Impact of cost cutting on laboratories: new business strategies for laboratories

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Cost reduction is the primary force driving healthcare reform. To survive and thrive in these tumultuous times, laboratories must adapt and implement new business strategies. Business paradigm shifts create opportunities for organizations with a plan; a wait-and-see attitude forecasts failure. Drawing upon an 11-year experience with the "ARUP business model," this work will highlight business strategies that have contributed to the success of this university-based reference laboratory. In the future, successful laboratories will implement new business strategies to become more effective members of the emerging integrated healthcare delivery teams. Within the laboratory, traditional organizational disciplinary boundaries, i.e., chemistry, microbiology, and hematology, are melding together to increase efficiency. Laboratorians must become influential members of institutional healthcare delivery teams formed to control utilization. Laboratory services are being adjusted to optimize patient care. Incremental pricing is only one of the strategies to be implemented to expand outpatient business to those in the region. Expanded computer capabilities, client services, specimen handling, marketing, and sales are also required. On a regional basis, service laboratories are increasingly joining forces to increase efficiency while at the same time improving the quality of patient care.

INDEXING TERMS: healthcare reform • managed care • financial management • utilization control

Today, cost reduction is the primary force driving healthcare reform. Three topic areas are presented here: (a) the impact of cost cutting on laboratories, (b) new business strategies for laboratories, and (c) a business model that has been an accommodation to healthcare reform. The rapidly increasing cost of laboratory services has received disproportionate attention even though laboratory services represent only 4–11% of healthcare expenditures. Even as technological advances continue to provide new and better tests, laboratories throughout the US and throughout the world face tremendous pressure to reduce costs. Several healthcare trends affecting clinical laboratories include rapid development of integrated delivery systems, increasing regulations, changing practice patterns, and increased public awareness [1]. However, the trend having the greatest impact currently is reduced revenue per test.

IMPACT OF COST CUTTING ON LABORATORIES

Test cost accounting. In today's increasingly competitive environment, revenues per test are continuing to decrease (Fig. 1) [1]. To survive, laboratories are adapting to this cost-cutting necessity through organizational changes, automation, and staffing economies. A laboratory test cost-accounting system is essential, for without accurate costing, discounting and potential efficiency measures cannot be properly evaluated. The economic viability of the laboratory is greatly affected by both test volumes and variety. Make/buy decisions require accurate cost data for each test. Financial management was identified by 78% of those surveyed as the paramount managed care-driven trend [2]. The results of this survey suggested that the managed care impact

![Graph showing the impact of cost cutting on laboratories](image)

Fig. 1. Financial trends affecting clinical laboratories: increasing demand for laboratory services (top line), decreasing revenues per test (middle line), and increasing cost per test (bottom line); improved efficiency is required to preserve profits (hatched area).

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will increase referral testing, decrease quality, and increase utilization controls [2].

**Utilization control.** At the University of Utah Health Science Center (UUHSC), Associated Regional and University Pathologists, Inc. (ARUP), has worked closely with hospital administration and the newly formed Faculty Practice Organization to optimize test utilization. A series of seminars on health reform coupled with coordinated communications from hospital administration and the medical faculty practice organization created an environment conducive to utilization control. Overall, a 16.9% decrease in the number of laboratory test orders was achieved between January 1995 and September 1995. During this period, changes in hospital census statistics were small compared with the 16.9% reduction in laboratory test orders. Patient days, patient admissions, and the average length of stay decreased by <1%, consistent with seasonal fluctuations. Emergency room registrations representing 7.5% of the total outpatient registrations were down 8.6%, while clinic registrations were up <1%. Clearly, decreased laboratory utilization could not be attributed to hospital census changes. The changed utilization resulted from a collective institutional effort and a widespread recognition that healthcare costs must be reduced. In addition, testing protocols were adjusted to decrease the order frequency for many tests, e.g., those shown in Fig. 2. Scrutiny of testing protocols optimized test utilization and reduced costs. As testing volumes decreased, labor and supply costs were reduced, but achieving cost savings proportional to the reductions in testing volumes has continued to be a serious challenge because the laboratory has been expected to maintain all existing services with fewer resources.

**Traditional laboratory organization.** Traditionally, laboratories have been organized around disciplines of clinical chemistry, immunology, microbiology, hematology, etc. Many laboratories are reorganizing around technologies and processes that transcend the traditional disciplinary boundaries. Increased efficiencies can result through increased automation and process improvement.

**NEW BUSINESS STRATEGIES**

New laboratory business strategies that are emerging from this era of healthcare reform include integrated healthcare delivery, utilization control, value verification, and continuous improvement. Laboratories as never before must become active, participating members of the extended healthcare team. No longer can the laboratory provide analytical services in isolation. Labo-
ratorians must be contributing members working cooperatively with hospital administration, the ordering physicians, and other members of the integrated healthcare delivery team to reduce costs while at the same time improving patient care. Utilization control needs to be strongly supported by laboratorians. Too often in the past, the strategy has been, do whatever testing is requested regardless of the cost and value to the patient, i.e., service at any cost. Laboratory services must now be optimized for the benefit of the patient. The true value of laboratory services in healthcare will be appreciated only when waste is eliminated and utilization is properly controlled. Even though extremely complex and expensive, outcomes research is beginning to verify the value of laboratory testing [3]. However, until the emphasis shifts from short-term financial management, i.e., profit taking, to long-term patient benefits, outcomes research will not likely be appropriately funded. Continuous improvement is not really a new strategy, but needs to be encouraged in all laboratories, for there is much progress to be made. An emphasis shift back to patient care is just beginning [4]. When patient care again becomes the focus, the value of the laboratory will be increasingly recognized. Those responsible for implementing new business strategies in the laboratory are advised to plan well. Success will not come from continuing rhetoric; talking is important, but doing makes the difference. The successful laboratories will plan well and deal with specifics. In “DIMIN Survival Plan” [5], the plan is a critical component to assure that the laboratory adds value to society while continuing to make a profit. Survival depends on the organization remaining profitable, but the primary goal of a service organization should go beyond the profit motive. In this era when cost reduction is driving healthcare, increased productivity is a requirement for survival. At the same time, the laboratory must be a contributing member of the emerging healthcare delivery networks. Fundamental to participation in cost cutting is an accurate knowledge of laboratory test costs. Too many laboratories do not know the cost of the services they provide; such laboratories are at a high risk of failure as competition and cost-cutting efforts continue to drive revenues per test downward (Fig. 1). Adequate test cost accounting requires a joint effort between those with financial expertise and those with a detailed knowledge of laboratory testing. Interlaboratory comparisons are usually of relatively little value because of the complexity of test cost accounting procedures; intralaboratory comparisons over time are more valuable. Without solid test

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1 Nonstandard abbreviations: UUHSC, University of Utah Health Science Center; ARUP, Associated Regional and University Pathologists; and FTE, full-time employee equivalent.
cost accounting, incremental costing is very risky. Test cost-accounting models must provide up-to-date cost information on a variety of test types; for example, tests that require calibration with each run may require another model than that for methods that use historical (stored) calibration curves. Up-to-date cost information must be used to price laboratory services for managed care or capitation contracts and for discounting fee-for-service contracts. As financial trends continue to drive down laboratory revenues per test, those laboratories that do not know their cost will not succeed.

As the revenue per test drops, increased productivity is required for survival (Fig. 1). Appropriate measurement criteria must be established to monitor progress. As the strategies to increase productivity are implemented, their impact needs to be measured. Such strategies include streamlining the organization, automation, and process improvement. Organizations that empower employees will discover that, as employees take ownership of their jobs, they will come forward with suggestions that will improve productivity throughout the organization.

Laboratories located in medical schools are particularly challenged by healthcare reform as financial support for education is being threatened on several fronts. Historically, patient fees at university medical centers have provided partial support for education. The cost-cutting trend is a serious threat to the continuance of these educational resources. Medical schools, which have historically focused on research and tertiary care specialties, are now reaching out to capture enough covered lives to support the tertiary care services and education. A recent news article [6] lists several strategies. Unified healthcare delivery systems are being formed within the medical school environment to compete for covered lives. Some medical school hospitals have been sold; others have signed management contracts. All are attempting to assure a sufficiently large primary care referral base to support their medical specialties and education. Joint ventures are also being considered as medical schools adapt to the healthcare reform.

ARUP BUSINESS MODEL

Formation and definition. In 1984, in response to the threatened implementation of diagnosis-related groups (DRGs), the clinical laboratories were moved less than a mile from the perceived security of the UUHSC, and ARUP was formed as a for-profit corporation. Taking unprecedented risk, the pathology department established a for-profit corporation for the express purpose of supporting the academic efforts of pathology and the university. Since the formation of ARUP in 1984, healthcare reform initiatives as well as market pressures have continued to reduce laboratory revenues per test. Competition for new laboratory business from outpatients continues to intensify. Nevertheless, the regional laboratory model remains viable for those clinical laboratories able to: (a) make timely market-motivated decisions, (b) offer competitive pricing and service, and (c) build their referral business to complement a solid inpatient laboratory service. If these criteria can be met with existing facilities, then a stand-alone off-site laboratory such as ARUP may not be the way to go in 1996.

In 1984, >99% of the testing performed was ordered from the University Health Sciences Center, and, as in most university laboratories, emphasis was on quality analytical testing, clinical consultation, research, and education. In the beginning, this reference laboratory was not particularly customer-friendly, service-oriented, or price-competitive. As now stated, the "vision is to be the reference laboratory of choice for community healthcare systems, as the most responsive source of quality information and knowledge." Maintaining the delicate balance between academia, service, and business is a continuing struggle that has resulted in a unique organizational culture wherein the commitment to education continues to be strong, extending to clients and the profession as well as to the students enrolled in the formal educational programs for medical laboratory technicians, medical technologists, master's-level laboratory scientists, pathology residents, and postdoctoral fellows.

"ARUP's mission is to continually improve patient care by building professional relationships through excellence in laboratory testing, service, education, and research." This mission statement directs the entire organization. The motto, "Making the Best Better," conveys the heavy investment in continuing improvement. The goal is to have every employee take job ownership and continually make their part of the organization better. The philosophy is to support clients by performing tests they cannot perform as efficiently and effectively in their laboratories. As soon as tests can be performed more efficiently and effectively in a client's laboratory, our value-added services will provide methodologies, training, and specimen exchanges to help the client bring tests in-house. Today, ARUP clients include academic health science centers, community hospitals, regional laboratories, reference laboratories, and industrial corporations. Our market niche is to ride the wave of esoteric testing illustrated in Fig. 3.

Growth. Physical facility expansion is one evidence of growth. In 1989, ARUP expanded from its initial off-site laboratory, 25 000 sq. ft. (~2300 m²), into a 75 000-sq.-ft. (almost 7000 m²) building designed for the referral laboratory business. A portion of this building was initially leased to other tenants to provide options for future growth. In 1995 ARUP expanded its physical

Fig. 3. ARUP's business is to ride the "wave" that brings new discoveries to improve patient care through: (A) discovery, (B) recognition of clinical value, (C) diagnostic test development, (D) introduction of commercial tests, and (E) timely transfer of testing to local laboratories.
Fig. 4. Primary job functions of the 704 ARUP employees (June 1995) illustrate balance of the organization and the continuing emphasis on analytical (51%) and faculty consulting (11%) services; other important job groups include administration and employee services (3%), information services (4%), finance (4%), marketing and sales (8%), and logistics (19%), which includes specimen handling, client services, and couriers.

facility by 131 000 ft. (≈12 000 m²) to accommodate current and future growth. Increasing the variety of testing has been a far greater challenge than increasing the volume. In 1984, 1000 different tests were offered; by 1987, this number had increased to 1600. Today, ARUP performs >2000 different tests. More than 5000 specimens are received daily from clients throughout the US for referral testing.

Employees. In 1984, the laboratory had just over 100 employees, including phlebotomists, specimen handlers, technologists, and laboratory managers. The growing business soon needed more employees to perform the analytical work; but also needed expertise in finance, billing, purchasing, accounts receivable, payroll, budgeting, computer services, marketing, sales, and several other areas required for a successful business. The current employee mix is illustrated in Fig. 4. The strength of any business is capable, dedicated people committed to their jobs and to the mission of the organization. People are the secret to success.

Testing and revenue sources. As a referral testing laboratory, the testing and client mix dramatically changed. Referral testing now accounts for >59% of revenues (Fig. 5). When ARUP was formed, the provision of laboratory services to the UUHSC provided a $10 million revenue base, which at that time represented 99% of revenues. The continuing close relationship with UUHSC has been vital, as the reference laboratory has grown in a remarkably consistent manner to $59 million in total revenues for the 1995 fiscal year that ended June 30, 1995. The average growth rate since inception has been 18.2% per annum.

Improving productivity. In response to the financial trend of decreasing laboratory revenues per test due to competition and increasing costs per test (Fig. 1), it has become mandatory to improve productivity to survive. In May 1994, employees were asked to contribute suggestions to improve productivity within the organization; our employees submitted 466 suggestions in 1 week. Implementation of the employee suggestions had a significant impact as reflected in the corporate progress measures illustrated by billed units per full-time employee equivalent (FTE) and revenue and cost per billed unit (Fig. 6). The corporate performance measures are regularly shared with the employees, who have accepted the challenge to “make the best better.”
CONCLUSIONS [1]

1) Community or regional-based healthcare will prevail.
2) Hospital laboratories that adapt will survive.
3) Laboratory testing will be more important as its value is recognized.
4) The tradition of outstanding healthcare in America will continue.

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References