

# The History of Cardiovascular Medicine

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## Abstract

Cardiovascular medicine has evolved to such a new standard. We can now create artificial electrical impulses to keep normal heart beat or replace a damaged artery to improve blood flow. We can physically watch the flow of blood through the chambers of the heart live and produce shock to return a heart that has stopped beating. The expansion of this specialty of medicine has greatly impacted the nurse's role. There has been an increase in the formation of organs representing nurses in the different specialties, including Cardiology, which help advocate for their involvement and impact in the field.

Cardiovascular pharmacology has evolved and many advances have been made to improve the mortality rate of the population with cardiovascular disease.



## Introduction

The focus of this research is based on the history of Cardiovascular Medicine which has expanded the skills and knowledge needed by not only physician's in the specialty, but also by the nurse's who practice within it as well. The collected information will develop an understanding of the progression of cardiac medicine over time and it's importance as a specialty in nursing. Additionally, this research will provide various examples of technological advancements which contributed to improved practice and further knowledge of patient diagnoses in cardiac nursing and the nursing scope of practice in this field.

This research will also provide examples of improved cardiovascular pharmacology and the effects of the population since improvement in medicine. This includes the clinical advances in Beta-Blocking therapy, HMG Co-A reductase inhibition as well as the introduction to antihypertensive agents.



## Method

The topic of "The History of Cardiovascular Medicine" was determined since this specialty has grown exponentially since its beginnings, aiding the growth of Nurse's roles and skills within this specialty as well. Particularly for nurses, it is essential to stay informed of changes and new research in order to provide exceptional care for patients within a given specialty.

All articles were accessed online through the UCONN Library's Nursing Research Databases, or through the textbook, *History of Professional Nursing in the United States: Toward a Culture of Health*. One database used during the literature search was Medline. The search was conducted using the keywords and Boolean phrases "cardiac medicine" AND "history" with a selection of peer-reviewed articles. Through PubMed, peer reviewed articles were searched using the keywords and phrases used were "nurse cardiac history", "pacemaker history", "cardiovascular medicine" "advances" and "cardiac development".

## Results

In 1791 Luigi Galvani laid the foundation of modern cardiac electrophysiology by documenting how electricity played an instrumental role in the heart's function. During the early 19<sup>th</sup> century electricity was beginning to be used in the treatment of cardiac disorders It wasn't until the 20<sup>th</sup> century when the first cardiac pacing machines that we use today were developed (Ward, Henderson, & Metcalfe, 2013). In 1959 three Johns Hopkins physicians, Kouwenhoven, Jude, and Knickerbocker, discovered a way to massage the heart without having to open the chest cavity, cardiopulmonary resuscitation or CPR, which became one of the most effective ways to save cardiac patients and is used as a priority intervention today (Keeling, Hehman, & Kirchgessner, 2018). However, despite new advances, Dr. Hughes M. Day realized it was necessary to have a group of nurses specially trained in Cardiology who could implement the technology and procedures to improve outcomes (Keeling, Hehman, & Kirchgessner, 2018). Cardiology nursing emerged as a new clinical specialty in the 1960's, with the first Coronary Care Unit established at Bethany Hospital in Kansas City in 1962 by Dr. Day (Keeling, Hehman, & Kirchgessner, 2018). He established an initiative the "Code Blue team" consisting of doctors, nurses, and a respiratory therapist to respond to cardiac arrests that occurred on the unit (Keeling, Hehman, & Kirchgessner, 2018). Along with this initiative, he began monitoring patients using continuous monitoring electrodes to watch their heart rhythms and anticipate cardiac arrests. However, this often required interpretation by the nurses when doctors were not around, requiring him to train nurses in interpretation of EKG rhythms which brought into question whether this was within the nurses' scope of practice (Keeling, Hehman, & Kirchgessner, 2018). In Philadelphia, Dr. Meltzer and Kitchell and Nurse Rose Pinneo took on the scope of practice claims and came to the conclusion that nurses were able to take on the responsibilities of cardiac monitoring, CPR, and cardiac defibrillation helping to expand the nursing scope of practice, blurring the lines between medicine and nursing, allowing nurses to have more autonomy and specialized knowledge in the field (Keeling, Hehman, & Kirchgessner, 2018). As cardiology nursing grew as a specialty, many national organizations were formed to establish credibility. Those organizations include the Society for Peripheral Vascular Nursing and the Preventative Cardiovascular Nursing Association. Over the years cardiology nurses have been paramount in providing health promotion, risk reduction, and disease prevention in cardiovascular medicine. Some of these advances include cardiac rehab, secondary prevention, and chronic congestive heart failure management (Thompson, 2016). As the role of the nurse has developed throughout history, one of the most crucial tasks for the nurse is preventing harm or a worsening condition to the patient. This is often done in the form of assessment and observation. With this, the nurse can monitor the patient and accurately report findings and aid in suggestions with the healthcare team to ensure proper care. In some cases, there are silent factors at play that may pose a threat to the patient condition, and within recent years the nurse's understanding of technological advancements can greatly diminish the occurrence of sudden cardiac events that would result in poor prognosis and outcomes. Such is the case with myocarditis- a leading cause of sudden cardiac death and is a precursor to cardiomyopathy which has been diagnosed more frequently and earlier due to new modern imaging (Baebler, Blazek, Bunck, Lucke, Maintz, Ou, & Schmidt, 2016). Thus, early and accurate intervention is essential in prevention, and has been greatly influenced by advancing technology

One of the most profound discovery that lead to the expansion in the way we observed the heart was the echocardiogram. An echocardiogram uses echo reflection and sound waves to create visuals of the heart's chambers and valves and the blood flow in them. Inge Edler, known as the father of echocardiography, was a cardiologist and director of the cardiovascular laboratory in the University hospital of Lund. He sparked the idea of using such methods in order to visualize the heart to diagnose mitral stenosis and the presence of mitral regurgitation. Edler and Carl Hertz, a physicist, worked together to create this new machine, which resulted in the first ever moving picture of the heart on October 29, 1953 (Singh & Goyal, 2007). The field of echocardiography is continuing to evolve to further advance the ability to diagnose and heart conditions.

In 1950, Mabel and Braunwald lead the pathway to discovery for innovation and therapeutic advancement in cardiovascular science and medicine over the past two centuries. Many clinical advances were made to Beta-Blocking therapies, HMG Co-A reductase inhibitors, and the introduction to antihypertensive medications. The impressive reduction in mortality rates after the introduction of these medication advances made patients live longer but also develop congestive heart failure. The top clinical advances included medical treatment for coronary insufficiency, drug treatment for hypertension, and oral diuretics (Gromo, Mann, & Fitzgerald, 2014).

## Conclusions

From our research into the growth and history of cardiovascular medicine, it was found that continued education in nursing practice to maintain current standards of practice and understanding of technological advances is necessary. Understanding advancements in practice and technology allow the nurse to better educate patients and contribute to an individualized plan of care during their stay. Nurses have been monumental in improving and maintaining the health of cardiology patients. They teach and encourage health promotion, risk reduction and disease prevention. It was also found that although technological advances and medical discoveries often drive the growth of healthcare, nurses are the forefront and implementers of many of these advances and are a necessary part of the healthcare team due to their close proximity with the patient and the time devoted to their care.

The evolution of the technologies related to cardiovascular issues has greatly expanded our ability to properly see the etiology and make a diagnosis and a treatment plan for each individual placement. Technology such as pacemakers and echocardiograms allow us to provide optimal care for patients with increased quality of life.

From the research in cardiac pharmacology it was found that the introduction of hypertensive medications had decreased mortality rate from 450 per 100,000 of the population to 100 per 100,000 of the population. It was also concluded that the introduction of hypertensive medications in 1950, also lead to an increase in congestive heart failure, which entailed a worse prognosis than the initial problem of myocardial infarction (Gromo, Mann, & Fitzgerald, 2014).

## Significance

Cardiology nurses are an incredible resource to combat the poor cardiac health of many Americans. Too often nurses are overlooked and underappreciated. As a member of the interdisciplinary team, nurses need to advocate for their worth in the clinical setting, in research and in policy making. It was the emergence of the Cardiology specialty in the 1960's that brought to light the need to have specially trained nurses in the field, and ultimately, led to the advancement of nursing's scope of practice distinguishing them as not only the caregivers, but allowing them to perform life saving measures and interventions that had once been considered medical interventions.

Not only cardiology nurses, but all nurses struggle to be recognized for their full potential by other disciplines. Maureen Walsh, a state senator, made a comment that nurses play cards during their shift, minimizing the time and care that is given by nurses every hour of the day in hospitals around the world. By becoming more involved in politics nurses can raise awareness about the scope of their practice and influence future legislature that affects the health of the all patients.

The application of further advancement in the education for cardiac nurses are warranted. As seen by the researches reviewed, nurses are responsible for a majority of emergency life saving measures. They are also the main staff that provides comprehensive education regarding lifestyle changes to reduces mortality and improve quality of life in regard to the patient's cardiovascular issue.

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