



RESEARCH ARTICLE

Determining the Cost of Care for U.S. Healthcare Providers: A Hybrid Approach

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Abstract

Many US healthcare providers can't easily calculate the cost of treating patients. They use simple calculations such as the cost-to-charge ratio (CCR) which Medicare uses for reimbursement purposes and the ratio-of-cost-to-charge (RCC) which allocates costs to patients based on revenue generated from revenue centers. Healthcare providers are unique, provide different services, and use different resources for treatments. A-one-size-fits-all costing system can't work for all sizes and different specialty practices. Scholars suggested many costing methods that can be used in different healthcare practices, such as the unit cost analysis, the standard costing method, the gross-costing method, the chart of accounts, the resource-based relative value units (RBRVS), the step-down cost accounting (SDCA), and the activity-based costing (ABC). The purpose of this article is to recommend a costing method that can be easily learned and applied by different size healthcare providers. The proposed hybrid costing approach can help providers calculate the cost of care by capturing the cost of routine and standard exams, treatments, services, and procedures using the process costing system, and capture all other costs that are unique to each patient using the job order costing system. Adequately determining the cost of care will help healthcare leaders improve planning and budgeting for target income and achieve organizational efficiency and effectiveness.

Keywords: Costing, system, hybrid, healthcare, providers.

1 | INTRODUCTION

Understanding cost accounting for medical practices is vital. The goal is to provide quality care at the lowest possible cost, which brings the question of how much does it cost to treat a patient? While the basic methods of estimating the cost of care are easy to use and cheap, healthcare

providers should avoid using them. Guesstimating cost doesn't promote efficiency and effectiveness and causes managers to make poor business decisions. The proposed hybrid costing approach is a credible costing system that can help providers to accurately calculate the cost of care, which helps improve planning, controlling, making pricing decisions, and improve financial reporting.

DETERMINING THE COST OF CARE FOR U.S. HEALTHCARE PROVIDERS: A HYBRID APPROACH

A recent strata survey, as cited by LaPointe (2019) revealed that 90% of healthcare providers do not know the cost of care. Another (2016) survey - conducted by the Healthcare Financial Management Association (HFMA) in collaboration with the Institute of Management Accountants (IMA) of healthcare providers showed they are somewhat dissatisfied with their current accounting systems. While many have agreed their accounting system provides accurate information, 56% have agreed their current accounting system doesn't provide the required information to improve the quality of their decisions. Most of the 41 respondents have agreed that the information provided by their accounting systems can lead to operations improvement (Lawson, 2017).

Healthcare management and scholars attempted to provide physician executives with tools to help them fairly estimate the cost of care such as exams, outpatient services, procedures, surgeries, and follow-ups. Yet, there is not much agreement that one tool is considered superior, practical, and accurate. This article explores selected literature, examines different costing methods used by healthcare leaders and suggests a less sophisticated and superior costing system that can be used by different size healthcare facilities.

The healthcare system in the US is facing challenges and demands to improve the quality of care, increase accessibility and affordability, and sustain efficient practices that ensure sustainability. The 2010 Patient Protection and Affordable Care Act (ACA, also known as "Obamacare") aimed to reform healthcare by supporting low-cost healthcare innovative practices, making it affordable and accessible to more people with different household income levels. Individuals and businesses became empowered to select the best health and dental insurance plans from the

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insurance marketplace to best serve their needs while reducing the out of pocket cost for patients (Health-Care.gov). This act offered primary care practices incentive payments from Federal, State, and insurance companies for adopting models that improve the quality and accessibility of health care to all Americans (Wasserman, Berninger, Gerteis, & Abt Associates, 2015).

The researcher explored different literature to identify and discuss some of the common cost calculation methods such as the cost-to-charge ratio (CCR) and the ratio-of-cost-to-charge (RCC). Then, explore some of the common costing methods that use proper cost accounting principles to include the unit cost analysis, the standard costing method, the gross-costing method, the chart of accounts, the resource-based relative value units (RBRVS), the step-down cost accounting (SDCA), and the activity-based costing (ABC). This article suggests the adoption of a hybrid approach to assign direct costs and allocate overhead. This costing method uses the process costing system to assign costs to standard treatments and procedures. Also, used the job order costing system to recognize the unique resources exhausted by patients for different treatments.

Many scholars attempted to describe costing systems that can be used by different size healthcare facilities. A major challenge to calculating cost is getting accurate cost information from healthcare providers. Calculating cost is perceived to be a sophisticated task that providers don't even try to understand. Furthermore, the number of services and procedures the providers perform is in the thousands; making calculating the cost per patient and visit a complex task. The type of service and payors may also impact the amount of reimbursement the provider receives for treating a patient. For instance, the payor would pay the same amount if the provider was a hybrid and offers both urgent care and family care services. These factors are complex and impact the feasibility of calculating cost per patient per visit (Rice, 2018).

Physician leaders may not have control over the amounts of reimbursements from payors, but they have control over their internal processes and the cost of running their practices. Health leaders like Robert DeMichieci - executive vice president and CFO at the

University of Pittsburgh Medical Center (UPMC) – recognized the importance of implementing a credible costing system to improve internal processes and operations. DeMichiei said, as cited by Bannow (2019): “We had not only the data and the measurements and the insight into our operations, but we also had the management willpower and initiative.” UPMC uses the activity-based cost accounting system for years which improved its planning, control, and financial reporting. DeMichiei shared that nursing cost per case was over budget by 3% for March 2018 due to a 2% increase in nursing expenses and a 1% increase in patients volume. Moreover, the cost per surgery was 3% less compared to the previous year due to closing two outpatient surgery centers and consolidating their patients with the remaining open centers. The following graph shows UPMC’s comparison of the actual total expenses of January through March of 2019 compared to 2018 actual expenses. It also shows 2019 budgeted total expenses compared to 2018 actual expenses:

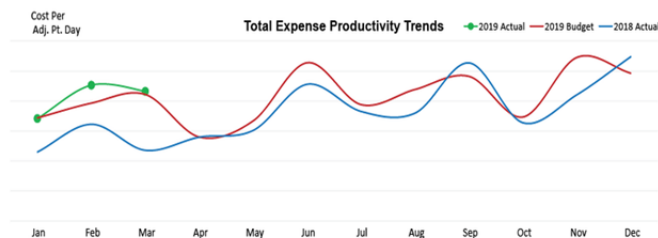


FIGURE 1:

As cited by Bannow (2019)

Using cost accounting information, UPMC’s leaders were able to adjust costs based on patient volume. DeMichiei emphasized the importance of using a costing system that accurately measures the cost of operations. Most healthcare providers rely on managing revenue, DeMichiei said. They focus on pursuing rate increases from payors and driving volume up. This approach proved to be a failure since payors are decreasing their rates for services and healthcare became overutilized.

The importance of having a credible cost accounting system never been more vital. Healthcare leaders are facing continuous pressure to reduce the cost of healthcare and maintaining quality. Cost accounting in healthcare is essential to estimate the cost of

care, improve budgeting, cost control, and revenue analysis. Without a credible cost system, healthcare leaders would guesstimate the cost of care by using simple calculations such as the cost-to-charge ratios (CCRs) and the ratio-of-cost-to-charge (RCC).

CCR was used by many hospitals to obtain cost information per patient and to understand the relationship between cost centers and revenue centers. CCR converts charges to cost by dividing the total cost by total charges (CCR = Total Hospital (or Cost Centre) Cost / Total Hospital (or Cost Centre) Charges). Asper (2013) - director of the Research Data Assistance Center (ResDAC) used downloadable cost reports data to identify the total cost of care and charges at the hospital overall level, cost center level, and Medicare inpatient specific level. This method is easy to apply, but it uses 2-3 years old cost reports which make the cost to charge.

RCC is based on the step-down cost allocation method which allocates the cost of service departments to other service and operating departments. RCC uses total department cost percentage to total patient revenue, then apply this ratio across all departments with disregard to patient’s consumption of resources from each department (Imus, 2020). RCC is easy to apply but is not a good proxy to estimate cost per patient since it doesn’t provide accurate cost information. Furthermore, this method uses charges to calculate the cost, and departmental charges are based on individual item mark-ups that differ for each department, and individual patients use different resources from each department (Shwartz, Young, & Siegrist, 1995).

The increased cost of running a medical practice, along with the continuous reduction of reimbursement amounts from health insurance payers (including Medicare and Medicaid) makes it imperative for healthcare leaders to come up with a fix to stay in business. Many had tried innovative solutions such as improving internal processes, using state-of-the-art software, such as the EMR (Electronic Medical Records) to reduce labor, and reducing errors and waste, but few knew how to control the cost of treating patients while maintaining quality. It is time for healthcare organizations to invest in a reliable cost accounting system.

DETERMINING THE COST OF CARE FOR U.S. HEALTHCARE PROVIDERS: A HYBRID APPROACH

According to the 2018 survey conducted by the American Hospital Association (2020), the 6,146 U.S. hospitals admitted 36,353,946 patients with total expenses of \$1,112,207,387,000. Healthcare organizations treat thousands of patients each year, making it vital to accurately determine and understand the cost of care. Furthermore, the industry faces continuous pressure to endure changes to improve access and quality while reducing costs.

Many scholars identified and recommended costing systems to help healthcare leaders accurately calculate the cost of care. The following are some of the common cost accounting techniques used by different size healthcare providers:

2 | UNIT COST ANALYSIS

Kullgren and Sibella (2004) explored the unit cost analysis for a family physician practice, a mid-sized community practice. They conclude that understanding the cost structure of providing services will help managers set better fees, negotiate better rates with insurance plans, and plan better for the future. For the unit cost analysis to be useful and practical, Kullgren and Sibella affirm that it needs to be simple and inexpensive. The use of technology and applications such as Excel makes it easy for physicians to understand the cost structure and improve budgeting and planning.

They suggest the following six steps approach to analyze and calculate the unit cost: 1) define the unit of service, such as an exam or a procedure 2) determine the number of units provided in a period 3) calculate the direct cost (labor and materials) per unit of service. In this step, the standard quantity is used, and prices are predetermined, such as the physician cost (quantity and rate), nurse cost, reception cost, and other resources cost. Then a total of direct cost per unit of service is calculated 4) determine the annual indirect cost for the practice (rent, utilities, insurance, administrative staff salaries, etc.), then allocate to units of service based on the number of visits 5) calculate depreciation and donated goods and services, then allocate to units of services based on the number of visits 6) then calculate the unit cost

by adding the direct cost (from step 3), the indirect cost (from step 4), and the depreciation and value of donated goods and services (from step 5).

This method requires some cost accounting knowledge, but not too complex for the practice's accounting department to understand and apply. The drawback of this method is, some of the unit's direct costs are predetermined which makes it easy to miss additional costs due to unexpected circumstances.

3 | THE STANDARD COSTING METHOD

Chatterjee, Levin, and Laxminarayan (2013) used the standard costing method to calculate the unit cost of providing a medical service in hospitals in India. The data was collected from accounting and payroll reports, medical records, department reports, and annual financial statements. The researchers followed the following steps to organize data and calculate the unit cost: 1) identify and organize cost centers: hospitals are divided into patient care cost centers (PCCs), such as inpatient, and outpatient, and support cost centers (SCCs), such as human resources and laundry 2) calculate the direct cost for each cost center: include labor costs, material costs, and capital. Staff who worked for more than one cost center; their wages were appropriated accordingly based on the number of hours of service in each cost center. Direct labor included salaries and benefits for all physicians, nurses, and staff. Material costs included medications, supplies (medical and office), utilities, labs, and X-ray materials. Capital costs include depreciation of fixed assets to include buildings, vehicles, equipment, and furniture 3) allocate the overhead costs such as administration and human resources to all cost centers (including SCCs and PCCs) using proper allocation criterion, such as: allocate administration cost based on the equivalent full-time personnel, allocate electricity cost based on the size of the floor plan, and allocate medical records cost based on the estimated number of admissions, then allocate total costs to of the SCCs to PCCs 4) calculate the total cost of PCCs by adding the direct and indirect costs for each PCC, then the total would be divided by total patients visits during the period. This method is expensive and time-

consuming, but it proved to improve managerial reporting, such as the occupancy rate, outpatient visits, the total of emergency visits, the number of surgeries performed, and the quality of decision-making.

4 | GROSS-COSTING METHOD

Wasserman, Berninger, Gerteis, & Abt Associates (2015) recommended this method for patient-centered medical home (PCMH) providers. When aggregated data is available - a good source of data can be from general ledgers of HMO organizations that have multiple primary care practices and insurance claims, it would be analyzed using the descriptive analysis to produce a graph showing cost trends. Factors like patient demographics and case-mix can make cost calculations inaccurate. The linear regression method can be used to account for variations that impact the results. This method is time-consuming and requires a certain degree of understanding of the practice activities and costs.

5 | THE CHART OF ACCOUNTS METHOD

Rice (2018) suggested this simple formula to calculate the cost per patient to help urgent care center managers and leaders understand the cost structure per patient and create a pricing model that covers the cost and yields income. The cost per patient is calculated by dividing total expenses for a period by the number of patients seen, then subtract from the average collection amount per patient to calculate the profit per patient. The challenge with this method becomes apparent when considering how employees are paid. When paid biweekly, some months will have two pay periods, and others will have three which would skew the labor cost from month to month. Additionally, whether providers are reimbursed by the global contract or fee-for-service for the products provided or patients would be billed separately. The key to maximize revenue is to capture all reimbursements accurately including whether services are provided by a physician or a physician extender.

6 | THE RESOURCE-BASED RELATIVE VALUE UNITS (RBRVS)

Rice (2018) also suggested this method to be used by payors such as Centers for Medicare & Medicaid Services (CMS) and Health Maintenance Organization (HMO) providers to reimburse healthcare practices including urgent care centers. All procedures listed in the current procedural terminology (CPT) to include diagnostic and surgical are assigned a value that takes into consideration the physician's time and care (52%), treatment-related expenses (44%), and malpractice expenses (4%). The CPT value would be then adjusted based on location. CPT codes were developed by the American Medical Association to help healthcare providers capture all services rendered per patient for the goal of billing payors.

7 | THE STEP-DOWN COST ACCOUNTING (SDCA)

Conteh and Walker (2004) recommend using the step-down cost accounting technique (SDCA) to calculate the unit cost. They use two stages to calculate the unit cost. First, the final product and cost centers are defined, then the full cost of each resource used is calculated and allocated to cost centers using the step-down method. Second, the total and unit cost for each cost center is computed and reported to the stakeholders. This method provides acceptable calculation of the unit cost at the cost center and facility levels but is complex and requires readily information for different cost categories and from all the departments in the facility.

8 | ACTIVITY-BASED COSTING (ABC)

This method supports primary care practice managers' efforts to improve the quality of care, increase efficiency, and reduce cost. The following steps are used to calculate the unit cost: 1) activities and cost elements are identified through interviews with all staff (clinicians and administrative) 2) the unit cost per activity is calculated to include salaries and benefits, leases, and equipment. This can be obtained

from internal records or external sources such as the U.S. Bureau of Labor Statistics 3) produce a total cost per activity by multiplying the unit cost per activity by the quantity of each resource consumed 4) add the total cost for all activities used in a treatment to produce a total cost per treatment (Wasserman, Berninger, Gerteis, & Abt Associates, 2015). This costing method is the most popular in healthcare despite its complexity and cost (Lawson, 2017).

The beforehand traditional costing systems provide a high-quality cost per patient calculations compared to other simple methods such as CCR and RCC. These methods use sound cost accounting principles. Healthcare leaders are more prepared to face the rapid changes in the industry, improve operations, and maximize the use of resources offered to treat patients. However, many healthcare providers are swaying away from using them due to their complexity and high cost that exceeds their benefits. The 2016 HFMA-IMA initiative – as cited by Lawson (2017) found that most of the healthcare respondents are dissatisfied with their current accounting system. Although 25% responded they do not have ABC or are not considering adopting it, most of the respondents agree that ABC is effective compared to other conventional accounting systems in helping healthcare leaders better understand their operations,

9 | THE HYBRID COSTING APPROACH

This article suggests the use of a hybrid approach to calculate the cost of care which offers an accurate base to set treatment prices. This costing method uses both the process costing system to assign costs to routine treatments and procedures, such as physical exams, recovery room cost, imaging, etc. and the job order costing to capture the cost of care for the unique resources exhausted by each patient. This hybrid approach can be easily learned and applied to different size healthcare settings.

The proposed hybrid costing approach illustrates how the cost of care is assigned to specific patients using both types of cost accounting systems. While both systems are different, providers can apply them together to track all types of costs and improve

planning, pricing, and decisions. Companies like GM was successful in using both costing systems to track cost for both standard model cars such as Chevy Camaro and Buick and made to order custom cars (Kimmel, Weygandt, & Kieso, 2016).

The process cost system is commonly used in manufacturing companies that mass-produce homogeneous products like canned and bottled products. Each unit consumes the same amount of resources (materials, labor, and overhead), thus should be responsible for the same amount of cost. The use of process costing in healthcare is appropriate for repetitive and routine work such as routine imaging, lab work, and exams. Each department - such as surgery and oncology will track the department cost (materials, labor, and overhead) for the period. Each patient who receives a standard and routine treatment, procedure, exam, or service would be assigned a precalculated rate based on the actual direct materials and direct labor consumed or exhausted and the allocated overhead - based on one or more measures. Job order costing focuses on each patient as an individual job rather than a process (which is used for routine work, procedures, exams, etc.).

Understanding the cost components included in total departmental costs will help managers appropriately assign the cost of care to patients. Medical facilities include service departments and operating departments. Because service departments exist to support operations, the cost of service departments will be allocated to the operating departments (step-down method) and become part of the departmental overhead cost.

The types of costs to consider in providing healthcare services are: 1) direct costs: these costs are easily and directly traceable to a specific patient (the cost object) and include direct materials and direct labor, such as medical supplies, physical exams, diagnostic imaging, medications, and rehabilitation. Direct materials cost (actual cost) can be determined from materials requisition forms. Direct labor cost (actual cost) can be obtained from payroll department records 2) indirect costs: these costs cannot be easily traced to a specific patient, such as information technology cost, human resources cost, admissions cost, and buildings and equipment costs.

This article refers to indirect cost as overhead (including direct overhead – relates to operating departments and indirect overhead – relates to service departments). The typical allocation of total overhead costs (cost pool) is using a predetermined overhead rate (PDOHR). This rate is calculated before the beginning of the fiscal year by dividing the estimated total annual overhead cost by the estimated activity level for the period, such as machine hours, labor hours, or labor costs, then applied to patients based on the actual activity level. At the end of the year, the total actual overhead incurred is compared with the total applied overhead to calculate the overhead variance. The amount of overapplied or underapplied overhead will be closed out to the cost of services (or goods) account (Kimmel, Weygandt, & Kieso, 2016).

Healthcare providers can keep track of all the resources used and exhausted using a cost sheet for each patient. Process costing will capture all charges for routine care and job order cost will capture charges for unique and patient-specific charges. The hybrid costing method is not intended for financial reporting since it has an estimated component (the overhead), but rather, it is proposed to help managers improve budgeting and planning and improve the quality of decisions that leads to reducing the overall cost, maintain quality, and create value to patients (financial and nonfinancial).

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