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CHAPTER 5

Verbal Orders and Hospital Nursing

Expanding Nurses’ Scope of Practice in the Mid-Twentieth Century

Eliminating Errors in Medication

... If by some miracle, I could address a plea to all members of the medical profession who give orders for medications, I should say something like this—“We are neither sentimental about our functions as nurses nor under false impressions concerning our relative responsibilities. We want to carry out your orders because we, like you, desire to help our patients. Sometimes, however, you do make it unnecessarily difficult for us. You insist on our taking verbal orders when we are taught not to do so. You often write orders we can interpret only with great difficulty or not at all, either because you do not write legibly or because your directions are not clear.¹

Margene O. Faddis, RN, Associate Professor of Nursing

Writing in the American Journal of Nursing in 1939, Associate Professor Margene O. Faddis was expressing her concern about medication errors in hospitals. Faddis addressed two of the major problems: (1) physicians were asking general staff nurses to accept “verbal orders” for patient medications rather than writing those orders on the patient’s chart, and (2) physicians’ written orders were often illegible and incomprehensible. Both concerns were valid. In the 1930s, as in previous decades, nurses were not supposed to accept verbal orders given by physicians. That is, the physician had to see the patient and write the medication order on the chart, rather than simply giving a “verbal” order over the telephone or in a hallway of the hospital. In fact, physicians had to write and sign not only all medication orders, but all other treatment and dietary orders, as well.
Only a small percentage of the nurses working in the United States had the freedom allowed them in practice settings like the Henry Street Settlement, the Frontier Nursing Service, or the Indian Health Service. Even fewer nurses worked as nurse anesthetists. In 1939, more than half of all nurses working in America worked in hospitals.\(^2\) For years, most graduate nurses had worked in private-duty nursing, in patients’ homes.\(^3\) Student nurses had staffed the hospitals. With the collapse of the economy in the 1930s, however, many graduates sought hospital employment.

In the hospital, there were no standing orders for nurses to follow in the absence of a physician. Even “p.r.n” orders (pro-re-nata—Latin for “as needed”) were to be written specifically for each patient. For example, a physician might write on a patient’s chart: “Give ASA, grs. 5 prn q4h for pain,” meaning that the nurse was permitted to give the patient one aspirin (5 grains) every four hours as was needed to treat pain.

The purpose of having written rather than verbal orders was to prevent errors in the nurse's interpretation of the orders, including specifics concerning for which patient the medication (or diet or activity order) was intended, the exact dose of a medication, or the specific route of administration. If the doctor had not written the order clearly, which was often the case, the nurse could misinterpret it and make a medication error.

Unlike the Visiting Nurses at Henry Street Settlement, nurse anesthetists, Frontier Nurses in Appalachia, and field nurses working for the Bureau of Indian Affairs (later, the Indian Health Service), all of whom had postgraduate training in their specialty (public health, anesthesia nursing, or nurse-midwifery), the majority of hospital staff nurses,\(^4\) also known as “general duty” nurses, did not have additional education after they graduated from nursing school. Most graduated from hospital-based diploma programs, not colleges and universities, and they had been taught only the basics about physiology, pathophysiology, and pharmacology.\(^5\) General staff nurses did not have the advanced education necessary to make in-depth assessments of their patients’ signs and symptoms, nor were they expected to.

For a century, physicians had claimed that the acts of diagnosis and prescription were theirs alone; the nursing profession had never challenged that claim. Ever since Florence Nightingale had refused to care for the sick and injured soldiers in the Crimea until she had a specific request or order from the surgeon in charge, the nursing profession had clung to the belief that nurses were to carry out physicians’ orders rather than take any initiative in ordering and implementing care. Physicians even ordered diets for patients, an activity that nurses were more informed about and more capable of implementing. For example, one popular 1902 textbook of nursing included an entire chapter on recipes for broths and gruel, as well as the
nutritional requirements of patients with specific disease conditions. Nonetheless, the author was adamant that the physician should make dietary decisions for the patient. According to that text: “What kind of food is to be given in each case will usually be decided by the physician; how best to prepare and administer it are matters for the nurse to know.” The boundary line between the professions was clear. Nurses made and recorded patient observations; physicians analyzed the data presented to them. Physicians prescribed treatments, dietary therapy, and medicines; nurses carried out orders. State medical practice acts reinforced these divisions.

Medicine and Nursing in the Early Twentieth Century

Since the founding of the American Medical Association in 1847, allopathic physicians had been working to gain control of medical care in the United States. In the late nineteenth century, scientific advances in surgery and widespread acceptance of the germ theory and antisepsis gave physicians the credibility they wanted. The rise of professional nursing, coupled with hospital reform, changed the reputation of hospitals from almshouses for the poor to places of healing and scientific medical care. The initiation of medical licensure, the revolutionary changes in medical education that occurred after the Flexner report in 1910, new medical technologies such as the x-ray, the electrocardiogram (ECG), and new diagnostic tests such as the complete blood count and urinalysis further increased physicians’ control of their profession. According to historians Rosemary Stevens and Joel Howell, the changes and new technologies also increased the public’s confidence in doctors and hospitals. By the 1920s, middle-class Americans accepted hospitalization for specific medical interventions that had “highly successful outcomes, particularly: obstetrical deliveries, appendectomies, and tonsillectomies and adenoidectomies.” Because of the widespread problem of tuberculosis, Americans also were willing to enter specialized hospitals—sanitariums and preventoriums—for treatment of that disease.

As Michael Bliss and Chris Feudtner have so clearly described, the discovery of insulin in 1922 provided further evidence of the promise of research and physician-prescribed medicines. With the use of sulfa drugs in the 1930s, physicians were demonstrating that they could cure such previously fatal diseases as pneumonia and nephritis (kidney infection). The use of the “miracle drug” penicillin (discovered by Alexander Fleming in 1928 and widely marketed in World War II), medical advances in World War II, and postwar “space-age” medical technology also increased the American public’s respect and admiration for the medical profession. The
words “physician” and “cure” became synonymous. And, according to historians Barbara Melosh and Susan Reverby, although the public respected and trusted nurses (educated in training schools, middle-class, and female), they saw them as the “caring” profession, “hand-maidens” to better-educated, higher-class, male physicians. Even hospital nurses themselves, the majority of whom were students, did little to change this widespread conviction. In fact, they promoted it. Inside hospitals, graduate nurses worked as nursing supervisors, nursing directors, or nurse anesthetists. Student nurses handled the management of the wards, including bathing and feeding patients, as well as giving treatments and medications ordered by physicians. And the students simply followed orders.

**Following Orders**

Thus, by the 1940s, when the majority of graduate nurses had shifted their place of employment from private duty in patients’ homes to staff nursing in hospitals, the boundaries of medicine and nursing had been clearly established. Both professions accepted as fact that doctors were responsible for giving medication orders; nurses, both students and graduates, followed them. These orders were to be written, not given verbally. According to a 1948 textbook of nursing:

> In all instances the physician is responsible for writing and signing the order for the drug. . . . In extreme emergencies a verbal order may be carried out by the nurse, but this order should later be written and signed by the physician.

Unlike the nurse working in an urban tenement, in an isolated cabin in Appalachia, or in a remote trading post on an Indian reservation, or the nurse anesthetist who had to rely on her own observations to make critical decisions while the surgeon operated, the general staff nurse working on the wards in an American hospital did not need to act on her own accord. Physicians were readily available. Inside the hospital, therefore, there were no “standing orders” to be followed when the physician was not present. Moreover, the bureaucratic system of hospital administration and the hierarchy within nursing—from the staff nurse to the head nurse to the nursing supervisor and finally to the director of nursing, ensured that decision making went up a nursing chain of command.

Nowhere was the chain of command more rigid than it was in the administration of medications. Usually, the head nurse used a “case assignment method,” in which she assigned each staff nurse to care for a specif-
ic number of patients. In this system, each nurse was responsible for her own patients’ medications.\textsuperscript{17} According to a 1939 *AJN* article:

Every department . . . has a medicine board. . . . Across the board there are fifteen spaces—twelve for the day hours and three others. There is one for p.r.n. medicines . . . and one for special medications that are not easily classified. . . . As we work on a case assignment method here, each nurse is responsible for her medications and each nurse is required to consult the medicine board before she begins her assignments in the morning. She is responsible for moving her own cards, charting her medicines as given and removing a card . . . when it is not needed. All medicines are listed individually with the name of the patient, room number, medicine, amount and hours to be given.\textsuperscript{18}

During the day, if the nurse needed to contact the doctor about a drug order, she would go to the head nurse, who would discuss the issue with the physician. If, however, the nurse needed an order at night, when the head nurse was not available, she would report the need to the nurse in charge of the unit, who would in turn call the nursing supervisor. The supervisor would then telephone the physician about the problem.\textsuperscript{19} The physician would analyze the information presented and respond with orders for treatment, giving verbal orders to the nurse supervisor (whom he trusted) over the telephone, and signing them in the morning. If the situation warranted, the physician might come into the hospital to see the patient in person.

The process took time. Moreover, the reality was that the staff nurse was the first to assess the patient’s problem. She was the one who was present at the bedside, and she had been trained to observe for certain signs and symptoms that indicated critical changes in the patient. Based on her findings, the nurse presented an account of the patient’s condition to the nurses above her in the chain of command. Eventually, the facts reached the physician. Nurses soon learned that the way in which signs and symptoms were presented could lead the head nurse or supervisor, and subsequently the physician, to a particular diagnosis and treatment conclusion. So, frequently it was the nurse who clustered symptoms to lead the physician to reach the same conclusion she had already reached. It was a game in some respects, with neither nurse nor physician acknowledging what was going on.\textsuperscript{20} According to state medical practice acts, only physicians could diagnose and treat. Certain tasks belonged to physicians, and others to nurses.

What was also unacknowledged was the fact that the boundaries between the two professions had been fluid since the inception of professional nursing. These boundaries would continue to shift as physicians transferred increasing
numbers of responsibilities to nurses. By the mid-twentieth century, the confluence of many social, political, and economic factors, including postwar hospital reconstruction, increasing life expectancy, the national problem of heart disease, emerging ideas in patient care delivery, medical specialization, and advances in medicine and technology would transform medical and nursing practice.

Post-World War II Hospital Reconstruction

Immediately after World War II, in 1946, Congress passed the Hospital Survey and Construction Act (also known as “The Hill Burton Act”), providing large scale funding to modernize aging hospitals and build new ones. Across the country, hospital administrators seized the opportunity to expand and renovate their facilities, and by the early 1950s, many hospitals were under construction. These modern hospitals eliminated the large, open wards in which nurses could readily observe patients and easily move between beds. Instead, the renovated hospitals had long halls with numerous private and semiprivate rooms. Although pleasing to middle-class patients who demanded privacy, the newly configured and expanded hospital spaces, along with the rising acuity of illness in patients, changed the way in which nurses worked.21

In the newly renovated spaces, nurses could neither see the patients from the nursing station nor observe them when they were busy caring for a patient in another room. The nurses also had to walk long distances up and down the hallways to reach patients, and the way in which care had previously been given to the sickest patients in the ward could no longer be done. Previously, if a patient needed close observation, the nurses would move him or her to the front of the ward, near the nurses’ desk, where he or she was always in view. With long halls, and private rooms, this solution was no longer viable. A logical next step might have been to assign one nurse to “special” the sickest patient. However, because of increased patient demand for hospital care and the return of women to the home after World War II, fewer nurses were working. There were simply not enough nurses to go around.

Thus, the modern hospitals, coupled with the nursing shortage, demanded a new system of care. Nurse leader Eleanor Lambertson took an interest in the problem and initiated “team nursing,” a task-oriented approach to providing nursing care. In this system, the nursing unit was divided into two or three nursing teams—each team delivered nursing care to a group of patients, who were assigned to team members according to the complexity of the patient’s needs. Using this system, licensed practical nurses (LPNs) and nurse’s aides provided direct patient care. Registered nurses served as head nurses, supervi-
sors, and team leaders,\textsuperscript{22} positions that forced the RNs to spend much of their time away from the bedside, preparing assignments, scheduling LPNs and aides, and performing other administrative paperwork. Moreover, the team concept affected the way in which medications were given.

Passing Meds

One member of each team, usually a graduate RN or a senior student, gave medicines to all of the patients of that team, in most cases half of a large nursing unit of 45 to 60 patients. The procedure for “passing meds,” as
nurses referred to it, was straightforward. That process, however, involved numerous steps. First, the head nurse transcribed physician orders from the chart to small medicine tickets. Using these medicine tickets, the medication nurse would pour the prescribed drugs from large bottles into small medicine cups, arranging them on a tray.

The tray contained rows of small glass cups, each identified by the medicine ticket on which was written the patient’s name, the name of the drug, the method of administration, the bed or room number, and the dose to be given.

The medication nurse would distribute drugs all day, beginning with drugs like insulin that had to be given early in the morning, before breakfast. She then administered the preoperative medications for those patients needing sedation prior to surgery, followed by those medications that were ordered to be given at four-hour intervals, starting at 10:00 AM. Passing medications for an entire team was a challenge, as there were often twenty-two to thirty patients for whom the nurse was responsible. Keeping up with the new drugs that were being prescribed was also an uphill struggle. Counting narcotics and keeping them under lock and key complicated the nurses’ work even further.

Few nurses acknowledged to themselves or others that they did indeed know a great deal about the drugs they administered. They had to. According to one 1955 textbook of nursing:

> Giving drugs is one of the nurse's most serious duties. . . . She must know about many drugs and in giving these must be able to follow many physicians' plan of therapy for many patients. . . . It is desirable, therefore that the nurse know the nature of the drug; its local and systemic action and something of the physiological explanation; why the drug is ordered in each case and the result the physician hopes to get; the signs of the intended effect; and the signs of an overdose or of a cumulative toxic effect, or indications that the patient has an idiosyncrasy to the drug. . . . Nurses should know how age, sex, body weight, and time of administration affect the dose. She should know how drugs are excreted . . . for example, the kidneys are irritated by mercury, arsenic, and the sulfa drugs. While the physician is primarily responsible for ordering the medication in the correct dosage, he, being human and often overworked, is subject to error. Lives have been saved by nurses who have recognized mistakes in written orders for drugs. . . . Moreover, a nurse can be successfully prosecuted for carrying out a doctor's order for the wrong drug or a toxic dose, if the court is persuaded that the preparation of the nurse qualified her to recognize the danger of the drug or the dosage.
In other words, even the general duty staff nurse, without training in pharmacotherapeutics, had to know almost as much as physicians did about the medications they gave. Furthermore, they were accountable under their own licenses for the judgments they made.

Increases in Life Expectancy and Chronic Disease

While hospitals were growing and changing, major changes were occurring in relation to the public’s health, medical science and technology, and society. These changes would intersect to create a paradigm shift in the way in which hospitals and nurses delivered care.\(^{25}\) On the positive side, because of the success of scientific advances in medicine, child and infant mortality rates were declining. Antibiotics, like sulfa drugs and penicillin, did more than provide symptomatic relief; they cured infections.\(^{26}\) Other illnesses, like polio and tuberculosis, were under investigation, and both vaccine trials and the creation of new drugs were underway. Scientists had developed new machines and medical treatments to diagnose disease and cure patients, including the electrocardiogram (ECG), chest x-ray, urinalysis, and blood work.\(^{27}\) Americans were living longer. Between 1940 and 1950, the average life expectancy rose 4.4 years for white men (to 66.5 years) and 6.4 years for white women (to 72.2 years).\(^{28}\) On the negative side, despite these innovations, chronic illnesses, like cancer, stroke, and heart disease, were emerging as the major problems facing Americans. Of these, heart disease—soon known as “the coronary problem”—was the number one killer.

The “Coronary Problem”

The “Coronary Problem” in post-World War II America was a significant one. As President Harry S. Truman noted in his 1949 address to the nation, “The tremendous toll of the heart diseases must be of deep concern to all our citizens. Combating the nation’s leading cause of death has become our most serious national health problem. . . . The heart diseases, I am informed, now account for one out of every two deaths after the age of forty.”\(^{29}\)

Those dying were typically white males in their mid-forties and fifties. Many “dropped dead” outside of the hospital before they could reach care. Those who managed to stay alive long enough to reach the hospital were often placed in the new private rooms to ensure quiet and rest, visited only every few hours by the medication nurse or the LPN or aide assigned to
check their blood pressure, pulse, and temperature. Close to 40 percent died without warning from sudden cardiac arrest—alone in their private rooms.  

For the remaining 60 percent who survived the first few days after a heart attack (myocardial infarction, or MI), new therapies offered hope for survival. The radiological technique of cardiac catheterization offered promise for the diagnosis of blocked coronary arteries. Once diagnosed, these blocked arteries could be “bypassed” with veins harvested from the patient’s own legs in open-heart surgery—made possible by new cardiopulmonary bypass technology in the 1950s. Those who did not need surgery might benefit from recently invented, high-tech cardiac pacemakers. Others could receive cardiac drugs such as quinidine gluconate, potassium salts, and procainamide hydrochloride (Procainamide) and Lanatoside C (for rapid intravenous digitalization to strengthen the heart beat) that were used to treat atrial and ventricular arrhythmias.

Meanwhile, reports of the success of external cardiopulmonary resuscitation (CPR) and external cardiac defibrillation in saving lives after cardiac arrest filled the medical literature. Perhaps more patients could be saved.

Despite the new treatments and drugs, mortality from heart attacks remained high, and the nation was concerned. For the most part, the patients dying from acute myocardial infarction were white, middle-class men in the prime of life who played an important role in the American economy. Moreover, they included prominent national leaders whose medical conditions attracted national press coverage. In July 1955, Senate Majority Leader Lyndon Baines Johnson (LBJ) experienced a massive heart attack. Johnson remained in the US Naval Hospital in Bethesda for six weeks, during which time members of the press were in constant attendance. Only two months later, on September 24, 1955, President Dwight D. Eisenhower suffered a coronary thrombosis. The press coverage of the president’s illness was immediate and continued throughout his seven-week stay at Fitzsimmons Army Hospital and subsequent convalescence at home. Heart disease had the nation’s attention. It also had the attention of the middle-aged white male legislators who made up Congress. It would not be long before they appropriated federal funds to address the problem.

Emerging Ideas in Patient Care Delivery Systems

While the nation focused on the larger problem of what to do about heart disease, inside hospitals across the nation nurses were struggling to care for coronary and other critically ill patients in the newly configured environ-
The sickest patients needed constant observation and care, even when they were in private rooms at some distance from the nurses’ station. The patient who could afford to do so hired a private-duty nurse to stay in his room. For the patient who could not afford a private nurse, the head nurse tried to move him to a room nearer the nursing station. The solution worked for acutely ill trauma or surgical patients who needed nursing treatments at frequent intervals. However, the solution did not work for cardiac patients. The heart patient needed rest in a quiet environment, and the rooms nearest the station were not quiet. On the other hand, the rooms that provided peace and quiet also provided a setting in which sudden death could occur unobserved. Something had to be done, and that something would have profound implications for nurses’ scope of practice.

In 1957, Faye Abdellah and her colleague Josephine Starchan, both nurses at Manchester Memorial Hospital in Connecticut, attempted to find a solution. Together, they proposed a system of “Progressive Patient Care,” defining it as the “organization of facilities, services and staff around the medical and nursing needs of the patient.” In this system, patients would progress from special care units where they stayed when they were critically ill, to “step-down units,” and on to “home care.” To test the idea, Abdellah and Starchan established a special care unit at Manchester Memorial and equipped the twenty-seven bed unit with routine and emergency supplies, including oxygen tents, suctioning equipment, and emergency drugs. The unit would be used for “those patients who were critically ill or in need of very close nursing observation and attention.” Patients with acute cardiac conditions met the requirement for “close nursing observation” and were admitted to the special care unit. There, nurses were taking on new responsibilities, including the tasks of inserting intravenous (IV) lines and drawing blood specimens, tasks which until the crisis situation of World War II had been done solely by physicians.

According to Abdellah, “Since most emergency situations arise or are cared for on this unit, the nurses need to be especially alert in observing signs and symptoms of possible complications. Technical competence, skill in giving direction and guidance to team members, and the physical, mental, and emotional ability to meet day-by-day crises are essential.” Meeting the “day-by-day” crises would soon mean that a nurse had to give emergency cardiac drugs intravenously—in some instances without waiting for a physician’s written or verbal order.

The idea of progressive patient care, which included step down units, (for the care of patients who were not critically ill) and home care in addition to intensive care, soon had widespread acceptance. Of the three parts, hospital administrators, physicians, and nurses were particularly interested in the concept of intensive care, the most exciting and innovative aspect. As
a result, intensive care units opened in hospitals throughout the country in the 1950s and early 1960s. Most were general medical–surgical units, open to patients with a variety of acute illnesses and trauma. Several were designated specifically to house postoperative cardiac surgical patients. Very few admitted patients who had had a heart attack. These patients were assigned to quiet, private rooms on a general nursing unit.

Advances in Medical Science and Technology

Advances in medical science and technology continued after World War II. In 1959, Drs. William B. Kouwenhoven, James Jude, and G. Guy Knickerbocker at the Johns Hopkins University School of Medicine experimented with dogs and discovered an effective method of “massaging the heart without thoracotomy”—that is, without surgically opening the chest.40 Two years later, the same research team reported that they had used the method of external cardiac massage on 118 patients, 28 of whom survived to leave the hospital.41 This dramatic discovery of the effectiveness of external CPR followed on the heels of a series of medical research reports on cardiac defibrillation. In 1941, Dr. Claude Beck, a surgeon at Case Western Reserve School of Medicine in Cleveland, Ohio had reported the first two attempts of cardiac defibrillation during surgery. His conclusion, that “the heart can be defibrillated . . . a coordinated beat can be restored,”42 had been ground breaking. When they published again in 1956, Beck and his colleagues emphasized the necessity of having an electrocardiogram (ECG) convey data about the electrical activity of the heart. That way, the physician could know whether the underlying cardiac mechanism responsible for the death was cardiac arrest (flat line) or a fatal arrhythmia (electrical irregularity). According to the researchers:

Since cardiac arrhythmias cannot be diagnosed by inspection alone, easy access to an electrocardiograph is necessary. Precise knowledge of the cardiac mechanism is of utmost importance if successful restoration of a normal rhythm is to be intelligently planned.43

That precise identification of the mechanism responsible for cardiac arrest required that the patient would have to be connected to an electrocardiograph machine at all times and that someone with specialized knowledge in interpreting ECGs be present at the bedside when sudden death occurred. Therein lay the problem: cardiac patients were not routinely attached to ECGs. In fact, a nurse would have to locate an electrocardiograph machine and wheel it into the room in an emergency situation.
Furthermore, nurses, who were present in the hospital twenty-four hours a day (if not directly at the bedside), could not interpret the electrocardiograms. Neither could many general practitioners—if and when they arrived at the scene of the emergency and ordered one to be taken.

Nursing Care of the Patient with a Heart Attack, circa 1950s

Until this time, despite the advances in science and technology, the nurse caring for heart attack patients in the postwar period continued to care for them as she had for years. Her role involved serving as the physicians’ eyes and hands, making observations, and collecting physiologic data such as temperature, pulse rate, and blood pressure—tasks that had been delegated to nurses over the first half of the century. In doing so, the nurses used technology that the physician considered to be “easy enough for the nurse to do.”

For example, by the 1950s, physicians had delegated to nurses the task of taking blood pressures. To do this, the nurses used blood pressure cuffs and stethoscopes. Stethoscopes, however, were to be used by the nurse only for checking blood pressure. Only physicians were to use the stethoscope to listen to a patient’s heart and lung sounds. The nurse, on the other hand, was expected to observe the depth, quality, and rate of respirations and count the pulse at the patient’s wrist, noting whether the pulse was strong or weak, bounding or thready, regular or irregular. Well into the 1960s, nurses’ notes were typically a litany of facts without analysis. Temperature, pulse and respiration were recorded at specific intervals and graphed once a shift. Nurses did not usually write their analysis of the observations they made. More often, one would have to read between the lines to ascertain what the nurse was thinking, which could be done by the way that she clustered signs and symptoms in her notes. She might, for example, write, “Patient complaining of chest pain. Color: dusky. Skin: cold and clammy. Pulse: thready, rate 100. Also short of breath, respirations 28. BP 80/60. Urinary output declining from 70 cc per hour to 20 cc per hour. Doctor notified.” What the nurse meant, of course, was that the patient was failing to maintain an adequate blood pressure; failing to profuse his skin, lungs, and kidneys; and was in all likelihood suffering shock. In the extreme instance of sudden death (as the author recalls) the nurse was only expected to record: “Apneic, pulseless, cyanotic, unresponsive, pupils fixed and dilated. Appears dead. Doctor notified.” Indeed, as historian Margarete Sandelowski has argued, nurses were expected to “collect, record, and interpret information vital to the diagnosis—and therefore to the treatment and prognosis . . . without making any claims to participating in diagnosis.”
In addition to making and recording observations, the nurse’s job for the patient with a heart attack included the traditional tasks of putting the patient to bed and making him or her comfortable. Writing in the *American Journal of Nursing* in 1961, Mildred Crawley, Chief of the Heart Nursing Service, National Institutes of Health, described the nurse’s role in the care of the acutely ill cardiac patient:

During the first hour of a patient’s hospitalization, the doctor must make an initial examination, an electrocardiograph will be taken, blood may be drawn for analysis, probably oxygen will be started, and medication will be given for pain. During all these activities, the nurse or aide is expected to admit the patient, care for his belongings, undress him and get him settled as comfortably as possible in bed, [and] care for the needs and questions of the family. . . .47

The boundaries between medicine and nursing were clear. The physician would examine the patient. He or a medical student would take the cardiogram and draw blood. Meanwhile, the nurse would settle the patient in bed and put his or her belongings in the bedside table. Then the nurse would take the temperature, pulse, and respirations as ordered and record her observations at the appropriate intervals. Following doctor’s orders, she would also give injections of morphine and administer tablets of nitroglycerine “p.r.n.” to the patient complaining of chest pain. Or she might ask the medication nurse to administer these drugs. She certainly didn’t read the electrocardiogram (if, in fact, it was taken). In the course of the patient’s illness, only the physician would diagnose cardiac arrhythmias and decide on the proper treatment.

By the early 1960s, however, it was becoming apparent that these clearly delineated boundaries of medical and nursing practice were not always in the best interest of the patient. Neither was the delay involved in getting an order for an emergency drug or waiting for a busy medication nurse to administer morphine or nitroglycerine to the patient complaining of chest pain. Chest pain was a life-threatening emergency that required immediate diagnosis and treatment. Moreover, the prompt use of new drugs like lidocaine and atropine to treat lethal cardiac arrhythmias could be life saving. Waiting even three minutes for a doctor to arrive at the scene to order these drugs could prove fatal for the patient. The solution was obvious, at least to a handful of physicians scattered around the world.48 The nurse, present at the bedside twenty-four hours a day, seven days a week, would have to learn from physicians how to diagnose and treat cardiac arrhythmias. She could *not* wait for orders, even if by not doing so, she invaded territory traditionally claimed by the medical profession.
The Genesis of the CCU: Bethany Hospital, Kansas City

Bethany Hospital in Kansas City, Kansas, was in many ways similar to the 6,000 other community hospitals in America in the 1950s. Like them, Bethany had experienced phenomenal growth, subsidized by Hill Burton funds. In fact, the construction of a large west wing at Bethany in 1957 provided the 90-bed hospital with an additional 110 beds, more than doubling its size. And, like other newly renovated hospitals, instead of the traditional, open wards, Bethany now had long corridors off of which opened multiple private and semiprivate rooms.

The new configuration stressed a system already short of nurses. The arrangement also blocked the nurses’ view of critically ill patients. Consequently, patients who needed 24-hour-a-day observation were either placed near the nurses’ station or assigned a private-duty nurse. However, private-duty nurses were not assigned to care for cardiac patients who were considered to be in stable condition. Instead, the hemodynamically stable patient recuperating from a heart attack was often assigned to a private room near the end of a hall, where he could rest quietly. A nurse would check him periodically, most often when she was passing medications. Aides would take his blood pressure and pulse at regular intervals, usually every four hours; however, even stable, pain-free cardiac patients were dying suddenly and without warning. At Bethany, the mortality rate from a heart attack (myocardial infarction) was 35 percent.49

Dr. Hughes W. Day, a 46-year-old internist at Bethany, was concerned about the sudden deaths of his middle-aged cardiac patients. He had also read the medical literature on Dr. Claude Beck’s cutting-edge research on cardiac defibrillation. In an attempt to keep his cardiac patients alive, Day initiated a new procedure, calling it “Code Blue.”50 According to his protocol, when a nurse discovered a patient who had no pulse or respirations, she was to call the hospital switchboard operator and ask her to announce “Code Blue” over the hospitals’ loudspeaker. The call would alert a special team of physicians and nurses to respond to these cardiac emergencies. The idea was an excellent one—at least in theory. In reality, the success of the Code Blue protocol at Bethany was less than optimal.

There were several problems. First, there was no effective alarm system to alert the nurses that a patient had suffered sudden cardiac arrest. Patients died quietly in their rooms. If, by chance, the nurse did discover that a patient had suddenly stopped breathing and/or had no pulse, the RN had to call the code and get the code cart to the patient’s room. Doctors then had to respond from wherever they were in the hospital. Precious minutes were wasted. Often, it was too late to save the patient, who by that time had significant brain damage owing to lack of oxygen.
The nurses and doctors used the protocol for about ten months without success. There was no change in mortality statistics for patients who suffered cardiac or pulmonary arrest—of those in whom resuscitation was attempted, only 4 percent survived.

Frustrated by the poor success rates of the Code Blue procedure, Day decided to try a new approach. He would electronically monitor all cardiac patients, leaving the cardiac monitor outside the patient’s room in the hall with the arrhythmia alarms set. If the heart rate was too high or too low, the alarms would sound. That way, theoretically, the nurse caring for the patient could immediately observe an arrhythmia or respond to alarms signifying cardiac arrest or changes in heart rate. Again the reality was quite different. As Judith Stuart, a Bethany nurse in 1961, recalled:

One of the engineers at Bethany, Johnny Walker, rigged up a cardiac monitor for Dr. Day. Originally the cardiac patients were just put in a room out on the floor and hooked to a monitor that sat outside the room. When the patient’s heart stopped, the alarm would go off and the nurse would call Dr. Day at home so he could come to the hospital and try to resuscitate the patient. Usually it was too late because more than ten minutes had elapsed.

It was becoming apparent that the electronic equipment that Day had installed could not be used to its fullest capacity without specially trained nurses who could operate it effectively and interpret the arrhythmias—essentially nurses who could diagnose.

Having reached this conclusion, Day collaborated with hospital administrator Walter Coburn and requested funding from the John A. Hartford Foundation, proposing to develop a cardiac unit in which specially trained nurses could provide care for cardiac patients. Day proposed that the coronary unit be attached to an intensive care unit already being planned. That way, nurses who were experienced in caring for critically ill patients would be available to help out in the coronary section during emergencies. Each cardiac patient would be continuously monitored on an electrocardiograph machine. Day himself would teach the nurses how to interpret the printouts from that machine, telling them what to look for and what to report to him. He would also teach them about the emergency drugs used to treat arrhythmias. The idea sold to the Hartford Foundation, and the Hartford Intensive Coronary Care Unit, with its seven intensive care beds and its four beds for coronary patients, opened on May 20, 1962. Almost simultaneously, Lawrence E. Meltzer, MD, conducted a similar experiment in the Presbyterian Hospital in Philadelphia.
The Presbyterian Nursing Experiment

Apparently unaware of the work of Hughes Day in Kansas City, Lawrence E. Meltzer, a seasoned research physician at Presbyterian Hospital in Philadelphia, applied to the Division of Nursing, United States Public Health Service (USPHS) in 1962, requesting funding for a research project in the newly established cardiac research unit at Presbyterian. Working with the chief of cardiology, J. Roderick Kitchell, MD, Meltzer proposed a nurse-focused study in Presbyterian’s recently completed, two-bed cardiac unit to see if monitoring and intervention by specially trained nurses could reduce the high incidence of sudden cardiac deaths.54

Like Hughes Day at Bethany, Lawrence Meltzer was determined to find a way to reduce the high mortality after heart attacks—even if it meant delegating new responsibilities to nurses. Hypothesizing that he could prevent the sudden and unexpected deaths by electrical cardiac monitoring,55 Meltzer proposed to use a “specially trained team of nurses, cardiologists and resident physicians functioning in a hospital unit planned solely for the treatment of acute myocardial infarction [heart attack] in which patients would be monitored by ECG and have all necessary equipment available to interrupt would-be catastrophic arrhythmias,” including intravenous drugs.56 The proposed team would include registered nurses who had specific skills in caring for cardiac patients. These nurses would assume a responsibility previously assumed only by research cardiologists or anesthetists: they would interpret the heart rhythms displayed on the cardiac monitors and initiate emergency treatment for life-threatening arrhythmias. In fact, they would defibrillate patients, start intravenous lines, give oxygen, and treat cardiac arrhythmias with various drugs according to “standing orders” left by the physician. According to Meltzer’s proposal, “the nurse, by definition of her responsibility, will be the vital member of the scientific team.”57

Based on this new role, Meltzer predicted that the coronary care nurses’ status within the profession would be affected. According to Meltzer, “If nurses are capable of performing these exacting tasks and assuming this degree of responsibility, the role of the nurse will be materially different than her present day status.”58 As he would later write in the preface to his book, *Intensive Care: A Manual for Nurses*, “it was apparent that a separate, higher division within the nursing profession must be established for this purpose in the form of nurse specialists.”59

Creating Specific Knowledge for Nurses

The key to the entire coronary care project was, by necessity, the nurses’
advanced training in the highly specialized area of coronary care. According to Presbyterian CCU’s nursing director Rose Pinneo, “It became obvious that specialized training beyond basic nursing education was essential in order for nurses to fulfill their role in the coronary care unit.”

Meltzer was at first of the opinion that this specialized training should include complex knowledge of twelve-lead electrocardiograms (the view of the electrical activity of the heart from twelve different perspectives), but he later decided that the nurses needed to learn to interpret only one of the “views,” that from lead II, one that clearly showed the cardiac rhythm. He also thought that they should know principles of cardiology, pared down to the essential knowledge needed for safe practice. In Meltzer’s opinion, the nurses needed to learn to recognize the patterns of the basic cardiac arrhythmias and identify those that were life-threatening. In addition, they needed to know the drugs to be used to treat the arrhythmias and how to defibrillate patients.

After the brief introductory course and a few weeks of orientation to the monitoring equipment and the unit procedures, the CCU nurses learned on the job, practicing their newly acquired skills as they cared for patients. Organized clinical conferences occasionally supplemented nurse-to-nurse or physician-to-nurse training. Every month or so, Meltzer met with the nurses and reviewed cases in which the patient had had a cardiac arrest, and he “would point out areas in which the nurses might have done something different.” With Meltzer’s help, the novice coronary care nurses gained specialized knowledge so they could take on the new responsibilities of caring for critically ill patients who had suffered heart attacks. Whether or not their new responsibilities were within the legal scope of practice was a separate issue, but one that would quickly rise to the surface in medical and nursing discussions.

Standing Orders

In addition to the cardiac monitoring and emergency cardiopulmonary resuscitation and defibrillation, CCU nurses also assumed other tasks formerly performed by physicians. Some of the responsibilities were documented in a standing order set—a list of medical procedures and “p.r.n.” medications written ahead of time to cover foreseeable circumstances in which the nurse might have to initiate treatment in the absence of a physician. Based on these standing orders, nurses attached patients to electrocardiograph machines, inserted intravenous lines to provide fluids, performed venipunctures to draw blood samples, administered oxygen, and gave emergency medications like intravenous morphine, quinidine, lido-
caine, dilantin, or sublingual nitroglycerine. In addition, they conducted ongoing physical assessments of the patient's condition. In a 1965 speech, nurse director Rose Pinneo described the nurse's role during the process of admitting a patient to the coronary care unit:

Mr. J., a 75-year-old man, was brought to the coronary care unit after a myocardial infarction attack at home. He was dyspneic [short of breath] on admission and had severe chest pain accompanied by anxiety. In evaluating Mr. J., while making him comfortable, the nurse realized that his chest pain must be relieved before she proceeded with any other measures. Therefore, she administered an ordered narcotic. Since dyspnea was another obvious problem, she started oxygen therapy by nasal cannula and evaluated its effectiveness. . . . As soon as possible, she applied chest electrodes and connected them by wires to cardiac monitors. . . .

After Midnight

The coronary care nurse's role expanded even more after midnight. Defibrillating patients was a classic example. During the day and in the evening, there was usually a physician available who could defibrillate a patient whose cardiac rhythm had degenerated to ventricular fibrillation. After midnight, defibrillating a patient was often up to the nurse. Presbyterian Hospital did have interns and residents on call during the night; however, they did not sleep in the CCU but “catnapped wherever they could find an empty bed. Sometimes this was in the intensive care unit, and sometimes in a bed across the hall from the CCU.” As a result, there was often a delay in the resident's arrival in the unit in response to a code. According to coronary care nurse Lynn Warner: “I defibrillated many patients. I worked at night of course, so I was there first.” Head nurse Janice Lufkin agreed, noting: “mostly I defibrillated at night when no one was there right away. Sometimes the doctor was away from the unit, in the ER admitting a patient or in the ICU.”

Even when the resident or intern was present, the nurse might have to take the lead in treating the patient, as some of the coronary care nurses soon knew more than the house staff about the interpretation of cardiac arrhythmias and the necessary treatments. As Janice Lufkin recalled:

We soon got experience with the rhythm strips. The interns would even come up the stairs from the ER and ask if we could read the
rhythm strip of an ER patient or interpret their EKG [sic]. They would ask if they should admit the patient. We were good at the rhythms, but just OK with the 12 lead EKGs. We could recognize the basics, like ST elevation in some leads . . . the obvious MI. And then we would tell them what to do.68

Sometimes the house staff’s inexperience was a problem. Coronary care nurse Lynn Warner recalled one instance: “We were giving Dilantin IV for ventricular tachycardia. . . . [T]he residents would try to help, but they would forget to use Normal Saline to mix it in, and the medications would precipitate in the IV line.”69

By 1970, Meltzer did not mince words when discussing the relationship between house staff and CCU nurses, writing: “The unique role of the CCU nurse and her status on the team should be carefully explained to the house staff. As might be anticipated, the traditional physician-nurse relationship may become distorted in this setting when the nurse is assuming duties and responsibilities beyond those generally expected of nurses . . . the wise house officer will recognize their judgment and expertise.”70

An Expanded Role for Nursing

The new environment, with its high-tech equipment, combined with the expectations outlined in Meltzer’s research project, demanded that the nurses expand their traditional role. In the early days of the unit’s existence, the primary purpose of the CCU project was to determine if the nurses’ immediate response to medical emergencies, particularly cardiac arrest, could save lives. Since each minute of delay could be life-threatening, autonomy in decision making during those emergencies was essential. So was the authority to treat the patient. As Pinneo would later explain:

Utilizing this unique combination of clinical assessment and cardiac monitoring, the nurse makes independent decisions. She determines those situations requiring her immediate intervention to save life prior to the physician’s arrival or those situations that warrant calling the physician and waiting for his evaluation. It is in these precious moments that the patient’s life may literally be in the hands of the nurse.71

What was new was the fact that nurses had to move from simply collecting data and reporting their findings, as they had long been doing when they took temperatures and blood pressures, to interpreting those data and acting on their own assessment when necessary, prior to reporting it to a
physician. The results were impressive—at least at first. Day’s success in reducing mortality from sudden death from 43 percent in 1963 (on general hospital units) to 19 percent in the coronary care unit in 1965 received world-wide attention. Meltzer's statistics were similar. Physicians and nurses from all over the world visited Bethany Hospital and Presbyterian Hospital to see for themselves the way that care was implemented in the CCU. The American Heart Association and the American College of Cardiology held national conferences on the topic, attracting hundreds of nurses and cardiologists from around the world. With financial support from the federal government’s Regional Medical Programs initiated by President Lyndon B. Johnson in 1965 (P.L. 89–239), coronary care units sprang up around the country. The idea had taken hold. Call nurses had an expanded role within hospitals, and no one was questioning their new responsibilities. Meltzer clearly understood the implications of extending the nurse’s role. Discussing the change in 1972, he identified it as critical to the new “scientific team approach,” noting, “That the physician delegates unusual authority to the nurse in this team approach . . . is one of the most distinguishing characteristics of the system of intensive coronary care.”
These first units were as much an experiment on nurses—to see if they could assume a new role—as they were about decreasing mortality in MI patients. The experiment about nurses’ roles was a success. It was apparent that nurses could and would learn new skills and expand their scope of practice. They could also learn medical information, be assertive, make critical decisions at the bedside, and take responsibility for their actions. In doing so, they did, in fact, elevate their status from physician’s handmaidens to emerging nurse specialists. But, despite claims of collegial status in the literature, and despite the fact that the nurses were indeed members of the scientific team, they were not really “equals.” Their gender (mostly female), age (twenty-something), educational level (usually diploma education rather than college and postgraduate training), and socioeconomic status as nurses would influence physicians’ ability to accept them as colleagues. Nonetheless, the professional relationship between CCU nurses and physicians was quite different in some respects from the traditional nurse/physician relationship. Simply put, the physicians trusted them. These young nurses made independent clinical assessments and treatment decisions in emergency situations. They experienced a new level of autonomy and gained a new level of respect. If the physicians did not like the nurses’ new role, they either did not express their feelings or perhaps only discussed it in private with their colleagues. The nurses reported no problems, and in fact, they felt that the new role was well received. 

Some aspects of their role did not change, however. The boundary lines between medicine and nursing remained blurry. Even though the nurses worked from standing order sets, and even though they assessed patients, diagnosed such problems as cardiac arrhythmias, heart failure, and cardiogenic shock and selected the appropriate treatment, nurses did not have the legal authority to prescribe medications. Instead, during the night they wrote “verbal orders” (usually given by themselves) for medications and implemented them. The doctors signed the orders when they made rounds in the morning. Nurses negotiated the boundaries of their practice with each individual physician with whom they worked.

Undeniably, with the implementation of the cutting-edge technology and the new knowledge came the shift in responsibilities for nursing that expanded the boundaries of what was considered within their scope of practice. Often the nurses were working outside their legal scope of practice. The shift in boundaries and legal coverage occurred gradually and unsteadily as the decade of the 1960s progressed. Conflicting expectations coincided, as new duties were combined with traditional ones. Coronary
care nurses who still needed a physician’s order for aspirin or a specific diet for their post-MI patients were entrusted with the authority to identify a fatal cardiac arrhythmia and administer a life-saving cardiac medicine intravenously. On the other hand, the staff nurse who had never before dared call a physician directly was now not only calling him, but was reporting that she had given intravenous atropine, defibrillated his patient, or given an intravenous bolus of lidocaine. Nurses who had been “ordered to care” now stepped over the nursing practice domain line into the realm of scientific medicine, diagnosed arrhythmias, and initiated treatments in dramatic life-saving moments.

A New Era

Coronary care unleashed a new era for nurses, as the changes that occurred in practice set the stage for the establishment of a collegial relationship between nurses and physicians. In fact, physician-nurse collaborative practice became the norm in these units. Teamwork was essential to the unit’s success, and boundaries between the disciplines blurred as a new respect for each other’s skills developed. According to historians Fairman and Lynaugh, “Most importantly, nurses and physicians learned to trust each other as they practiced in their own areas of expertise.”

The problem was that some of coronary care nursing practice was technically outside of the scope of practice for nursing. Only eight years earlier, the American Nurses Association (ANA) had written the definition of nursing that specifically excluded the acts of diagnosis and prescription. Now, nurses were diagnosing arrhythmias, heart failure, shock, and even death. Whether or not they were “practicing medicine without a license,” all depended on how the terms “diagnose” and “prescribe” were defined. Was diagnosing an arrhythmia really medical diagnosis, or was the arrhythmia to be considered a complication of the diagnosis of acute myocardial infarction? What about heart failure or shock? Were they diagnoses or reactions to the myocardial infarction? Was writing a verbal order (from oneself) the same as prescribing? (After all, there was no prescription pad involved.) Or was it simply “furnishing” according to protocols that would have been written had the idea of having such protocols for all possible conditions been considered?

Organized nursing could not agree. Many nursing professors, concerned about carving out a specific role for nurses to separate the profession from medicine, worried that nursing was taking on too many tasks that physicians didn’t want to do anymore. However, while the professors, theorists, and other leaders argued over whether nurses should start intravenous lines,
defibrillate, draw blood, read electrocardiograms, and so on, the coronary care nurses did what they believed was necessary to save lives. Once again, as had happened in Henry Street, in the field of anesthesia, in the Frontier Nursing Service, and in the Indian Health Service, the realities of practice preceded the legal and professional changes in scope of nursing practice that would be necessary.

The coronary care nurse’s work also initiated other practice questions for the profession. If specially trained nurses could diagnose and treat life-threatening arrhythmias in coronary care units, why couldn’t specially trained nurses in pediatrics diagnose and treat a child’s sore throat or ear infection? If intensive care nurses could use a stethoscope to listen to a patient’s heart and lungs in high-tech urban, academic medical centers where doctors were readily available, why couldn’t a nurse use a stethoscope to examine a patient in a remote area clinic? And if a nurse could use a stethoscope to listen to a heart, why not an otoscope to look in a patient’s ear? Who owned the technology?

The extent of what nurses might learn was also questioned. If the nurse could interpret part of an ECG (one lead) couldn’t she learn to interpret the entire twelve-lead ECG? If she could interpret cardiograms, why not interpret x-rays? If she could interpret the results of a blood test to see if the cardiac patient needed more potassium, why couldn’t she check the white blood count to see if the patient had an infection? And, if she could learn advanced pharmacology about cardiac drugs, couldn’t she learn advanced pharmacotherapeutics for a wide variety of drugs?

Moreover, the extent of nurses’ authority to furnish and prescribe drugs was an issue. If a nurse could write verbal orders for life-saving intravenous drugs like lidocaine and atropine, couldn’t she write a prescription for penicillin, trisulfite pills, or cough medicines like elixir of terpin hydrate—drugs with far less risk to the patient—drugs that nurses had been furnishing for over thirty years in the Frontier Nursing Service and under the Bureau of Indian Affairs? Furthermore, if nurses were capable of taking care of a critically ill patient in intensive care, couldn’t they be trusted to manage the care of well babies in collaboration with a physician partner—a job they had been doing for quite some time in the Frontier Nursing Service and in the Indian Health Service? Some thinking along these lines was apparently what Loretta Ford, RN, and Henry Silver, MD, were doing in Colorado in 1965 when they initiated the role of the pediatric nurse-practitioner—a role that would transform graduate education and practice in nursing in the decades to follow—a role that would bring the issue of prescriptive privileges for nurse practitioners to the forefront of debate.