Chapter 2
Dynamic Capacity Management (DCAMM™) in a Hospital Setting

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ABSTRACT

"Hospitals are dynamic systems and must be analyzed and managed as such. Therefore, we need dynamic analytical tools and thinking to fix hospitals' most pressing issues" (Story, 2010).

This is the premise of the chapter on Dynamic Capacity Management (DCAMM). In the near future, healthcare providers will be expected to achieve even better results with reduced compensation, fewer resources, lower capital expenditures, even stricter regulations and restrictions, and more litigation. This means that there must be a radical operational transformation away from the traditional, static management and improvement methodologies towards a dynamic, high-capacity approach. DCAMM is an analytical methodology and (non-proprietary) toolset that is meant to profoundly change the way hospitals are managed.

DCAMM starts with an analysis of dynamic demand, matched against dynamic capacity. This brings forth simple yet important operational concepts that take a dynamic, "systems" level view of the entire care structure (e.g. a hospital or a community). Using specially designed simulation models and the power of predictive analytics, we can achieve a very different perspective on the variability and interdependencies that were once considered chaos. By "managing to" the variation, and understanding and predicting the dynamism of the system, concepts such as "Dynamic Standardization" and "Outlier Management" can augment the existing, static process improvement systems such as Lean and Six Sigma. This chapter will provide an overview of the concepts and structures necessary to profoundly change the way our hospitals, and health systems, are managed.

INTRODUCTION

As I outline in my recently published book, Dynamic Capacity Management for Healthcare: Advanced Methods and Tools for Optimization, (Story, 2010) healthcare is a dynamic environment in which to work, changing every hour of every day in a seemingly constant state of flux. Short of a battlefield, few environments are as dynamic and complex as healthcare. The processes required to take thousands of these unique patients from sick and diseased to cured or improved are perhaps as complex as any, with care provision specialized for each patient with the individuality of a snow-flake. Thus our systems are known more for their complexity and chaos than their standardization and regimen. Our nurses, doctors, and administrators are therefore correct to claim that healthcare is indeed different from other industries.

But because we are caring for fellow human beings, with lives and loves and livelihoods at stake, our systems are expected to yield results that are nothing short of perfection. Though they may not be designed to achieve the desired results, patients, insurers, and regulators expect our systems to function flawlessly and inexpensively. Cost controls therefore cannot dictate lowered quality standards or become excuses for errors. Product recalls don't apply here, and well-heeled, greed-inspired lawyers await every mistake.

Furthermore, in the future, healthcare providers will be expected to achieve even better results with reduced compensation, fewer resources, lower capital expenditures, stricter regulations and restrictions, and more litigation. As U.S. "healthcare reform" (a.k.a. "Obamacare") is slowly implemented, the financial struggles ahead for healthcare provision have never looked more troubling. This means that efficiency and performance optimization will be of even greater importance as we try to perfect the processes of the care we provide within the constraints of reduced or existing capacity, higher per-patient costs, and reduced compensation. The provision

of services must yield high quality and optimal clinical outcomes yet be provided at the lowest possible cost. Therefore, improving the efficiency of the complex and dynamic operations of care delivery may be one of the best ways to ensure the survival of our facilities.

It's Up to Us

Read the following three quotes, and see if they sound familiar:

"We need legislation which reorganizes the system to guarantee a sufficient volume of high quality medical care, distributed equitably across the country and available at reasonable cost to every American. It is going to take a drastic overhaul of our entire way of doing business in the health-care field in order to solve the financing and organizational aspects of our health crisis. One aspect of that solution is the creation of comprehensive systems of health-care delivery".

"I think that this new system will be successful and give us exciting and constructive alternatives to our existing programs of delivering better health services to Americans."[1]

"I have strongly advocated passage of legislation to assist the development of [these concepts] as a viable and competitive alternative to fee-for-service practice.... This bill represents the first initiative by the Federal Government which attempts to come to grips directly with the problems of fragmentation and disorganization in the health care industry.... I believe that [this approach] is the best idea put forth so far for containing costs and improving the organization and the delivery of health-care services."[2]

The year was 1973. The speakers were [the late] Sen. Ted Kennedy, (D-MA), and Rep. Harley Staggers (D-WV). The subject…HMOs! The similarities between this sort of language and that

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