



Ensuring Financial Sustainability

Aravind Eye Care System Finance Project Team Final Report

April 26, 2007

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ARAVIND EYE CARE SYSTEM

Founded in 1978 as a humble eye hospital with 11 beds, the Aravind Eye Care System (AECS) today is the world's largest and most productive provider of eye care. The mission of the organization is simple but equally bold:

“To eradicate needless blindness and provide affordable, high quality eye care service to all, rich or poor.”

In the pursuit of this mission, AECS seeks to escalate its productivity from the current level of about 250,000 surgeries per annum to over one million by 2015. While AECS certainly has the passion to attain this goal, ensuring that the organization maintains its financial sustainability at the same time is a new challenge that has yet to be formally addressed.

PROJECT BACKGROUND

The 2007 Ross School of Business MAP team (the Team) performed a seven-week analysis of the current state of operational and financial reporting at AECS. The Team was tasked with using financial and operational data to develop performance metrics to support financial sustainability across AECS. The goal was to provide AECS with a set of Key Performance Indicators (KPIs) that highlight critical areas of importance for decision making and performance evaluation at the senior management level. Ideally, the KPI methodology will be expanded across the entire organization in the future.

ALIGNING THE AECS VISION WITH FINANCIAL SUSTAINABILITY

The mission of AECS to eliminate needless blindness is deeply rooted into the culture and value system of the organization. On the one hand, AECS delivers eye care to members of the community regardless of the patient's ability to pay; on the other hand, the organization must generate surplus in order to continue and perpetuate its mission. Therefore, the mission of AECS and its financial sustainability are intertwined. In light of the aggressive expansion objectives planned for AECS, examining financial performance provides a clearer picture of the key challenges facing the organization. Maintaining a strong financial operation will help ensure efficient and prudent utilization of the financial resources of AECS in the continued pursuit of its mission.

KEY FINDINGS AND RECOMMENDATIONS

To create the list of KPIs, the Team conducted over twenty interviews with AECS staff, researched the best practices and performance drivers of other hospitals and non-profit organizations, and investigated the last five years of financial and operational data. This information was coupled with the AECS model of providing Patient Centered Care that is supported by the key objectives of Reaching the People, Efficient Service, Giving Value, and Financial Sustainability. Shown in Table 1, the resulting collection of KPIs contains the most critical metrics that were identified, regardless of whether AECS currently captures data to support them.



Table 1 Key Performance Metrics for Aravind Eye Hospitals

Group	Metric Name
Financial	Income per Patient
	OP Income per Paying Patient
	IP Income per Paid Surgery
	Expenses per Patient
	Direct Materials per Surgery
	Direct Labor per Patient
	Utilities/Maintenance per Patient
	Cash Surplus per Patient
	Cash Surplus Margin %
	Return on Operating Assets
	Capital Investment as % of Surplus
Patient Volume Mix	New Out-Patients
	Cataract Surgery Penetration
	Subsidized % of Patients
	Surgeries as % of Patients
	Cataract as % of Surgeries
Operational	Patients per Staff
	Surgeries per Full-Time Doctor
	Sister Turnover % (< 5 years)
	Doctor Turnover % (< 5 years)
	Surgeries per Bed
Clinical	Patient Satisfaction – Unsubsidized
	Patient Satisfaction – Subsidized
	Cataract Infection Rate

In order to build momentum for the use of the KPI methodology, the Team provided case studies to demonstrate how the KPIs can be used to explain historical trends and aid in future decision making. Additionally, the Team provided a road map of future finance projects to aid in achieving the ultimate goal of a robust and comprehensive financial management information system (MIS).



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AECS: Aravind Eye Care System, which consists of nine vertically integrated components: Aravind Eye Hospitals (AEH) and Aravind Managed Eye Hospitals, Education and Training Programs, Aravind Research Foundation, Lions Aravind Institute of Community Ophthalmology (LAICO), Aurolab, Community Outreach, Eye Bank, Aravind Tele-ophthalmology Network, and IT Services.

AEH: Aravind Eye Hospital. The freestanding, Aravind owned and operated hospitals located in Madurai, Theni, Tirunelveli, Coimbatore, and Pondicherry.

Camp patients: Patients that are brought to an AEH as a result of a Camp being held to reach out to rural areas. Also known as “free patients”.

CBE: Coimbatore.

CMO: Chief Medical Officer. The CMO is the senior most staff member located at an AEH.

Cost: The amount of expense incurred by Aravind to perform a service or procedure.

Free patients: see Camp Patients.

IHMS: Integrated Hospital Management System.

IP: In patients. The sub-set of the out patient population that is admitted for surgery.

KPI: Key performance indicator.

KPI template: Project deliverable consisting of Excel spreadsheets populated with historical data for KPIs.

MDU: Madurai.

MIS: Management information system. A system of data and processes that are used for management and control of an organization.

MLOP: Middle-level ophthalmological personnel. Generally used in reference to senior sisters.

MIS: Management information system.

OP: Out patients. The population of patients entering AEHs

OT: Operating theatre.

Pondy: Pondicherry.

SLT: Senior leadership team. Broadly, the senior management of the Central Office, Family members, GOVEL Trust Trustees, and Chief Medical Officers (CMOs).

Subsidized patients: Patients entering the free section of the hospital, also known as direct patients, and patients entering the hospital system via eye camps and vision and community centers.



Tariff: The money paid by a patient for a service or procedure.

The Team: 2007 Ross School of Business MAP Team.

TNI: Theni.

THE: Theni.

Total patients: All new and review patients from paying, direct, and hospital sections, and patients from vision and community centers.

TVL: Tiruneveli.

Un-subsidized patients: Patients entering the “paying” section of the hospital. These patients pay full tariffs for services and procedures.





AECS – THE MCDONALD’S OF EYE CARE

From its inception in 1976 under the stewardship of Dr. G. Venkataswamy (Dr. V.), Aravind Eye Care System (AECS) is now the world’s largest and most productive eye care provider. The mission of AECS is to eradicate needless blindness, particularly among the poor, with the efficiency and accessibility inspired by fast food goliath McDonald’s. AECS currently comprises nine vertically integrated components: Aravind Eye Hospitals (AEHs) and Aravind Managed Eye Hospitals, Education and Training Programs, Aravind Research Foundation, Lions Aravind Institute of Community Ophthalmology (LAICO), Aurolab, Community Outreach, Eye Bank, Aravind Tele-ophthalmology Network, and IT Services. Each component contributes to the mission of AECS.

AECS originated with a single hospital consisting of 11 beds in the city of Madurai. From its humble beginnings, AEH-Madurai is now the largest of the five hospitals in AECS. It also serves as the headquarters of AECS. The four additional AECS-owned hospitals are located in the cities of Theni, Tirunelveli, Coimbatore, and Pondicherry. During 2006, AEH-Madurai performed over 106,000 surgeries.

SOCIAL ENTERPRISE AND ORGANIZATIONAL GROWTH

As the cornerstone of AECS over the past 30 years, AEHs bring high quality eye care services to the surrounding community with the goal of reaching as many patients as possible, regardless of the patient’s ability to pay. In order to accomplish this goal, AEHs employ a system summarized as “high volume, high quality” patient care. AEHs price basic surgeries and procedures with simple accommodations using a flat fee set at a level that is affordable by almost all members of the community. Patients can elect to pay additional fees for more comfortable accommodations – such as a private room or suite – and more advanced surgical techniques.

AECS relies on operational and clinical efficiency and a mix of paying and free patients to ensure financial sustainability. Also, strong family involvement in the Board of Directors, Capital Expenditure Committee, and the Finance Department ensures close monitoring and control over the organization’s finances. The historical success of this social-enterprise, family-run business model has resulted in the operationally and financially stable organization that exists today. The goals of AECS for future growth are dramatic: to perform one million surgeries per annum in AECS-owned or -managed hospitals by year 2015, a 300% increase from 2006.

FINANCE AT AECS

While the operational and clinical systems of AECS-owned and -managed hospitals are designed for replication to new hospitals, the senior leadership team (SLT) is less confident that the current financial reporting, control, and decision making system is prepared for radical future growth and generational transfer within the family. The management information system (MIS) of AECS currently consists of two robust but separate electronic systems: the Integrated Hospital Management System (IHMS), which records daily operational and clinical data; and the Tally financial reporting system.

Data from IHMS is widely analyzed and shared to improve operational and clinical efficiency, but financial monitoring is largely limited to the AECS Finance Director and Finance staff centrally located in Madurai. For example, cost control at various business units is performed by the Finance Director



comparing the current month's expenses against the previous and prior month's expenses. Limited financial budgeting is performed, and Chief Medical Officers (CMOs) of each AEH are largely unconcerned with the financial aspect of revenue or expenses until contacted by the Finance Director and Finance staff. Once contacted, the CMO's primary response is to focus on controlling cost in the area in question. Finance at AECS, in summary, is largely performed in a reactionary manner focused on short-term (monthly) changes.





THE FIRST STEP TOWARDS A FINANCIAL MIS

The 2007 MAP-AECS project is intended as the first step in a long-term initiative by AECS to bring the system-oriented approach of its patient care to its financial operations. The ultimate goal of this initiative is a comprehensive MIS that enables:

- Widely shared and evaluated financial performance metrics
- Proactive budgeting
- Retrospective variance analysis
- A well-defined framework for capital expenditure and periodic expense decisions
- Some measure of de-centralized control and responsibility

ORIGINAL PROJECT DESCRIPTION

The goal of AECS of performing one million surgeries per annum by 2015 requires the development of systems that can sustain the efficiency and quality of care that is currently provided. This requires some standardized data gathering techniques. The organization will ultimately have to rely much more heavily on data gathered from the different hospitals to determine, for example, where changes need to be made, where performance requires a more significant review and which hospitals have developed best practices that should be transferred to the other hospitals. The purpose of this project is to develop a set of metrics that can be used for such decisions.

2007 MAP-AECS PROJECT SCOPE

After meeting with senior management of AECS to define the project scope, it was agreed that the project would focus on creating a standardized, accessible, and simple set of performance metrics rooted in objective financial and operational information. These key performance indicators (KPIs) are targeted at the SLT, an audience of senior management, Trustees, and CMOs. The metrics are designed to be used by the SLT on an on-going basis. The KPI template developed by the project allows the SLT to understand the financial and operational performance of AECS-owned hospitals, and to track performance of these hospitals across different periods of time.

ACKNOWLEDGEMENTS

This study was made possible by the sponsorship of Mr. G. Srinivasan, Dr. S. Aravind, and Mr. R.D. Thulasiraj from AECS. The Team greatly appreciated their openness and willingness to share information with the Team, and their very generous hospitality during our stay in Madurai. The Team would also like to thank Mr. R. Kumar for his assistance throughout the project, and the many members of AECS that we interviewed. Mr. Ramamoorthy and Mr. S. Jayachandran were of particular help during the data gathering stage of the project. Finally, the Team would like to recognize the members of the Ross School of Business that supported and guided our project, especially Professors Gautam Kaul and Paul Clyde, and Lecturer Nancy Kotzian.





The execution of our project objectives and the development of our deliverables included the following four phases:

PHASE 1 – ENGAGEMENT DEFINITION AND PRELIMINARY RESEARCH

- Conducted interviews with 2007 MAP-AECS project stakeholders to understand their expectations of the project.
- Interviewed members of the AECS finance and accounting team to gain a high-level understanding of the existing finance and accounting system.
- Completed scope definition, project plan, and achieved sign-off on the Letter of Engagement.

PHASE 2 – KPI IDENTIFICATION AND COMPILATION

- Conducted additional interviews of AECS staff, including Chief Medical Officers and functional area managers to determine the most important decisions that need to be made, how these decisions are made, and what drives the success of AECS.
- Performed secondary research using trusted sources to determine the most appropriate drivers of financial performance and KPIs used for hospitals and non-profit organizations.
- Toured the Madurai and Pondicherry hospitals to gain a deeper understanding of operations and drivers of financial performance.
- Solicited feedback from 2007 MAP-AECS project stakeholders and finalized the list of KPIs.

PHASE 3 – TEMPLATE DEVELOPMENT AND DATA COLLECTION

- Developed the KPI template spreadsheet.
- Collected the required data and populated the KPI template with historical period data.
- Solicited feedback on KPI template from 2007 MAP-AECS project stakeholders.
- Utilized the KPI template to interpret causes of declining surplus margin percent at AECS.

PHASE 4 – FINAL DELIVERABLES

- Delivered on-site presentation to 2007 MAP-AECS project stakeholders.
- Delivered final presentation to University of Michigan faculty with AECS stakeholders connected through conference call.
- Provided AECS stakeholders with the final KPI template spreadsheets.
- Finalized written report and delivered to faculty and AECS stakeholders the week of April 23, 2007





AECS STAFF INTERVIEWS

The final scope of the 2007 MAP-AECS project focused on developing a set of KPIs for the SLT to use to understand, evaluate, and control the performance of AEHs. To develop the most appropriate KPIs, the Team conducted interviews with the members of SLT – the principal users of the KPIs – and with directors of divisions that support AEHs but are not aligned with any specific hospital.

A comprehensive list of all interviews conducted is located in Appendix A, and the list of standard interview questions posed to each interviewee is shown in Appendix B. The interview questionnaire was designed to focus the interview on gathering a standard body of information, while allowing each interviewee the freedom to answer as they thought best. The theme throughout the interviews was to obtain a sense of how success is currently measured and how each person makes decisions in their particular area of responsibility. The interviewees were also asked for their view on the areas that are most critical for the SLT to understand as AECS pursues its growth strategy. A summary of our interview findings as it relates to the development of the list of KPIs is shown in Table 2 below.

After completing the majority of interviews, the Team analyzed the findings and met with Dr. Aravind and Mr. Thulasiraj on a number of occasions. The purpose of these meetings was to receive feedback and iterate through versions of the KPI list and template.

Table 2 Summary of Interview Findings

Division	Interview Findings	Critical Areas of Focus
IT	<ul style="list-style-type: none"> No formal evaluation or measurement of IT performance, but tracking number of complaints. Division is constrained by the limited resources allocated to them. 	<ul style="list-style-type: none"> Additional IT personnel needed at each AEH. Strengthen central IT in Madurai.
HR	<ul style="list-style-type: none"> Patient and employee satisfaction are interconnected; satisfaction surveys are currently being developed for both areas. Patient referral is also a good indication of patient satisfaction. Journal publishing is a good indication of doctor satisfaction. 	<ul style="list-style-type: none"> Attrition of sisters and doctors less than five years should be monitored. Dilution of values and culture. Maintaining the founding mission.
Free Hospital	<ul style="list-style-type: none"> Clinical and operational procedures are not uniform across AEH. Priority should be on quality of service over volume of patients. Ratio of 70% free/subsidized patients is not healthy; ratio should be 60% free/subsidized. 	<ul style="list-style-type: none"> Obtaining accurate diagnoses in camps and Out Patient Departments are important to IP efficiency. Clinical quality should be measured by infection rates. Many best practices are implemented, but quickly lose momentum and then are dropped.



Division	Interview Findings	Critical Areas of Focus
Operations	<ul style="list-style-type: none"> • Space constraint at AEH-Madurai adversely impacts operational performance. • Key metrics used for managing patient loads are number of patients, number of beds, and length of stay. • Implementing day care and day admit programs helps to alleviate space constraints and accommodate the high volume of cataract patients. 	<ul style="list-style-type: none"> • Benchmarking across AEHs to pinpoint and determine best practices.
CMO	<ul style="list-style-type: none"> • The largest surplus margins come from cataract procedures. • Need to more closely evaluate the pluses and minuses of specialty clinics. • Need to communicate to potential patients the value proposition of AEHs: high quality at a lower cost than competing hospitals. 	<ul style="list-style-type: none"> • Retention and performance of doctors should be a key focus as they are the limiting resource/bottleneck at AEHs. • Need to develop a core of senior leaders to supplement family members in the management structure of the organization.
Training	<ul style="list-style-type: none"> • MLOPs should be compared to those in the same practice areas. • More transparency is needed in the how and why the SLT makes staffing decisions. 	<ul style="list-style-type: none"> • MLOP are the backbone to the organization, and their retention should be a primary focus.
Orbit Specialty Clinic	<ul style="list-style-type: none"> • Determinants of success are: doctors performance as measured by numbers of surgeries performed, and staff turnover. 	<ul style="list-style-type: none"> • Any measures of performance should measure hospitals against each other.

INTRA-TEAM DISCUSSION AND ANALYSIS

Along with interviews and secondary research, discussion and analysis among the Team played a key role in selecting KPIs. These discussions allowed the Team to translate knowledge, observations, and past experience into KPIs that fit best with the goal of the project. We include below summaries of several key discussions to provide insight into the creation and development of our KPI template.

Breadth in the Categories of KPIs

While the focus of our project is financial in nature, the Team realized that we could not provide an adequate tool without looking at areas that fall beyond the scope of financial data. The Team discussed what areas should be included in the KPIs and how those areas should be defined. Categories of metrics discussed include revenues, costs, assets, staffing, patient mix, procedure mix, operations, and clinical areas. Ultimately, we decided that the categories of KPIs must be linked to and cover all of the sections of the AECS model in order to align with the goals and mission of the organization.

Balance in the Number of KPIs

The Team faced two competing interests in determining the level of detail for our KPIs. On one hand, the list needed to remain short in order to be accessible to the SLT, and to create the momentum to look at



financial performance. On the other hand, more detailed KPIs provide a higher degree of information that may be desired by those using the KPIs. Throughout the project, we balanced these interests while determining which metrics to use in our template. Ultimately, the Team favored the high-level view as it minimizes the risk of missing critical areas of performance while piquing the interest of the audience to drill further down into the data to analyze the KPI.

Use of Non-Financial Denominators in KPIs

The Team discussed at great length the appropriate denominators to use for the KPIs. Currently, the AECS Finance team uses revenue as the base (denominator) for analyzing trends in financial data, such as utilities as a percentage of revenue. The Team believes this method may mislead the user; a cost as a percentage of revenue can be affected by changes in revenue even if the cost remains constant. The Team decided that denominators should be the driver of the numerator of the KPI, and that there should be consistency between denominators to enable comparisons. Since patients drive the success and operations of AECS, we chose patients as the denominator for many of the KPIs.

Breakdown of Expenses

The Team believes a greater understanding of costs is necessary in order to develop a robust MIS. While it is clear that there should be a breakdown of expenses included in the KPIs, the nature of this breakdown was a point of contention among the Team. Costs could be broken down by type of expense (labor, materials, overhead) or by source of expense (different types of services and procedures). Understanding costs by service and procedure is more difficult yet more informative, and is a prerequisite to accurate budgeting, pricing, and investment decisions. However, since AEHs have not performed a costing exercise to the level of detail required, the Team decided to provide KPIs for three sub-categories of expenses: labor, materials, and utilities and maintenance. In lieu of identifying costs by service and procedure, the Team included a KPI that provides information regarding the procedure mix (Cataracts as % of Surgeries).





HEALTHCARE AND NON-PROFIT RESEARCH APPROACH

As part of the process of developing appropriate KPIs for AECS, the Team researched several secondary sources. The purpose of this exercise was to identify relevant drivers of financial performance and KPIs used by comparable organizations. Because of the unique organizational model and operational practices of AECS, “comparable organizations” comprised a variety of business models and publication sources. The Team identified these as:

- Hospital groups
- Non-profit organizations
- Eye care private practices
- Healthcare industry journals
- World Health Organization (WHO)
- Healthcare Financial Management Association (HFMA)

Using on-line library resources from the Ross School of Business Kresge Library, internet search engines, and the LAICO facility’s in-house library, the Team developed an understanding of trends, best practices, and performance metrics used by related organizations. This information was used in conjunction with the results of staff interviews and intra-team discussion in the development of the KPI categories, the final list of KPIs, and the detailed KPI specifications.

KEY LESSONS FROM NON-PROFIT HOSPITALS

One of the key lessons that emerged from research is that business growth should not take priority over financial control and responsible investing. In fact, slower growth that entails forming systems at the local level and establishing market presence can provide the foundation for long-term growth.

Another lesson from non-profit hospital research is that staying abreast of and proactively responding to changing market conditions, particularly for hospital chains, is imperative. Changes in technology, pricing, and competition have overwhelmed hospital strategies in the past that focused solely on consolidation and vertical integration.¹

INDIAN HEALTHCARE INDUSTRY TRENDS

The rapidly growing Indian economy has fueled a surge in the healthcare industry as more people are able to afford healthcare services. In addition, the Indian government has instituted substantial import tax breaks on medical equipment to encourage upgrades in existing hospitals and the establishment of clinics in semi-urban and rural areas. Advances in telemedicine provide an additional boost as patients in rural and remote villages are now reachable. Many corporate hospitals are now opening clinics in these areas to capture more market share.²

Following the trend of opening more facilities to capture market share, large eye care hospital networks in southern India are expanding. For example, Vasan Eye Care Hospitals, one of the largest networks in the region, currently has nine state-of-the-art facilities in Trichirapally, Salem, Erode, Cochin, Trivandrum,

¹ Source: “Health Affairs,” January/February 2000

² Cygnus Business Consulting & Research, *QPAC-Indian Health Care Industry- October-December 2006*



Calicut, Kottayam, Kannur and Hubli. Vasan recently opened a new location in Chennai and has seven more in the pipeline. Increased competition within the industry has brought a greater focus on high quality of care and competitive pricing to maintain market share and industry ranking.

HEALTHCARE FINANCIAL INDICATORS

As the market tightens, understanding and tracking financial information becomes critical to maintaining an organization’s sustainability. Our research shows financial and operational information serves to measure the following areas:

- Service efficiency and effectiveness
- Investment
- Financing
- Stewardship
- Compliance

Measurements of critical values should possess the following qualities:

- High probability of problem or opportunity detection
- Natural relation to key drivers of the organization
- Capability for external validation or benchmarks

Developing financial reports can provide valuable, high-level information about a hospital’s profitability, with supplemental reports breaking down the information by department or cost center to provide a more granular level of analysis. Formatting for reports often include multi-year run charts with standard deviations from the mean highlighted to see if results fit within the designated target parameters. In addition, the use of a color-coded scorecard (red, yellow, green) in reports helps to clearly identify areas which require improvement.³ Across healthcare organizations, financial performance indicators are generally presented to a board annually and leadership group monthly. Table 3 below summarizes the most common financial performance metrics reviewed by senior leaders.

Table 3 Commonly Used Health Care Financial Performance Metrics

<p>Profitability & Growth</p> <ul style="list-style-type: none"> • Operating income • Operating margin • EBITDA margin • Revenue growth • Revenue target attainment • Net income • Total contributions (since not all contributions hit income statement) • Cash flow 	<p>Liquidity</p> <ul style="list-style-type: none"> • Days cash on hand • Days in accounts receivable • Salaries per day • Salaries per adjusted patient day • Supplies per adjusted patient day <p>Capital Efficiency</p> <ul style="list-style-type: none"> • Investment as a percentage of revenue • Revenue as a percentage of net fixed assets
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At the department level, performance data include a responsibility report, which contains gross revenues, direct expenses, and key volume statistics for a specific department, along with several key ratios such as

³ “Financial Indicators: How Do you Measure Success?”, www.hfma.org



paid hours per statistic, which shows levels of staffing relative to each unit of volume that occurs in that department. Other departmental reports include measures of budget variances, staffing, and productivity.

Some hospitals are managing performance at the product line level, for instance, determining whether specific areas are financially viable. Combining financial metrics with operational statistics brings a new perspective that balances the lagging and leading indicators of the overall health of the organization. The combination also brings the measures of organizational performance and utility down to a relative basis for comparison allowing benchmarking across institutions or business units to further understand and optimize one's performance. Table 4 below shows commonly used performance metrics that combine financial and operational elements.

Table 4 Commonly Used Financial and Operational Combinations⁴

Market Factors	<ul style="list-style-type: none"> Percentages of in patient and surgical patients (since these are more profitable) Revenue growth per product line (procedure mix) Revenue per adjusted patient day Patient volume Adjusted Patient Days
Labor Costs	<ul style="list-style-type: none"> Productivity measures: FTE per patient Compensation measure: salary per FTE
Supply/Medicine Costs	<ul style="list-style-type: none"> Direct Material per patient Should choose sizeable cost items
Service Intensity	<ul style="list-style-type: none"> Expenses per adjusted patient day Include critical driver of costs (services per encounter) Driven by length of stay and ancillary service usage
Cost Factors	<ul style="list-style-type: none"> Total cost per patient Nurse cost per patient Administrative costs per patient FTE s per adjusted patient day

USE OF PERFORMANCE METRICS

Performance metrics provide insight into an organization's historical performance. Performance metrics can also help the organization determine whether adjustments are necessary to remain aligned to the organization's strategic plan as well as translate the organization's strategy into actionable objectives. Secondary research suggests that performance metrics are widely applicable across an organization.

Controlling Costs

Hospitals may be able to reduce costs by considering the following strategies:

- Monitor costs at the department or cost center level and track overall costs on a case-mix weighted basis (on as timely a basis as possible, not weeks later).
- Empower staff to look for opportunities to improve efficiency and quality of care. Align staff schedules to patient schedules, especially in outpatient clinics and satellite sites.

⁴ Essentials of Health Care Finance, 5th Edition, William O. Cleverley and Andrew E. Cameron



- Maintain a relatively flat organizational structure so that no more than three or four reporting relationships separate the lowest level employees from senior management. Too many layers of management can interfere with operational performance.

Controlling Supplies and Purchased Services

Monthly standardized review of the supply cost per adjusted patient, procedure mix-weighted, as well as other key indicators will keep direct material expenses controlled.

Internal and External Benchmarking

Attempting to compare performance against external benchmarks for revenue or expenses is a challenge because of the wide variability in factors that impact these benchmarks. In terms of labor, the most telling measure tends to be using hours of FTEs per adjusted occupied bed, which controls for currency and wage differences. In order to see the real picture of labor expenditure, boards should look at both FTEs per unit of service as well as cost per unit of service. This provides a comprehensive understanding of whether hours, skill mix, or pay rates are managed properly.

Regardless of the existence of external benchmarks, performance for each period is generally compared to budget; last period; and prior period, different year; and year-to-date is compared to both budget and the prior year.





DETERMINE THE LIST OF RECOMMENDED KPIS

After performing primary and secondary research, the Team was faced with the task of paring the initial list of performance metrics down to those that are truly key to understanding the performance of AEHs at the SLT-level. Also, the Team wanted to organize the list of KPIs in a manner consistent with the mission of AECS, and to help users balance competing priorities within the social-enterprise business model of the organization. The Team discusses below the methods and requirements that were used to perform the final selection and organization of KPIs.

KPI Definition

The purpose of creating a template of KPIs is to focus the SLT on looking more closely at financial performance, and to provide a tool for informed decision making. The template should create momentum within the organization towards incorporating and utilizing financial data in decision making. Therefore, the selected KPIs need to be both useful and interesting to the target audience. The selected audience for our template is the members of the SLT of AECS, who are interested in a high-level view of the performance of the organization.

A useful KPI is defined as a metric that can be used to track and explain the performance of a vital aspect of the organization. The SLT is only interested in metrics that identify important information and that can lead the SLT to take appropriate actions. The KPIs must also be interesting in order to capture the attention of the audience. If a KPI is not interesting to the user, then it will not create momentum towards greater use of financial data in decision making.

The selected KPIs also need to be appropriate for the SLT. There are a number of metrics and drill-downs that should be tracked at lower levels of AECS, but the scope of this project is to create a concise list of metrics that are best suited for the high-level view of the SLT.

The final requirement for any KPI is to be consistent with the mission of AECS. The success of the organization to this point has been driven by the commitment to the ultimate goal of eradicating needless blindness. A KPI can contribute to the continued success of AECS only if it fits into the current mission of the organization.

Approach in Selecting KPIs

Our approach was to rely on interviews, secondary research, and discussion among the Team in order to create the initial list of KPIs. The goal was to create a list of metrics that need to be tracked, regardless of whether the data is currently available. Interviews with current leaders within AECS led to a greater understanding of the organization and the areas that are vital to continued operational, clinical, and financial success. Secondary research was done to identify what metrics are seen as driving the performance of other hospitals and non-profit organizations.

The next step in selecting the final list of KPIs was to solicit feedback from key stakeholders within AECS. A collaborative approach in creating the list of metrics helps foster buy-in from the future users of the KPI template. However, the Team preserved the final say in creating the list of KPIs to retain the objectivity of the process.



KPI SPECIFICATIONS BY CATEGORY

The selected KPIs are grouped into categories that are consistent with the AECS model that focuses on patient centered care. Figure 1 below shows the AECS model with the four areas that surround Patient Centered Care being Reaching the People, Efficient Service, Giving Value, and Financial Sustainability. Each of these areas is linked to a category of KPIs in order to ensure that the metrics are consistent with the goals and mission of the organization.

Figure 1 AECS Model and KPI Categories



Each of the identified KPIs fits into the following four categories: Financial, Patient Volume Mix, Operational, and Clinical. Table 5 below lists each KPI within the appropriate category. The specification details for each KPI can be found in Appendix F.

Table 5 Key Performance Metrics for Araving Eye Hospitals

Group	Metric Name
Financial	Income per patient
	OP Income per Paying Patient
	IP Income per Paid Surgery
	Expenses per Patient
	Direct Materials per Surgery
	Direct Labor per Patient
	Utilities/Maintenance per Patient
	Cash Surplus per Patient
	Cash Surplus Margin %
	Return on Operating Assets
	Capital Investment as % of Surplus
Patient Volume Mix	New Out-Patients
	Cataract Surgery Penetration
	Subsidized % of Patients
	Surgeries as % of Patients
	Cataract as % of Surgeries
Operational	Patients per Staff
	Surgeries per Full-Time Doctor
	Sister Turnover % (< 5 years)
	Doctor Turnover % (< 5 years)
	Surgeries per Bed
Clinical	Patient Satisfaction – Unsubsidized
	Patient Satisfaction – Subsidized
	Cataract Infection Rate





SWOT ANALYSIS OF AECS

Given the mission of AECS, understanding and managing its financial performance is vital to proper regulation of patient volume and surplus margin. Volume and margin within AECS creates surplus, which is the fuel for high quality eye care and future growth. After learning more about AECS during our project, the Team has identified strengths, weaknesses, opportunities and threats (SWOT) for the SLT to consider as AECS builds a robust financial MIS.

Strengths

Senior Leadership Commitment to Financial Sustainability

Started as a small family-run social enterprise, the dramatic growth of AECS is a superb example of the effort and devotion by SLT members to provide eye care to the surrounding communities. Through their years of service, their understanding of all aspects of AECS comes as second nature. It is from their experiences and hands-on involvement that the financial reporting, control and decision making systems are thoroughly managed. In light of the growth trajectory of AECS in the near future, it is with characteristic prudence that many recognize the limitations of the current financial management system, and are taking proactive measure to ensure the organizational and financial sustainability of AECS.

Mission-oriented Culture Deeply Rooted in AECS Staff

Along with its reputation as a leader in clinical ophthalmology, the community care aspect of AECS is also internationally recognized. At the core of this organization, the culture of AECS to serve patients regardless of their ability to pay feeds the momentum to eradicate needless blindness and the growth of the organization. Alongside inspiring AECS and its staff, the culture ensures that the values of its founder Dr. V. remain as the foundation of AECS even as its reach in eye care broadens and deepens.

Operating Efficiency and Flexibility

Part of Dr. V.'s vision for AECS included creating an organization that runs with the standardization and efficiency of McDonald's. Throughout the 30-year history of AECS, innovations in eye care have continually emerged that increase efficiency and lower cost. The willingness of management and employees to embrace these changes and to seek further ways to improve efficiency is a valuable strength, especially for an organization that expects large amounts of growth and organizational change in the near future.

Organizational Transparency and International Reputation

AECS is an open and transparent organization; the organization is remarkably willing to help, share, and actively participate in developmental, research, and academic activities. By collaborating with doctors and students from around the world and with other renowned academic, non-profit, NGO, and healthcare institutions, AECS has created a reputation as one of the top ophthalmologic organizations and as a leader in social enterprise. This reputation allows AECS to perpetuate the collaboration with other top organizations, which is beneficial for all involved.



Weaknesses

Lack of Decentralized Decision Making Authority, Autonomy

With the highly centralized senior management structure of AECS, major decisions are handled principally by the SLT. The individual CMOs and department managers of each AEH have little decision making power to pursue a new idea, innovation, or investment. Managers must provide detailed justification and go through a lengthy series of steps before obtaining SLT approval for changes or purchases of significance. As a result, there is or will soon be a critical bottleneck at the SLT level as the capacity for effective decision making is exceeded by the number of decisions that need to be made. The centralization of control and responsibility at the SLT level will hinder the growth and competitive advantage of AECS.

Incomplete Understanding of Costs and Revenues by Service and Procedure

The current accounting system is insufficient for the complexity of services and procedures offered across AECS. The accounting system does not allow senior managers to track and disaggregate costs at the service or procedure level, and many categories of costs and revenues are pooled together. As AECS expands the portfolio of services offered, the cost and revenue structure of AECS will become increasingly more complicated. It is critical for AECS to understand the full cost of each service and procedure before setting prices and budgets and making investment decisions. By obtaining this cost and revenue information in a timely manner and categorized in meaningful ways, it will allow the organization to budget and allocate monetary resources accurately and efficiently.

MIS Inadequate for Size and Complexity of Organization

While AECS captures and reports a great amount of statistical and operational data using IHMS, the information is housed at each individual hospital rather than in a central location. Similarly, financial information is captured at the hospital level and is more general than the operational data captured. In order for senior management to analyze performance across the organization, a cumbersome task of assembling data via email must take place. As AECS continues to grow, manually managing this information will become even more inefficient.

Opportunities

Unutilized Capacity at AEHs

Although space constraints are frequently mentioned – especially at the Madurai hospital – evidence indicates that off-peak capacity is available to deliver additional eye care services. Based on substantial seasonality in patient volume – highest during the fiscal first quarter of AECS – and patient volume being highest early in the week and early in the morning, the Team believes that the critical resources for eye care services, operating theatres (OTs) and doctors, are available during off-peak periods. By increasing patient volume later in the day and week and during off-peak months, additional patients can be treated without investing in additional capacity.

One method for increasing utilization is the implementation of an appointment system, which was cited by a number of AEH staff during our interviews. Scheduling surgical patient re-visit appointments in the afternoon and moving non-emergency surgeries to later in the week will both decrease patient wait times and smooth the variability in patient volumes. This will most likely increase the utilization of resources and overall patient volume as walk-in patient wait time decreases. Also, as community and vision centers



are expanded to replace camps, an appointment system can be used to allocate patients to available time slots.

Market Potential for Specialty Products and Services

As more competitors enter the cataract surgery market, AEHs will face increasing difficulty in meeting patient volume targets for cataract surgery. However, AEHs can offset the adverse changes in the competitive environment for cataract surgeries by increasing the number of specialty services and procedures offered to paying patients, such as Lasik, advanced foldable lenses, and out patient investigations. AEHs currently have a competitive advantage as many are the sole provider of specialty services in their region. Through the Team's interviews, various CMOs commented that these advanced procedures also can be offered at significant discounts to the prevailing market price because of lean operations. In addition, socio-economic changes in Southern India are likely to increase demand for these services over time.

Transfer of AEH Model to Managed-Care Hospitals

AECS has seen success in partnering with other hospitals in the form of their Managed Care facilities in Amethi and Kolkata. Using this management by contract approach, AECS deploys its successful operational model to hospitals in underserved areas. By continuing to partner with additional hospitals in the future, AECS will be able to reach many more patients without the expense of building complete hospitals.

Threats

Losing Status as Employer of Choice

The economic environment of South India has changed dramatically from the time when AECS began operating with 11 beds over 30 years ago. In years past, the sisters that make up the bulk of the workforce of AECS had few alternatives to the opportunities offered by AECS. Today, opportunities are growing for would-be sisters, and their expectations are changing accordingly. As with sisters, doctors' expectations are also changing; in addition to servicing patient needs, doctors seek opportunity to publish in journals and advancement within the organization.

The Team believes one area of concern for AECS is retaining and developing human capital at a reasonable price. Given staff compensation is one of the highest expenditure items at AECS, insights into other drivers of engagement besides the simple financial aspect will help senior leadership determine the right compensation – both financial and other – for its staff.

Inflation and the Eroding Value of Annual Cash Surplus

AECS is strongly effected by the socio- and macro-economic factors of a rapidly modernizing India. Inflation in the cost of materials, wages, and capital goods will be a significant factor on the financial sustainability of AECS. Since cash surplus generated today is to be used for re-investment in the organization at some point in the future, cash surplus must not only grow in absolute amount but also must outpace the rate of inflation in order to achieve the same or greater level of purchasing power. This did not happen for cash surplus generated by AEHs between FY04-05 and FY05-06. When measured using a 6% rate of inflation, the 250 lakh surplus generated in FY05-06 declined by 3.7% in real terms from the 245 lakh surplus in FY04-05.



ADDITIONAL INTERVIEW OBSERVATIONS

During the course of the Team's staff interviews, we learned a great deal about AEHs and AECS, although some of this information is not directly relevant to our project. In order to serve future projects and those interested in learning more about AECS, we excerpted a handful of recurring themes from our interviews that do not appear elsewhere in this report.

What to Emphasize: High Volume or High Quality

A number of different staff raised concerns regarding service quality and quality control across AEHs. In the opinion of these staff, AEHs have a tendency to place too much emphasis on the volume of patients being served, to the detriment of the quality of care being given. Rather than focus on volume as the main part of the "high volume with high quality" mantra, it was suggested that quality be the main focus, with high volume naturally following:

"High volume can only be sustained for about 5 years per doctor, high quality is lifelong"
~ Dr. V. P. Ravichandran

Operational Uniformity Across AEHs

During the course of our interviews, the Team became aware of operating and clinical procedures that were different across hospitals, which was unexpected given the emphasis placed on standardization within AEHs. Although CMOs from each hospital meet on a weekly basis to discuss best practices employed and to standardize operations and clinical procedures, it appears that hospital sometimes can operate in very different ways. One clinical example is the prescription of post-operative eye drops. In some AEHs, these eye drops are given to free and direct patients while in other hospitals these eye drops are given to only paying patients.

A separate example is the quarterly audit that takes place at the Coimbatore and Pondicherry hospitals. In this process, an external auditing agency or internal staff provides an assessment of the hospital based on metrics that are defined by the SLT and CMO. A review of the outcomes takes place that results in an action plan to remedy any issues or risks identified. While the former CMO of Coimbatore who began this practice believes it has been integral to the growth and success of the hospital, only two of five AEHs perform this practice (the former CMO of Coimbatore is now the CMO of Pondicherry). While these two examples are anecdotal and do not themselves represent a significant issue, the larger issue is that a system that many claim to be standardized is not completely so.

Rigid Criteria for Capital Expenditure Justifications

The standard process for large equipment or other capital expenditures involves filling out a justification form to be reviewed at the annual Purchase Committee meeting. The basis for justification of expenses is primarily focused on the increase in patient volume that the acquisition will generate. However, a measure of patient load is sometimes not an accurate representation of the contribution that a purchase will make. For example, in a hospital such as Coimbatore there is significant local competition and a variety of services using state-of-the-art equipment are widely available. In order to retain and grow their market share in the area, the Coimbatore hospital must maintain comparable services.

Another concern expressed is that purchase requests are often declined without an explanation. With no understanding as to why decisions are being made, managerial employees have become more hesitant to even submit their requests.



A more open process both for requests and denials or decentralized decision making based on the judgment of the CMO would provide more flexibility and efficiency in capital budgeting.

Concerns on the Effects of Growth on AECS

Since its inception 30 years ago, the primary focus of AECS has been to provide eye care to as many patients as possible rather than on the financial bottom line. Given that our project is intended to help AECS prepare for future growth in one area (finance), the Team was interested in getting the opinion of other members of the SLT regarding other areas for concern as the organization grows. Three concerns were repeatedly raised by SLT members during interviews, which are:

- Avoiding dilution of founding values and culture
- Keeping the vision of the organization clear
- Maintaining consistent policies without deviations across AEHs

It is the opinion of many that if the focus – or the perceived focus – of the organization shifts towards making more money, then one or more of the above mentioned elements would be sacrificed. In endeavors such as the managed care hospitals which are geographically distant from AEHs, the features listed above are critical to differentiating AEHs from other low-cost service providers. Additionally, these three concerns are also applicable to maintaining stable growth across AECS-owned hospitals.





ESTABLISH BUY-IN AND MOMENTUM

The KPIs and KPI template delivered as part of this project provide a standardized set of performance metrics for evaluating AEHs. In order for AECS to extract value from the KPI template, it is critical that the SLT build momentum behind performance evaluation by committing to reviewing the template together on a regular basis. Also, in order to establish buy-in to the KPI methodology, the SLT must understand the application of the KPIs to AEHs. The Team recommends the SLT take the following steps in order to build momentum and buy-in:

1. Review KPI specifications among SLT to understand and discuss the metrics
2. Review KPI template to become familiar with interpreting and using the data
3. Meet as a SLT to review FY06-07 KPIs
4. Establish action plans based on FY06-07 results

Once the SLT has absorbed the usage of the KPIs, it can begin the process of regular evaluation and review of the results. Because the KPIs evaluate each hospital against the same criterion, the SLT will be able to compare results to identify opportunities for improvement. By using the KPIs collectively to improve the organization and further the AECS mission, the SLT will demonstrate the value of the KPI methodology, and build momentum for the implementation of additional KPIs at lower levels and within other AECS organizations.

PERFORM BUDGETING AND VARIANCE ANALYSIS

The next step in utilizing the KPIs to their full potential is for the SLT to establish budgets or targets for KPIs, and then to perform subsequent variance analyses on the actual results. The creation of these targets begins the process of benchmarking, and moves the SLT towards being proactive about the performance of the organization.

STANDARDIZE DATA COLLECTION

In order for the KPI methodology to be deployed successfully, there must be a uniform system put into place to capture the KPI data and populate the template on a regular basis.

Fill Gaps in Data Collection

In the development of the KPIs, the Team looked to both the feedback of AECS staff and research on best practices of other hospitals and non-profit organizations. As a result, some of the KPIs that were identified involve data that is not currently captured or is incompletely captured by the organization. Some of the major items that require improved collection are:

- *Bed Counts:* Currently the KPI template is populated with the same number of beds over time for each hospital.
- *Cataract Infection Rates:* Only yearly data for 2005 and 2006 for Cataract Infection Rates was readily available.
- *Patient Satisfaction:* Across many organizations researched, Patient Satisfaction was identified as a critical performance indicator. AECS is currently developing a survey to capture this



- information and the results will need to be provided to the owners of the KPI template for population.
- *Cataract Market Demand:* AECS will need to obtain population statistics from the Indian Government and cataract incidence rates from the WHO for each area that it services to understand the level to which they are reaching those in need in each market.
 - *Asset Values on Balance Sheet:* The return on operating assets KPI requires the total amount invested in a hospital. Currently, the fixed asset account for each hospital does not permanently record the value of land and buildings.

Integrated and Electronic Data Capture

AECS should develop an integrated and electronic system for capturing KPI data. Currently, each AEH uses the same IHMS software to capture patient related data, but the storage of this information is distributed at each hospital. Whenever a comprehensive view of the organization is needed, data must be downloaded and emailed to a central location. This process is both time consuming and prone to error. With an integrated IT system, the owner of the KPI template can retrieve a comprehensive set of information as-needed with greater data consistency and reliability.

In addition, the Team found a reliance on paper-based recordkeeping within AECS. For instance, the monthly Manpower Statistics are captured on an Excel spreadsheet, printed for inclusion in the Monthwise Performance Report, and subsequently overwritten in the following month, thus leaving no electronic record of past manpower data. From both the perspective of an organizational best practice and the ability to provide historical data for analysis, all data captured by AECS should be archived electronically.

Create Drill-Down Capabilities

KPIs provide a summary view of performance across AEHs. While these indicators give a macro-view of hospital performance, micro-level analysis is often required to gain a more complete understanding. In order to achieve the fine-grained level of analysis that may be required, individual KPIs will need to be drilled into by breaking down the metrics by patient mix (paying, direct, camp), procedure type (cataract vs. specialty), and others ways as desired. (Additional drill downs for each KPI are provided in the KPI Specifications in Appendix F).

Analyzing the data underlying the KPIs at this more detailed level will also provide the opportunity to develop KPI templates for use at lower levels and within other AECS organizations. As a result, departments will be able to measure themselves on a more accurate basis and set internal goals that are specific to their specialty.

The MIS supporting the SLT KPI template – and any additional KPIs deployed across the organization – will need to be modified based on desired drill downs and customized views for specialty departments. As additional KPI templates are deployed, the Team encourages AECS to maintain uniformity across hospitals in order to allow for comparability.

USE DATA TO DRIVE DECISION MAKING

The Team is passionate in our belief that the KPI template and methodology provides a way for the SLT to become more proactive in managing AEHs. By using KPI data to drive decision making, the SLT can move away from “post-mortem” evaluations and towards a rational and structured decision making process.



One example of how the KPI template can be used as a tool to proactively manage performance is the Hospital Comparison case study. This study, shown in Appendix D, exhibits how a slight change in one performance area (surgeries as a percent of patients) can markedly improve others. By using the KPI template to prioritize management initiatives, the SLT can better focus finite resources to gain desired outcomes.

Also, the Declining Surplus Margin case study shows how decisions made on an operational level (surgical medicine policy change and loss of staff efficiency) impact financial performance. If management performed this analysis prior to these decisions, perhaps other areas could have been targeted – such as prices paid for specialty services – to compensate for the loss of margin and margin percent. The Declining Surplus Margin Percent case study is shown in Appendix C.

DE-CENTRALIZE FINANCIAL AND OPERATIONAL RESPONSIBILITY

Define Roles and Responsibilities

As AECS grows in the future, it will become more critical that both financial and operational responsibility be delegated from the SLT to lower levels of management. A clearly defined set of roles and responsibilities for the CMOs and other owners of the KPIs will provide a standardized method of assigning goals.

Having these roles and responsibilities directly aligned with goals that support the AECS mission will ensure that the best interests of both the individuals and the organization are taken into account.

Create Performance Metrics Aligned with AECS Mission

Performance metrics and goals should be set in direct alignment with the defined roles and responsibilities. This will prevent any disconnect between the management's expectations of performance and the staff's vision of how performance should be measured.

Design Compensation and Reward System

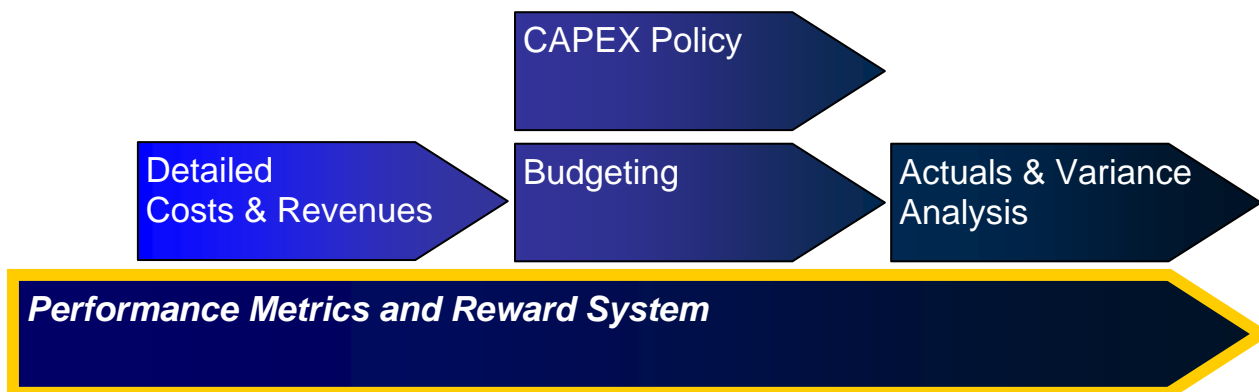
A compensation and reward system aligned with set performance goals will motivate staff to meet their objectives. Because these goals can be both monetary and recognition based, the AECS mission is kept in focus while employees pursue both their personal self-interest and the interests of the organization.





As the first project in what is expected to be multi-year initiative, the Team is providing a road map of future finance projects that will move AECS to a more robust financial MIS. The Team selected these projects based on the general requirements for a robust financial MIS as shown in Figure 2 below. The 2007 MAP-AECS project is the beginning part of the “Performance Metrics and Reward System” component.

Figure 2 Road Map of Financial MIS Priorities



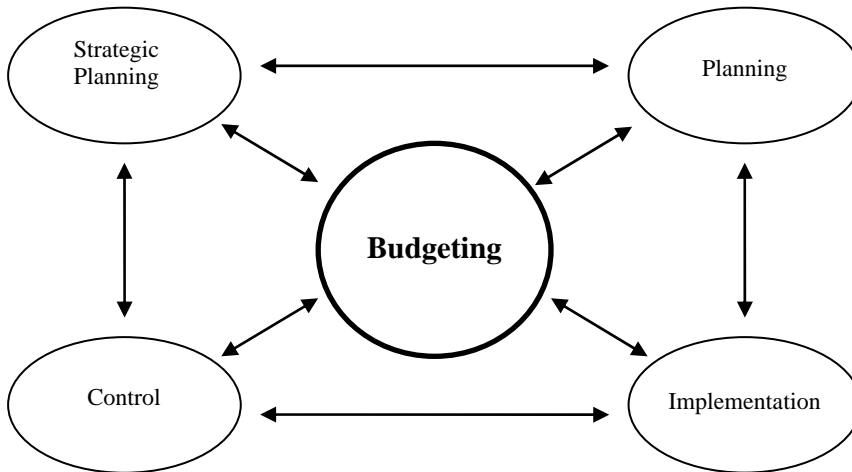
Although these projects can be undertaken in any order, we prioritized these projects so that the output of a preceding project will maximize the value of a successive project while considering the need to maintain momentum in the broader initiative. For example, activity-based costing (ABC) is placed after KPI targets and budgets in order to preserve momentum even though ABC would greatly improve the accuracy of the KPIs. Alternately, ABC is placed before implementing a capital expenditure policy because very detailed cost information is necessary to make any new capex policy relevant and useful. The Team’s suggested follow-on projects are as follows.

IMMEDIATE PRIORITY: KPI TARGETS AND BUDGETS FOR FY’08

KPIs serve as tools to compare performances among AEHs at any point of time, such as annually or quarterly, and also to track performance of AEHs over the course of time. However, the value of using KPIs can be greatly increased by setting targets and budgets for the future, and devising strategy to meet the targets by following a planning and control cycle as shown in Figure 3.



Figure 3 Planning and Control Cycle



Budgeting forms the cornerstone of a planning and control cycle. The first stage involves *Strategic Planning*, which is focused on the long-term and driven by the goals and mission of AECS. The short-term and medium-term goals are identified through the process of *Planning*, which is followed by creating a roadmap for *Implementation* and *Control*. Each stage is interconnected through the process of *Budgeting*, which is where the SLT would set KPI targets. Tracking these targets and performing variance analysis – comparing actuals to budgets – can allow the SLT to better understand its position relative to its strategic objectives, and to be more proactive in managing AEHs.

MEDIUM-TERM PRIORITY #1: ACTIVITY-BASED COSTING

Activity-Based Costing (ABC) is a management accounting method that allocates costs to services and procedures based on resource consumption. The goal of ABC is to provide to management the total and “true” cost of products, services, procedures, which aids in pricing for full cost recovery and formulating accurate budgets. ABC methodology involves identifying activities involved in the production or delivery of a product, service, or procedure; determining cost drivers (indirect, direct and overhead) to the activities; and finally allocating the costs based on the consumption of resources.

Services and Procedures that AEHs perform that should be reviewed using ABC include:

- Out patient diagnostics such as vision check, refraction, preliminary examination, dilation, final examination.
- In patient diagnostics.
- Surgeries, both cataract and specialty procedures.
- Specialty Clinics, including Glaucoma, Retina, Cornea/Lasik, Pediatric, Orbit/Prosthetic, UVEA, Neuro, and Low Vision.
- Counseling, both pre- and post-operation.

ABC generates useful information on how money is spent, whether a service or procedure is cost-effective, how to benchmark for quality improvement, and how to price for complete cost recovery. ABC also identifies opportunities to improve business process effectiveness and efficiency by setting accurate

budgets. ABC is especially important for AEHs because the service and procedure mix is changing rapidly, and because of the wide variety in types of services and procedures offered, from basic refraction to highly complex specialty eye care surgeries.

MEDIUM-TERM PRIORITY #2: CAPEX AND DISCRETIONARY EXPENSE PROCEDURES

Capital expenditure decisions are currently made once per annum by a Madurai-based purchase committee, which is comprised primarily of the SLT. The committee approves or denies capital purchase requests from all five AEHs based on a variety of different criteria, including pay-back period, patient volume, and clinical need.

With the expansion in the portfolio of services and procedures offered by AEHs, the increase in the potential number of requests as AECS grows, and a more complex competitive environment, the system for allocating capital needs to be made more consistent and timely decisions. Using the output from the ABC project, AECS can then develop procedures for evaluating large capital expenditure requests via a capital committee while leaving some capital expenditures at the discretion of local management based on pre-defined criteria.

LONG-TERM PRIORITY #1: DECENTRALIZED CONTROL SYSTEM FOR SENIOR STAFF

Setting targets for various KPIs can allow for a decentralized system to evaluate performance with goals that align with the mission of AECS. For example, certain decisions that are taken by the SLT can be passed down to the various CMOs and department heads. The additional advantage for such a system would be to fairly assess performance evaluation for responsible officials, whose compensation and reward incentives can be directly based on their ability to meet KPI targets. Although a centralized system could be argued to reduce control at the SLT level, it has several advantages as listed below:

- Developing a shared understanding of the goals and objectives of the organization among the participants of the budgeting process.
- Developing co-ordination between various CMOs, department heads, and the SLT.
- Motivating staff by empowering them, and also incorporating accountability.
- Bringing in cost awareness as a result of being involved with resource allocation decisions.
- Improve the ability to delegate responsibility and assess performance, which is related to a compensation and reward program aligned with areas of responsibility and targets.

LONG-TERM PRIORITY #2: INTEGRATED IT SYSTEM

AECS currently has different information management systems that independently gather and maintain sets of data. They include Tally Software for accounting, IHMS for patient information and operational management, Human Resources Information System, and Excel data sheets for camp records and capital expenditure information. The KPI tool in Excel uses data manually populated from the aforementioned systems, which are aggregated into the Monthwise Performance Reports.

AECS could significantly benefit by establishing an integrated IT system with a centralized data warehouse, which would vastly improve the ability to extract value from the large amounts of data being



gathered. Benefits of an integrated IT system with a centralized data warehouse include more timely analysis, greater analytical flexibility, standardization in data collection, and lower labor intensity.

Database Management Systems such as Microsoft Access on a small scale or SQL Server, SAP or Oracle Enterprise Resource Planning Software on a mid-tier scale are examples of some tools that could be implemented to serve as a unified data warehouse. The integrated IT system would be able to query data from various tables (that store data from various departments such as finance, accounting, cap-ex, human resources, patient information, surgery mix etc.) and incorporate comparability options among different hospitals over various frames of time. These database tools could serve as a first-level direct entry system, which would replace the different systems currently in place. Alternately, the centralized data warehouse could be designed to import or gather data from existing systems on a regular basis.

LONG-TERM PRIORITY #3: ACCRUAL ACCOUNTING SYSTEM

Cash-based and accrual-based accounting methods differ only in the timing of when transactions are credited or debited to accounts. On the revenue side, AEHs do not have a pressing need for changing from the current cash-based accounting method because services are generally rendered and paid for in cash on the same day. However, on the expense side, cash-based accounting leads to very “choppy” income statements and balance sheets for AEHs because large expenses such as inventories are paid for in cash, but then consumed slowly over time. If KPIs are used to analyze performance, accrual-based accounting will provide a more accurate picture of performance than cash-based accounting.





APPENDIX A - INTERVIEW SCHEDULE

Interview Dt	Name	Position	Organization
14-Mar-07	Dr. S. Aravind, MS, MBA	Administrator	AEH-MDU
14-Mar-07	Mr. G. Srinivasan, BE, MS	Finance Director	AECS
15- Mar-07	Dr. S. Aravind, MS, MBA	Administrator	AEH-MDU
	Mr. R.D. Thulasiraj, BSc, MBA	IT & Systems Director	AECS
	Mr. N. Shanmugasundaram, B.Com	Finance Manager	AEH-MDU
	Mr. Ramamoorthy	Accounts Manager	AEH-MDU
21-Mar-07	DR. R.Ramakrishnan, MS, DO	CMO	AEH-TVL
22-Mar-07	Mr. S. Jayachandran, MHM	Purchasing Director	AECS
23-Mar-07	Mr. R. Meenakshi Sundaram, MHM	Outreach Director	AECS
23-Mar-07	Dr. V. Narendran, DO, DNB	CMO	AEH-CBE
	Dr. Kalpana Narendran, DO, DNB	Chief – Pediatric Ophthalmology	
26-Mar-07	Mr. B.S. Ganesh Babu, MCOM, MS	IT Director	AECS
26-Mar-07	Mr. S.P. Venkatesh, BE, MBA	LAICO Faculty	AECS
26-Mar-07	Ms. Preethi Pradhan, MSW	HR Senior Manager	AECS
27-Mar-07	DR. V.P. Ravichandran, DO	Free Hospital	AEH-MDU
	Mr. R. Ramesh Babu, MA	Free Hospital	
28-Mar-07	Mr. R. Premkumar, MHM	Operations Senior Manager	AECS
28-Mar-07	Dr. S. Aravind, MS, MBA	Administrator	AEH-MDU
29-Mar-07	Dr. Usha Kim, DO, DNB	Training Director	AECS
29-Mar-07	Dr. G. Natchiar, MS, DO	HR Director	AECS
30-Mar-07	Dr. R.D. Ravindran, MS, DO	CMO	AEH-Pondy
30-Mar-07	Mr. Poobalan, CAIIB	Administration Manager	AEH-Pondy
s3-Apr-07	Mr. R.D. Thulasiraj, BSc, MBA	IT & Systems Director	AECS
3-Apr-07	DR. P. Namperumalsamy, MS, FAMS	Chairman	AECS
4-Apr-07	Dr. S. Aravind, MS, MBA	Administrator	AEH-MDU
5-Apr-07	Dr. S. Aravind, MS, MBA	Administrator	AEH-MDU



APPENDIX B - ARAVIND EYE CARE SYSTEM TEAM 251 INTERVIEW TEMPLATE

Introduction

- Each interviewer introduce him/herself
- A quick overview to the interviewee(s) why Michigan Team 251 is here in Madurai working at AECS and the purpose of the project: Historically, AECS is a superior organization in terms of operational efficiency. As it expands strategically in the near future to reach its goal of performing one million surgeries per annum by 2015, it is our objective to help AECS remain financial sustainability in perspective of the aggressive growth plans.

Purpose of Interview

- Understand interviewee's(s') department/role in the organization and his/her responsibilities as well as his/her perspective on the financial and accounting systems of AECS.

Questions

- Describe your role and day-to-day responsibilities/activities
- What are typical problems that come up requiring your attention and what are some [performance] indicators that you look for to give you a sense of whether things are going well or not-so-well?
- What types of decisions do you make day-to-day and how do you make those decisions? What kind of information do you use to make those decisions? [How do you ascertain the information? Are they available (and if so where are they)?]
- What type of information is helpful to you to help you/department/AEHs maintain success?
- Do you use financial or accounting information in your day-to-day activities? If so, how do you use it and does the current fin/acct information provide you enough perspective? [Expand]
- What would success mean for your department/role/organization? How do you describe success in your role and for the organization? What do you think will help you/department/organization be successful or what do you think drives this success?
- What is your current ratio of paying versus non-paying [at your hospital]? For AECS? Is this a level that you are trying to maintain here? In your mind, is there an idea ratio? In your mind, how would you best maintain this ratio and at the same time maintain financial sustainability of your hospital and of AECS [as well as grow aggressively]?
- How are you evaluated?
- What do you think of this ___ (insert a KPI here)? If you knew that ___ (insert a KPI here), what would that tell you or what would you think?

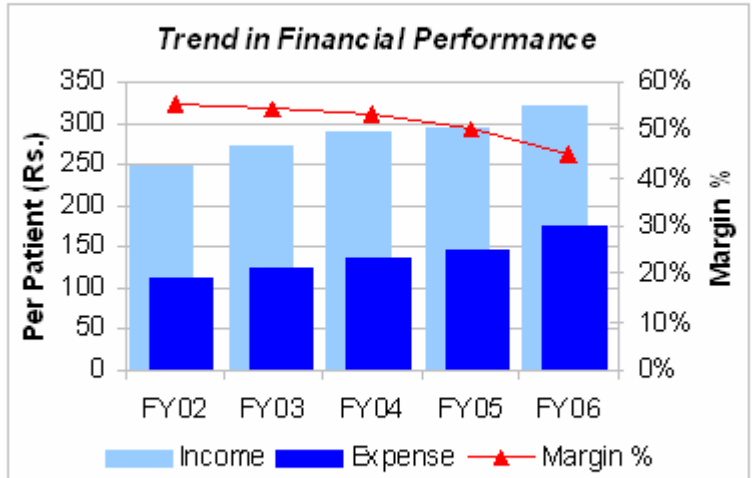
Closing

- In your opinion, what do you believe are the keys for sustainable growth for AECS financially [and operationally] or what do you think will help AECS financially successful?
- Thank you and goodbye!



APPENDIX C - CASE STUDY: DECLINING SURPLUS MARGINS

 Case Study – Declining Surplus Margins



(The following case study evaluates all AEHs at an aggregate level)

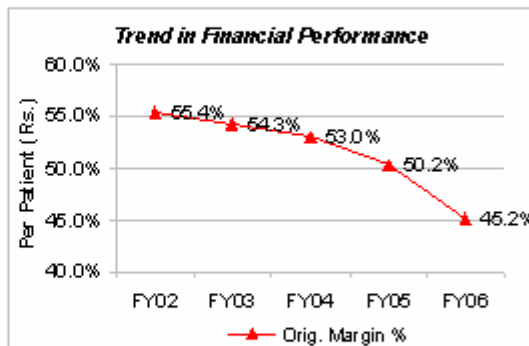
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 Case Study – Declining Surplus Margins

Trends in Financial Performance for all hospitals

- Margin % declined by 2.8% between FY04 & 05
- Margin % declined by 5.0% between FY05 & 06



1





Case Study – Declining Surplus Margins

• Financial category of KPI Spreadsheet shows primary components of income statement (scaled for size)

• Financial KPI for Direct Material per Surgery:

Financial KPI	FY06	FY05	% Change	FY04	% Change
Direct Material per Surgery	442	328	35%	310	42.6%

• Significant change in Direct Material per Surgery indicates area for investigation

• Decision to incorporate surgical medicine previously external to AEHs occurred between FY05 and FY06

• Revenue and expenses in FY06 affected by this policy change

What percent of the 7.8% decline in margin % between FY04 and FY06 is explained by this policy change?

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Case Study – Declining Surplus Margins

• Scaled income statement (per patient basis) on KPI Spreadsheet

Financial KPI	FY06	FY05	% Change	FY04	% Change
Income per patient	319	294		289	
Expenses per patient	175	146		136	
Cash surplus per patient	144	148		153	
Cash surplus margin %	45.2%	50.2%		53.0	

+

Financial KPI	FY06	FY05	% Change	FY04	% Change
Direct Material per Surgery	442	328	35%	310	42.6%

• Creates the ability to adjust the income statement to account for the surgical medicine policy change

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Case Study – Declining Surplus Margins

- **Apply historical 6% growth rate to FY05 direct materials per surgery**
 - FY06 Direct Materials per surgery = Rs. 328 X 1.06 = 348
- **Convert direct material per surgery to total direct material expense**
 - Adjusted Direct Material = Rs. 348 X 2,48,174 surgeries = 864 Lakhs
- **Find difference between actual and estimated, and divide by actual number of patients**
 - (1,098 Lakhs – 864 Lakhs) / 17,33,600 patients ≈ Rs. 13.5

Financial KPI	FY06		Adjusted FY06
Income per patient	319	Minus Rs. 13.5 *	306
Expenses per patient	175	Minus Rs. 13.5 *	161
Cash surplus per patient	144		144
Cash surplus margin %	45.2%		47.2%

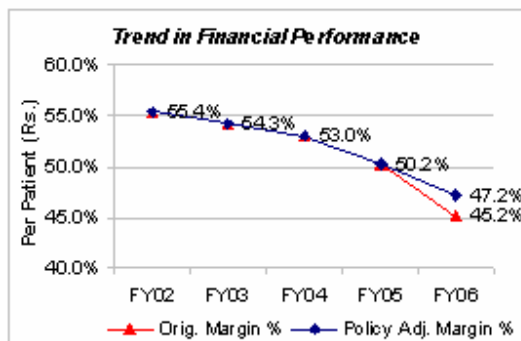
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MICHIGAN
ROSS SCHOOL OF BUSINESS



Case Study – Declining Surplus Margins

- **2% of the 7.8% decline in margins is explained by this policy**



What other KPIs can be used to explain the remaining 5.8% decline in margins?

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MICHIGAN
ROSS SCHOOL OF BUSINESS





Case Study – Declining Surplus Margins

Operational KPI	FY06	FY05	% Change	FY04	% Change
Patients per Staff	988	1086	-9.1%	1184	-16.5%

- **% Change in Patients per Staff KPI indicates AEHs are utilizing their staff less efficiently**

- Interpretation: the number of staff across AEHs has risen faster than the number of patients between FY04 and FY06

- **The loss of efficiency has a financial impact on Direct Labor (DL) expense, expenses per patient, and ultimately surplus margin**

- The team assumes that DL expense is a fixed expense within a year

What percent of the remaining 5.8% decline in margin % between FY04 and FY06 is explained by the decrease in staff efficiency?

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Case Study – Declining Surplus Margins

KPI	FY06	FY05	% Change	FY04	% Change
Expenses per Patient	161*	146	10.5%	136	18.9%
Direct Labor per Patient	54	47	16.7%	46	18.5%
Patients per Staff	988	1086	-9.1%	1184	-16.5%

- **Calculate the average amount actually paid per staff**

- FY06 DL per Staff = Rs. 54 X 988 = 53,352

- FY05 DL per Staff = Rs. 47 X 1086 = 51,042

- **Using FY04 efficiency, estimate staff required for actual patient load**

- FY06 adjusted staff = 17,33,600 / 1184 = 1,464 (actual = 1,755)

- FY05 adjusted staff = 16,57,928 / 1184 = 1,400 (actual = 1,526)

- **Calculate Direct Labor expense for staff level at FY04 efficiency**

- FY06 adjusted DL = 53,352 X 1,464 = 781 Lakhs

- FY05 adjusted DL = 51,042 X 1,400 = 715 Lakhs

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* as adjusted due to surgical medicine policy change





Case Study – Declining Surplus Margins

- Calculate Direct Labor per Patient using adjusted DL expense

- Adjusted FY06 DL per Patient = 781 Lakhs / 17,33,600 = Rs. 45
- Adjusted FY05 DL per Patient = 715 Lakhs / 16,57,928 = Rs. 43

- Overall financial impact of loss of staff efficiency:

Financial KPI Adjustment	FY06	FY05
Income per patient	306*	294
Expenses per patient	161*	146
DL per Patient	54	47
Cash surplus per patient	144	148
Cash surplus margin %	47.2%	50.2%

	FY06	FY05
Income per patient	306*	294
Expenses per patient	152	142
DL per Patient	45	43
Cash surplus per patient	154	152
Cash surplus margin %	50.3%	51.7%

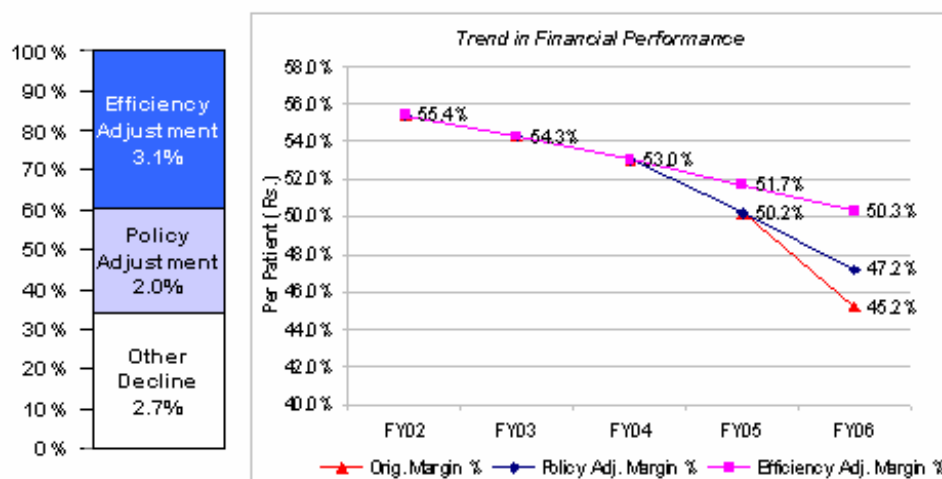
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* as adjusted due to surgical medicine policy change



Case Study – Declining Surplus Margins

Using KPIs to Explain Historical Performance



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APPENDIX D - CASE STUDY: HOSPITAL INCOME COMPARISON

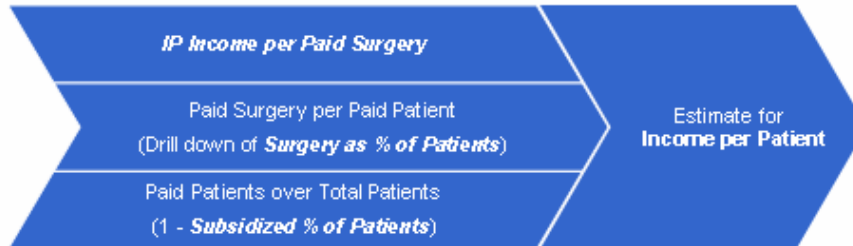
 Case Study – Hospital Income Comparison

**ARAVIND EYE HOSPITAL II
KEY PERFORMANCE METRICS – COMPARISON
QUARTER ENDED 30.06.2024**

	Medicaid		Cash/Insurance		Trust/Refill		Pooled Surgery		Trust I		
	Actual	Target	Actual	Target	Actual	Target	Actual	Target	Actual	Target	
FINANCIAL											
Income per Patient	400	1	303	2	303	3	248	4	166	5	
OP Income per Paying Patient	0	1	80	3	0	2	72	4	35	5	
IP Income per Paid Surgery	3,623	3	4,707	1	3,503	4	4,273	2	2,884	5	
Expenses per Patient	184	5	152	4	0.5	2	135	3	78	1	
Direct Material per Surgery	235	3	378	5	218	2	310	4	208	1	
Direct Labour per Patient	71	5	48	4	37	2	41	3	19	1	
Utilize/Medical per Patient	30	5	30	4	17	1	34	3	21	2	
Cash Surplus per Patient	216	1	211	2	308	3	112	4	87	5	
Cash Surplus Margin %	53.9%	3	58.1%	2	99.0%	1	45.4%	5	53.5%	4	
Subsidized Operating Assets	0.0%	0.0000	0.0%	0.0000	0.0%	0.0000	0.0%	0.0000	0.0%	0.0000	
Capital Investment as % of Surplus	0.0%	1	0.0%	1	0.0%	1	0.0%	1	0.0%	1	
PATIENT VOLUME MIX											
New Clin Patients	88,815	1	57,057	2	30,500	3	35,273	4	13,046	5	
Collected Surgery Procedures	0.0%	0.0000	0.0%	0.0000	0.0%	0.0000	0.0%	0.0000	0.0%	0.0000	
Subsidized % of Patients	44.7%	2	44.6%	3	41.3%	4	37.5%	5	45.4%	1	
Surgery as % of Patients	18.1%	1	13.8%	2	12.4%	3	12.3%	4	10.4%	5	
Collected as % of Surgeries	78.2%	5	75.4%	4	78.3%	3	78.8%	2	91.0%	1	

 Case Study – Hospital Income Comparison

Key Levers of Income per Patient



Understanding how the hospitals compare on these levers can illuminate areas of excellence and possible improvement





Case Study – Hospital Income Comparison

Income Comparison – First Quarter 2005

	Madurai Actual	Coimbatore Actual	% Difference
Income per Patient	400	363	-10%
O/P Income per Paying Patient	90	86	-4%
I/P Income per Paid Surgery	3825	4707	19%
Subsidized % of Patients	45%	44%	1%
Surgeries as % of Patients	19%	14%	-37%

KPIs are useful to identify and analyze differences between hospitals and the sources and affects of these differences.

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Case Study – Hospital Income Comparison

Translating Comparison into Action

- Management can create a goal to improve surgeries as % of patients by 1 percentage point

KPI	Coimbatore
I/P Income per Paid Surgery	4,707
X (1 - Subsidized % of Patients)	56%
X Surgeries as % of Patients	+1%
Increase in Income per Patient	26
Coimbatore Actual Income per Patient	363
Coimbatore New Income per Patient	389

Achieving this goal will increase income per patient by 7.2%

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APPENDIX E - KPI SPECIFICATION TEMPLATE

KPI Name		
Definition		
Purpose		
Additional Drill Downs	•	
Owner		
Audience		
Reporting Frequency		
Calculation		
Data Items	• Numerator	• Denominator

This is a blank KPI specification template which is provided for use when creating any additional KPIs.



APPENDIX F - KPI SPECIFICATIONS

Financial

KPI Name	Income per Patient	
Definition	Average revenue generated by a patient.	
Purpose	Shows the average amount of revenue generated per patient. This amount is available to cover variable and fixed costs per patient. When paired with expenses per patient KPI, gives the cash surplus per patient and the margin percent.	
Additional Drill Downs	<ul style="list-style-type: none"> • OP income per paying patient (included as KPI) • IP income per paying patient (included as KPI) • Income per patient by specific procedure or investigation type • Non-clinical income by revenue driver, such as grants divided by number of doctors 	
Owner	CMO, Senior Leadership Team	
Audience	Senior Leadership Team	
Reporting Frequency	Quarterly, Annually	
Calculation	Total revenue / Total patients	
Data Items	<p style="text-align: center;">Numerator</p> <ul style="list-style-type: none"> • Total Revenue 	<p style="text-align: center;">Denominator</p> <ul style="list-style-type: none"> • # New Out-Patients (pay, direct, camp) • # Review Out-Patients (pay, direct, camp)

KPI Name	OP Income per Paying Patient	
Definition	Average OP revenue received for each paying outpatient.	
Purpose	Indicator of the amount of controllable OP revenue, which is one of the main drivers of per patient revenue. This number is controllable by changing the number of paying outpatients, altering tariffs, or moving patients to different types of OP procedures, such as investigations.	
Additional Drill Downs	<ul style="list-style-type: none"> • OP revenue by service or procedure, such as types of investigations, divided by the number of services or procedures performed 	
Owner	CMO, Senior Leadership Team	
Audience	Senior Leadership Team	
Reporting Frequency	Quarterly, Annually	
Calculation	OP revenue / # paying Ops	
Data Items	<p style="text-align: center;">Numerator</p> <ul style="list-style-type: none"> • Consulting Fee • Treatment Charges • Contact Lens • Lab Charges • X-Ray Charges 	<p style="text-align: center;">Denominator</p> <ul style="list-style-type: none"> • # Paying Out-Patients (new & review)



KPI Name	IP Income per Paid Surgery	
Definition	Average amount of IP revenue received for each paid surgery.	
Purpose	Indicator of the amount of controllable IP income. This number is controllable by altering tariffs or moving patients to different type of IP or surgical procedures.	
Additional Drill Downs	<ul style="list-style-type: none"> IP revenue by service or procedure stream, such as types of surgeries, divided by the number of services or procedures performed 	
Owner	CMO, Senior Leadership Team	
Audience	Senior Leadership Team	
Reporting Frequency	Quarterly, Annually	
Calculation	IP revenue / # paid surgeries	
Data Items	<p style="text-align: center;">Numerator</p> <ul style="list-style-type: none"> Surgery/Dressings Medical Service Charges OT Medicine 	<p style="text-align: center;">Denominator</p> <ul style="list-style-type: none"> # of Paid Surgeries

KPI Name	Expenses per Patient	
Definition	Average expense incurred to treat a patient.	
Purpose	Shows the amount of cost incurred by the average patient, and the amount that must be covered by the average revenue per patient to earn surplus. This number elicits innovations or inefficiencies among hospitals after controlling for procedure mix. Also, when paired with revenue per patient KPI, these numbers give the cash surplus per patient and the margin percent.	
Additional Drill Downs	<ul style="list-style-type: none"> Direct materials per surgery (included as KPI) Direct labor per patient (included as KPI) Utilities & Maintenance per patient (included as KPI) Cost of services and procedures (direct materials + direct labor + variable overhead) by number of services and procedures performed 	
Owner	CMO	
Audience	Senior Leadership Team	
Reporting Frequency	Quarterly, Annually	
Calculation	Total expenses / Total patients	
Data Items	<p style="text-align: center;">Numerator</p> <ul style="list-style-type: none"> Total expenses 	<p style="text-align: center;">Denominator</p> <ul style="list-style-type: none"> # New Out-Patients (pay, direct, camp) # Review Out-Patients (pay, direct, camp)



KPI Name	Direct Materials per Surgery	
Definition	Average direct materials expense incurred per surgery.	
Purpose	Separates expenses per patient into major component parts. Direct material is divided by the primary driver of the cost pool (surgeries) to enable comparability across time and hospitals. This number also elicits innovations or inefficiencies among hospitals after controlling for procedure mix.	
Additional Drill Downs	<ul style="list-style-type: none"> • Cost of direct materials by service and procedure divided by number of services and procedures performed 	
Owner	CMO	
Audience	Senior Leadership Team	
Reporting Frequency	Quarterly, Annually	
Calculation	Direct materials expense / Surgeries	
Data Items	<p style="text-align: center;">Numerator</p> <ul style="list-style-type: none"> • IOL • Medicine & Surgicals Consumption • Linen • Lab expenses 	<p style="text-align: center;">Denominator</p> <ul style="list-style-type: none"> • # Cataract Surgeries (cat+ECCE) • # Cataract Surgeries (manual phaco) • # Cataract Surgeries (phaco) • # Other Major Surgeries • # Minor Surgeries • # Laser Surgeries

KPI Name	Direct Labor per Patient	
Definition	Average direct labor expense consumed by each patient	
Purpose	To separate expenses per patient into major component parts. Direct labor is divided by the number of patients to enable comparability across time and hospitals. Since direct labor increases are largely un-controllable (inflation, competition for talent, government regulation, etc.), dividing by the number of patients also enables budgeting for the number of patients required to hold the per patient direct labor expense constant.	
Additional Drill Downs	<ul style="list-style-type: none"> • Direct labor segregated by labor type (sisters, MLOPs, Fellow & PGs, medical officers, etc.) • Direct labor expense consumed per service and procedure 	
Owner	CMO, Senior Leadership Team	
Audience	Senior Leadership Team	
Reporting Frequency	Quarterly, Annually	
Calculation	Direct labor expense / patients	
Data Items	<p style="text-align: center;">Numerator</p> <ul style="list-style-type: none"> • Salary & Stipend • PF Contribution 	<p style="text-align: center;">Denominator</p> <ul style="list-style-type: none"> • # New Out-Patients (pay, direct, camp) • # Review Out-Patients (pay, direct, camp)



KPI Name	Utilities/Maintenance per Patient	
Definition	Utilities and maintenance expense incurred per patient.	
Purpose	To separate expenses per patient into major component parts. Utilities and maintenance are added together, and then divided by the number of patients to enable comparability across time and hospitals. This number also elicits innovations or inefficiencies among hospitals after controlling for procedure mix and age of facilities.	
Additional Drill Downs	<ul style="list-style-type: none"> • Utilities consumed per service and procedure divided by the number of services and procedures performed • Maintenance by type of maintenance project 	
Owner	CMO	
Audience	Senior Leadership Team	
Reporting Frequency	Quarterly, Annually	
Calculation	Utilities and maintenance expenses / Total patients	
Data Items	<p style="text-align: center;">Numerator</p> <ul style="list-style-type: none"> • Water Expense • Electricity Expense • Maintenance Expense 	<p style="text-align: center;">Denominator</p> <ul style="list-style-type: none"> • # New Out-Patients (pay, direct, camp) • # Review Out-Patients (pay, direct, camp)

KPI Name	Cash Surplus per Patient Cash Surplus Margin %	
Definition	The difference between revenue and expenses per patient on an absolute and percent of revenue basis.	
Purpose	Shows the average amount of surplus earned for each patient. Measurement of profitability is necessary because surpluses fund future growth plans, subsidize free and direct patients, and generally enable AECS to perpetuate its mission.	
Additional Drill Downs	<ul style="list-style-type: none"> • Cash surplus & margin % earned per procedure type • Cash surplus & margin % earned per patient type 	
Owner	CMO, Senior Leadership Team	
Audience	Senior Leadership Team	
Reporting Frequency	Quarterly, Annually	
Calculation	<p>Cash surplus = Total revenue – total expenses</p> <p>Cash surplus per patient = Cash surplus / total patients</p> <p>Cash surplus margin % = Cash surplus / revenue</p>	
Data Items	<p style="text-align: center;">Numerator</p> <ul style="list-style-type: none"> • Total Revenue • Total Expenses 	<p style="text-align: center;">Denominator</p> <ul style="list-style-type: none"> • # New Out-Patients (pay, direct, camp) • # Review Out-Patients (pay, direct, camp)
	<ul style="list-style-type: none"> • Total Revenue • Total Expenses 	<ul style="list-style-type: none"> • Total Revenue



KPI Name	Return on Operating Assets	
Definition	Cash surplus earned divided by the assets used to produce the surplus.	
Purpose	Shows the financial return on investment. This metric identifies areas of over- or under-investment for hospitals with similar patient loads, and areas of innovation or inefficiency among hospitals with similar asset bases but different patient loads. Also, this number can be utilized to approximate the pay-back period after a new hospital is opened, which is the current financial metric used by AECS for capital expenditure decision making.	
Additional Drill Downs	<ul style="list-style-type: none"> Return on specific assets, such as the investment required and surplus from a Lasik machine. 	
Owner	CMO, Capital Purchase Committee	
Audience	Senior Leadership Team	
Reporting Frequency	Quarterly, Annually	
Calculation	Cash surplus / operating assets (Cash is excluded from operating assets to limit the distortion by the large cash balances of retained earnings kept in trust on the balance sheets of each hospital. Also, non-depreciated assets are used to improve comparability across hospitals due to the wide range of hospital ages).	
Data Items	<p style="text-align: center;">Numerator</p> <ul style="list-style-type: none"> Total Revenue Total Expenses 	<p style="text-align: center;">Denominator</p> <ul style="list-style-type: none"> Fixed assets (non-depreciated) Inventory

KPI Name	Capital Investment as % of Surplus	
Definition	Amount of capital expenditure as percent of cash surplus	
Purpose	Shows the percent of surplus being plowed back into the asset base of each hospital. This figure can be used as a guideline during capital budgeting as well as to identify inefficient use of capital expenditures (ex. high cap-ex as % of surplus but low return on operating assets). Also, the amount of cash surplus available for use elsewhere (free cash-flow) can be derived by multiplying the cash surplus amount by 1 minus the capital investment as % of surplus rate.	
Additional Drill Downs	<ul style="list-style-type: none"> Clinical investments divided by clinical cash surplus Clinical investments by clinical area (ex. specialty, cataract) divided by clinical area cash surplus General facilities investments divided by cash surplus 	
Owner	CMO, Capital Purchase Committee	
Audience	Senior Leadership Team	
Reporting Frequency	Annually	
Calculation	Capital Investment / Cash Surplus	
Data Items	<p style="text-align: center;">Numerator</p> <ul style="list-style-type: none"> Capital Investment 	<p style="text-align: center;">Denominator</p> <ul style="list-style-type: none"> Total Revenue Total Expenses



Patient Volume Mix

KPI Name	New Out-Patients	
Definition	Number of new out patients that have come into each hospital during a period.	
Purpose	Provides an indication as to whether the system is growing in accordance with levels required for mission and financial sustainability. When used in conjunction with the Cataract Surgery Penetration KPI, a full understanding of the reach of AECS into target populations and progress of mission is shown.	
Additional Drill Downs	<ul style="list-style-type: none"> • New patients by each patient source (ex. paying, direct, and camp) • District-wise comparison 	
Owner	CMO	
Audience	Senior Leadership Team	
Reporting Frequency	Monthly	
Calculation	# New OP	
Data Items	<p style="text-align: center;">Numerator</p> <ul style="list-style-type: none"> • # New Out Patients (pay, direct, camp) 	<p style="text-align: center;">Denominator</p>

KPI Name	Cataract Surgery Penetration	
Definition	Percentage of the total available market of cataract patients that are being served by AEH	
Purpose	<p>Indicator of whether AEHs are reaching their full potential in terms of reaching patients in need. Also, a gauge of whether the goals of the AECS mission are on track, or if community awareness and outreach efforts need to be improved.</p> <p>[The team prefers Cataract Surgery Penetration to the SLT's suggested cataract surgery market share. AEHs are the cataract market leader, and therefore should be focused on growing the market of patients served rather than stealing market share from other, smaller hospitals.]</p>	
Additional Drill Downs	<ul style="list-style-type: none"> • Contribution of paying, direct, and camp to cataract surgery penetration • District-wise comparison 	
Owner	CMO	
Audience	Senior Leadership Team	
Reporting Frequency	Monthly	
Calculation	$\frac{\# \text{ Cataract surgeries}}{\text{Available market of cataract patients}}$ $\text{Available market} = \text{Population hospital serves} * \text{Cataract incident rate}$	
Data Items	<p style="text-align: center;">Numerator</p> <ul style="list-style-type: none"> • # Cataract Surgeries (cat+ECCE) • # Cataract Surgeries (manual phaco) • # Cataract Surgeries (phaco) 	<p style="text-align: center;">Denominator</p> <ul style="list-style-type: none"> • Population served • Cataract incident rate



KPI Name	Surgeries as % of Patients	
Definition	OP to IP conversion rate.	
Purpose	Measures the percentage of out patients that elect to have surgery performed. An indicator of whether counseling services are effective in educating patients. Also provides insight to the amount of out patients that are required to be screened in order to generate a specific number of surgeries.	
Additional Drill Downs	<ul style="list-style-type: none"> • Surgeries as percent of paying, direct, and free patients • Surgery type 	
Owner	CMO	
Audience	Senior Leadership Team	
Reporting Frequency	Monthly	
Calculation	$\# \text{ Surgeries} / \# \text{ OP}$	
Data Items	<p style="text-align: center;">Numerator</p> <ul style="list-style-type: none"> • # Cataract Surgeries (cat+ECCE) • # Cataract Surgeries (manual phaco) • # Cataract Surgeries (phaco) • # Other Major Surgeries • # Minor Surgeries • # Laser Surgeries 	<p style="text-align: center;">Denominator</p> <ul style="list-style-type: none"> • # New Out-Patients (pay, direct, camp) • # Review Out-Patients (pay, direct, camp)

KPI Name	Subsidized % of Patients	
Definition	Mix of direct and camp patients	
Purpose	Measures the percentage of total out patients that are direct or from camps. Provides information for understanding changes in revenue due to different tariffs charged to paying patients. Also indicates whether AECS is achieving its target of paying to subsidized patient ratio (balances financial metrics with the social-enterprise aspect of AECS)	
Additional Drill Downs	<ul style="list-style-type: none"> • Direct, Camp • Surgery type 	
Owner	CMO	
Audience	Senior Leadership Team	
Reporting Frequency	Monthly	
Calculation	$(\# \text{ Direct OP} + \# \text{ Camp OP}) / \# \text{ OP}$	
Data Items	<p style="text-align: center;">Numerator</p> <ul style="list-style-type: none"> • # Direct Out-Patients (new & review) • # Camp Out-Patients (new & review) 	<p style="text-align: center;">Denominator</p> <ul style="list-style-type: none"> • # New Out-Patients (pay, direct, camp) • # Review Out-Patients (pay, direct, camp)



KPI Name	Cataract as % of Surgeries	
Definition	Cataract procedure mix	
Purpose	Measures the percentage of total surgeries performed that are related to the cataracts, the core competency of AEH. Also, provides context for understanding changes in revenue and expenses caused by different tariffs and costs for services and procedures.	
Suggested Drill Down	<ul style="list-style-type: none"> • Each cataract surgery type 	
Owner	CMO	
Audience	Senior Leadership Team	
Reporting Frequency	Monthly	
Calculation	# Cataract Surgeries / # Surgeries	
Data Items	<p style="text-align: center;">Numerator</p> <ul style="list-style-type: none"> • # Cataract Surgeries (cat+ECCE) • # Cataract Surgeries (manual phaco) • # Cataract Surgeries (phaco) 	<p style="text-align: center;">Denominator</p> <ul style="list-style-type: none"> • # Cataract Surgeries (cat+ECCE) • # Cataract Surgeries (manual phaco) • # Cataract Surgeries (phaco) • # Other Major Surgeries • # Minor Surgeries • # Laser Surgeries



Operational

KPI Name	Patients per Staff	
Definition	Efficiency and utilization of staff	
Purpose	Indicator of whether staffing allocations are being done properly and a measure of performance efficiency of the staff in relation to patient demand.	
Additional Drill Downs	<ul style="list-style-type: none"> • In-Patients per Staff • Individual Departments • Staff Levels (MOs, MLOPs, etc.) 	
Owner	CMO	
Audience	Senior Leadership Team	
Reporting Frequency	Monthly	
Calculation	# OP / Staff	
Data Items	<p style="text-align: center;">Numerator</p> <ul style="list-style-type: none"> • # New Out-Patients (pay, direct, camp) • # Review Out-Patients (pay, direct, camp) 	<p style="text-align: center;">Denominator</p> <ul style="list-style-type: none"> • Average Total Staff

KPI Name	Surgeries per Full-Time Doctor	
Definition	Efficiency and utilization of full-time doctors	
Purpose	Average number of surgeries each full-time doctor performs during the reporting period. When compared to prior periods, can provide indication of changes in efficiency and capacity utilization. If looked at in conjunction with procedure mix, can provide more information regarding efficiency of procedures based on complexity or demand.	
Additional Drill Downs	<ul style="list-style-type: none"> • Procedure type 	
Owner	CMO	
Audience	Senior Leadership Team	
Reporting Frequency	Monthly	
Calculation	# Surgeries / # Full-Time Doctors	
Data Items	<p style="text-align: center;">Numerator</p> <ul style="list-style-type: none"> • # Cataract Surgeries (cat+ECCE) • # Cataract Surgeries (manual phaco) • # Cataract Surgeries (phaco) • # Other Major Surgeries • # Minor Surgeries • # Laser Surgeries 	<p style="text-align: center;">Denominator</p> <ul style="list-style-type: none"> • # Full-Time Doctors



KPI Name	Sister Turnover % (< 5 years)	
Definition	Turnover rate (in a given period) of sisters that have been with AECS for less than five years.	
Purpose	Because of the high investment in training that is made during the first two years of employment, it is expected that sisters will remain with AECS for at least an additional two or three years following the completion of training. If the turnover rate for less than five years increases, it is an indication of potential employee dissatisfaction and/or a problem in the training and operational systems.	
Additional Drill Downs	<ul style="list-style-type: none"> • Frequency distribution by # years of service • Individual Departments 	
Owner	CMO, HR Manager	
Audience	Senior Leadership Team	
Reporting Frequency	Monthly	
Calculation	# Sister resigned w/ less than five years experience / Average # Sisters	
Data Items	<p style="text-align: center;">Numerator</p> <ul style="list-style-type: none"> • # sisters leaving (<5 yrs) 	<p style="text-align: center;">Denominator</p> <ul style="list-style-type: none"> • Average # Sisters

KPI Name	Doctor Turnover % (< 5 years)	
Definition	Turnover rate of full-time doctors that have been with AECS for less than 5 years.	
Purpose	Because of the high investment in training that is made during the first 2 years of employment, it is expected that full-time doctors will remain with AECS for at least an additional 2 or 3 years following the completion of training. If the turnover rate for less than 5 years increases, it is an indication of potential employee dissatisfaction, a problem in the training and operational systems, and/or increased competition for doctors in the region.	
Additional Drill Downs	<ul style="list-style-type: none"> • Frequency distribution by # years of service • Individual Departments 	
Owner	CMO, HR Manager	
Audience	Senior Leadership Team	
Reporting Frequency	Monthly	
Calculation	# Doctors resigned w/ less then five years of experience / Average # Doctors	
Data Items	<p style="text-align: center;">Numerator</p> <ul style="list-style-type: none"> • # Doctors leaving (<5 yrs) 	<p style="text-align: center;">Denominator</p> <ul style="list-style-type: none"> • Average # Doctors



KPI Name	Surgeries per Bed	
Definition	Bed turnover rate	
Purpose	Measure of efficiency of operational practices. Can be used to evaluate effectiveness of day care program as well as pilot day admit program. Also can be helpful in calculating the utilization rate of each hospital, and identifying other practices that improve asset (beds) turnover.	
Additional Drill Downs	<ul style="list-style-type: none"> • Paying, Direct, Free • Regular admit, Day care, Day admit • Surgery type 	
Owner	CMO	
Audience	Senior Leadership Team	
Reporting Frequency	Monthly	
Calculation	# Surgeries / # Beds	
Data Items	<p style="text-align: center;">Numerator</p> <ul style="list-style-type: none"> • # Cataract Surgeries (cat+ECCE) • # Cataract Surgeries (manual phaco) • # Cataract Surgeries (phaco) • # Other Major Surgeries • # Minor Surgeries • # Laser Surgeries 	<p style="text-align: center;">Denominator</p> <ul style="list-style-type: none"> • # Beds



Clinical

KPI Name	Patient Satisfaction – Subsidized & Unsubsidized	
Definition	Average score from standardized and regular patient satisfaction survey. Score separated into two KPIs, one for subsidized patients and another for unsubsidized.	
Purpose	Patient satisfaction is a key metric for driving patient volume. AECS derives many new patients from word-of-mouth “advertising” of current and former patients, and the return rate of patients for review procedures is tied to satisfaction. Also, employee satisfaction and patient satisfaction are highly correlated.	
Additional Drill Downs	<ul style="list-style-type: none"> • Satisfaction by types of services and procedures received • Satisfaction across days of week, time of year 	
Owner	CMO, MLOP	
Audience	Senior Leadership Team	
Reporting Frequency	Monthly	
Calculation	Average score from standardized and regular patient satisfaction survey.	
Data Items	<p style="text-align: center;">Numerator</p> <ul style="list-style-type: none"> • Not applicable 	<p style="text-align: center;">Denominator</p> <ul style="list-style-type: none"> • Not applicable

KPI Name	Cataract Infection Rate	
Definition	Number of infections from cataract surgeries as a percentage of total number of cataract surgeries	
Purpose	Cataract infection rate indicates the effectiveness of the AEH system for performing cataract surgeries. Low infection rates point to possible innovations that improve the system; high infection rates indicate a hospital that may require improvement. Also used as a counter-balance against financial performance metrics that give incentive to cut costs.	
Additional Drill Downs	<ul style="list-style-type: none"> • Unsubsidized and subsidized infection rate • Infection rate by cataract surgery OT • Infection rate by medical officer versus fellows and post-grads 	
Owner	CMO	
Audience	Senior Leadership Team	
Reporting Frequency	Monthly	
Calculation	# of infections from cataract surgeries / # of cataract surgeries	
Data Items	<p style="text-align: center;">Numerator</p> <ul style="list-style-type: none"> • # Cataract Infections 	<p style="text-align: center;">Denominator</p> <ul style="list-style-type: none"> • # Cataract Surgeries (cat+ECCE) • # Cataract Surgeries (manual phaco) • # Cataract Surgeries (phaco)

