

An Oracle White Paper
June 2011

Achieving Clinical and Operational Excellence: How to Establish Healthcare Service Line Costs

Introduction

Not knowing the clear direction that the healthcare reform initiatives will take over the next several years, healthcare organizations remain under intense pressure to reduce costs and repair inefficiencies. Most organizations understand that to successfully execute, they have to manage cost and key performance measurements across business lines. Yet, few are able to attain this. Healthcare provider organizations find themselves in the middle of market pressures from payers, the government and competing for market share and doctors. The only way to sustain an organization in this financially stimulating environment is to closely manage profitability, which cannot occur without understanding true costs and profit sources. Healthcare organizations that fail to recognize and meet this imperative will find it increasingly difficult to compete and may eventually have to close their doors.

This white paper will address how innovative healthcare organizations are adapting to different service line costing methodologies and to implement a sustainable and supportive model for healthcare costing. Balancing detail and accuracy is critical in deciding on a more efficient model for developing service line costs than traditional costing methodologies. Healthcare organizations need the support of timely and insightful patient-level analysis and the ability to access the right level of detail needed to drive improved performance across their organization.

Oracle Enterprise Performance Management solutions bring the leading planning, budgeting, costing and forecasting cycle and a suite of Healthcare specific analytics applications called Healthcare Performance Platform dedicated to helping providers become world class care delivery organizations. Oracle, partnered with **Anthem Healthcare Intelligence** brings the only solution that integrates the planning, budgeting, forecasting, costing and BI under a single analytical platform. This integration simplifies the scenario analysis and what-if planning Provider organizations require today in order to understand the impact of changes in case mix, costs of delivering services, or the real cost of reimbursement tariffs.

“Service Line dashboards provide a great means to share enterprise performance with the entire executive management team. The dashboards are proven as a catalyst for change for healthcare organizations.”

Roy Mathews, CEO, Anthem Healthcare Intelligence

Value of Service Line Costs

Some industry leading financial consulting firms have indicated that even though healthcare organizations have streamlined their processes in recent years, many hospitals and provider groups have yet to rigorously deploy methodologies like Six Sigma and Lean. Nor have they adopted tools like process analysis and activity-based costing. With the demand for financial results increasing, it is time for cost and performance measurement to move to the very top of management’s agenda.

To obtain a clearer picture of costs, you must be able to answer key questions:

- What drives profitability—by case, service line, etc.?
- Which activities and processes produce value and enhance quality?
- How do contractual payer prices compare to costs?
- How much capacity is being used?
- Are equipment investments justified?

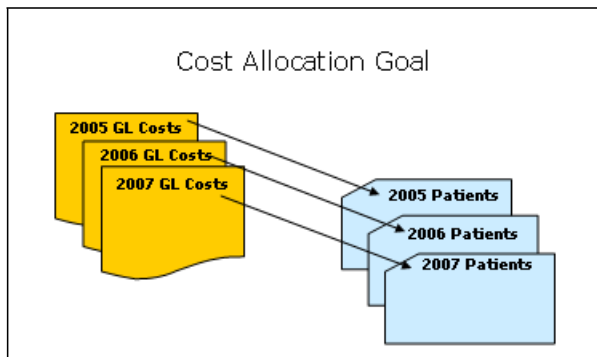
To stay competitive in today’s environment, healthcare organizations need to streamline inefficient processes and understand the types and amount of resources they need to deliver care across the enterprise. This can only be achieved through cost transparency.

Amazingly, most healthcare entities still use primitive standard costing tools that date back to an assembly line model – tools long abandoned by the manufacturing industry that created them. The result is rudimentary cost allocation that fails to match resources and related costs to their services. This makes it impossible to arrive at informed decisions that will improve financial results.

The movement to a value driven healthcare model and the advances in medicine will enable healthcare organizations to provide more effective and specialized care than ever before. But the cost of the technology, human capital, medical devices, and drugs required for providing this care, and the capability to report on service line cost is critical. At the same time, reimbursement contracts are more complex, harder to administer, and unable to keep pace with rising costs. Bridging this widening gap between care delivery and administrative costs requires healthcare providers to truly understand the cost of the care on a per-patient basis, so they can negotiate realistic payment terms and stop-loss measures with their contracted payer groups. To effectively set a strategic and profitable course for the future, internal planning and analysis groups must have insight into the volume and cost of care across functional departments—such as radiology, lab services, and nursing—and across clinical service lines—such as oncology, cardiac services, and neuroscience.

Different Cost Allocation Approaches in Healthcare

There are four main cost allocation approaches for healthcare providers. All four attempt to allocate costs that are accumulated in the General Ledger system to services performed, often to the service transaction level, but other times to a more summarized level. Allocation to the lowest level of details provides the greatest amount of flexibility in reporting. Some of the cost allocation approaches overlap each other, but they can be categorized into the following: RCC (Ratio of Cost to Charge), RVU (Relative Value Units), Hybrid (80/20), and Micro Costing/Activity Based Costing (ABC).



RCC method is the most commonly used. This is because it is easy to implement, maintain, and understand. Under RCC, charge amount or service line level is the measure by which costs are disseminated. Typically, when cost models are initiated, all revenue-producing departments can be quickly set up with RCC.

Hospitals using RCC methods should eventually strive to implement the RVU method. The RVU method can be set up to simulate Standard Costing approach. The RVU and RCC methods are similar in that both methods employ weights to determine proper allocation. What sets RVUs apart is that measures other than charge amount can be utilized to determine resource consumption. The RVU process is more complex than the RCC method, and requires more maintenance. However, it produces more reliable and predictable cost estimates.

Due to the tedious process of performing RVU cost studies for every charge item, it is common practice to apply the hybrid or 80/20 rule. This means RVUs are only developed for the charge items that comprise 80% of the total patient revenue for a given department. The remaining 20% of the charges use the RCC method.

Variations of RVUs or Standard Costing can also be used to satisfy the more sophisticated data inputs of the Micro Costing/ABC approach. The theory of ABC costing is that a more accurate service line cost is derived when cost drivers are established based on a cause/effect relationship between the commencement of a cost and its true origin. In order to properly implement ABC costing, separate measures must be established for each cost driver so that charge items that do not gain benefit from a resource are not allocated any costs for that resource. Microcosting uses more complex and specific objective measures such as time studies and actual prices. These approaches are the most challenging and costly to implement and maintain, but in the long run, will result in more precise results. Microcosting and ABC approaches are rarely found among U.S. based healthcare provider organizations compared to other industries.

Advantages & Disadvantages of RVU Based Costing

The most common costing method used today in the healthcare industry overall is RCC. This is primarily due to comfort level, based on experience, many financial managers have with reimbursement and the use of the RCC method in Medicare cost reports. Additionally, the RCC method is relatively easy to implement for a non-cost accountant. A simple calculated weight of cost to charge by department in Excel or an Access database will suffice. This cost rate can then be easily applied to the procedures and patients from Patient Accounting data that could also be stored in Excel or Access.

Although RCC has these advantages, it also has significant disadvantages. For one, the RCC method assumes that reimbursement directly correlates to resource consumption. One major Charge Master mark-up could render the RCC method obsolete. Additionally, the RCC method does not force cost accountants and department managers to analyze their own data to identify cost drivers and measure true resource consumption.

Conversely, the RVU method provides a more accurate measure of resource consumption. This is because service line costs will be determined by clinical acuity levels, not reimbursement rates. A benefit of the RVU method is that it can be as simple or complex as it needs to be. Sophisticated RVU development can be performed to determine RVU values such as nurse minutes for a service, number and type of films needed for radiology tests, and actual cost based on the NDC value of a pharmaceutical supply.

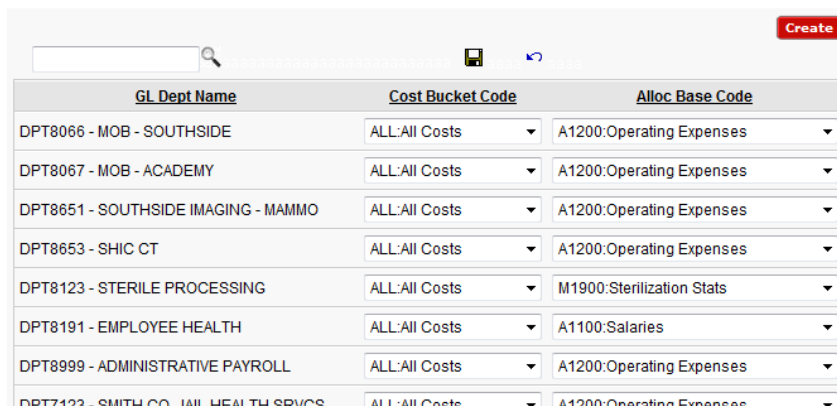
The major hindrance of RVU costing is that it entails RVU development. This requires time, expertise, and corroboration across departments. Full RVU costing could be considered a bottom-up approach to costing, requiring organizational-wide adoption. Another disadvantage is that RVU values must be maintained and updated at least once a year, whereas the RCC method is self-sustaining. Additionally, RVU development typically requires a more robust system than offered by Excel or Access, therefore, additional technological outlays may be required to accommodate for an RVU costing system. From an ROI perspective, the benefits of RVU approach will outweigh its additional costs needed for most healthcare providers. The process of developing RVU's, however, involves significant commitment for organizations of any size.

Allocation of Overhead Costs

Regardless of which of the above methods is used for allocating costs to the service transaction level, the overhead costs need to be first allocated to the revenue producing areas. Overhead (primarily administrative costs), is the fastest growing portion of a hospital's total costs. This is partially due to the growing complexity of the healthcare industry. More specialized professionals are required to manage such functions as Quality, Accounting and Finance, Reimbursement, Decision Support/Business Intelligence, HIM, Information Systems, and Medical Coding. Furthermore, with the continuing dependence on electronic processes and records for care delivery, investments must be made to keep up with technology.

There are two types of overhead costs in the healthcare setting, 1) Direct Overhead and 2) Indirect Overhead. Direct overhead costs can be linked to a particular department, but not a procedure or service. An example would be the salary of a Lab Director. This salary can be traced to the Lab department, but not to specific Lab tests. As such, this salary could be spread over all procedures based on RCC or RVU method. Indirect overhead costs are costs incurred by departments that are shared across the system. An example would be all expenses in the Housekeeping department. The resources consumed in Housekeeping (Director Salary, Man Hours, Materials) cannot be associated

with specific procedures or departments. Both revenue-producing departments and other indirect departments utilize Housekeeping. Even Housekeeping uses Housekeeping services. A portion could be considered direct to patient care, but generally Housekeeping expenses are considered entirely indirect. It is common practice to allocate Housekeeping costs to departments based on square feet. Not only do square feet have a reasonable correlation with resources consumed in Housekeeping, but square feet by department is data readily available to cost analysts via previously completed Medicare Cost reports. It is generally acceptable to update this allocation once a year to accommodate for development of existing departments and the creation of new departments.



GL Dept Name	Cost Bucket Code	Alloc Base Code
DPT8066 - MOB - SOUTHSIDE	ALL:All Costs	A1200:Operating Expenses
DPT8067 - MOB - ACADEMY	ALL:All Costs	A1200:Operating Expenses
DPT8651 - SOUTHSIDE IMAGING - MAMMO	ALL:All Costs	A1200:Operating Expenses
DPT8653 - SHIC CT	ALL:All Costs	A1200:Operating Expenses
DPT8123 - STERILE PROCESSING	ALL:All Costs	M1900:Sterilization Stats
DPT8191 - EMPLOYEE HEALTH	ALL:All Costs	A1100:Salaries
DPT8999 - ADMINISTRATIVE PAYROLL	ALL:All Costs	A1200:Operating Expenses
DPT7123 - SMITH CO. I&I HEALTH SVCS	ALL:All Costs	A1200:Operating Expenses

Overhead allocation involves determining which cost buckets will be allocated and what basis will be used. ABC costing can produce sophisticated methodologies to achieve more precise allocations. An emphasis in ABC produces a correlation between a service activity and overhead costs. ABC, however, requires additional set up and maintenance. Common overhead allocation involves setting up an allocation basis such as square feet or FTE count. These are relatively easy to gather in an organization and automated feeds may also be available.

Indirect overhead cost allocation is not an overly complicated process, yet it consists of several steps and, when done manually, the margin of error is great. First, expenses by indirect departments, overhead (cost driver) statistics, and patient accounting data at the procedure level must be stored in a reliable database. These costs must first be allocated to other indirect departments when applicable and then to direct departments. The approaches to allocate overhead costs include single step, sequential step down, and reciprocal methods. Single step approach is the simplest in which all indirect costs are allocated to direct departments. Medicare cost reporting follows the sequential step down approach and provides a pre-established framework for allocating overheads. As a result variations of step down approach are commonly used in healthcare. Reciprocal method is the most advanced and can be complex to implement and trace costs back to their sources.

Service Line Definitions

The term “Service Line” or more commonly known industry term “Product Line” is less precise in healthcare than manufacturing or retail. For an automobile manufacturer, a product lines could be cars, SUV’s and trucks. In healthcare, service lines are generally defined after the fact because many patients come to the hospital with needs and expectations for multiple services. While hospitals are organized along traditional departments such as Radiology, Surgery, Pharmacy, Lab, Nursing etc, most inpatients will use services from several areas. Grouping departments as services is one way of defining service lines, but that does not accurately reflect the patient’s typical use of the hospital. For example, the same

patient may use services from all of the above departments in one stay. The hospital will be paid based on the patient's total stay rather than for individual services purchased from each department. Most payments cannot be broken down into the department level of details.

So, what is the most useful way of defining hospital service lines? It should be based on patient encounter attributes. In a hospital data warehouse, where patient encounters are tracked, there are a number of attributes of the patient available. Using these attributes, a rule based service line grouper can group services into various categories. The first break down should be inpatient versus outpatient services. There are many ways to break down inpatients into more detail service lines. Examples include Major Disease Categories (MDC's) and Diagnoses Related Groups (DRG's) provided by the CMS administration. ICD procedure codes and diagnosis codes can also be used for this definition. Since there are hundreds or even thousands of these codes available, this process can become complicated. As a practical matter, one may start with MDC's and then further refine them based on DRG's and ICD codes. Outpatients can be defined in terms of HCPCS or ICD codes. An automated service line grouper will make these tasks much easier. Solutions like Healthcare Performance Platform come with a Service Line Grouper as below. The grouper not only allows grouping of patients into service lines, but updating the group assignments each time the data is updated from the source as part of the daily data warehouse update.

Page Items Grp Seg Alias Service Line-Primary Strategic Area ADULT MEDICINE									
	Id	Tbl Column	Operator	Sep	Value 1	Sep	Grp Op	Order	
1	1	VISIT_TYPE	=		IP		AND	1	
2	1	AGE	>=		18		AND	2	
3	1	DISCH_DATE	<	((	1-Oct-2007		AND	3	
4	1	DRG_CODE	IN	(	43,44,46,47,65,66,67,68,69,71,72,73,78,79,80		OR	4	
5	1	DRG_CODE	IN		83,84,85,86,87,88,89,90,92,93,94,95,96,97,99		OR	5	
6	1	DRG_CODE	IN		100,101,102,128,130,131,174,175,176,177,178,179,180,181,182		OR	6	
7	1	DRG_CODE	IN		183,188,189,202,204,205,206,207,208,240,241,242,246,247,271		OR	7	
8	1	DRG_CODE	IN		272,273,277,278,280,281,283,284,294,295,296,297,299,300,301		OR	8	
9	1	DRG_CODE	IN		316,317,320,321,322,323,325,326,328,329,331,332,340,350		OR	9	

The above approach was based on disease or procedure driven service line definitions. There are business reasons to look at service lines from a payer or physician standpoint. A flexible grouper will enable defining alternative service line definitions based on multiple criteria. Once the service lines are defined and costing is completed, many different service line performance reports can be easily created as below:

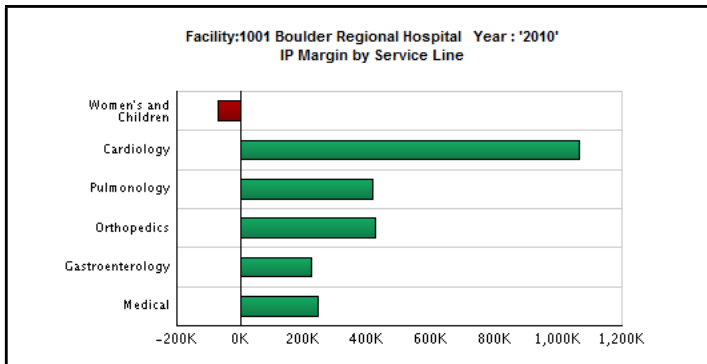
By Inpatient Service:

Page Items Facility 1001 Boulder Regional Hospital Month/Year Mar 2010 Visit Type IP Balance Type Zero Bad Debt Flag <All>										
	Cases	Charges	Payments	Adjustments	Refunds	Est Reserve	Exp Reimb	Costs	Margin	Cost Per Case
► Cardiology	65	1,663,006	590,916	1,072,113	23	0	590,916	418,716	172,199	6,442
► Gastroenterology	34	302,879	159,143	143,736	0	0	159,143	106,599	52,545	3,135
► Medical	95	1,396,266	660,373	735,893	0	0	660,373	697,627	<37,254>	7,343
► Orthopedics	24	755,780	309,628	448,532	2,379	0	309,628	360,583	<50,955>	15,024
► Pulmonology	95	1,121,043	457,811	663,207	0	0	457,811	454,282	3,529	4,782

By Physician:

Page Items	Facility	1001 Boulder Regional Hospital		Visit Type	<All>		Balance Type	<All>	
	Bad Debt Flag	<All>		Service Line Name	Cardiology				
		Cases	ALOS	Charges	Net Revenue	Costs	Margin	Cost Per Case	
▶ DENOIL SKERZYNSKO, M.D.		31	1.3	1,003,051	305,542	218,037	87,506	7,033	
▶ KIVON MEQUOLONG, M.D.		11	1.3	321,363	79,803	71,045	8,758	6,459	
▶ HOLLERY HEYNIS MD		8	2.0	115,801	33,609	36,280	<2,671>	4,535	
▶ JECQUIS HIOBOG, MD, FECC, FCCP		7	0.9	195,557	77,169	39,157	38,012	5,594	
▶ DERRIL RONIHERT, M.D.		7	4.7	161,731	50,258	52,776	<2,518>	7,539	

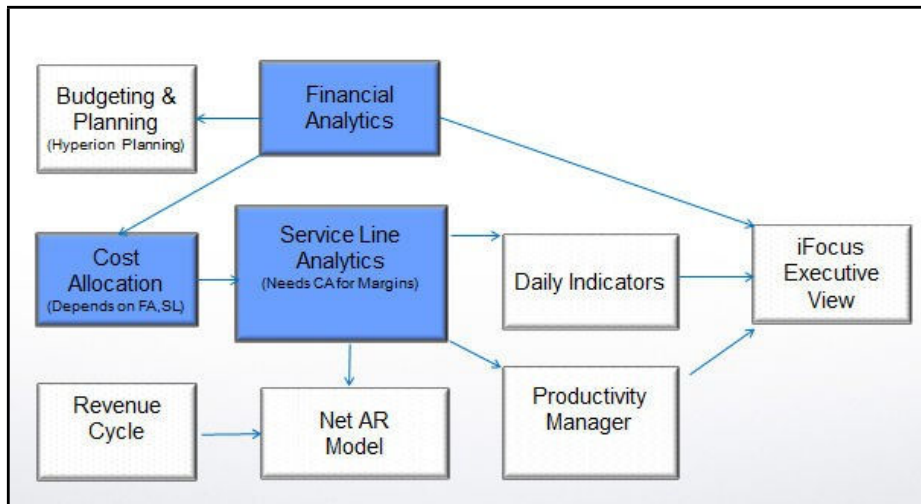
Dashboard Graphs:



Detail Data Requirements

Service line reporting requires vast amounts of data and appropriate querying tools. With a strong data warehouse foundation and good analytical reporting applications, the job becomes manageable and maintainable. The data warehouse should contain all relevant information about each patient encounter. The warehouse data model is ideally structured under a relational star/snowflake schema for optimum performance and ease of use. OLAP can be used when the business requirements are well defined. Building multiple OLAP applications based on specific business purposes is a good approach with the relational warehouse providing all the data feeds.

Costing requires data from General Ledger and Patient Accounting sources. Patient Accounting data may already be brought into a data warehouse which can then be interfaced to the costing application. Once costing is done, that data is brought back to the warehouse for service line reporting. The required data elements include encounter demographics, charge details, payment details, diagnoses, procedure, and CPT details, physician information, insurance information and such. General Ledger details need to include account and department level details and statistical information such as square feet, number of employees etc. If you have a full suite of BI applications the applications colored in blue should contain all the data elements required:



Ongoing Maintenance

Once the initial cost model setup for a facility is complete, it must be maintained in order to remain relevant. A good cost model application will provide easy to use forms that will make the update process quick and straightforward. It will generate summary comparison reports at each cost model step to assist in the trouble-shooting and reconciliation of data.

Every time a new General Ledger account accumulates dollars in the source accounting system, it must be added and classified in the cost model. A well-designed cost model should add any new accounts through an automated process. However, someone familiar with the Chart of Accounts and the Cost Model must classify each new account into buckets and RVU designations. Potential classifications are Inpatient Revenue, Outpatient Revenue, Other Revenue, Deductions, Salaries and Wages, Medical Supplies, etc.

Any reassignment of accounts and departments must be made. This is often performed to better establish a matching of revenues and expense by combining or rearranging departments. It can also be used to properly share resources such as a Director of Radiology across Diagnostic Radiology, Nuclear Medicine, Ultrasound, etc.

Facility 1001 - Boulder Regional Hospital Year 2010 Account ID ALL

Create

From GL Dept	To GL Dept	Reassign Percent
DPT6213 - 3 NORTH-MEDICAL UNIT	DPT6212 - 3 WEST-MEDICAL UNIT	1
DPT7036 - IV SOLUTIONS	DPT7058 - PHARMACY	1
DPT7040 - LAB-SPECIMEN COLLECTION	DPT7043 - LAB-BLD ADM SUP	.06
DPT7040 - LAB-SPECIMEN COLLECTION	DPT7045 - LAB-CHEMISTRY	.51
DPT7040 - LAB-SPECIMEN COLLECTION	DPT7046 - LAB-HEMATOLOGY	.11
DPT7040 - LAB-SPECIMEN COLLECTION	DPT7048 - LAB-BACTERIOLOGY	.1
DPT7050 - LAB-GENERAL	DPT7043 - LAB-BLD ADM SUP	.07

The above are a handful of examples. Other required maintenance includes department list and its attributes, RVU's, mark-up factors, allocation bases, and GL to Patient Accounting department mappings. Web based, user friendly forms will allow online gathering of maintenance information much easier and the overall process much quicker.

A cost model cannot be properly maintained without the support of accounting, operations, and a Decision Support department. A well laid out Decision Support System and Cost Model Application will significantly increase the ability to analyze costs and margins for services. However, since operations constantly change and grow, human intervention and expertise will always be an essential part of a well-implemented cost model.

Best Practices

No doubt, costing is a complex activity in a healthcare provider organization of any size. Due to the inherent complexity of the system and the associated business processes many organizations fail to efficiently deploy cost allocation in a reasonable timeframe. Even after successful deployment, upkeep of the system becomes a maintenance nightmare. Here are some of the best practices we have found that will enable quicker deployment and easier maintenance to generate better cost information across the patient service areas:

Hybrid Approach in Building RVU's:

Hospitals use thousands of charge codes to charge their patients. Building RVU's for all charge codes is very time consuming. We have found that an 80/20 in developing RVU's will achieve substantially all benefits of an RVU based costing. The idea is RVU's will be built for 20% of the charge codes that make up 80% of the volumes. The rest of the charge codes will be allocated based on RCC's. The percentages could vary but the concept is valid when dealing with departments that have lots of charge codes.

Automated RVU Updates and Other Data Interfaces

Whenever possible, update RVU's using an automated feed. Whether it is standard CPT based weights, wholesale prices, or a supplies systems interface, an automated interface will make the maintenance much more efficient. Other interfaces such as the one with the GL or data warehouses can also be automated.

Better Validation Reports

Cost accountants spend a lot of time validating information. There are certain traceability reports that will make their job much easier. These reports are designed to pick up the mismatches easily and help to resolve issues quickly. There can be validation reports established for each step/process of the allocation.

Distribute Maintenance Responsibility to Department Managers

With web based forms and appropriate training, department managers can share the responsibility for RVU maintenance to improve the precision of the cost allocation system. This will free up the cost accountants to spend more of their time on analysis.

Matching Charge Master to Item Master

Most healthcare provider organizations do not have a Charge Description Master (CDM) that matches with their item master. This creates enormous complexities in updating RVU's. Any effort, even small, towards standardizing the CDM around item master will go a long way towards improving the cost model.

Share Service Line Reports with the Leaders

Dashboards provide a good means to share service line performance with the entire executive management team. That should prompt further discussion and visibility for the service line and costing efforts. Many critical decisions such as adding or dropping a service line, recruiting physicians, refocusing marketing activities etc. can be based on such information. Support and sponsorship for the costing process is usually better established when information is available to all leaders of the organization. Service Line Dashboards are proven as a catalyst for change for healthcare organizations.

"Oracle offers a complete Enterprise Performance Management Solution providing reliable costing information when and where it is needed to support the ever changing healthcare market in achieving operational excellence"

William Bercik, Director of Healthcare – North America, Oracle Corporation

Conclusion

Creating cost simplicity is very difficult, but healthcare organizations that move from a basic to a sophisticated approach to cost analysis will benefit greatly. They will be more prepared for the phase of healthcare reform, making better decisions that will lead to superior financial results. They will be less likely to experience negative financial surprises than other organizations.

Additionally, the benefits of the Oracle and Anthem partnership with a proven healthcare customer base experiencing improved performance results from integration, common and powerful reporting across all modules, modern and open-standards based architecture and finally the hardware and software engineered together to create all of the requirements that healthcare organizations need to achieve clinical and operational excellence.



About Anthem

Anthem Healthcare Intelligence provides business intelligence applications created exclusively for healthcare provider industry. Experts in data warehousing and management reporting, Anthem enables healthcare executives to know critical information and insights to improve their organization's performance. Anthem products are created by personnel who have decades of healthcare operations and analytics background. Anthem is headquartered near Nashville, Tennessee.

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