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# The Product Life Cycle of Healthcare in the United States

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## Abstract

The concept of a product lifecycle is widely used in industry and can be used to develop strategies to anticipate and manage change. Although not widely recognized, the lifecycle of healthcare as a product in the United States also fits into this framework. By this analysis, healthcare is a mature product and will need to be rejuvenated or face decline. There is some evidence that improvements are taking place with modern quality initiatives.

## INTRODUCTION

It is widely recognized in industry that market conditions undergo changes over time leading to a product life cycle that can be defined in stages. This process is used to help predict and manage the strategies used to make the product attractive to potential customers. Although used widely for such material things as cars and computers, this concept is noticeably lacking from the medical literature if one considers that healthcare is a product. Because of a perception that there are few alternatives, there has been little elasticity of demand in healthcare and costs have remained high.<sup>2</sup> Historically, medicine has been “exempt” from traditional economic analyses and advances in quality improvement programs but this is changing.<sup>3</sup>

Many services involve life and death issues such as food safety, transportation (particularly airline) safety and law enforcement. This paper will discuss some of the ways medical care can be considered a product that can be looked at in ways that industry has considered traditional for many years. Hopefully by looking at existing information through this “lifecycle lens” a different perspective can be obtained that will help to bring greater understanding to this confusing issue and ultimately initiate and propel changes that will improve the healthcare system.

## THE TRADITIONAL PRODUCT LIFECYCLE

Product output changes over time in relation to changing conditions. Initially costs for research and development and advertising are high and sales are low. As the public begins to become more aware of the product there are more profits but also more competition and this leads to specialization of the product to differentiate it from the other similar products.

With time the market becomes saturated, the industry may suffer from bureaucracy and government regulation and if there is nothing done will start to decline. The primary forces throughout this cycle are supply and demand working in a functional market.<sup>1</sup>

## THE LIFECYCLE OF MEDICINE IN THE UNITED STATES

In contrast to many products or services, a significant part of medical care operates, or is perceived to operate as a market failure.<sup>4</sup> Patients without resources receive care by law in emergency departments.<sup>5</sup> Hospitals charge insured patients more for their care so they can care for the uninsured.<sup>6</sup> Third parties pay for most of the healthcare delivered.<sup>7</sup> Coverage is linked to employment. Despite resistance to attempts to create universal health care coverage, the federal government, through Medicare and Medicaid, pays for much of the healthcare provided in the United States.<sup>8</sup> If the cost and delivery of healthcare is examined as a whole, however, it still follows the same trends described in the traditional product lifecycle.

Independent physicians practicing with little regulation characterized early medicine.<sup>9</sup> There were discoveries, which were marked as milestones but had not yet been turned into large-scale industries. For example, Lister's work on antiseptics during the mid-late 1800's,<sup>10</sup> Basch's instrument to measure blood pressure in 1887,<sup>11</sup> the discovery of the practical use of radiation for imaging by Roentgen in 1895,<sup>12</sup> and the development of arsphenamine for the treatment of syphilis.<sup>13</sup> Because there were few expensive technological advances, the cost of medical care was relatively low. For the most part, medical expenses were paid in cash.

The growth phase of medicine began during the late 19<sup>th</sup> century and early 20<sup>th</sup> century. Increased competition along with increasing knowledge created pressure for physicians to develop medical specialties.<sup>14</sup> For example the American Board of Surgery was formed in 1934 for the purpose of separating surgeons from other physicians.<sup>15</sup> At that time a surgeon might be characterized as a physician who had specialized knowledge in anatomy and the instruments used in surgery as well as having undergone a period of training for surgery. Since that time, other specialties were created. For example orthopedic surgery, neurosurgery and others came into existence.<sup>16</sup> The American board of Surgery even created its own certificates of sub-specialization.<sup>15</sup> Physicians underwent “turf” wars in which they would compete to perform a certain procedure.<sup>17</sup>

Demand for medical care increased and Blue Cross-Blue Shield, a health insurance company was formed.<sup>18</sup> From 1940 through the 1960's there was a dramatic increase in the number of commercial health insurance companies and the people who had health insurance. Medicare and Medicaid were programs initiated in 1966 and have grown dramatically.<sup>19</sup> Examined this way, the real “growth” in the industry of medicine was the growth of the health insurance industry and its financing of the medical and pharmaceutical industries.

Concerns over cost and quality have been the themes of the mature phase of healthcare in the United States. In 2003 the Centers for Medicare and Medicaid Services estimated that healthcare consumed 15.3% of the Gross Domestic Product, a larger percentage than any other country.<sup>18</sup> Problems in quality were identified with the Institute of Medicine (<http://www.iom.edu>) report *To Err is Human: Building a Safer Healthcare System* that revealed that there were many more errors in medicine than the public realized and that as many as 44,000 to 98,000 people die in hospitals each year as the result of medical errors.<sup>20</sup> Many of the attempts to improve quality were failures. In one study of medical litigation, for example, the severity of the patient's disability, not the occurrence of an adverse event or an adverse event due to negligence, was predictive of payment to the plaintiff.<sup>21</sup> Bureaucracy became pervasive.<sup>22</sup> These characteristics fit the pattern of a growth cycle at maturity.

### **THE CURRENT STAGE OF THE LIFECYCLE**

Healthcare started as a service provided for a fee by individual practitioners known for quality by word of mouth advertising. It has grown predominantly in relation to the

growth of third party payers with quality still being recognized to a large extent by word of mouth. Medicine at the start of the 21<sup>st</sup> century is characterized by high cost, high litigation, and an increasing perception that the quality could be improved.

Frequently the consumer of medical care is the patient, but because either the government or large industry pays much of healthcare insurance premiums, these entities have come to realize that they have a stake in the quality as well.<sup>23</sup> The Leapfrog Group (<http://www.leapfroggroup.org>), an initiative created by the Business Roundtable (<http://www.businessroundtable.org>), is a large-scale employer driven attempt to improve the quality of medical care. The Joint Commission on Accreditation for Healthcare Organizations (JCAHO) has a new Center for Patient Safety (<http://www.jointcomission.org>), and the Agency for Healthcare Research and Quality (AHRQ), an organization of the federal government, has the mission to “improve the quality, safety, efficiency, and effectiveness of health care for all Americans” (<http://www.ahrq.gov>). The Institute for Healthcare Improvement (IHI), a non-for-profit organization, seeks to “lead improvement of healthcare throughout the world” (<http://www.ihl.org>).

The fact that governmental, commercial, and non-for-profit organizations have all identified an interest in improving the quality of healthcare suggests that the opportunity to improve the product has not been missed. This will be easier to evaluate over a longer period of time but optimistically a “New and Improved” healthcare with more value to the customers may be on the horizon. This innovation is in its early stages and a marginal analysis that takes into account the revenues, costs, and other effects should be performed to approach this wisely. It took approximately 100 years to reach the maturation phase and it may take another 20-30 years for the product cycle to be complete. To prevent decline of the product, there will have to be a focus on value. If value is the degree to which buyers think goods and services make them better off,<sup>24</sup> what is meant by value in healthcare will have to be better defined.

### **VALUE IN HEALTHCARE**

It has been said that management begins with measurement.<sup>24</sup> What has been measured in medicine has been limited, however. Early attempts to improve quality dealt mostly with the structure of medical training. For example the American Medical Association created the Council on Medical Education to standardize the

requirements for medical licensure.<sup>25</sup> The Flexner report dealt with the structure of medical training.<sup>26</sup>

The measurements that are likely to be most important would be outcomes that the patient or their family would want from their medical care. For example, mortality, lengths of stay in the intensive care unit or in the hospital have been termed “patient centered outcomes”.<sup>27</sup> There is some evidence that during the beginning of growth phase there was active resistance to some attempts to examine outcomes. Ernest Codman, a surgeon at Massachusetts General Hospital, attempted to implement a “End Results Analysis” which was opposed by much of the medical staff.<sup>28</sup> He published a book *A Study in Hospital Efficiency* reporting his own outcomes in 1916.<sup>29</sup> It is interesting that despite being a relatively simple concept it took many decades before there was mainstream interest in outcomes.<sup>30</sup>

Some of the primary ways employers have been trying to improve the quality of healthcare include consumer directed-healthcare, pay for performance, and disease management.<sup>23</sup> All of these concentrate on cost and patient centered outcomes. Access to care may be another way to place value on healthcare. Favorable outcomes will only affect patients actually receiving care in the healthcare system. Some areas of the country still do not have adequate access to some types of specialized care. For example, trauma center access.<sup>31</sup> Calculated shortages of physicians also may not take into account the failure of many of these physicians to provide emergency services.<sup>32</sup>

## **SUMMARY**

The product of healthcare can be examined from many different perspectives including that of the product lifecycle. When examined this way it can be seen to follow the traditional pattern despite having some elements of market failure. Because medical care is a necessity, it has and will also be delivered in some way. The manifestations of the product cycle, therefore, are that the organizations involved in providing, financing, and improving the quality of healthcare change over time.

The introductory phase of medicine in the United States was characterized by a focus on physicians and their discoveries, most of which had only small profit potential at the time. In the growth phase the character changed to financing by insurance companies with a very large growth in expenditures for hospitals, physicians, and medications. The maturation phase brought government bureaucracy and a

realization that the quality for the amount of money spent (value) was low. We are now at the point in the maturation phase where the decisions that are made will determine whether the product needs to be improved or a new one developed. Government, non-for-profit, and commercial industry have all created promising new organizations and initiatives to prevent decline in the product. Because medical care will continue to be delivered, these and other innovations will be required to prevent the decline.

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