The Role of Health Administration in Developing the Service Provided to Care for Patients

By

Yahya Abdullah Saeed Al Zahrani*

****Specialist in Health Services and Hospitals Management, First Settlement - East Jeddah Hospital/ jeddah**

Hani Abdullah Gharm Allah Al-Ghamdi**

****Specialist in Health Services and Hospitals Management, First Settlement - East Jeddah Hospital/ jeddah**

Awad Aoudah Alahmadi***

*****Specialist in Health Services and Hospitals Management, First Settlement - East Jeddah Hospital/ jeddah**

Meshal Ali Hamdan Alahmadi****

******Specialist in Health Services and Hospitals Management, First Settlement - East Jeddah Hospital/ jeddah**

Fahad Mohammed Saeed AlThobaiti*****

*******Technician - Health Administration, Al Mhani Hospital/ Al-Mahani belongs to Taif**

Fahad shabbab mohammed alghamdi******

******** Health services and hospitals management specialist, East Jeddah Hospital / Jeddah**

Abstract : The current study examined the role of health management in developing the service provided to care for patients according to international health standards. Medical management works to simplify daily operations within hospitals and health centers to ensure the smooth flow of patients and services. These operations include managing work schedules, distributing human resources, and ensuring the availability of medical tools and equipment. This helps reduce waiting times and improve the patient experience, which contributes to raising the efficiency of all health services provided.

Keywords: ***Health Administration -Service - Care – Patients.***

.INTRODUCTION:

The role of health management in raising the level of performance of the health system Man has practiced health since ancient times and sought to obtain it by all means until it became a human right.

This right was adopted by the United Nations in its constitution and development goals and through the World Health Organization, which is concerned with managing health affairs in the world. In turn, it reaffirmed in its constitution the human right to health, and managed and mobilized efforts and resources aimed at achieving this human right to this day. In order to achieve comprehensive health coverage, the World Health Organization, along with member states, reviews and improves the global health system from time to time, due to the changes and developments occurring in the world in the field of health and disease.

Since disease is susceptible to development and change, confronting it requires developing the health system according to these developments and changes. The most important event for reforming the global health system in the nineteenth century was the (Almaty Conference) in 1979 AD, which called for a review of the provision of health services through the provision of primary health care. Since the health system needs continuous updating and development, its management is the key and starting point in the process of reforming and developing the health system to keep pace with the requirements and aspirations of society. For this reason, in January 2012, the Eastern Mediterranean Regional Office issued a document entitled "Drawing the Features of the Health Future" in order to enhance the role of the organization in the region.

This document focused on implementing the five strategic objectives, including strengthening health systems; and providing special support to countries suffering from crises and needing to rebuild their health systems, within the framework of the priorities of the World Health Organization's work that it approved in the organization's reform document. Strengthening health systems and enhancing their capacity is achieved through governance, including political commitment, legislation, regulatory resources, and health management. This is why this topic has received great attention in developed and developing countries. Our country, Yemen, has also made many health commitments through the Ministry of Public Health and Population, and issued many health legislations regulating health work.

Recently, it has moved towards improving health management, as the first axis of the Ministry of Public Health and Population's fourth strategy included the importance of management in improving the performance of the health system through governance. A training center for health management was established, and many training courses and workshops were launched to train many health managers. A Master's course in health management was approved by the Yemeni Council for Medical Specialties.

Hospital administrators:

Hospital administrators are individuals or groups of people who act as the central point of control within hospitals. These individuals may be previous or current clinicians, or individuals with other healthcare backgrounds.

There are two types of administrators, generalists and specialists. Generalists are individuals who are responsible for managing or helping to manage an entire facility. Specialists are individuals who are responsible for the efficient and effective operations of a specific department such as policy analysis, finance, accounting, budgeting, human resources, or marketing.[3]

It was reported in September 2014, that the United States spends roughly $218 billion per year on hospital's administration costs, which is equivalent to 1.43 percent of the total U.S. economy. Hospital administration has grown as a percent of the U.S. economy from .9 percent in 2000 to 1.43 percent in 2012, according to Health Affairs. In 11 countries, hospitals allocate approximately 12 percent of their budget toward administrative costs. In the United States, hospitals spend 25 percent on administrative costs.[4]

Competencies

NCHL competencies that require to engage with credibility, creativity, and motivation in complex and dynamic health care environments.[5]

- Accountability
- Achievement orientation
- Change leadership
- Collaboration
- Communication skills
- Financial Skills
- Impact and influence
- Innovative thinking
- Organizational awareness
- Professionalism
- Self-confidence
- Strategic orientation
- Talent development
- Team leadership
- Training and organizations
- Associated qualifications

Health care management is usually studied through healthcare administration[6] or healthcare management[7] programs in a business school or, in some institutions, in a school of public health.

North America:

Although many colleges and universities are offering a bachelor's degree in healthcare administration or human resources,[6] a master's degree is considered the "standard credential"[8] for most health administrators in the United States. Research and academic-based doctorate level degrees, such as the Doctor of Philosophy (PhD) in Health Administration and the Doctor of Health Administration (DHA) degree, prepare health care professionals to turn their clinical or administrative experiences into opportunities to develop new knowledge and practice, teach, shape public policy and/or lead complex organizations. There are multiple recognized degree types that are considered equivalent from the perspective of professional preparation.

The Commission on the Accreditation of Healthcare Management Education (CAHME) is the accrediting body overseeing master's-level programs in the United States and Canada on behalf of the United States Department of Education. It accredits several degree program types, including Master of Hospital Administration (MHA), Master of Health Services Administration (MHSA), Master of Business Administration in Hospital Management (MBA-HM), Master of Health Administration (MHA), Master of Public Health (MPH, MSPH, MSHPM), Master of Science (MS-HSM, MS-HA), and Master of Public Administration (MPA).(Master of Hospital Management) .

Professional Organizations:

There are a variety of different professional associations related to health systems management, which can be subcategorized as either personal or institutional membership groups. Personal membership groups are joined by individuals, and typically have individual skills and career development as their focus. Larger personal membership groups include the Healthcare Financial Management Association and the Healthcare Information and Management Systems Society. Institutional membership groups are joined by organizations; whereas they typically focus on organizational effectiveness, and may also include data sharing agreements and other medical related or administrative practice sharing vehicles for member organizations. Prominent examples include the American Hospital Association and the University Healthsystems Consortium.

Emergency medical services (EMS), also known as ambulance services or paramedic services, are emergency services that treat illnesses and injuries that require urgent medical response, providing out-of-hospital treatment and transport to definitive care. They may also be known as first aid squad, rapid squad, emergency squad, rescue squad, ambulance squad, ambulance authority, life squad or other abbreviations such as (EMAS) or (EMARS). In most places, emergency medical services can be called by members of the public (as well as medical facilities, other emergency services, businesses and authorities) via an emergency telephone number that puts them in touch with a monitoring facility, which will then dispatch appropriate means to deal with the situation. Ambulances are the primary vehicles for providing emergency medical services, although some also use cars, motorcycles, aircraft or boats.

Emergency medical services agencies may also operate a non-emergency patient transport service, and some have units for technical rescue operations such as motor vehicle accidents, water rescues, and search and rescue. As a first resort, emergency medical services provide on-scene treatment for those in need of urgent medical care. If deemed necessary, they will be tasked with transporting the patient to the next point of care, most likely a hospital emergency department. Historically, ambulances have only transported patients for care, and this remains the case in parts of the developing and developed world. The term "emergency medical service" was popularized when these services began to focus on diagnosis and treatment at the scene. In some countries, a substantial portion of emergency medical service requests do not result in transporting the patient to a hospital. The levels of training and competence of emergency service members and staff vary. Medical is widely available worldwide. In some systems, members may be present only qualified to drive ambulances, with no medical training. In contrast, most systems have staff who hold at least basic first aid certifications, such as Basic Life Support (BLS). In English-speaking countries, they are known as Emergency Medical Technicians (EMTs) and Advanced Paramedic Officers (PARAMEDs), with additional training such as Advanced Life Support (ALS). Doctors and nurses also provide pre-hospital care to varying degrees in different countries.

System Processes:

A career in healthcare administration consists of organizing, developing, and managing medical and health services. These responsibilities are carried out at hospitals, clinics, managed care companies, public health agencies, and other comparable establishments. This job involves a lot of paperwork and minimal clinical engagement. Healthcare administrators make sure to promote excellence in patient care, patient satisfaction, and relationships with their physicians. In order to do this they must make sure that their employees are willing to follow protocols and keep a positive attitude with their patients. The entire organization has a better experience when everything is organized and protocols are set into place. The dual role of physicians follows as both consumers of healthcare resources and controllers of organizational revenue with their ability to direct patients and prescribe care.

This makes leader relationships with physicians fairly atypical in comparison with key stakeholder relationships in other industries.[9] Healthcare administrators might become overworked along with physicians feeling stressed from various protocols. However, both the parties of stakeholders and patients make up the backbone of a proper healthcare administration. These administrators make sure that the doctors, insurance companies, patients, and other healthcare providers have access to the files they need to provide appropriate treatments. Multiple hierarchies of professionals, on both the clinical and administrative sides of the organization, generate special challenges for directing and coordinating the healthcare organization.[9]

A healthcare administrator has a long-term effect in improving the hospital's process operation systems. They play a vital role in the sustainability of the institution.

Funding of Hospitals:

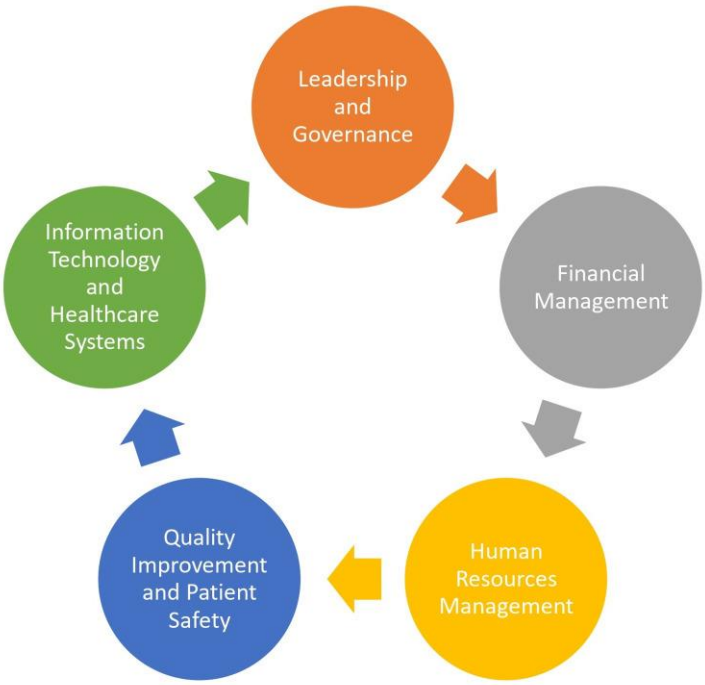
Healthcare administrators are in charge of hospital finances and advocate various strategies to improve their facilities and resources. Hospitals provide funding for assets like marketing, charity events, equipment, medicine, payroll, etc. At the same time, an institution should not be all things to people; it has its own limitations.[10] The management administration carefully manages these funds due to a spending limitation. The healthcare administrators control the expenditures that the hospital allows in order to meet profits. Sometimes hospitals are limited on what they can do for patients. Administrators that run these hospitals strive to achieve goals within their financial limitations. This study examines the causes of healthcare employment growth and workforce composition in the US and evaluates the labor market's impact on healthcare spending and health outcomes.[11] When healthcare spending reduces, employment growth will start reducing as well. The healthcare administration is critical to the lives of the people in hospitals. It contributes to cost saving practices and making sure that the necessities are brought to the institution. Healthcare management makes sure that protocols and funds are properly organized for each department. They are responsible for keeping the healthcare industry afloat. Many hospitals host charity events and donate to them as well.

Overall Goal:

The fundamental goal of a hospital administrator is to create a positive work environment where patients are treated in the most efficient and cost-effective way possible. The United States leads the world in high quality and advanced level healthcare.[10] Everyone is working towards a common goal thanks to these mission statements. This improves the organization's efficiency and productivity. The mission statement establishes the organization's purpose and provides employees a sense of belonging and identity. This encourages management and stakeholders to put in more effort in order to obtain success. The ultimate purpose of health care is to help individuals regain their overall health and wellbeing.

This completes the entire process required for widespread of research work on open front. Generally all International Journals are governed by an Intellectual body and they select the most suitable paper for publishing after a thorough analysis of submitted paper. Selected paper get published (online and printed) in their periodicals and get indexed by number of sources.

Figure 1. Key components of effective hospital administration.



Conclusions

Early Civilian Ambulances:

A major advance (which in the coming years would come to shape policy regarding hospitals and ambulances) was made with the introduction of a carriage for cholera patients in London during 1832. The statement on the carriage, as printed in The Times, said, "The therapeutic process begins as soon as the patient is placed in the carriage, the time which can be given to the care of the patient is saved, the patient may be conveyed to the hospital so quickly that the hospitals are less numerous and are located at greater distances from each other." This doctrine of ambulances providing immediate care, allowing hospitals to be more distant, is reflected in modern emergency medical planning. Bellevue Hospital horse-drawn ambulance in New York City, 1895. The first hospital-based ambulance service operated out of the Commercial Hospital, Cincinnati, Ohio (now Cincinnati General) by 1865, This was soon followed by other services, notably the New York service from Bellevue Hospital which began in 1869 with ambulances carrying medical equipment, such as splints, a stomach pump, morphine and brandy, reflecting contemporary medicine. Another early ambulance service was founded by Jarome Mundy, Count Wilczek and Edward Lamezzan Salins in Vienna after the tragic fire at the Vienna Ringtheater in 1881. It was called the Vienna Voluntary Rescue Society and served as a model for similar societies around the world. In June 1887 St. John's was established to provide first aid and ambulance services at public events in London, modeled on military-style leadership and discipline.

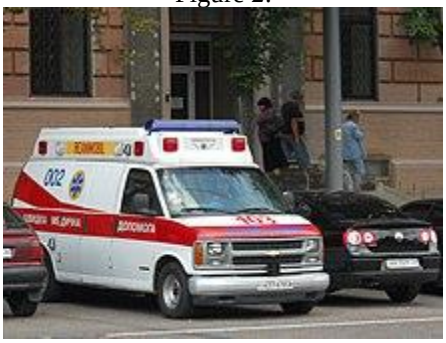
The rise of modern emergency medical services Developments in the 1960s, particularly the development of cardiopulmonary resuscitation and defibrillation as the standard model for out-of-hospital cardiac arrest care, along with new pharmaceuticals, led to changes in the missions of ambulances. In Belfast, Northern Ireland, the first mobile coronary care ambulance successfully resuscitated patients using these techniques.

One well-known report in the United States during that time was Accidental Death and Disability, the Neglected Disease of Modern Society, also known as the White Paper. The report concluded that ambulance services in the United States varied widely in quality and were often unsupervised and unsatisfactory. These studies pressured governments to improve emergency care in general, including the care provided by ambulance services. Government reports resulted in standards being set in ambulance construction regarding the internal height of the patient care area (to allow the attendant to continue caring for the patient during transport), the equipment (and therefore weight) that the ambulance was carrying, and several other factors. In 1971, an interim report was published at the annual meeting, by the president of the American Trauma Association, Sonny Gaston, Dr. Gaston, who reported that the study was a "brilliant white paper" that "shook and awakened the entire organizational structure." This report was established as a "prime mover" and made "the greatest contribution of its kind to the improvement of emergency medical services." Since this time, a concerted effort has been made to improve emergency medical care in the pre-hospital setting. These developments included Dr. R. Adams Cowley establishing the first statewide emergency medical services program in Maryland. Developments were parallel in other countries. In the United Kingdom, the 1973 Act merged "local ambulance services" into larger agencies and established national standards. In France, the first formal emergency medical services agencies were established in the 1970s.

State Ambulance Service A government-owned ambulance in Kiev, Ukraine Operating separately (although alongside the fire and police services in the area), these ambulances are funded by local, regional, or national governments. In some countries, these are only found in major cities, while in all countries, such as the United Kingdom, almost all emergency ambulances form part of a national health system. In the United States, ambulance services provided by local governments are often referred to as "tertiary" emergency medical services (the fire department, police department, and separate EMS make up the triad of emergency services) by employees of the said service, as well as other services, as well as other city officials and residents. State ambulance services are also required to take civil service exams just like state fire and police departments. In the United States, some federal government agencies employ emergency medical technicians at the basic and advanced life support levels, such as the National Park Service and the Federal Bureau of Prisons. Fire or police-related service In countries such as the United States, Japan, France, and parts of India, ambulances may be operated by local fire or police services.

Fire-based emergency medical services are the most common model in the United States, where all urban fire departments provide emergency medical services. Most emergency ambulance services in large cities are part of fire departments. It is fairly rare for a police department in the United States to provide emergency medical or ambulance services, although many police officers have basic medical training. Charity ambulance service Charities or non-profit companies operate some emergency medical services, and they are primarily staffed by volunteers, although some have paid staff. These services may be linked to the volunteer fire service, and some volunteers may provide both services. Some ambulance charities specialize in providing coverage at public gatherings and events (such as sporting events), while others provide care to the community as a whole. The International Red Cross and Red Crescent Movement is the world's largest charity providing emergency medical services. In some countries, it operates as a private ambulance service. Other organisations include St John Ambulance, the Order of Malta Ambulance and Hatzalah, as well as small local volunteer agencies. In the United States, volunteer ambulances are rarer, but can still be seen in both urban and rural areas (e.g., Hatzalah). Some charities provide ambulances to transport patients on trips or holidays away from hospitals and nursing homes where they are in long-term care. An example is the JumpLance Project in the United Kingdom.

Figure 2.



Private Ambulance Service:

Some ambulances are operated by commercial companies with paid employees, usually under contract with local or national governments, hospital networks, health care facilities, and insurance companies. In the United States, private ambulance companies provide 911 emergency service in large cities as well as most rural areas through contracts with local governments. In areas of a local county or city that provides its own 911 service, private companies provide discharges and transfers from hospitals to other health-related facilities and homes. In most areas, private companies are part of the government's emergency disaster plan, and are heavily relied upon for overall EMS response, treatment, and recovery. In some areas, private companies may only provide the patient transport elements of ambulance care (i.e. non-urgent), but in some places, they are contracted to provide emergency care, or to form a "second-tier" response, where they only respond to emergencies when all full-time emergency ambulance crews are occupied.

This may mean that the government or other service provides "emergency" cover, while a private company may be charged for "minor injuries" such as cuts or bruises or even assistance to people with mobility impairments if they fall down for example and need help getting back up, but do not need treatment. This system benefits from having emergency crews available at all times for real emergencies. These organisations may also provide services known as "standby" cover at industrial sites or on special occasions. In Latin America, private ambulance companies are often the only emergency medical services readily available. Emergency Services Combined These are full-service emergency services agencies, which may be located in places such as airports or large colleges and universities. The main feature is that all personnel are trained not only in emergency medical services, but also as firefighters and police officers. They can be found in smaller towns and cities, where demand or budgets are too low to support separate services. This multi-functionality allows for maximum use of limited resources or budget, but having one team respond to any emergency. Hospital-based Hospitals may offer their own ambulance service as a service to the community, or when ambulance care is unreliable or for a fee, their use depends on the use of the services of the hospital provider. In-house ambulances Many large factories and other industrial centers, such as chemical plants, oil refineries, breweries and distilleries, have ambulance services provided by their employers as a means of protecting their interests and the welfare of their employees. These vehicles are often used as a first response vehicle in the event of a fire or explosion.

Objectives Six Points of the Star of Life :

Emergency medical services exist to fulfill the basic principles of first aid, which are to preserve life, prevent further injury and promote recovery. This common theme in medicine is illustrated by the "Star of Life". The "Star of Life" shown here, with each "arm" of the star representing one of the six points, is used to represent the six stages of quality care by a hospital: Early detection – members of the public, or another agency, find the incident and understand the problem. Early reporting – the first person on the scene makes a call to emergency medical services (911) and provides details to enable a response. Early response – the first specialist rescuers (EMS) are dispatched and arrive at the scene as quickly as possible, allowing care to begin. Good care on scene or in the field – the EMS provides appropriate and timely interventions to treat the patient at the scene without causing further harm. Transport care – the EMS loads the patient into the appropriate vehicle and continues to provide appropriate medical care throughout the journey. Transfer to definitive care - The patient is delivered to an appropriate care facility, such as a hospital emergency department, for medical care.

Strategies for providing care :

Training for emergency medical services in Estonia:

Although a variety of different philosophical models are used in the provision of emergency medical services around the world, they can generally be placed into one of two categories, one led by a physician and the other led by allied health staff from the hospital such as emergency medical technicians or paramedics, these models are commonly referred to as the Franco-German model and the Anglo-American model. Studies have been inconclusive about whether one model produces better outcomes than another. A 2010 study in the Oman Medical Journal suggested that rapid transport was a better strategy for trauma, while stabilization at the scene was a better strategy for cardiac arrest. Levels of care Many systems have levels of response to medical emergencies. For example, a common arrangement in the United States is to dispatch fire engines or volunteers to provide a rapid initial response to medical emergencies, while an ambulance is dispatched to provide advanced treatment and transport the patient. In France, private fire services and ambulances provide basic care, while hospital-based ambulances with doctors on board provide advanced care. In many countries, an air ambulance provides a higher level of care than a regular ambulance. Examples of levels of care include: First aid, which consists of basic skills typically taught to members of the public, such as CPR, bandaging wounds, and rescuing someone from choking. Basic life support (BLS) is the lowest level of training that can be performed by those treating patients on an ambulance. It typically involves the administration of certain medications and some invasive (body-penetrating) treatments. Basic life support personnel can either operate an ambulance alone, or assist a more qualified crewmate in an advanced life support ambulance. In English-speaking countries, BLS ambulance crew are known as emergency medical technicians or emergency care assistants. Intermediate life support (ILS), also known as limited advanced life support, is positioned between basic life support and advanced life support, but is less common between the two. BLS is usually provided with a moderately expanded skill set, but where it is present, it replaces basic life support. Advanced life support has a greatly expanded skill set such as intravenous therapy, cricothyroidotomy and electrocardiogram interpretation. The scope of this upper-tier response varies greatly by country. BLS is usually provided by paramedics, but some countries require a higher level of care and employ physicians in this role. Critical care transport (CCT), also known as medical retrieval, in some countries (Australia, New Zealand, Great Britain and Canada) refers to the transfer of critical care patients between hospitals. These services are a key component of regional hospital care systems where critical care services are centralised in a few specialist hospitals. An example is the Emergency Medical Retrieval Service in Scotland. This level of care is likely to involve traditional healthcare professionals, i.e. nurses and doctors working in pre-hospital settings and even in ambulances.

Transport Only:

A motorcycle ambulance in South Sudan. Emergency medical services are provided as a transport only operation, simply to get patients from their location to the nearest medical treatment. This has been the case historically in all countries, and is still the case in many developing countries. Where workers such as taxi drivers and contractors can transport people to hospital. Transport-centric emergency medical services The Anglo-American model is also known as the "load and go" or "look and run" model. In this model, ambulances are staffed by paramedics and emergency medical technicians, who have specialized medical training, but not at the same level as a doctor. In this model, it is rare to find a doctor actually working routinely in an ambulance, although they may be deployed in large or complex cases. Doctors working in emergency medical services provide oversight of the work of ambulance crews. This may include off-line medical supervision, where protocols or "standing orders" set out treatment procedures. It may also include online medical supervision, where a doctor is contacted to advise and authorize various medical interventions. In some cases, such as in the UK, South Africa and Australia, the paramedic may be an independent healthcare professional, who does not require a doctor's permission to administer interventions or medications from an agreed list, and can perform roles such as suturing or prescribing medication to the patient. "Telemedicine" has recently emerged in ambulances, similar to online medical control. This practice allows paramedics to remotely transmit data such as vital signs and ECGs to the hospital from the field. This allows the emergency department to prepare to treat patients before they arrive. This allows lower-level providers (such as the National Registry Emergency Medical Technician) in the US to use these advanced technologies and have the physician interpret them, bringing rapid recognition of rhythms to areas where paramedics are most vulnerable. Major injuries The fundamental decision in prehospital care is whether to transport the patient immediately to hospital, or to move advanced care resources to the patient where they lie. The "look and run" approach is exemplified by the aeromedical evacuation helicopter, while the "stay and play" approach is exemplified by the French, Belgian or German mobile emergency resuscitation unit. The strategy developed for prehospital care in North America is based on the "golden hour" theory, that is, the best chance for a trauma victim to survive is in the operating room, with the goal of having the patient operated on within an hour of the traumatic event. This appears to be true for cases of internal bleeding, especially penetrating injuries such as gunshots or stab wounds. Consequently, less time is spent providing prehospital care (spinal immobilization/ABC, ensuring airway, breathing and circulation, monitoring external bleeding, endotracheal intubation) and the victim is transported as quickly as possible to a trauma center. The goal of "tell and run" treatment is to transport the patient within ten minutes of arrival, hence the phrase "platinum ten minutes" (as well as "golden hour"), now

commonly used in EMS training programs. "Tell and run" is a method developed for dealing with psychological trauma, rather than strictly medical situations (such as cardiac or respiratory emergencies).

However, this may be changing. Increasingly, research on the management of myocardial infarctions occurring outside of a hospital, or even within hospitals without their own percutaneous coronary intervention laboratories, suggests that treatment time is a clinically important factor in heart attacks, and that trauma patients may not be the only patients for whom "carry and move" is clinically appropriate. In such circumstances, the gold standard is to measure time in emergency cardiac care. The longer the interval, the greater the damage to the heart muscle, and the more difficult the long-term prognosis for the patient. Current research in Canada has suggested that time in emergency cardiac care is significantly lower when appropriate patients are identified by paramedics in the field, rather than in the emergency room. They are then transferred directly to a waiting percutaneous coronary intervention laboratory. The S-T-segment elevation myocardial infarction program has reduced myocardial infarction deaths in the Ottawa area by 50%. In a related program in Toronto, emergency medical services have begun using a procedure to rescue myocardial infarction patients from hospital emergency rooms without percutaneous coronary intervention, and transfer them, on an emergency basis, to waiting percutaneous coronary intervention laboratories at other hospitals.

Doctor-led emergency medical services Ambulance in the Czech Republic Doctor-led emergency medical services are also known as the Franco-German model, "stay and play", "stay and stabilize" or "delay and treat". In a doctor-led system, doctors respond directly to all major emergencies that require more than simple first aid. Doctors will attempt to treat the injured at the scene and will only transport them to hospital if necessary. If patients are transported to hospital, they are more likely to go directly to a ward rather than an emergency department. Countries that use this model include France, Belgium, Luxembourg, Italy, Spain, Brazil and Chile. In some cases in this model, such as France, there is no direct equivalent to a paramedic, Doctors and nurses (in some cases) provide all medical interventions to the patient, other ambulance personnel are not medically trained and only provide driving and heavy lifting, in other applications of this model, such as in Germany, there is an equivalent to a paramedic, but he is an assistant to the doctor with a limited scope of practice, they are only allowed to perform advanced life support procedures if authorized by a doctor, or in cases where life is immediately threatening. Ambulances in this model tend to be better equipped with more sophisticated medical equipment, in essence, to get the emergency department to the patient, high-speed transport to hospitals is, in most cases, unnecessarily unsafe, and the preference is to stay and provide definitive care to the patient until he is medically stable, then transport, in this model, the doctor and nurse may hire an ambulance with a driver, or they may hire a rapid response vehicle instead of an ambulance, providing medical support to several ambulances. Staff Emergency medical technician staff in New York City Patient arriving at the hospital Ambulance caregivers are generally professionals and in some countries their use is controlled by training and registration. Although these positions are protected by legislation in some countries, this protection is by no means universal.

Anyone, for example, can call themselves an "emergency medical technician" or "paramedic," regardless of their training, or lack thereof. In some jurisdictions, technicians and paramedics may be further defined by the environment in which they work, including designations such as "wild," "tactical," etc. A unique aspect of EMS is that there are two hierarchies of authority, with the chain of command separate from the medical authority.

Basic Life Support (BLS)First Responder :

First responders may be dispatched to provide first aid, sometimes to an advanced level. Their duties include providing immediate life-saving care in the event of a medical emergency: commonly advanced first aid, administering oxygen, cardiopulmonary resuscitation, and using an automated external defibrillator. First responder training is considered a minimum for emergency service personnel who may be dispatched in response to an emergency call. First responders are typically dispatched by the ambulance service to quickly arrive and stabilize the patient before the ambulance arrives and to assist the ambulance crew. Some emergency medical services agencies have set up volunteer schemes, which can be sent to a medical emergency before an ambulance arrives. Examples include the 'community first responder' schemes run by the UK Ambulance Service and similar volunteer programmes run by the Fire Service in France.

In some countries, such as the United States, there may be independent groups of volunteer responders such as rescue teams. Police officers and firefighters who are carrying out another emergency service task may also be deployed in this role, although some firefighters are trained to a more advanced medical level. Alongside first responders who are deployed in an emergency, others may be stationed at public events. The International Red Cross and Red Crescent Movement and St John Ambulance both provide first aid in these roles. Driver Some agencies separate the functions of the 'driver', using ambulance crew without a medical qualification (or just a first aid certificate), whose job it is to drive ambulances, although this approach continues in some countries, such as India, it is increasingly rare. Ambulance drivers may be trained in radio communications, ambulance operations and emergency driving skills.

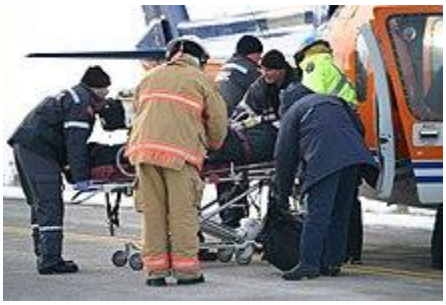
Non-emergency driver Many countries employ ambulance personnel who only carry out non-emergency patient transport duties (which can include stretcher or wheelchair situations). Depending on the resources available, they may be trained in first aid or extended skills such as the use of an automated external defibrillator, oxygen therapy, pain relief and other life-saving or palliative skills. In some services, they may also provide emergency cover when other units are not available, or when accompanied by a fully qualified technician or paramedic.

The role is known as an ambulance care assistant in the UK.

In conclusion, this comprehensive review has underscored the undeniable significance of effective hospital administration in

healthcare. It has illuminated the multifaceted nature of hospital administration, from the crucial role of leadership and the intricacies of financial management to the imperative of patient-centred care and interdisciplinary collaboration. Moreover, we have highlighted the essential role of data-driven measurement, analysis, and benchmarking in assessing hospital performance. Looking ahead, the future of healthcare administration is poised to be shaped by emerging technologies, evolving policies, and persistent challenges.

Figure 3

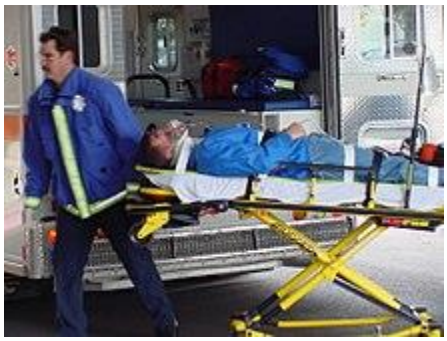


Emergency Medical Technician:

Emergency medical technicians work to load a patient into an ambulance Emergency medical technicians, also known as ambulance technicians in the United Kingdom and emergency medical technicians in the United States, in the United States, EMTs typically have 3 levels: EMT-A, EMT-B, and Ambulance Technicians. The new National Registry of EMS Technician Education Standards has renamed the levels as follows: Emergency Medical Responder (EMR), Emergency Medical Technician, Advanced EMT, and Paramedic. EMTs are typically able to perform a wide range of emergency care skills, such as automated defibrillation, spinal cord injury care, and oxygen therapy. In some jurisdictions, some technicians are able to perform duties such as placing intravenous cannulas, administering limited medications, more advanced airway procedures, and limited cardiac monitoring. Most advanced procedures and skills are not within the national scope of practice for an EMT. As such, most states require additional training and certification to perform above and beyond the national curriculum standards.

In the United States, EMT certification requires Emergency Medicine Intensive courses and field skills training, certification expires after two years and requires 48 credits (continuing education credits), 24 of these credits must be in refresher courses while the other 24 can be taken in a variety of ways such as emergency driving training, child care, elder care, and specific injuries. Emergency Medical Dispatcher An increasingly popular addition to the EMS system is the use of highly trained dispatchers who can provide (pre-arrival) instructions to callers reporting medical emergencies. They use carefully structured interrogation techniques and provide coded instructions to allow callers or bystanders to initiate definitive care for critical problems such as airway obstruction, bleeding, childbirth, and cardiac arrest. Even with a rapid response time by a first responder measured in minutes, some medical emergencies develop in seconds. Such a system provides, in essence, "zero response time," and can have a tremendous impact on positive patient outcomes. Advanced Life Support (ALS) Emergency Medicine Specialist (Paramedic) Girl being treated by paramedics A paramedic has a high level of pre-hospital medical training and usually includes basic skills that technicians do not perform, including often cannulation (and with it the ability to use a range of medications to relieve pain, correct heart problems and perform endotracheal intubation), cardiac monitoring, endotracheal intubation, pericardiocentesis, cardioversion, needle decompression and other skills such as performing cricothyroidotomy, The most important job of a paramedic is to identify and treat any life-threatening conditions and then carefully assess the patient for complaints or other findings that may require emergency treatment. In many countries, this is a legal right, and using it without a relevant qualification can result in criminal prosecution. In the United States, paramedics represent the highest level of licensing for pre-hospital emergency care. In addition, there are several certifications for paramedics such as Wildland Advanced Life Support, Air Ambulance Certification, Emergency Critical Care and Medical Transport Program Certification.

Figure 4



Ccritical Care Paramedic :

A critical care paramedic, also known as an advanced paramedic or other titles, is a paramedic with additional training to deal with critically ill patients. Critical care paramedics often work on air ambulances, which are more likely to be sent to emergencies requiring advanced care skills. They may also work on ground ambulances. Training, skills, and certification requirements vary from jurisdiction to jurisdiction, as does whether they have been trained externally by a university or professional body or "in-house" by their emergency medical services agency. These providers have a wide range of medications to treat complex medical conditions and serious injuries. Examples of medications are dopamine, dobutamine, propofol, blood, and blood products. Some examples of skills include: Life support systems typically limited to the ICU or

critical care hospital system such as mechanical ventilators, intra-aortic balloon pumps, and external pacemaker monitoring. Depending on the service's medical direction, these providers are trained to place and use IVCs such as umbilical venous catheters, umbilical arterial catheters, cricothyrotomy, thyrotomies, central venous catheters, arterial catheters, and chest tubes. Paramedic Practitioner/Emergency Medical Care Practitioner In the UK and South Africa, some paramedics undertake further university education to become sole practitioners, giving them ultimate responsibility for their clinical judgement, including the ability to prescribe medications independently, including those normally reserved for doctors, such as courses of antibiotics. An emergency care specialist is a position sometimes referred to as an 'advanced paramedic' and aims to bridge the gap between ambulance care and that of a GP. Emergency care practitioners are university graduates in emergency medical care or qualified paramedics who have undergone further training, and are authorised to carry out specialist techniques. In addition, some may prescribe medications (from a limited list) for long-term care, such as antibiotics. In a primary care setting, they are also educated in a range of diagnostic techniques.

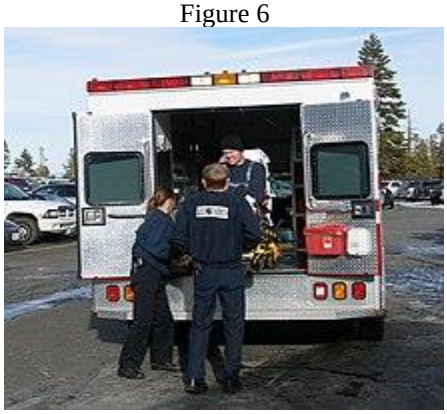
Figure 5

Traditional Healthcare Careers Nurse :

The role of nurse in the pre-hospital setting is common in many countries in some parts of the world. Nurses are the primary health care worker who provides emergency medical services. In European countries such as France or Italy, nurses have also been employed as a means of providing advanced life support services. These nurses may work under the direct supervision of a physician, or in rare cases independently. In some places in Europe, notably Norway, paramedics still exist, but the role of the "ambulance nurse" is still evolving. It is also thought that nurses may bring unique skills to some of the situations encountered by ambulance crews. In North America, and to a lesser extent elsewhere in the English-speaking world, some jurisdictions employ specially trained nurses to perform medical transport work, most of whom are medical personnel or critical care transport providers, and often work in conjunction with a technician, paramedic, or physician in emergency transports. In the United States, the most common functions of registered nurses in ambulances are in critical care/mobile intensive care transport, and air medical management. Employers in the United States typically require such nurses to hold additional certifications beyond their basic nursing license. Four individual states have a prehospital or intensive care nurse license above paramedics. Many states allow registered nurses to also become registered paramedics depending on their role in the EMS team. In Estonia, 60% of ambulance teams are led by a nurse. An ambulance nurse can perform almost all emergency procedures and administer prehospital medications like doctors in Estonia. In the Netherlands, all ambulances are staffed by a registered nurse with additional training in emergency nursing, anesthesia or critical care, and an emergency medical technician driver. In Sweden since 2007 2005, all emergency ambulances must be staffed with at least one registered nurse, since only nurses are allowed to administer medications, in Spain advanced life support ambulances must have a registered nurse, in France since 1986, ambulances that depend on the fire department have the option of providing resuscitation using specially trained nurses who work on protocols.

Doctor In countries with the doctor-led emergency medical services model, such as France, Italy, German-speaking countries (Germany, Switzerland, Austria) and Spain, doctors respond to all situations that require more than basic first aid, in some versions of this model (such as France, Italy and Spain), there is no direct equivalent to a paramedic, since advanced life support is performed by doctors, in German-speaking countries, paramedics are assistants to ambulance doctors (called emergency physicians), in these countries, if a doctor is present, paramedics ask the doctor's permission to administer treatments such as defibrillation and medications, if there is no doctor on the scene and there is a life-threatening situation, they may administer treatments that follow Doctor's instructions. In countries where emergency medical services are led by paramedics, the ambulance service may still employ doctors, who may work on specialist response vehicles, such as the UK's air ambulance, who may also provide advice and develop treatment protocols, with the medical director acting as the medical adviser to the ambulance service.

Figure 6



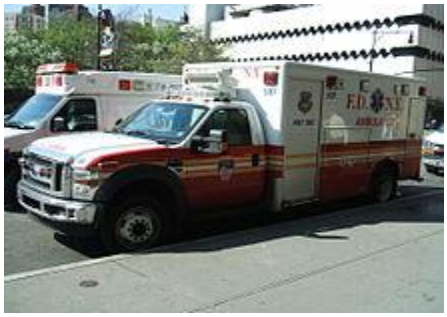
Specialized Emergence :

y Medical Services Air ambulances often complement the land ambulance service; in some remote areas, they may even form the primary ambulance service. Like many innovations in emergency medical services, medical aircraft were first used in the military. One of the first recorded aircraft rescues of a casualty was in 1917 in Turkey, when a Camel Corps soldier who had been shot in the ankle was airlifted to hospital in a de Havilland DH9. In 1928, the first civilian air medical service was established in Australia to provide health care to people living in remote areas of the Australian outback. This service became the Royal Flying Doctor Service. The use of helicopters was

pioneered in the Korean War, where the time required to reach a medical facility was reduced from 8 hours to 3 hours in World War II, and again to 2 hours in the Vietnam War. Aircraft can travel faster and operate over a wider coverage area than a land ambulance. They have a particular advantage for serious trauma injuries.

The established theory of the golden hour suggests that serious trauma patients should be transported as quickly as possible to a specialist centre. For trauma, therefore, helicopter medical responders can provide a higher level of care at the scene, faster transport to a specialist hospital and critical care during the flight, the problem is that it can be dangerous for them to fly in bad weather. Tactical (Hazardous Area) New York City Fire Department Some EMS agencies have created specialist teams to assist casualties in major incidents or hazardous situations, These operations include tactical police, explosions, hazardous materials, building collapses, fires and natural disasters, in the United States, they are often known as tactical EMS teams and are often deployed alongside police SWAT teams, The equivalent in the UK ambulance services is the Hazardous Area Response Team. Wilderness Systems similar to wilderness EMS have been developed to provide medical responses in remote areas, which may have significantly different needs than an urban area. Examples include the National Ski Patrol or the Appalachian Responder Search and Rescue Conference (based in the United States). Like traditional wilderness EMS providers, all wilderness EMS providers still must work under direct or indirect medical supervision. To help physicians with the skills needed to provide this oversight, the Wilderness Medical Association and the National Association of Emergency Medical Services Physicians jointly supported the development of a unique course in 2011 called "The Medical Director of Emergency Medical Services," which was cited by Emergency Medical Services Journal as one of the top 10 EMS innovations of 2011. Skills taught in wilderness EMS courses that go beyond the scope of practice of basic EMS include: catheterization, administration of antibiotics, use of airway devices (such as a laryngeal tube), nasogastric intubation, and simple suturing. However, the scope of practice for wilderness EMS still falls under the standard of care of basic life support. Many Wilderness Emergency Medical Training Organizations, including private schools, non-profit organizations such as the Appalachian Wilderness Medicine Center and the Wilderness Emergency Medical Services Institute, military branches, community colleges and universities.

Figure 7



However, amidst these changes, the resounding message is clear: effective hospital administration is pivotal in improving patient outcomes. Hospital administrators are not just stewards of institutions; they are architects of better healthcare, custodians of patient well-being, and quality champions. The call to action for healthcare leaders and policymakers is to prioritize the development of capable, forward-thinking administrators, invest in technology, promote value-based care, and address disparities to ensure that the promise of better patient outcomes remains at the heart of healthcare administration. Ultimately, the journey toward improved patient outcomes through effective hospital administration is a shared responsibility that holds the potential to transform healthcare for generations to come.

References:

- Addressing health and health-care disparities: the role of a diverse workforce and the social determinants of health. Jackson CS, Gracia JN. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3863703/ Public Health Rep. 2014;129:57–61. doi: 10.1177/00333549141291S211. [DOI] [PMC free article] [PubMed] [Google Scholar]
- Analysis of length of hospital stay using electronic health records: a statistical and data mining approach. Baek H, Cho M, Kim S, Hwang H, Song M, Yoo S. PLoS One. 2018;13:0. doi: 10.1371/journal.pone.0195901. [DOI] [PMC free article] [PubMed] [Google Scholar]
- Artificial intelligence in healthcare: transforming the practice of medicine. Bajwa J, Munir U, Nori A, Williams B. Future Healthc J. 2021;8:0–94. doi: 10.7861/fhj.2021-0095. [DOI] [PMC free article] [PubMed] [Google Scholar]
- Benchmarking specialty hospitals, a scoping review on theory and practice. Wind A, van Harten WH. BMC Health Serv Res. 2017;17:245. doi: 10.1186/s12913-017-2154-y. [DOI] [PMC free article] [PubMed] [Google Scholar]
- Benchmarking: a method for continuous quality improvement in health. Ettorchi-Tardy A, Levif M, Michel P. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3359088/ Healthc Policy. 2012;7:0–19. [PMC free article] [PubMed] [Google Scholar]
- Big data analytics in healthcare: promise and potential. Raghupathi W, Raghupathi V. Health Inf Sci Syst. 2014;2:3. doi: 10.1186/2047-2501-2-3. [DOI] [PMC free article] [PubMed] [Google Scholar]

- Big data in healthcare: management, analysis and future prospects. Dash S, Shakyawar SK, Sharma M, Kaushik S. J Big Data. 2019;6:54. [Google Scholar]
- Blockchain technology in healthcare: a systematic review. Saeed H, Malik H, Bashir U, et al. PLoS One. 2022;17:0. doi: 10.1371/journal.pone.0266462. [DOI] [PMC free article] [PubMed] [Google Scholar]
- Committee on Quality of Health Care in America. National Academies Press. Washington, DC: National Academies Press; 2000. To Err Is Human: Building a Safer Health System. [PubMed] [Google Scholar]
- Correlation between hospital finances and quality and safety of patient care. Akinleye DD, McNutt LA, Lazariu V, McLaughlin CC. PLoS One. 2019;14:0. doi: 10.1371/journal.pone.0219124. [DOI] [PMC free article] [PubMed] [Google Scholar]
- Data integration between clinical research and patient care: a framework for context-depending data sharing and in silico predictions. Hoffmann K, Pelz A, Karg E, et al. PLOS Digit Health. 2023;2:0. doi: 10.1371/journal.pdig.0000140. [DOI] [PMC free article] [PubMed] [Google Scholar]
- Defining and implementing value-based health care: a strategic framework. Teisberg E, Wallace S, O'Hara S. Acad Med. 2020;95:682–685. doi: 10.1097/ACM.0000000000003122. [DOI] [PMC free article] [PubMed] [Google Scholar]
- .Digital transformation in healthcare: technology acceptance and its applications. Stoumpos AI, Kitsios F, Talias MA. Int J Environ Res Public Health. 2023;20 doi: 10.3390/ijerph20043407. [DOI] [PMC free article] [PubMed] [Google Scholar]
- Ehrenstein V, Kharrazi H, Lehmann H, Taylor CO. Healthcare Research and Quality. Rockville: Agency for Healthcare Research and Quality; 2019. Obtaining Data from Electronic Health Records. [Google Scholar]
- Electronic health record implementation: a review of resources and tools. Aguirre RR, Suarez O, Fuentes M, Sanchez-Gonzalez MA. Cureus. 2019;11:0. doi: 10.7759/cureus.5649. [DOI] [PMC free article] [PubMed] [Google Scholar]
- Ellenbecker CH, Samia L, Cushman MJ, Alster K. Patient Safety. Vol. 2008. Rockville: Agency for Healthcare Research and Quality (US); 2008. Patient Safety and Quality in Home Health Care. [PubMed] [Google Scholar]
- Empowering education: a new model for in-service training of nursing staff . CH M, SA M, EB A, AM A. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5238493/ J Adv Med Educ Prof. 2017;5:26–32. [PMC free article] [PubMed] [Google Scholar]
- From staff-mix to skill-mix and beyond: towards a systemic approach to health workforce management. Dubois CA, Singh D. Hum Resour Health. 2009;7:87. doi: 10.1186/1478-4491-7-87. [DOI] [PMC free article] [PubMed] [Google Scholar]
- Governance in health - the need for exchange and evidence comment on "governance, government, and the search for new provider models". Chanturidze T, Obermann K. Int J Health Policy Manag. 2016;5:507–510. doi: 10.15171/ijhpm.2016.60. [DOI] [PMC free article] [PubMed] [Google Scholar]
- Guidelines for prevention of hospital acquired infections. Mehta Y, Gupta A, Todi S, et al. Indian J Crit Care Med. 2014;18:149–163. doi: 10.4103/0972-5229.128705. [DOI] [PMC free article] [PubMed] [Google Scholar]
- Health care cybersecurity challenges and solutions under the climate of COVID-19: scoping review. He Y, Aliyu A, Evans M, Luo C. J Med Internet Res. 2021;23:0. doi: 10.2196/21747. [DOI] [PMC free article] [PubMed] [Google Scholar]
- Health care payers COVID-19 impact assessment: lessons learned and compelling needs. McClellan M, Rajkumar R, Couch M, et al. NAM Perspect. 2021;2021 doi: 10.31478/202105a. [DOI] [PMC free article] [PubMed] [Google Scholar]
- Health care professional development: working as a team to improve patient care. Babiker A, El Husseini M, Al Nemri A, et al. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4949805/ Sudan J Paediatr. 2014;14:9–16. [PMC free article] [PubMed] [Google Scholar]
- Healthcare and Hospital Budgeting: A Complete Guide | Syntellis. Syntellis Perform. [Oct; 2023]. 2023. https://www.syntellis.com/guide-to-healthcare-and-hospital-budgeting https://www.syntellis.com/guide-to-healthcare-and-hospital-budgeting
- Healthcare data security technology: HIPAA compliance. Mbonihankuye S, Nkunzimana A, Ndagijimana A. Wirel Commun Mob Comput. 2019;2019:0. [Google Scholar]
- Healthcare reimbursement and quality improvement: integration using the electronic medical record comment on "fee-for-service payment--an evil practice that must be stamped out?". Britton JR. Int J Health Policy Manag. 2015;4:549–551. doi: 10.15171/ijhpm.2015.93. [DOI] [PMC free article] [PubMed] [Google Scholar]
- .High-quality health systems in the Sustainable Development Goals era: time for a revolution. Kruk ME, Gage AD, Arsenault C, et al. Lancet Glob Health. 2018;6:0–252. doi: 10.1016/S2214-109X(18)30386-3. [DOI] [PMC free article] [PubMed] [Google Scholar]
- How the nursing profession should adapt for a digital future. Booth RG, Strudwick G, McBride S, O'Connor S, Solano López AL. BMJ. 2021;373:0. [Google Scholar]
- Hughes RG. Patient Safety. Vol. 2008. Rockville: Agency for Healthcare Research and Quality (US); 2008. Tools and strategies for quality improvement and patient safety. [PubMed] [Google Scholar]
- Human resource management as an area of changes in a healthcare institution. Hampel K, Hajduova Z. Risk Manag Healthc Policy. 2023;16:31–41. doi:

10.2147/RMHP.S388185. [DOI] [PMC free article] [PubMed] [Google Scholar]

- Importance of leadership style towards quality of care measures in healthcare settings: a systematic review. Sfantou DF, Laliotis A, Patelarou AE, Sifaki-Pistolla D, Matalliotakis M, Patelarou E. Healthcare (Basel) 2017;5 doi: 10.3390/healthcare5040073. [DOI] [PMC free article] [PubMed] [Google Scholar]
- Interprofessional collaboration in health care: lessons to be learned from competitive sports. Bosch B, Mansell H. Can Pharm J (Ott) 2015;148:176–179. doi: 10.1177/1715163515588106. [DOI] [PMC free article] [PubMed] [Google Scholar]
- Interventions to improve team effectiveness within health care: a systematic review of the past decade. Buljac-Samardzic M, Doekhie KD, van Wijngaarden JD. Hum Resour Health. 2020;18:2. doi: 10.1186/s12960-019-0411-3. [DOI] [PMC free article] [PubMed] [Google Scholar]
- Lean six sigma in healthcare: a systematic literature review on challenges, organisational readiness and critical success factors. McDermott O, Antony J, Bhat S, Jayaraman R, Rosa A, Marolla G, Parida R. Processes. 2022;10:1945. [Google Scholar]
- Learning from hospital mortality. Stewart K, Choudry MI, Buckingham R. Clin Med (Lond) 2016;16:530–534. doi: 10.7861/clinmedicine.16-6-530. [DOI] [PMC free article] [PubMed] [Google Scholar]
- National Academies of Sciences. Washington, DC: National Academies Press; 2021. The Future of Nursing 2020-2030: Charting a Path to Achieve Health Equity. [PubMed] [Google Scholar]
- Panteli D, Legido-Quigley H, Reichebner C, Ollenschläger G, Schäfer C, Busse R. Copenhagen: European Observatory on Health Systems and Policies; 2019. Clinical Practice Guidelines as A Quality Strategy. [Google Scholar]
- Patient satisfaction survey as a tool towards quality improvement. Al-Abri R, Al-Balushi A. Oman Med J. 2014;29:3–7. doi: 10.5001/omj.2014.02. [DOI] [PMC free article] [PubMed] [Google Scholar]
- Patient satisfaction with health care services; an application of physician's behavior as a moderator. Manzoor F, Wei L, Hussain A, Asif M, Shah SI. Int J Environ Res Public Health. 2019;16 doi: 10.3390/ijerph16183318. [DOI] [PMC free article] [PubMed] [Google Scholar]
- Patient satisfaction with the quality of nursing care. Karaca A, Durna Z. Nurs Open. 2019;6:535–545. doi: 10.1002/nop2.237. [DOI] [PMC free article] [PubMed] [Google Scholar]
- Patient-Centered Communication: Basic Skills. Hashim MJ. https://pubmed.ncbi.nlm.nih.gov/28075109/ Am Fam Physician. 2017;95:29–34. [PubMed] [Google Scholar]
- Patient-centred care is a way of doing things: How healthcare employees conceptualize patient-centred care. Fix GM, VanDeusen Lukas C, Bolton RE, Hill JN, Mueller N, LaVela SL, Bokhour BG. Health Expect. 2018;21:300–307. doi: 10.1111/hex.12615. [DOI] [PMC free article] [PubMed] [Google Scholar]
- Patient-reported outcomes (PROs) and patient-reported outcome measures (PROMs) Weldring T, Smith SM. Health Serv Insights. 2013;6:61–68. doi: 10.4137/HSI.S11093. [DOI] [PMC free article] [PubMed] [Google Scholar]
- Patients' healthcare, education, engagement, and empowerment rights' framework: patients', caretakers' and health care workers' perspectives from Oromia, Ethiopia. Birhanu Z, Abamecha F, Berhanu N, Dukessa T, Beharu M, Legesse S, Kebede Y. PLoS One. 2021;16:0. doi: 10.1371/journal.pone.0255390. [DOI] [PMC free article] [PubMed] [Google Scholar]
- Predictive analytics and tailored interventions improve clinical outcomes in older adults: a randomized controlled trial. Golas SB, Nikolova-Simons M, Palacholla R, Op den Buijs J, Garberg G, Orenstein A, Kvedar J. NPJ Digit Med. 2021;4:97. doi: 10.1038/s41746-021-00463-y. [DOI] [PMC free article] [PubMed] [Google Scholar]
- Principles of clinical ethics and their application to practice. Varkey B. Med Princ Pract. 2021;30:17–28. doi: 10.1159/000509119. [DOI] [PMC free article] [PubMed] [Google Scholar]
- Quality indicators for ICU: ISCCM guidelines for ICUs in India. Ray B, Samaddar DP, Todi SK, Ramakrishnan N, John G, Ramasubban S. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2856147/ Indian J Crit Care Med. 2009;13:173–206. [PMC free article] [PubMed] [Google Scholar]
- Quentin W, Partanen VM, Brownwood I, et al. Copenhagen: European Observatory on Health Systems and Policies; 2019. Measuring Healthcare Quality. [PubMed] [Google Scholar]
- Recommendations for achieving interoperable and shareable medical data in the USA. Szarfman A, Levine JG, Tonning JM, et al. Commun Med (Lond) 2022;2:86. doi: 10.1038/s43856-022-00148-x. [DOI] [PMC free article] [PubMed] [Google Scholar]
- Reducing hospital readmission rates: current strategies and future directions. Kripalani S, Theobald CN, Anctil B, Vasilevskis EE. Annu Rev Med. 2014;65:471–485. doi: 10.1146/annurev-med-022613-090415. [DOI] [PMC free article] [PubMed] [Google Scholar]
- Remote surveillance technologies: realizing the aim of right patient, right data, right time. Safavi KC, Driscoll W, Wiener-Kronish JP. Anesth Analg. 2019;129:726–734. doi: 10.1213/ANE.0000000000003948. [DOI] [PMC free article] [PubMed] [Google Scholar]
- Supporting efficiency improvement in public health systems: a rapid evidence synthesis. Walters JK, Sharma A, Malica E, Harrison R. BMC Health Serv Res. 2022;22:293. doi: 10.1186/s12913-022-07694-z. [DOI] [PMC free article] [PubMed] [Google Scholar]
- Sustainability in Health care by Allocating Resources Effectively (SHARE) 10: operationalising disinvestment

in a conceptual framework for resource allocation. Harris C, Green S, Elshaug AG. BMC Health Serv Res. 2017;17:632. doi: 10.1186/s12913-017-2506-7. [DOI] [PMC free article] [PubMed] [Google Scholar]

- Telehealth benefits and barriers. Gajarawala SN, Pelkowski JN. J Nurse Pract. 2021;17:218–221. doi: 10.1016/j.nurpra.2020.09.013. [DOI] [PMC free article] [PubMed] [Google Scholar]
- Telemedicine for healthcare: capabilities, features, barriers, and applications. Haleem A, Javaid M, Singh RP, Suman R. Sens Int. 2021;2:100117. doi: 10.1016/j.sintl.2021.100117. [DOI] [PMC free article] [PubMed] [Google Scholar]
- Telemedicine: current impact on the future. Jin MX, Kim SY, Miller LJ, Behari G, Correa R. Cureus. 2020;12:0. doi: 10.7759/cureus.9891. [DOI] [PMC free article] [PubMed] [Google Scholar]
- The internet of things (IoT) in healthcare: taking stock and moving forward. Rejeb A, Rejeb K, Treiblmaier H, Appolloni A, Alghamdi S, Alhasawi Y, Iranmanesh M. Internet Things. 2023;22:100721. [Google Scholar]
- The potential for artificial intelligence in healthcare. Davenport T, Kalakota R. Future Healthc J. 2019;6:94–98. doi: 10.7861/futurehosp.6-2-94. [DOI] [PMC free article] [PubMed] [Google Scholar]
- The Significance of Cooperation in Interdisciplinary Health Care Teams as Perceived by Polish Medical Students. Bendowska A, Baum E. Int J Environ Res Public Health. 2023;20 doi: 10.3390/ijerph20020954. [DOI] [PMC free article] [PubMed] [Google Scholar]
- The strategy that will fix health care. Porter ME, Lee TH. https://hbr.org/2013/10/the-strategy-that-will-fix-health-care Harv Bus Rev. 2013 [Google Scholar]
- The use of Big Data Analytics in healthcare. Batko K, Ślęzak A. J Big Data. 2022;9:3. doi: 10.1186/s40537-021-00553-4. [DOI] [PMC free article] [PubMed] [Google Scholar]
- Young M, Smith MA. 2023. Standards and evaluation of healthcare quality, safety, and person-centered care. [PubMed] [Google Scholar]