

# Assignment of biomedical engineering

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# **1 Evolution of Modern Healthcare System**

## **1.1 Introduction**

The modern healthcare system is the ubiquitous use of medical technology , in today healthcare system. The patient is at the center of an intricate network of clinicians, medical devices, and other elements of the system. Between the years 1750 and 2000, healthcare in the United States evolved from a simple system of home remedies and itinerant doctors with little training to a complex scientific , technological, and bureaucratic system often called the " medical industrial complex". The complex is built on medical science and technology.

## **1.2 Changing the Role of Hospitals and Leaders**

Hospitals, physician groups and health systems continue to consolidate, navigating a sustainable route to clinical and operational alignment is more complex. While systems search for ways to scale up, many organizations are finding that partnerships are an easier choice. Providers increasingly look to team up with other healthcare providers to streamline operations and minimize risk rather than trying to control each lever of the care continuum. Organizations used to be managed as small hospitals; now we think in terms of systems," Cosgrove said, although it's not a huge change for Cleveland Clinic's already integrated model, he added. "We are no longer getting paid for doing lots of operations. Hospitals will be cost centers instead of profit centers. Physicians are being tapped to lead health systems, as organizations look to work closely with doctors to limit unnecessary care and reduce variation. Demand is growing for strategists who can align physicians around a clinically integrated network and have the operational expertise to establish vertically integrated service lines.

## **1.3 Effective value based healthcare system**

The pressure is mounting for a transition to a specific value-based system which will both control rising healthcare costs while significantly improving the quality of outcomes for patients. Researchers writing about this change note that accountable care organizations, medical homes, and bundled care products are all different ways of initiating this transition and making wide-scale adoption of value-based care possible . In fact, the United States Secretary of Health and Human Services has recently set a goal of tying 50

## **1.4 Advance in Technology**

Healthcare technology trends focus heavily on patient empowerment. The introduction of wearable biometric devices that provide patients with information about their own health and telemedicine apps allow patients to easily access care no matter where they live. With new technologies focused on monitoring, research, and healthcare availability, patients will be able to take a more active role in their care.

## 1.5 Improve Reliability of healthcare

In health care, most of our processes are between 1 and 2 Sigma. For a wide variety of processes, patients can rely on receiving the interventions they should half the time, or 1 Sigma (25). For some outcomes, defects are 2 to 3 Sigma for example, catheter-related bloodstream infection rates and rates of ventilator-associated pneumonia are typically between 1 to 20 per 1000 catheter or ventilator days (13,26). Nevertheless, there are some notable exceptions in anesthesia in healthy patients and in bloodstream at are estimated to be 4 or 5 Sigma (defects per 10000 or 100 000) (27,28).

## 1.6 Conclusion

societal changes and scientific advances through out history have brought about enormous improvements in the achievement of health. Today,an optimized level of "health" whatever the definition might be , is fathomable and achievable if given unlimited resources.The problem lies in that resources are not unlimited , and are in fact disproportionately allocated between demographic groups.A value-based system, designed to provide a high quality of health care for the lowest cost ,is a solution to the growing crisis of healthcare system.A major problem with value- based care , however is that these health outcomes are subjective and determined by individual patient needs values.A new definition of health which incorporates a description of well - being , specific patient needs, and the organisational ,value based system required to satisfy those needs,is now necessary. The definition we propose will help focus national efforts aimed at improving access to healthcare and installing a valued-based system that brings united states outs of its healthcare crisis.