse if he could have a drink to which she explained that he was receiving alcohol via his drip. Later, Ruth and Barb heard a "glugging" sound from his bedside. They ran to him to find him drinking through the IV tubing that he had bitten through.

Figure 12: 1954, Dr. P. Davidson, General Surgeon.

Two excellent general surgeons of that era and into the 70s were Drs. Paul Davidson and Peter Pranckun. Per June: Dr. Davidson had a calm and gentlemanly demeanor. "Ego never got in the way. And he quickly called in an appropriate

consult if he thought he couldn't adequately handle a patient's changing situation. He worked well with the nurses, taught them a lot and was very personable with the patients." Beverly Wimer, who graduated in 1954, says she "didn't know how much his wife and children saw him; he seemed to live at the hospital." Drs. Davidson and Pranckun were great pals and used to play jokes on one another. An example was the time Dr. Davidson hid one of Dr. Pranckun's patient's chart. In later years June's father was actually operated on by Dr. Davidson for colon cancer, where 7 of 10 of his nodes were positive. He lived for several more years and died from natural causes. She holds Dr. Davidson in high esteem for his surgical as well as customer service skills.

Only the worst trauma cases were admitted to the ICU. They often suffered multiple injuries and were in traction devices, and could have co-existing head injuries. Carolyn remembers one young man who was admitted directly from the scene of his car accident, bypassing the emergency room. No pre-hospital care was provided, just ambulance delivery. It was one of Dr. Kirchner's very first cases as he had just returned home from his military tour in Vietnam. There was no IV, no blood available, and everyone was trying to find a vein and provide fluid resuscitation, stabilize his airway, and stop the bleeding from his open injuries. Dr. Kirchner quickly took him to surgery but was unable to save him. It turns out the patient was born in Lancaster General Hospital. In the letter his father wrote to the hospital following his death thanking the staff he wrote, "He took his first breath at Lancaster General….and his last."

Other Nursing Personnel

A standout bedside nurse in this era and into the early 1970s was Elaine Davis. Before coming to the ICU she had been a navy nurse. All the nurse historians speak about her in the most glowing terms due to her intelligence, quick learning ability, nursing skills, communication strengths with patients, colleagues and physicians alike, and her warmth and empathy. She was a favorite with Dr. Mann who would ask for her to assist with cardiac catheterizations in the X-Ray

department. Few knew that she was also the wife of a Vietnam POW. Her husband was imprisoned for seven and a half years, having been shot down in his first sortie about 1966. When Dr. Witmer came into the unit he would always ask, "Any news from Hanoi?" And when Dr. Rubin was hospitalized, she was the one he wanted to care for him. When Elaine met her husband Fruthad a small dog hidden in his jacket. That dog lived a long life in the States. After her husband's return, Elaine left nursing to raise her children. When she left the unit, she gave June a commemoration cup. June returned the cup to Elaine's family at her memorial service in 2018.

Figure 13: Elaine Davis, RN

Some other bedside nurses included Suzy Thurston, whom Dr. Mann called "Fuzzy" Thurston, after an NLF player by that name. She was universally liked for her smile and bubbly nature. When one patient asked Suzy if she was going to die, Suzy said, "Oh no, we would never let that happen to you" and the patient visibly calmed down. Betty Schweible was an older nurse when she came to the unit, but very capable and calm. She had been a private duty nurse but wanted more of a challenge. June remembers another very competent nurse, Sandy Hinkle. Several historians were highly complementary of Sandy's nursing knowledge and leadership on the evening shift, well into the 1970s. Other shift leaders were Emily Siemasco, Dottie Kelly and Shirley Conlin, who all remained working in the ICU into the 70s. This is an incomplete list at best.

Nursing supervisors covered ICU and the house on all 3 shifts. Two well-known individuals were Violet Pennybacker (Penny to all) and Joanne Wertz. They both worked at the hospital till the early 90s. Penny originally worked evenings, and Ms. Rollins and Ms. Ginder on nights, with Joanne Wertz on the day shift. On off hours, weekends and holidays supervisors went to the laundry, kitchen and

pharmacy to get supplies. The shift supervisor called physicians on night shift to stagger phone calls and minimize sleep interruption. However, that could delay care.

June was a very early advocate for higher education for nurses. In fact, from 1962-67 she pursued her bachelor's degree from Millersville. It was not a BSN program until later thus she graduated with a BSE with a concentration in nursing. One year she worked full time nights to complete her degree as the classes were during the day. She also had to learn to drive to get to the Campus because she lived 2 blocks away from the hospital. There was reimbursement for fees if you maintained a B average.

As a candy-striper, Darla Cardin (Poole) was "enamored of the ICU- it was so intriguing." She was especially drawn to the craniotomy patients whose heads were encased by large, thick bandages. She was in awe of the nurses with stethoscopes wrapped around their necks. When they walked into the cafeteria, they had a "persona to be admired." Everyone knew who they were by those stethoscopes. "That was the start of wanting to be a nurse." Darla was subsequently hired in 1974 as a registered nurse in the unit. Her other reminiscences can be read in the next sections.

Postscript

This document is a work in progress, based on oral histories from nurses working in the Intensive Care Unit at Lancaster General Hospital, Lancaster, PA since the early 1960s. We invite others to add to those stories or share their own personal experience.

Any additions will be with the approval of Elizabeth J. Thompson, RN, who is the author of this document.

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